(*Please scan this QR Code to view this Final Offer Document*)

Final Offer Document
Dated July 27, 2026
Book Built Issue

CUBE HIGHWAYS TRUST

Settled in the Republic of India as an irrevocable trust by way of the trust deed dated December 7, 2021, entered into between the Settlor, Cube Highways and Infrastructure Pte. Ltd., Cube Highways and Infrastructure III Pte. Ltd. and the Trustee, as amended and restated on July 8, 2022, and March 11, 2024, respectively, read with the deed of adherence dated February 20, 2026, executed by the Sponsor under the Indian Trusts Act, 1882 and registered as an infrastructure investment trust under the Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014, as amended on April 5, 2022, having registration number IN/InvIT/22-23/0022. The Trust's units were initially listed on BSE Limited and National Stock Exchange of India Limited on a private placement basis on April 19, 2023

Principal place of business: B-376, Upper Ground Floor, Nirman Vihar, New Delhi 110 092
Tel: + 91 120 4868300; **Compliance Officer**: Richa Gupta Rohatgi
E-mail: compliance.officer@cubehighways.com; **Website**: www.cubehighwaystrust.com

Sponsor **Cube Highways and Infrastructure V Pte. Ltd.**	**Investment Manager** **Cube Highways Fund Advisors Private Limited**	**Trustee** **Axis Trustee Services Limited**

Cube Highways Trust (the "**Trust**") is a privately listed infrastructure investment trust and is proposing conversion from a privately listed infrastructure investment trust to a public InvIT through an Offer for Sale of 328,947,365 units^ of the Trust ("**Units**") aggregating to approximately ₹ 50,000 million, consisting of, 52,073,815 Units^ by BCI IRR India Holdings Inc. aggregating to ₹ 7,915.22 million, 1,335,197 Units^ by BCI IRR India Holdings Limited Partnership aggregating to ₹ 202.95 million, 103,443,815 Units^ by Cube Highways and Infrastructure II Pte. Ltd. aggregating to ₹ 15,723.46 million, 50,658,881 Units^ by Cube Highways and Infrastructure III Pte. Ltd. aggregating to ₹ 7,700.15 million, 85,766,973 Units^ by Cube Mobility Investments Pte. Ltd. aggregating to ₹ 13,036.58 million, and 35,668,684 Units^ by Seventy Second Investment Company LLC aggregating to ₹ 5,421.64 million (collectively, the "**Selling Unitholders**") at a price of ₹ 152 per Unit (the "**Offer Price**") (collectively, the "**Offer**").
^*Subject to finalization of the Basis of Allotment*

The Offer Price is ₹ 152 per Unit.

THIS OFFER WAS BEING MADE IN RELIANCE UPON REGULATION 14(6) READ WITH REGULATION 14(4) OF THE SECURITIES AND EXCHANGE BOARD OF INDIA (INFRASTRUCTURE INVESTMENT TRUSTS) REGULATIONS, 2014, AS AMENDED AND CHAPTER 14 OF THE INVIT MASTER CIRCULAR, AS AMENDED (AS DEFINED BELOW)

The Units are privately listed on BSE Limited (the "**BSE**") and National Stock Exchange of India Limited (the "**NSE**") (BSE and NSE, collectively referred to as "**Stock Exchanges**"). The Trust is now proposing to convert from a privately listed InvIT to a public InvIT in accordance with Regulation 14(6) read with Regulation 14(4) of the Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014, as amended, and Chapter 14 of the InvIT Master Circular (as defined below). In-principle approvals for public listing of the Units have been received from both BSE and NSE on May 7, 2026. BSE is the Designated Stock Exchange.

The Price Band and the Minimum Bid Size (as determined by the Investment Manager in consultation with the Book Running Lead Managers) was announced on the websites of the Trust, the Sponsor, the Investment Manager, and the Stock Exchanges, as well as advertised in all editions of Financial Express (a widely circulated English national daily newspaper) and in all editions of Jansatta (a widely circulated Hindi national daily newspaper, Hindi also being the regional language of Delhi, where the registered office of the Investment Manager is located) at least two Working Days prior to the Bid/Offer Opening Date. The announcement/ advertisement contained relevant financial ratios computed for both the upper and lower end of the Price Band. For further information, please see the section entitled "*Basis of Offer Price*" on page 132.

The Offer was made through the Book Building Process and in compliance with the InvIT Regulations and the InvIT Master Circular, wherein not more than 75% of the Offer (excluding Strategic Investor Portion) was made available for allocation on a proportionate basis to Institutional Investors. The Investment Manager has, in consultation with the Book Running Lead Managers, allocated 60% of the Institutional Investor Portion to Anchor Investors on a discretionary basis in accordance with the InvIT Regulations and the InvIT Master Circular. Further, not less than 25% of the Offer (excluding Strategic Investor Portion) was made available for allocation on a proportionate basis to Non-Institutional Investors, in accordance with the InvIT Regulations and the InvIT Master Circular, subject to valid Bids being received at or above the Offer Price. The Offer included participation by Strategic Investors (*as defined hereafter*) in accordance with the InvIT Regulations and the InvIT Master Circular. All Bidders, (except Strategic Investors and Anchor Investors), were required to utilise the Application Supported by Blocked Amount ("**ASBA**") process by providing details of their respective ASBA accounts and UPI ID (in case of individual Non-Institutional Investors using the UPI Mechanism Bidding with a Bid Amount of ₹ 0.5 million or less), in which case the corresponding Bid Amounts were blocked by the Self Certified Syndicate Banks ("**SCSBs**") or under the UPI Mechanism, as applicable, to participate in this Offer. For details, please see the section entitled "*Offer Information*" on page 433.

The Units have not been and will not be registered under the United States Securities Act of 1933, as amended (the "***Securities Act***") and may not be offered or sold within the United States except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act and applicable U.S. state securities laws. Accordingly, the Units are only being offered and sold outside the United States in "offshore transactions" as defined in, and in reliance on, Regulation S under the Securities Act ("***Regulation S***") and the applicable law of the jurisdictions where such offers and sales occur.

RISKS IN RELATION TO THE OFFER

This is a public offer of Units by the Trust. The Offer Price (determined by the Investment Manager (on behalf of the Trust) in consultation with the Book Running Lead Managers) should not be taken to be indicative of the market price of the Units. No assurance can be given regarding an active or sustained market for trading in the Units or regarding the price at which the Units will be traded after listing of Units pursuant to the Offer.

GENERAL RISKS

INVESTMENTS IN UNITS INVOLVE A DEGREE OF RISK, AND BIDDERS SHOULD NOT INVEST ANY FUNDS IN THIS OFFER UNLESS THEY CAN AFFORD TO TAKE THE RISK OF LOSING THEIR ENTIRE INVESTMENT. FOR TAKING AN INVESTMENT DECISION, BIDDERS WERE REQUIRED TO RELY ON THEIR OWN EXAMINATION OF THE TRUST, THE UNITS AND THIS OFFER. BIDDERS ARE ADVISED TO CAREFULLY READ THE OFFER DOCUMENT AND THIS FINAL OFFER DOCUMENT, INCLUDING THE SECTIONS ENTITLED "*RISK FACTORS*" AND "*RIGHTS OF UNITHOLDERS*" ON PAGES 80 AND 426, RESPECTIVELY BEFORE MAKING AN INVESTMENT DECISION RELATING TO THIS OFFER. FOR TAKING SUCH INVESTMENT DECISIONS, PROSPECTIVE INVESTORS WERE REQUIRED TO RELY ON THEIR OWN EXAMINATION OF THE TRUST AND THE OFFER, INCLUDING THE RISKS INVOLVED. EACH PROSPECTIVE INVESTOR WAS ADVISED TO CONSULT ITS OWN ADVISORS IN RESPECT OF THE CONSEQUENCES OF AN INVESTMENT IN THE UNITS BEING OFFERED PURSUANT TO THE OFFER DOCUMENT AND THIS FINAL OFFER DOCUMENT. THIS FINAL OFFER DOCUMENT HAS BEEN PREPARED BY THE INVESTMENT MANAGER SOLELY FOR PROVIDING INFORMATION IN CONNECTION WITH THIS OFFER AND A COPY OF THIS FINAL OFFER DOCUMENT HAS BEEN DELIVERED TO THE SECURITIES AND EXCHANGE BOARD OF INDIA ("SEBI") AND THE STOCK EXCHANGES. SEBI AND THE STOCK EXCHANGES ASSUME NO RESPONSIBILITY FOR OR GUARANTEE THE CORRECTNESS OR ACCURACY OR ADEQUACY OF ANY STATEMENTS MADE, OPINIONS EXPRESSED OR REPORTS CONTAINED HEREIN AND THE UNITS HAVE NOT BEEN RECOMMENDED OR APPROVED BY SEBI AND THE STOCK EXCHANGES. ADMISSION OF THE UNITS AS PUBLIC INVIT TO BE OFFERED PURSUANT TO THIS OFFER FOR TRADING ON THE STOCK EXCHANGES SHOULD NOT BE TAKEN AS AN INDICATION OF THE MERITS OF THE TRUST OR OF THE UNITS.

INVESTMENT MANAGER'S, SPONSOR'S AND SELLING UNITHOLDERS' ABSOLUTE RESPONSIBILITY

The Investment Manager and the Sponsor, severally, having made all reasonable inquiries, accept responsibility for, and confirm that this Final Offer Document contains all information with regard to the Trust and this Offer, which is material in the context of this Offer, that the information contained in this Final Offer Document is true and correct in all material respects and is not misleading in any material respect, that the opinions and intentions expressed herein are honestly held and that there are no other facts, the omission of which makes this Final Offer Document as a whole or any of such information or the expression of any such opinions or intentions misleading in any material respect. Each of the Selling Unitholders, severally and not jointly, accepts responsibility for and confirms only the statements specifically made or confirmed by such Selling Unitholder and information pertaining to them and their respective portion of the Offered Units being sold in the Offer for Sale, and assumes responsibility that such statements are true and correct in all material respects and not misleading in any material respect. No Selling Unitholder, either severally or jointly, assumes responsibility for any other statements, disclosures and undertakings in this Final Offer Document, including without limitation, any of the statements, disclosures or undertakings made or confirmed by or in relation to, or to the business of, the Trust, the Investment Manager or the Sponsor, or by any other Selling Unitholder or any other person(s).

BOOK RUNNING LEAD MANAGERS				REGISTRAR TO THE OFFER
Kotak Mahindra Capital Company Limited 27 BKC, 1st Floor, Plot No. C –27, "G" Block, Bandra Kurla Complex, Bandra (East), Mumbai 400 051, Maharashtra, India **Tel.:** +91 22 4336 0000 **E-mail:** CHT.invIT@kotak.com **Investor Grievance E-mail:** kmccredressal@kotak.com **Website:** https://investmentbank.kotak.com **Contact Person:** Ganesh Rane **SEBI Registration No.:** INM000008704	**HDFC Bank Limited** Investment Banking Group Unit no. 701, 702 and 702-A, 7th floor Tower 2 and 3, One International Centre Senapati Bapat Marg, Prabhadevi Mumbai 400 013 Maharashtra, India **Tel.:** +91 22 3395 8233 **E-mail:** cubehighways.invit@hdfcbank.com **Investor Grievance E-mail:** Investor.redressal@hdfcbank.com **Website:** www.hdfc.bank.in **Contact Person:** Gaurav Khandelwal/ Souradeep Ghosh **SEBI Registration No.:** INM000011252	**HSBC Securities and Capital Markets (India) Private Limited** 52/60, Mahatma Gandhi Road Fort, Mumbai 400 001 Maharashtra, India **Tel.:** +91 22 6864 1289 **E-mail:** chtinvit@hsbc.co.in **Investor Grievance E-mail:** Investorgrievance@hsbc.co.in **Website:** www.business.hsbc.co.in **Contact Person:** Harsh Thakkar / Harshit Tayal **SEBI Registration No.:** INM000010353	**JM Financial Limited** 7th Floor, Cnergy, Appasaheb Marathe Marg Prabhadevi, Mumbai 400 025 Maharashtra, India **Tel.:** +91 22 6630 3030 **E-mail:** cubehighways.invit@jmfl.com **Investor Grievance E-mail:** grievance.ibd@jmfl.com **Website:** www.jmfl.com **Contact Person:** Prachee Dhuri **SEBI Registration No.:** INM000010361	**KFin Technologies Limited** Selenium, Tower B Plot No- 31 and 32, Financial District Nanakramguda, Serilingampally Hyderabad, Rangareddi 500 032 Telangana, India **Tel.:** +91 40 6716 2222 / 1800 309 4001 **E-mail:** cubc.invit@kfintech.com **Investor Grievance E-mail:** einward.ris@kfintech.com **Website:** www.kfintech.com **Contact Person:** M Murali Krishna **SEBI Registration No.:** INR000000221

BID OFFER/PROGRAM #

BID/OFFER OPENED ON: WEDNESDAY, JULY 22, 2026*	BID/OFFER CLOSED ON: FRIDAY, JULY 24, 2026

** The Anchor Investor Bidding Date was Tuesday, July 21, 2026.*
 # The Offer included participation by Strategic Investors in accordance with the InvIT Master Circular and the InvIT Regulations.

TABLE OF CONTENTS

NOTICE TO INVESTORS 1
DEFINITIONS AND ABBREVIATIONS 5
PRESENTATION OF FINANCIAL DATA AND OTHER INFORMATION 21
PAST MARKET PERFORMANCE 29
FORWARD-LOOKING STATEMENTS 30
THE OFFER 32
OVERVIEW OF THE TRUST 35
DESCRIPTION OF THE PORTFOLIO ASSETS 38
SUMMARY AUDITED CONSOLIDATED FINANCIAL INFORMATION OF THE TRUST 47
SUMMARY FINANCIAL INFORMATION OF THE SPONSOR 52
SUMMARY FINANCIAL INFORMATION OF THE INVESTMENT MANAGER 56
SUMMARY OF INDUSTRY 66
SUMMARY OF BUSINESS 73
RISK FACTORS 80
GENERAL INFORMATION 124
BASIS OF OFFER PRICE 132
PARTIES TO THE TRUST 134
OTHER PARTIES INVOLVED IN THE TRUST 167
CORPORATE GOVERNANCE 171
INDUSTRY OVERVIEW 188
OUR BUSINESS 262
SUMMARY OF KEY AGREEMENTS 316
INFORMATION CONCERNING THE UNITS 332
USE OF PROCEEDS 335
FINANCIAL INDEBTEDNESS AND DEFERRED PAYMENTS 337
PERFORMANCE OF THE TRUST VIS-À-VIS THE PROJECTIONS AT THE TIME OF INITIAL OFFER 350
CAPITALISATION STATEMENT 351
DISTRIBUTION 352
MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS 356
RELATED PARTY TRANSACTIONS 376
REGULATIONS AND POLICIES 385
REGULATORY APPROVALS 397
LEGAL AND OTHER INFORMATION 405
SECURITIES MARKET OF INDIA 415
SELLING RESTRICTIONS 417
PURCHASER REPRESENTATIONS AND WARRANTIES 424
RIGHTS OF UNITHOLDERS 426
DILUTION 429
OFFER STRUCTURE 430
OFFER INFORMATION 433
STATEMENT OF POSSIBLE DIRECT TAX BENEFITS 455
LEGAL MATTERS 468
INDEPENDENT ACCOUNTANTS 469
MATERIAL CONTRACTS AND DOCUMENTS FOR INSPECTION 470
DECLARATION 473
ANNEXURE A - VALUATION REPORTS
ANNEXURE B - TECHNICAL REPORTS
ANNEXURE C - TRAFFIC REPORTS
ANNEXURE D - AUDITED CONSOLIDATED FINANCIAL STATEMENTS

NOTICE TO INVESTORS

The statements contained in the Offer Document and in this Final Offer Document relating to the Trust and the Units are, in all material respects, true and accurate, not misleading, and adequate to enable the investors to make an informed decision. The opinions and intentions expressed in this Final Offer Document with regard to the Trust and the Units are honestly held, have been reached after considering all relevant circumstances and are based on reasonable assumptions and information presently available to the Investment Manager, the Trustee, the Sponsor and the Selling Unitholders, as applicable. There are no other facts in relation to the Trust and the Units, the omission of which would, in the context of the Offer, make any statement in this Final Offer Document misleading in any material respect. Further, each of the Investment Manager and the Sponsor has made all reasonable enquiries to ascertain such facts and to verify the accuracy of all such information and statements disclosed in this Final Offer Document in all material respects. Each of the Selling Unitholders has made all reasonable enquiries to ascertain such facts and to verify the accuracy of all such information and statements disclosed in this Final Offer Document in relation to themselves and their respective Units offered in the Offer.

The Book Running Lead Managers have not separately verified all information (financial, legal or otherwise) contained in this Final Offer Document. Accordingly, the Book Running Lead Managers, any of its shareholders, employees, counsel, officers, directors, representatives, agents, associates or affiliates do not make any express or implied representation, warranty or undertaking, and accept no responsibility or liability as to the accuracy or completeness of the information contained in this Final Offer Document or any other information supplied in connection with the Offer or the distribution of the Units, other than in relation to themselves. Bidders acknowledge that they have neither relied on the Book Running Lead Managers nor any of its shareholders, employees, counsel, officers, directors, representatives, agents or affiliates in connection with such person's investigation of the accuracy of such information or such person's investment decision, and each such person must rely on his/her own examination of the Trust and the merits and risks involved in investing in the Units. Bidders should not construe the contents of this Final Offer Document as legal, business, tax, accounting or investment advice. Each Bidder acknowledges that in making an investment decision, such investor will rely on the information contained in the Offer Document and this Final Offer Document and not on any other disclosure or representation by the Investment Manager, the Project Manager, the Trustee, the Sponsor, the Selling Unitholders, the Book Running Lead Managers or any other party. Save as expressly stated in this Final Offer Document, nothing contained herein is, or may be relied upon as, a promise or representation as to the future performance of the Trust.

No person is authorized to give any information or to make any representation not contained in this Final Offer Document, and any information or representation not so contained must not be relied upon as having been authorized by or on behalf of the Trust or by, or on behalf of the Sponsor, the Investment Manager or by or on behalf of the Book Running Lead Managers.

The Draft Offer Document shall not be relied upon by, and the Investment Manager, the Trustee, the Sponsor, the Project Manager, and/or the Book Running Lead Managers shall not be liable to, any subsequent acquirer, transferee or investor of the Units.

The Offer was made in accordance with the InvIT Regulations and the InvIT Master Circular. However, Bidders from jurisdictions outside India should take note of the below:

Notice to Prospective Investors in the United States

The Units have not been recommended by any U.S. federal or state securities commission or regulatory authority. Furthermore, the foregoing authorities have not confirmed the accuracy or determined the adequacy of this Final Offer Document or approved or disapproved the Units. Any representation to the contrary is a criminal offence in the United States. In making an investment decision, investors must rely on their own examination of the Trust and the terms of the Offer, including the merits and risks involved. The Units have not been and will not be registered under the U.S. Securities Act or any other applicable law of the United States and, unless so registered, may not be offered or sold within the United States except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the U.S. Securities Act and applicable state securities laws in the United States. Accordingly, the Units are being offered and sold only outside the United States in "offshore transactions" as defined in, and reliance on, Regulation S under the U.S. Securities Act and, in each case, in compliance with the applicable laws of the jurisdictions where those offers and sales occur.

The Units have not been and will not be registered, listed or otherwise qualified in any other jurisdiction outside India and may not be offered or sold, and Bids may not be made, by persons in any such jurisdiction except in compliance with the applicable laws of such jurisdiction.

Notice to Prospective Investors in the European Economic Area

In relation to each Member State of the European Economic Area (each a "**Relevant State**"), no Units have been offered or will be offered pursuant to the Offer to the public in that Relevant State prior to the publication of a prospectus in relation to the Units which has been approved by the competent authority in that Relevant State or, where appropriate, approved in another Relevant State and notified to the competent authority in that Relevant State, all in accordance with the Prospectus Regulation, except that the Units may be offered to the public in that Relevant State at any time:

a. to any legal entity which is a qualified investor as defined under Article 2 of the Prospectus Regulation;

b. to fewer than 150 natural or legal persons (other than qualified investors as defined under Article 2 of the Prospectus Regulation), subject to obtaining the prior consent of Book Running Lead Managers for any such offer; or

c. in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

provided that no such offer of the Units shall require the Investment Manager or any Book Running Lead Manager to publish a prospectus pursuant to Article 3 of the Prospectus Regulation, supplement a prospectus pursuant to Article 23 of the Prospectus Regulation or publish an Annex IX document pursuant to Article 1(4) of the Prospectus Regulation. For the purposes of this provision, the expression an "**offer to the public**" in relation to the Units in any Relevant State means the communication in any form and by any means of sufficient information on the terms of the Offer and any Units to be offered so as to enable an investor to decide to purchase or subscribe for any Units, and the expression "**Prospectus Regulation**" means Regulation (EU) 2017/1129, as amended.

Information to EEA Distributors

Solely for the purposes of the product governance requirements contained within: (a) EU Directive 2014/65/EU on markets in financial instruments, as amended ("**MiFID II**"); (b) Articles 9 and 10 of Commission Delegated Directive (EU) 2017/593 supplementing MiFID II; and (c) local implementing measures (together, the "**MiFID II Product Governance Requirements**"), and disclaiming all and any liability, whether arising in tort, contract or otherwise, which any "manufacturer" (for the purposes of the MiFID II Product Governance Requirements) may otherwise have with respect thereto, the Units have been subject to a product approval process, which has determined that such Units are: (i) compatible with an end target market of retail investors and investors who meet the criteria of professional clients and eligible counterparties, each as defined in MiFID II; and (ii) eligible for distribution through all distribution channels as are permitted by MiFID II (the "**EEA Target Market Assessment**"). Notwithstanding the EEA Target Market Assessment, "distributors" (for the purposes of the MiFID II Product Governance Requirements) ("**EEA Distributors**") should note that: the price of the Units may decline and investors could lose all or part of their investment; the Units offer no guaranteed income and no capital protection; and an investment in the Units is compatible only with investors who do not need a guaranteed income or capital protection, who (either alone or in conjunction with an appropriate financial or other adviser) are capable of evaluating the merits and risks of such an investment and who have sufficient resources to be able to bear any losses that may result therefrom. The EEA Target Market Assessment is without prejudice to the requirements of any contractual, legal or regulatory selling restrictions in relation to the Offer. Furthermore, it is noted that, notwithstanding the EEA Target Market Assessment, the Book Running Lead Managers will only procure investors who meet the criteria of professional clients and eligible counterparties.

For the avoidance of doubt, the EEA Target Market Assessment does not constitute: (a) an assessment of suitability or appropriateness for the purposes of MiFID II; or (b) a recommendation to any investor or group of investors to invest in, purchase, or take any other action whatsoever with respect to the Units. Each EEA Distributor is responsible for undertaking its own target market assessment in respect of the Units and determining appropriate distribution channels.

Notice to Prospective Investors in the United Kingdom

No Units have been offered or will be offered pursuant to the Offer to the public in the United Kingdom except that the Units may be offered to the public in the United Kingdom at any time in accordance with the exceptions from the prohibition on offers to the public set out in Schedule 1 of the POATR which include (but are not limited to) where the offer is:

a. conditional on the admission of the Units to trading on the London Stock Exchange plc's main market (in reliance on the exception in paragraph 6(a) of Schedule 1 of the POATR);

b. to any qualified investor as defined under paragraph 15 of Schedule 1 of the POATR;

c. to fewer than 150 persons (other than qualified investors as defined under paragraph 15 of Schedule 1 of the POATR), subject to obtaining the prior consent of the Book Running Lead Managers for any such offer; or

d. in any other circumstances falling within Part 1 of Schedule 1 of the POATR.

For the purposes of this provision, the expression an "**offer to the public**" in relation to the Units in the United Kingdom means the communication to any person which presents sufficient information on: (a) the Units to be offered; and (b) the terms on which they are to be offered, to enable an investor to decide to buy or subscribe for the Units, and the expression "**POATR**" means the Public Offers and Admissions to Trading Regulations 2024.

The communication of this Final Offer Document and any other document or materials relating to the offer of Units is not being made, and this Final Offer Document and such other documents and/or materials have not been approved, by an authorized person for the purposes of section 21 of the Financial Services and Markets Act 2000, as amended. Accordingly, this Final Offer Document and such other documents and/or materials are only being distributed to, and must not be passed on to, the general public in the United Kingdom. This Final Offer Document and such other documents and/or materials are for distribution only to persons who (a) have professional experience in matters relating to investments and who fall within the definition of investment professionals (as defined in Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the "**Financial Promotion Order**")), (b) fall within Article 49(2)(a) to (d) of the Financial Promotion Order, (c) are outside the United Kingdom, or (d) are other persons to whom it may otherwise lawfully be communicated or

distributed under the Financial Promotion Order (all such persons together being referred to as "**relevant persons**"). This Final Offer Document and any such other documents and/or materials are directed only at relevant persons and must not be acted on or relied on by persons who are not relevant persons. Any investment or investment activity to which this Final Offer Document and any such other documents and/or materials relate will be engaged in only with relevant persons. Any person in the United Kingdom that is not a relevant person should not act or rely on this Final Offer Document or any other documents and/or materials relating to the offer of the Units or any of their contents.

Persons into whose possession this Final Offer Document may come are required by the Investment Manager and the Book Running Lead Managers to inform themselves about and to observe such restrictions.

Information to UK Distributors

Solely for the purposes of the product governance requirements of Chapter 3 of the FCA Handbook Product Intervention and Product Governance Sourcebook (the "**UK Product Governance Requirements**"), and disclaiming all and any liability, whether arising in tort, contract or otherwise, which any "manufacturer" (for the purposes of the UK Product Governance Requirements) may otherwise have with respect thereto, the Units have been subject to a product approval process, which has determined that such Units are: (i) compatible with an end target market of retail clients and investors who meet the criteria of professional clients and eligible counterparties, each as defined in Chapter 3 of the FCA Handbook Conduct of Business Sourcebook ("**COBS**"); and (ii) eligible for distribution through all permitted distribution channels (the "**UK Target Market Assessment**"). Notwithstanding the UK Target Market Assessment, distributors (for the purposes of the UK Product Governance Requirements) ("**UK Distributors**") should note that: the price of the Units may decline and investors could lose all or part of their investment; the Units offer no guaranteed income and no capital protection; and an investment in the Units is compatible only with investors who do not need a guaranteed income or capital protection, who (either alone or in conjunction with an appropriate financial or other adviser) are capable of evaluating the merits and risks of such an investment and who have sufficient resources to be able to bear any losses that may result therefrom. The UK Target Market Assessment is without prejudice to the requirements of any contractual, legal or regulatory selling restrictions in relation to the Offer.

Furthermore, it is noted that, notwithstanding the UK Target Market Assessment, the Book Running Lead Managers will only procure investors who meet the criteria of professional clients and eligible counterparties.

For the avoidance of doubt, the UK Target Market Assessment does not constitute: (a) an assessment of suitability or appropriateness for the purposes of Chapters 9A or 10A, respectively, of the COBS; or (b) a recommendation to any investor or group of investors to invest in, or purchase or take any other action whatsoever with respect to the Units. Each UK Distributor is responsible for undertaking its own target market assessment in respect of the Units and determining appropriate distribution channels.

IMPORTANT NOTICE

THE VALUE OF THE UNITS PURSUANT TO THE OFFER AND THE INCOME DERIVED FROM THEM MAY FLUCTUATE. THE UNITS PURSUANT TO THE OFFER ARE NOT OBLIGATIONS OF, DEPOSITS IN, OR GUARANTEED BY THE TRUST, THE TRUSTEE, THE SPONSOR, THE INVESTMENT MANAGER, THE BOOK RUNNING LEAD MANAGERS OR ANY OF THEIR RESPECTIVE SHAREHOLDERS, EMPLOYEES, COUNSEL, OFFICERS, DIRECTORS, REPRESENTATIVES, AGENTS, ASSOCIATES OR AFFILIATES. AN INVESTMENT IN THE UNITS PURSUANT TO THE OFFER IS SUBJECT TO INVESTMENT RISKS, INCLUDING THE POSSIBLE LOSS OF THE PRINCIPAL AMOUNT INVESTED. FURTHER, THE PUBLIC LISTING OF THE UNITS PURSUANT TO THE OFFER ON THE STOCK EXCHANGES DOES NOT GUARANTEE A LIQUID MARKET FOR THE UNITS PURSUANT TO THE OFFER. INVESTORS HAVE NO RIGHT TO REQUEST THE TRUST, THE TRUSTEE, THE SPONSOR, THE INVESTMENT MANAGER, THE SELLING UNITHOLDERS OR ANY OF THEIR RESPECTIVE SHAREHOLDERS, EMPLOYEES, COUNSEL, OFFICERS, DIRECTORS, REPRESENTATIVES, AGENTS, ASSOCIATES OR AFFILIATES TO REDEEM THEIR UNITS PURSUANT TO THE OFFER WHILE THE UNITS OFFERED PURSUANT TO THE OFFER ARE LISTED, UNLESS OTHERWISE PERMITTED BY APPLICABLE LAW. THE PERFORMANCE OF ANY OF THE LISTED UNITS PURSUANT TO THE OFFER OF THE TRUST IS NOT NECESSARILY INDICATIVE OF THE FUTURE PERFORMANCE OF THE UNITS.

Available Information

The Investment Manager agrees to comply with any undertakings given by it from time to time in connection with the Units offered pursuant to the Offer and, without prejudice to the generality of the foregoing, shall furnish to the Unitholders all such information as may be required under the InvIT Regulations and InvIT Master Circular.

Disclaimer

This Final Offer Document does not, directly or indirectly, relate to any invitation, offer or sale of any securities, instruments or loans (including listed non-convertible debentures or bonds, if any) that may be offered by the Trust after the commencement of trading of Units offered pursuant to the Offer. Any person or entity investing in such an offer or transaction by the Trust should consult its own advisors. Neither the Book Running Lead Managers, nor their associates or affiliates, have any responsibility or liability for such offer or transaction by the Trust.

SEBI Disclaimer

"It is to be distinctly understood that submission of the Draft Offer Document, the Offer Document or this Final Offer Document to SEBI should not in any way be deemed or construed that the same has been cleared or approved by SEBI. SEBI does not take any responsibility either for the financial soundness of any scheme or the project for which the issue is proposed to be made or for the correctness of the statements made or opinions expressed in the draft offer document, offer document and the final offer document."

BSE Disclaimer

"BSE Limited (the "Exchange") has given vide its letter dated May 7, 2026, permission to this Trust to use the Exchange's name in the offer document as one of the stock exchanges on which this Units of this Trust are proposed to be listed. The Exchange has scrutinized the offer document for its limited internal purpose of deciding on the matter of granting the aforesaid permission to this Trust. The Exchange does not in any manner: -

- *warrant, certify or endorse the correctness or completeness of any of the contents of the offer document; or*
- *warrant that this Trust Units will be listed or will continue to be listed on the Exchange; or*
- *take any responsibility for the financial or other soundness of this Trust, its Investment Manager, its Sponsor(s), its Trustee or Project Manager(s);*

and it should not be deemed or construed for any reason that the offer document has been cleared or approved by the Exchange. Every person who desires to apply for or otherwise acquires the Units of this Trust may do so pursuant to independent inquiry, investigation and analysis and shall not have any claim against the Exchange whatsoever by reason of any loss which may be suffered by such person consequent to or in connection with such subscription/acquisition whether by reason of anything stated or omitted to be stated herein or for any other reason whatsoever".

NSE Disclaimer

"As required, a copy of the Draft Offer Document has been submitted to National Stock Exchange of India Limited (hereinafter referred to as NSE). NSE has, vide its letter Ref.: NSE/LIST/C/2026/0475 dated May 07, 2026, given permission to the Issuer to use the Exchange's name in the Offer Document as one of the stock exchanges on which this Issuer's units are proposed to be listed. The Exchange has scrutinized the draft offer document for its limited internal purpose of deciding on the matter granting the aforesaid permission to this Issuer. It is to be distinctly understood that the aforesaid permission given by NSE should not in any way be deemed or construed that the offer document has been cleared or approved by NSE of been cleared or approved by NSE; nor does it in any manner warrant, certify or endorse the correctness or completeness of any of the contents of the offer document; nor does it warrant that this Issuer's units will be listed or will continue to be listed on the Exchange; nor does it take any granting the aforesaid permission to this Issuer. It is to be distinctly understood that the aforesaid permission given by NSE should not in any way be deemed or construed that the offer document has responsibility for the financial or other soundness of this InvITs, its Sponsor, its Investment Manager or any project of this InvITs. Every person who desires to apply for or otherwise acquire any units of this InvITs may do so pursuant to independent inquiry, investigation and analysis and shall not have any claim against the Exchange whatsoever by reason of any loss which may be suffered by such person consequent to or in connection with such subscription /acquisition whether by reason of anything stated or omitted to be stated herein or any other reason whatsoever."

DEFINITIONS AND ABBREVIATIONS

This Final Offer Document uses the definitions and abbreviations provided below, which you should consider when reading the information contained herein.

References to any legislation, act, regulations, rules, guidelines or policies shall be to such legislation, act, regulations, rules, guidelines or policies as amended, supplemented, or re-enacted from time to time, and any reference to a statutory provision shall include any subordinate legislation made under that provision.

The words and expressions used in this Final Offer Document, but not defined, herein, shall have the meaning ascribed to such terms under the InvIT Regulations, the SEBI Act, the SCRA, the Depositories Act, and the rules and regulations made thereunder.

Notwithstanding the foregoing, the terms not defined but used in section entitled "Summary Audited Consolidated Financial Information of the Trust", "Summary Financial Information of the Sponsor", "Summary Financial Information of the Investment Manager", "Statement of Possible Direct Tax Benefits", "Regulations and Policies", and "Legal and Other Information" on pages 47, 52, 56, 456, 385, and 405, respectively, and "Valuation Reports", "Technical Reports", "Traffic Reports", "Audited Consolidated Financial Statements", in Annexure A, Annexure B, Annexure C and Annexure D respectively, shall have the meanings ascribed to such terms in those respective sections/ annexures.

In this Final Offer Document, unless the context otherwise requires, a reference to "we", "us" and "our" refers to the Trust and the Portfolio Assets on a consolidated basis. For the sole purpose of the Audited Consolidated Financial Statements, reference to "we", "us" and "our" refers to the Portfolio Assets on a consolidated basis.

Trust Related Terms

Term	Description
Annuity SPVs Concession Agreements	Certain Portfolio Assets, being, APEPL, JUHPL, and QEPL (collectively, the "**Annuity SPVs**") hold projects which are based on the BOT and DBFOT Annuity model and accordingly, have entered into concession agreements with NHAI
APEPL	Andhra Pradesh Expressway Private Limited
Associate	Associate shall have the meaning under Regulation 2(1)(b) of the InvIT Regulations
Audit Committee	The audit committee of the Investment Manager constituted by the board of directors of the Investment Manager in accordance with applicable laws
Audited Consolidated Financial Statements	The Consolidated Financial Statements of the Trust Group comprising of the Consolidated Balance Sheet as at March 31, 2026 , the Consolidated Statement of Profit and Loss (including Other Comprehensive Income), the Consolidated Statement of Cash Flows, the Consolidated Statement of Changes in Unitholders' Equity, the Statement of Net Distributable Cash Flows (NDCFs) of the Trust and each of its subsidiaries for the year then ended (together referred to as the "Consolidated Financial Statements") and a summary of material accounting policies and other explanatory notes to the Consolidated Financial Statements. The Audited Consolidated Financial Statements also include the following comparative information: (a) Consolidated Balance Sheet as at March 31, 2025 and March 31, 2024; (b) Consolidated Statement of Profit and Loss (including Other Comprehensive Income) for the years ended March 31, 2025 and March 31, 2024; (c) Consolidated Statement of Cash Flows for the years ended March 31, 2025 and March 31, 2024; and (d) Consolidated Statement of Net Distributable Cash Flows (NDCF) of the Trust and its subsidiaries for the years ended March 31, 2025 and March 31, 2024
Audited Standalone Financial Statements	The Standalone Financial Statements of the Trust which comprise the balance sheet as at March 31, 2026, the Standalone Statement of Profit and Loss (including other comprehensive income), the Standalone Statement of Cash Flows and the Standalone Statement of Changes in Unitholders' Equity, the Statement of Net Distributable Cash Flows of the Trust for the year ended on that date, a summary of material accounting policies and other explanatory notes to the Audited Standalone Financial Statements. The Audited Standalone Financial Statements also include the following comparative information: (a) Standalone Balance Sheet as at March 31, 2025 and March 31, 2024; (b) Standalone Statement of Profit and Loss (including other comprehensive income) for the years ended March 31, 2025 and March 31, 2024; (c) Standalone Statement of Cash Flows for the years ended March 31, 2025 and March 31, 2024; and

Term	Description
	(d) Standalone Statement of Net Distributable Cash Flows (NDCF) of the Trust for the years ended March 31, 2025 and March 31, 2024
Auditors	S.B. Billimoria & Co. LLP, Chartered Accountants, the statutory auditors of the Trust
BFHL	Baharampore-Farakka Highways Limited
BOT/DBFOT SPVs	Portfolio assets which hold projects based on the build, operate, transfer and design, build, finance, operate, transfer model
BWHPL	Borgaon Watambare Highways Private Limited
BWHPL Concession Agreement	The concession agreement executed between BWHPL and NHAI dated May 10, 2018, as amended from time to time, read with the relevant supplementary agreement, for construction, O&M of the project at the site, comprising of Sangli-Solapur section of NH-166 from design chainage Km. 224.000 to Km. 276.000 existing Ch. 219.956 to Ch. 272.394 – (Package – II: Borgaon to Watambare of length 52 km) in the state of Maharashtra on Hybrid Annuity Model
CH-I	Cube Highways and Infrastructure Pte. Ltd.
CH-ID	Cube Highways and Infrastructure I-D Pte. Ltd.
CH-II	Cube Highways and Infrastructure II Pte. Ltd.
CH-III	Cube Highways and Infrastructure III Pte. Ltd.
CH-V	Cube Highways and Infrastructure V Pte. Ltd.
CNTL	Chenani Nashri Tunnelway Limited
Committed Assets	(i) Baharampore-Farakka Highways Limited; (ii) Chenani Nashri Tunnelway Limited; (iii) Devanahalli Tollway Private Limited; and (iv) Western MP Infrastructure & Toll Roads Private Limited
Compliance Officer	The compliance officer of the Trust, i.e., Richa Gupta Rohatgi
Concession Agreements	Collectively, the concession agreements entered between the Portfolio Assets and the relevant concessioning authorities. For details, please see the section entitled "*Summary of Key Agreements*" on page 316
Credit Rating Agencies	CRISIL Ratings Limited, ICRA Limited and India Ratings & Research Private Limited
Cube Tech/ Expert Service Provider	Cube Highways Technologies Private Limited
DATRPL	DA Toll Road Private Limited
DATRPL Concession Agreement	The concession agreement executed between DATRPL and NHAI dated July 16, 2010, as amended from time to time, read with the relevant supplementary agreement, for six-laning of the Delhi-Agra section of NH-2 from 20.500 km to 200.00 km (179.500 km length) in the state of Haryana/ Uttar Pradesh under NHDP Phase V on a BOT basis
DTPL	Devanahalli Tollway Private Limited
Erstwhile Project Manager	Cube Highways and Transportation Assets Advisors Private Limited
Erstwhile SPAs	The share purchase agreements entered into for the Sponsor's prior acquisition of certain Portfolio Assets, comprising of: (i) The amended and restated share purchase agreement dated February 13, 2024, executed amongst the Sponsor, Express Way Developers Limited, and WMTPL (ii) The share purchase agreement dated February 15, 2023, read with the amendment dated March 24, 2023, executed amongst the Sponsor, HCC Concessions Limited, Hindustan Construction Company Limited, HCC Infrastructure Company Limited, and BFHL (iii) The share purchase agreement dated February 7, 2025, read with the amendment dated June 4, 2025, executed amongst the Sponsor, National Infrastructure Fund acting through its investment manager National Investment and Infrastructure Fund Limited, Athaang Infrastructure Private Limited, and DTPL
FRHPL	Farakka-Raiganj Highways Private Limited
FRHPL Concession Agreement	The concession agreement executed between FRHPL and NHAI dated July 19, 2010, as amended from time to time, read with the relevant supplementary agreement, for four-laning of the Farakka-Raiganj section of NH-34 from 295.00 km to 398.00 km in the state of West Bengal under NHDP Phase III on a DBFOT toll basis
GAEPL	Ghaziabad Aligarh Expressway Private Limited

Term	Description
GAEPL Concession Agreement	The concession agreement executed between GAEPL and NHAI dated May 20, 2010, as amended from time to time, read with the relevant supplementary agreement, for the design, engineering, construction, development, finance, operation and maintenance of the Ghaziabad Aligarh section of NH-91 from km 23.600 to km 140.200 in the state of Uttar Pradesh under NHDP Phase III on a BOT basis
HAM SPVs	Borgaon Watambare Highways Private Limited, Mangloor Highways Private Limited, Srirangam Infra Private Limited, Mangalwedha Solapur Highways Private Limited, Shankarampet Projects Private Limited and Tirumala Highways Private Limited
Holding Company/Holdco	A holding company, as defined under Regulation 2(1)(sb) of the InvIT Regulations, as amended
HTPL	Hazaribagh Tollway Private Limited
HTPL Concession Agreement	The concession agreement executed between HTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Hazaribagh Ranchi stretch in the state of Jharkhand from km 41+500 to 115+290 km for a total length of 73+790 km for a concession fee of ₹ 9,378,502,000
IM Board	The board of directors of the Investment Manager
Industry Expert	CRISIL Intelligence, a division of CRISIL Limited
Industry Report	The report titled "*Assessment of the Indian Road Sector*" dated June 2026, prepared by CRISIL Intelligence
Investment Committee	The investment committee of the Investment Manager constituted by the board of directors of the Investment Manager
Investment Management Agreement	The amended and restated investment management agreement dated July 24, 2024, entered into between the Trustee, the Investment Manager, and the certain Portfolio Assets read with the deed of adherence entered into by BWHPL, JUHPL, SIPL, SPPL, THPL, MHPL, MSHPL, NAMEPL, QEPL and the Investment Manager
Investment Manager/IM	Cube Highways Fund Advisors Private Limited
Investment Objectives	The investment objectives of the Trust, as provided under the section entitled "*Overview of the Trust*" on page 35
InvIT Documents	The Trust Deed, the Investment Management Agreement, the Project Implementation and Management Agreement, Related Party SPAs, Third-Party SPAs, Share Purchase Agreements, policies adopted by the Investment Manager, Trust Loan Agreements or any other document, letter or agreement entered into or to be entered into by the Investment Manager or Trustee on behalf of the Trust, with respect to the Trust or the Units or executed or to be executed in connection with the Trust, the offer documents and such other documents in connection therewith, as originally executed and amended, modified, supplemented or restated from time to time, together with the respective annexures, schedules and exhibits, if any
InvIT Loans	The loans availed by the Trust, principal terms of which are set out in the section entitled "*Financial Indebtedness and Deferred Payments*" on page 337
JLTPL	Jhansi-Lalitpur Tollway Private Limited
JLTPL Concession Agreement	The concession agreement executed between JLTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Jhansi Lalitpur Package 1 stretch in the state of Uttar Pradesh from km 00+000 to 49+700 km for a total length of 49.700 km for a concession fee of ₹ 4,537,128,000
JMTPL	Jaipur-Mahua Tollway Private Limited
JMTPL Concession Agreement	The concession agreement executed between JMTPL and NHAI dated September 23, 2005, as amended from time to time, read with the relevant supplementary agreement, for improvement, operation and maintenance, rehabilitation and strengthening of the existing 2-lane road and widening to a 4-lane divided highway of the Mahua-Jaipur section of NH-11 from km 120.000 to km 228.000 in the state of Rajasthan on a BOT basis under NHDP Phase - IIIA
JUHPL	Jammu Udhampur Highway Private Limited
JVTPL	Jhansi-Vigakhet Tollway Private Limited
JVTPL Concession Agreement	The concession agreement executed between JVTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Jhansi Lalitpur Package 2 stretch in the state of Uttar Pradesh from 49+700 km to 99+005 km for a total length of 49.305 km for a concession fee of ₹ 2,729,795,000

Term	Description
KETPL	Kanyakumari-Etturavattam Tollway Private Limited
KETPL Concession Agreement	The concession agreement executed between KETPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Madurai Kanyakumari Package 2 stretch in the state of Tamil Nadu from 52+300 km to 116+500 for a total length of 64.200 km for a concession fee of ₹ 4,609,806,000
KMTPL	Kotwa - Muzaffarpur Tollway Private Limited
KMTPL Concession Agreement	The concession agreement executed between KMTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Kotwa Muzzaffarpur stretch in the state of Bihar from km 440.000 to 520.000 km for a total length of 80.000 km for a concession fee of ₹ 6,881,478,000
LRTPL	Lucknow-Raebareli Tollway Private Limited
LRTPL Concession Agreement	The concession agreement executed between LRTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the stretch in the state of Uttar Pradesh from 12.70 km to 82.70 km for a total length of 70 km and all project assets for a concession fee of ₹ 4,305,660,000
MBEL	Mahua Bharatpur Expressways Limited
MBEL Concession Agreement	The concession agreement executed between MBEL and NHAI dated October 13, 2005, as amended from time to time, read with the relevant supplementary agreement, for design, engineering, financing, procurement, construction, completion, operation and maintenance of existing 2 lane road and widening to 4 lane divided highway of km 63.000 to km 120.000 of NH-11 (Bharatpur-Mahua section) in the state of Rajasthan on a BOT basis under NHDP Phase IIIA
MHPL	Mangloor Highways Private Limited
MHPL Concession Agreement	The concession agreement executed between MHPL and NHAI dated May 9, 2018, as amended from time to time, read with the relevant supplementary agreement, for construction, O&M of the project at the site, comprising of NH-161 from Mangloor (Design Km. 86.788/Existing Km. 91.350) to Telangana/Maharashtra Border (Design Km. 135.751 / Existing Km. 140.873) (Design Length = 48.963 Km) in the state of Telangana under Bharatmala Pariyojana on Hybrid Annuity Model
MKTPL	Madurai-Kanyakumari Tollway Private Limited
MKTPL Concession Agreement	The concession agreement executed between MKTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Madurai Kanyakumari Package 1 stretch in the state of Tamil Nadu from 00+000 km to 52+300 km for a total length of 52.300 km for a concession fee of ₹ 6,667,151,000
MSHPL	Mangalwedha Solapur Highways Private Limited
MSHPL Concession Agreement	The concession agreement executed between MSHPL and NHAI dated May 10, 2018, as amended from time to time, read with the relevant supplementary agreement, for construction, O&M of the project at the site, comprising of Sangli- Solapur (Package IV: Mangalwedha to Solapur) Section of NH-166 from existing Ch.Km. 314.969 to Ch. 370.452 (Design Ch. Km. 321.600 to Km. 378.100) of length 56.500 Km in the state of Maharashtra on Hybrid Annuity Model
NAMEPL	N.A.M. Expressway Private Limited
NAMEPL Concession Agreement	The concession agreement executed between NAMEPL and the relevant state authorities in Andhra Pradesh dated July 23, 2010, as amended from time to time between NAMEPL and the relevant state authorities in Andhra Pradesh and Telangana, for the design, construction, finance, operation and maintenance of the Narketpally-Addanki-Medarametla Road (SH-2) from Km. 0.000 to 212.500 in the State of Telangana and Andhra Pradesh under Public Private Partnership on DBFOT (Toll) basis
NDEPL	Nelamangala Devihalli Expressway Private Limited
NDEPL Concession Agreement	The concession agreement executed between Lanco Devihalli Highways Limited and NHAI dated July 9, 2007, and endorsed in favour of NDEPL pursuant to the endorsement agreement dated January 11, 2021, entered into between NDEPL and NHAI, as amended from time to time, read with the relevant supplementary agreement, for design, engineering, construction, development, finance, operation and maintenance of Nelamangala Junction on NH-4 with NH-

Term	Description
	48 to Devihalli from 28.200 km to 110.000 km of NH-48 in the state of Karnataka under NHDP Phase IIIA on a BOT basis
NIIF SPVs	Jammu Udhampur Highway Private Limited and Quazigund Expressway Private Limited
NKTPL	Nanguneri-Kanyakumari Tollway Private Limited
NKTPL Concession Agreement	The concession agreement executed between NKTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Madurai Kanyakumari Package 4 stretch in the state of Tamil Nadu from km 180+000 to km 243+470 for a total length of 63.470 km for a concession fee of ₹ 6,194,192,000
Nomination and Remuneration Committee	The nomination and remuneration committee of the Investment Manager constituted by the board of directors of the Investment Manager in accordance with applicable laws.
Operations Committee	The operations committee constituted by the board of directors of the Investment Manager.
Original Trust Deed	The trust deed of Cube Highways Trust dated December 7, 2021, entered into between the Settlor, CH-I, CH-III and the Trustee
Parties to the Trust	Collectively, the Sponsor, the Sponsor Group, the Trustee, the Investment Manager and the Project Manager
Portfolio Assets / Project SPV(s)	The Trust's existing portfolio of assets comprises of (i) Andhra Pradesh Expressway Private Limited; (ii) Borgaon Watambare Highways Private Limited; (iii) DA Toll Road Private Limited; (iv) Farakka-Raiganj Highways Private Limited; (v) Ghaziabad Aligarh Expressway Private Limited; (vi) Hazaribagh Tollway Private Limited; (vii) Jaipur-Mahua Tollway Private Limited; (viii) Jammu Udhampur Highway Private Limited; (ix) Jhansi-Lalitpur Tollway Private Limited; (x) Jhansi-Vigakhet Tollway Private Limited; (xi) Kanyakumari–Etturavattam Tollway Private Limited; (xii) Kotwa–Muzaffarpur Tollway Private Limited; (xiii) Lucknow–Raebareli Tollway Private Limited; (xiv) Madurai-Kanyakumari Tollway Private Limited; (xv) Mahua Bharatpur Expressways Limited; (xvi) Mangalwedha-Solapur Highways Private Limited; (xvii) Mangloor Highways Private Limited; (xviii) N.A.M. Expressway Private Limited; (xix) Nanguneri-Kanyakumari Tollway Private Limited; (xx) Nelamangala Devihalli Expressway Private Limited; (xxi) Quazigund Expressway Private Limited; (xxii) Salaipudhur-Madurai Tollway Private Limited; (xxiii) Shankarampet Projects Private Limited; (xxiv) Srirangam Infra Private Limited; (xxv) Tirumala Highways Private Limited; (xxvi) Walayar Vadakkencherry Expressways Private Limited; and (xxvii) Western UP Tollway Private Limited
Project Implementation and Management Agreement / PIMA	The project implementation and management agreement dated June 26, 2026, entered into amongst the Trustee, Cube Highways Asset & Project Advisory Private Limited, the Investment Manager and the relevant Portfolio Assets
Project Manager	Cube Highways Asset & Project Advisory Private Limited* * *Cube Highways Asset & Project Advisory Private Limited has been appointed as the project manager of the Trust with effect from June 26, 2026, replacing the Erstwhile Project Manager whose engagement continued up to June 25, 2026*
QEPL	Quazigund Expressway Private Limited
Related Parties	Related parties, as defined under Regulation 2(1)(zv) of the InvIT Regulations
Related Party SPAs	The share purchase agreements entered into between CH-I, CH-III, CH-II, CH-ID and Cube Mobility Investments Pte Ltd., the Trustee, the Investment Manager and the Portfolio Assets pursuant to which the Trust has purchased the entire issued, subscribed and paid-up share capital of the Portfolio Assets* * *In case of MBEL, Madhucon Infra Limited holds 0.03% of the shares and a letter agreement in accordance with the InvIT Regulations has been entered into.*
Risk Management Committee	The risk management committee of the Investment Manager constituted by the board of directors of the Investment Manager in accordance with applicable laws
ROFO Agreement	Right of First Offer agreement dated March 17, 2026, entered into between the Investment Manager (on behalf of the Trust) and the Sponsor
ROFO Assets	Eligible road infrastructure projects acquired and/or developed by special purpose vehicles that are proposed to be acquired by the Trust in accordance with the ROFO Agreement which include (i) Kokhraj Handia Expressway Pvt. Ltd.; (ii) Delhi Hapur Meerut Expressway Pvt. Ltd.; and (iii) Malayagiri Highways Pvt. Ltd.
Selling Unitholders	The Unitholders offering their Units in the Offer, i.e.: (i) BCI IRR India Holdings Inc.;

Term	Description
	(ii) BCI IRR India Holdings Limited Partnership; (iii) Cube Highways and Infrastructure II Pte. Ltd.; (iv) Cube Highways and Infrastructure III Pte. Ltd.; (v) Cube Mobility Investments Pte. Ltd.; and (vi) Seventy Second Investment Company LLC
Settlor	Cube Highways and Transportation Assets Advisors Private Limited
Share Purchase Agreements/SPAs	The share purchase agreements, each dated July 13, 2026 entered into amongst Cube Highways and Infrastructure II Pte. Ltd., Cube Highways and Infrastructure V Pte. Ltd., the Trustee, the Investment Manager and the Committed Assets, pursuant to which the Trust will purchase the entire issued, subscribed and paid-up share capital of the Committed Assets* * *The Trust proposes to acquire at least 95% of the equity shares of WMTPL. As on date of this Final Offer Document, 5% of WMTPL's shareholding is held by Express Way Developers Limited. The acquisition of equity shares of WMTPL is subject to the satisfaction of certain conditions precedent specified in the SPAs. For further details, please see "Related Party Transactions – Share Purchase Agreements" on page 383.*
Shared Services Agreement I or SSA I	The shared services agreement dated September 7, 2022, as amended on January 18, 2023, and September 26, 2023, entered into between the Investment Manager and the Erstwhile Project Manager including the assignment agreement dated July 3, 2026, entered into by the Project Manager, the Investment Manager and the Erstwhile Project Manager
Shared Services Agreement II or SSA II	The shared services agreement dated July 3, 2026, entered into by the Project Manager and the Project SPVs
Shared Services Agreements or SSAs	Collectively, the Shared Services Agreement I and Shared Services Agreement II
SIPL	Srirangam Infra Private Limited
SIPL Concession Agreement	The concession agreement executed between SIPL and NHAI dated April 11, 2018, as amended from time to time, read with the relevant supplementary agreement, construction, O&M of the project at the site, comprising Km. 311.516 (existing chainage of NH 45) to Km. 39.100 (existing chainage of NH 227), Design chainage from Km. 0.000 to Km. 38.70, of Thiruchirapalli to Kallagam Section of NH 227, Total Design Length = 38.700 Km, in the State of Tamil Nadu under NHDP Phase-IV
SMTPL	Salaipudhur-Madurai Tollway Private Limited
SMTPL Concession Agreement	The concession agreement executed between SMTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Madurai Kanyakumari Package 3 stretch in the state of Tamil Nadu from km 116+500 to km 180+000 for a total length of 63.500 km for a concession fee of ₹ 4,806,288,000
Sponsor	Cube Highways and Infrastructure V Pte. Ltd.
Sponsor Group Selling Unitholders	The Sponsor Group entities offering their units in the Offer for Sale which include: (i) Cube Highways and Infrastructure II Pte. Ltd., (ii) Cube Highways and Infrastructure III Pte. Ltd. and (iii) Cube Mobility Investments Pte Ltd.
Sponsor Group/Cube Group	The Sponsor and the following entities: (i) Cube Highways and Infrastructure Pte. Ltd. (ii) Cube Highways and Infrastructure II Pte. Ltd. (iii) Cube Highways and Infrastructure III Pte. Ltd. (iv) Cube Highways and Infrastructure I-D Pte. Ltd. and (v) Cube Mobility Investments Pte Ltd.
SPPL	Shankarampet Projects Private Limited
SPPL Concession Agreement	The concession agreement executed between SPPL and NHAI dated May 9, 2018, as amended from time to time for construction, O&M of the project at the site, comprising of NH-161 from Ramsanpalle village, Design Km. 39.980/ Existing Km. 44.757, to Mangloor village, Design Km. 86.788/ Existing Km. 91.350, Design Length = 46.808 Km, in the State of Telangana under the Bharatmala Pariyojana on Hybrid Annuity Model
SPV(s)	Special purpose vehicles, as defined under Regulation 2(l)(zy) of the InvIT Regulations
Stakeholders Relationship Committee	The stakeholders relationship committee of the Investment Manager constituted by the board of directors of the Investment Manager in accordance with applicable laws.

Term	Description
Technical Consultants	Knight Frank (India) Private Limited and FP India Project Management Consultancy Services Private Limited
Technical Reports	Collectively, the technical reports dated May 2026* prepared by the Technical Consultants * *The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. The Investment Manager shall fulfil its obligations in respect of WUPTPL in accordance with the SEBI circular dated May 15, 2026, bearing the reference number SEBI/HO/DDHS/DDHS-PoD-2/I/11698/2026, read with the InvIT Regulations, as amended. Further, the concession period for APEPL is scheduled to expire on September 30, 2026. Accordingly, the Technical Reports do not include the reports for WUPTPL and APEPL*
Third-Party SPAs	Share purchase agreements entered into between National Investment and Infrastructure Fund acting through its investment manager, the Trust acting through the Investment Manager, JUHPL, and QEPL, pursuant to which the Trust has purchased the entire issued, subscribed and paid-up share capital of JUHPL and QEPL
THPL	Tirumala Highways Private Limited
THPL Concession Agreement	The concession agreement executed between THPL and NHAI dated May 9, 2018, as amended from time to time for construction, O&M of the project at the site, comprising of NH-140 from Chittor (Design Km. 0.000/Existing Km 158.000 of NH-4) to Mallavaram (Design Km. 61.128/Existing Km 41.800 of NH-140) (Design Length = 61.128 Km) in the State of Andhra Pradesh under Bharatmala Pariyojana on Hybrid Annuity Model
TOT SPVs	Portfolio Assets, holding projects based on the toll, operate and transfer model
Traffic Consultant	Steer Davies Gleave India Private Limited
Traffic Reports	Collectively, the traffic reports dated April 2026* prepared by the Traffic Consultant **The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. The Investment Manager shall fulfil its obligations in respect of WUPTPL in accordance with the SEBI circular dated May 15, 2026, bearing the reference number SEBI/HO/DDHS/DDHS-PoD-2/I/11698/2026, read with the InvIT Regulations, as amended. Further, the concession period for APEPL is scheduled to expire on September 30, 2026. Accordingly, the Technical Reports do not include the reports for WUPTPL and APEPL*
Trust	Cube Highways Trust
Trust Deed	The Original Trust Deed of Cube Highways Trust as amended and restated on July 8, 2022, which was subsequently amended and restated on March 11, 2024, entered into between the Settlor, CH-I, CH-III and the Trustee and shall include the deed of adherence dated February 20, 2026, entered into by the Sponsor.
Trust Group	As defined under note 1 of the notes forming part of the Audited Consolidated Financial Statements.
Trust Loan Agreements	Trust loan agreements and ancillary financing documents entered into amongst the Trustee, the Investment Manager and the Portfolio Assets
Trustee	Axis Trustee Services Limited
Unitholder	Any person who owns Units of the Trust
Units	An undivided beneficial interest in the units of the Trust, and such units together represent the entire beneficial interest in the Trust
Valuation Reports	The valuation reports dated May 22, 2026, issued by the Valuer, which set out its opinion as to the fair enterprise value of the Portfolio Assets as on March 31, 2026
Valuer	Ernst & Young Merchant Banking Services LLP
WMTPL	Western MP Infrastructure & Toll Roads Private Limited
WUPTPL	Western UP Tollway Private Limited* * *The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. The Investment Manager shall fulfil its obligations in respect of WUPTPL in accordance with the SEBI circular dated May 15, 2026, bearing the reference number SEBI/HO/DDHS/DDHS-PoD-2/I/11698/2026, read with the InvIT Regulations, as amended*
WUPTPL Concession Agreement	The concession agreement executed between WUPTPL and NHAI dated September 9, 2005, as amended from time to time, read with the relevant supplementary agreement for design, engineering, financing, procurement, construction, completion, operation and maintenance of existing 2 lane road and widening to 4 lane divided highway of Meerut Muzaffarnagar section of NH 58 from km 52.250 to km 131 in the State of Uttar Pradesh on a BOT basis under NHDP Phase – IIIA
WVEPL	Walayar Vadakkencherry Expressways Private Limited
WVEPL Concession Agreement	The concession agreement executed between WVEPL and NHAI dated September 17, 2012, as amended from time to time, read with the relevant supplementary agreement, for four-laning of

Term	Description
	Walayar-Vadakkancherry section in Kerala (182.250 km to 240.000 km of NH-47) – package NS-2/BOT/KL-2 on DBFOT (Toll) basis under NHDP Phase II in the state of Kerala

Offer Related Terms

Term	Description
Acknowledgement Slip	The slip or document issued by the Designated Intermediary to a Bidder as proof of registration of the Bid cum Application Form
Allocated/ Allocation	Allocation of Units, following the determination of the Offer Price by the Investment Manager, in consultation with the Book Running Lead Managers, to Bidders on the basis of the Application Form submitted by the Bidder
Allot/ Allotment/ Allotted	Unless the context otherwise requires, and allotment of Units pursuant to the transfer of the Offered Units to successful Bidders, pursuant to the Offer
Allotment Advice	Note, advice or intimation of Allotment sent to the Bidders who have been or are to be Allotted Units after the Basis of Allotment has been approved by the Designated Stock Exchange
Allottees	Successful bidders to whom Units are Allotted pursuant to the Offer
Anchor Investor	An Institutional Investor, making an application of a value of at least ₹ 100 million, applying under the Anchor Investor Portion in accordance with the requirements specified in the InvIT Regulations, in terms of the Offer Document
Anchor Investor Allocation Price	Price at which Units were allocated to Anchor Investors in terms of the Offer Document, as decided by the Investment Manager in consultation with the Book Running Lead Managers
Anchor Investor Application Form	The form used by an Anchor Investor to make a Bid in the Anchor Investor Portion and which will be considered as an application for Allotment in terms of the Offer Document
Anchor Investor Bidding Date	One Working Day prior to the Bid/Offer Opening Date, on which Bids by Anchor Investors were submitted and allocation to Anchor Investors was completed
Anchor Investor Offer Price	Final price at which Units will be Allotted to Anchor Investors in terms of the Offer Document and this Final Offer Document The Anchor Investor Offer Price was decided by the Investment Manager in consultation with the Book Running Lead Managers
Anchor Investor Portion	111,019,565 Units were allocated by the Investment Manager in consultation with the Book Running Lead Managers on a discretionary basis
Application Supported by Blocked Amount or ASBA	An application, whether physical or electronic, used by ASBA Bidders to make a Bid by authorizing an SCSB to block the Bid Amount in the ASBA Account and will include applications made by individual Non-Institutional Investors using the UPI Mechanism, where the Bid Amount was blocked upon acceptance of UPI Mandate Request by individual Non-Institutional Investors using the UPI Mechanism
ASBA Account	A bank account maintained with an SCSB and specified in the ASBA Form for blocking the Bid Amount mentioned in the ASBA Form and includes the account of individual Non-Institutional Investors which was blocked upon acceptance of a UPI Mandate Request made by the individual Non-Institutional Investors using the UPI Mechanism
ASBA Bid	A Bid made by an ASBA Bidder including all revisions and modifications thereto as permitted under the InvIT Regulations and InvIT Master Circular
ASBA Bidder	All Bidders other than Anchor Investors and Strategic Investors
ASBA Form	An application form, whether physical or electronic, used by ASBA Bidders which has been considered as the application for Allotment in terms of the Offer Document and the Final Offer Document
Bankers to the Offer	Collectively, the Escrow Collection Bank, the Public Offer Account Bank, the Sponsor Banks and the Refund Bank, as the case may be
Basis of Allotment	The basis on which Units will be Allotted to successful Bidders under the Offer and which is described in '*Offer Information'* on page 452
Bid Amount	The highest value of optional Bids indicated in the Bid cum Application Form and payable by the Bidder or blocked in the ASBA Account of the ASBA Bidder, or the amount payable by any Anchor Investor or Strategic Investors, as the case may be, upon submission of the Bid in the Offer
Bid cum Application Form	The Anchor Investor Application Form or the ASBA Form, as the context requires
Bid Lot	95 Units and in multiples of 95 Units thereafter

Term	Description
Bid(s)	An indication to make an offer during the Bid/Offer Period by an ASBA Bidder pursuant to submission of the ASBA Form, or on the Anchor Investor Bidding Date by an Anchor Investor pursuant to submission of the Anchor Investor Application Form, to subscribe to or purchase Units of the Trust at a price within the Price Band, including all revisions and modifications thereto as permitted and including any participation by Strategic Investors under the InvIT Regulations and InvIT Master Circular. The term "Bidding" shall be construed accordingly.
Bid/Offer Closing Date	Except in relation to any Bids received from the Anchor Investors and Strategic Investors, the date after which the Designated Intermediaries stopped accepting any Bids, being Friday, July 24, 2026, which was advertised in all editions of Financial Express (a widely circulated English national daily newspaper), in all editions of Jansatta (a widely circulated Hindi national daily newspaper, Hindi also being the regional language of Delhi, where the registered office of the Investment Manager is located)
Bid/Offer Opening Date	Except in relation to any Bids received from the Anchor Investors and Strategic Investors, the date on which the Designated Intermediaries started accepting Bids, being Wednesday, July 22, 2026, which was advertised in all editions of Financial Express (a widely circulated English national daily newspaper) and in all editions of Jansatta (a widely circulated Hindi national daily newspaper, Hindi also being the regional language of Delhi, where the registered office of the Investment Manager is located)
Bid/Offer Period	Period between the Bid/Offer Opening Date and the Bid/ Offer Closing Date, inclusive of both days
Bidder(s)	Any prospective investor who has made a Bid pursuant to the terms of the Offer Document and the Bid cum Application Form and for a Strategic Investor in terms of the Strategic Investor Unit Subscription Agreement with such investor and unless otherwise stated or implied, includes an Anchor Investor and a Strategic Investor
Bidding Centres	Centres at which the Designated Intermediaries could accept ASBA Forms, i.e. Designated SCSB Branch for SCSBs, Specified Locations for Syndicate, Broker Centres for Registered Brokers, Designated RTA Locations for RTAs and Designated CDP Locations for CDPs
Body Corporate	Body Corporate / Bodies corporate as defined in Regulation 2(1)(d) of the InvIT Regulations
Book Building Process	The book building process, as provided in Part A of Schedule XIII of the SEBI ICDR Regulations
Book Running Lead Managers or BRLMs	Kotak Mahindra Capital Company Limited, HDFC Bank Limited, HSBC Securities and Capital Markets (India) Private Limited and JM Financial Limited
Business Day	Any day from Monday to Friday, excluding any public holiday
Cap Price	The higher end of the Price Band, being ₹ 152 per Unit, above which the Offer Price was not finalized and above which no Bids were accepted
Cash Escrow and Sponsor Agreement	The cash escrow and sponsor agreement dated July 13, 2026, entered into amongst the Trust (acting through the Trustee), the Sponsor, the Investment Manager, the Book Running Lead Managers, the Selling Unitholders, Registrar to the Offer, and the Bankers to the Offer for, collection of the Bid Amounts and for remitting refunds, if any, of the amounts collected, to the Bidders
Client ID	Client identification number maintained with one of the Depositories in relation to a demat account
Closing Date	The date on which Allotment of the Units pursuant to the Offer shall be made, i.e. on or about Thursday, July 30, 2026
Collecting Depository Participant or CDP	A depository participant as defined under the Depositories Act, registered with SEBI and who is eligible to procure Bids at the Designated CDP Locations in terms of circular no. HO/49/14/14(2)2026-CFD-POD2/I/4518/2026 dated February 9, 2026, issued by SEBI, as amended
Confirmation of Allocation Note or CAN	Notice or intimation of allocation of Units sent to Anchor Investors and Strategic Investors who have been allocated Units, after the Anchor Investor Bidding Date
Demographic Details	Details of the Bidders, including the Bidder's address, investor status, occupation and bank account details PAN, DP ID and Client ID.
Depository Participant or DP	A depository participant as defined under the Depositories Act, 1996, as amended
Designated Date	The date on which funds are transferred from the Escrow Accounts and the amounts blocked by the SCSBs (in case of individual Non-Institutional Investors using the UPI Mechanism, instructions issued through the Sponsor Bank) are transferred from the ASBA Accounts, as the case may be, to the Public Offer Account or the Refund Account, as appropriate

Term	Description
Designated Intermediaries	Syndicate, sub-syndicate/agents, SCSBs, Registered Brokers, CDPs and RTAs, who are authorized to collect ASBA Forms from the ASBA Bidders, in relation to the Offer.
Designated RTA Locations	Such locations of the RTAs where Bidders can submit ASBA Forms. The details of such Designated RTA Locations, along with names and contact details of the RTAs eligible to accept Bid cum Application Forms are available on the respective websites of the Stock Exchanges (www.bseindia.com and www.nseindia.com)
Designated Stock Exchange	BSE Limited
DP ID	Depository Participant's Identification
Draft Offer Document	The Draft Offer Document dated March 17, 2026, in relation to the Offer, filed with SEBI and the Stock Exchanges, issued in accordance with the InvIT Regulations and the InvIT Master Circular, which does not contain the complete particulars of the Offer
Eligible NRI(s)	NRI(s) from jurisdictions outside India where it is not unlawful to make an offer or invitation under the Offer and in relation to whom the ASBA Form and the Offer Document which constituted an invitation to subscribe to the Units
Escrow Accounts	'No-lien' and 'non-interest bearing' account opened with the Escrow Collection Bank and in whose favour Anchor Investors and Strategic Investors transferred money through direct credit/NEFT/NACH/RTGS in respect of the Bid Amount when submitting a Bid
Escrow Collection Bank	Banks which is a clearing member and registered with SEBI as banker to an offer, under the Securities and Exchange Board of India (Bankers to an Issue) Regulations, 1994, and with whom the Escrow Account(s), have been opened, in this case being Kotak Mahindra Bank Limited
Final Offer Document	This Final Offer Document dated July 27, 2026 to be filed with SEBI and the Stock Exchanges after the Pricing Date in accordance with the InvIT Regulations and the InvIT Master Circular containing, amongst other things, the Offer Price that is determined at the end of the Book Building Process, the size of the Offer and certain other information, including any addenda or corrigenda thereto
First Bidder	Bidder whose name was mentioned first in the Bid cum Application Form or the Revision Form and in case of joint Bids, whose name appeared as the first holder of the beneficiary account held in joint names
Floor Price	The lower end of the Price Band, in this case being ₹ 151 at or above which the Offer Price and the Anchor Investor Offer Price and Strategic Investor Offer Price was finalised and below which no Bids were accepted
Institutional Investor Portion	Portion of the Offer (including the Anchor Investor Portion) being not more than 75% of the Offer Size, comprising not more than 185,032,893 Units (subject to finalization of the Basis of Allotment) which were available for allocation to Institutional Investors (including Anchor Investors), subject to valid Bids being received at or above the Offer Price, and as may be permitted by SEBI
Institutional Investors	Institutional investor as defined in Regulation 2(1)(ya) of the InvIT Regulations
Listing Agreements	The listing agreement dated April 19, 2023, and April 19, 2023, entered into with the BSE and NSE, respectively by the Trust, in line with the format as specified under the Securities and Exchange Board of India circular number CIR/CFD/CMD/6/2015 dated October 13, 2015, on "Format of uniform Listing Agreement"
Listing Date	The date on which the units of the Trust were initially listed on BSE and NSE, i.e. April 19, 2023, pursuant to the private placement of the Trust
Minimum Bid Size	Minimum of 95 Units and in multiples of 95 Units thereafter by Bidders, for Bidders other than Anchor Investors and Strategic Investors, ₹100 million for Anchor Investors and 5% of the total Offer Size (either jointly or severally) for Strategic Investors
Members of the Syndicate or Syndicate	Collectively, the BRLMs, Kotak Securities Limited, HDFC Securities Limited and JM Financial Services Limited
Mutual Funds	Mutual funds registered with SEBI under the Securities and Exchange Board of India (Mutual Funds) Regulations, 2026, as amended
Non-Institutional Investor Portion	Portion of the Offer being not less than 25% of the Offer Size, comprising at least 61,677,632 Units, which were available for allocation on a proportionate basis to Non-Institutional Investors (subject to finalization of the Basis of Allotment), subject to valid Bids being received at or above the Offer Price, and as may be permitted by SEBI
Non-Institutional Investors	All Bidders, that are not Institutional Investors (including Anchor Investors and Strategic Investors), who have Bid for Units in the Offer

Term	Description
Non-Resident Indian/ Non-Resident or NRI(s)	An individual resident outside India who is a citizen or is an 'overseas citizen of India' cardholder within the meaning of Section 7A of the Citizenship Act, 1955 and includes a Non-Resident Indian, FVCIs, FIIs and FPIs
NPCI	National Payment Corporation of India
Offer	The conversion of the trust from a privately listed infrastructure investment trust to a publicly listed infrastructure investment trust through an Offer for Sale of 328,947,365 Units^ of the Trust at an Offer Price of ₹ 152 per Unit, aggregating to approximately ₹ 50,000 million *^Subject to finalization of Basis of Allotment*
Offer Agreement	The offer agreement dated March 17, 2026, read with the amendment dated July 6, 2026 entered into among the Trustee (acting on behalf of, and in its capacity as a trustee to, the Trust), the Investment Manager, the Sponsor, the Erstwhile Project Manager, the Project Manager, the Selling Unitholders and the Book Running Lead Managers
Offer Document	The Offer Document dated July 13, 2026 issued in relation to this Offer, filed with SEBI and the Stock Exchanges, issued in accordance with the InvIT Regulations and the InvIT Master Circular, which did contain the complete particulars of the Offer
Offer for Sale	The offer for sale of 328,947,365 Units^ aggregating to approximately ₹ 50,000 million by the Selling Unitholders, comprising of 52,073,815 Units^ by BCI IRR India Holdings Inc. aggregating to ₹ 7,915.22 million, 1,335,197 Units^ by BCI IRR India Holdings Limited Partnership aggregating to ₹ 202.95 million, 103,443,815 Units^ by Cube Highways and Infrastructure II Pte. Ltd. aggregating to ₹ 15,723.46 million, 50,658,881 Units^ by Cube Highways and Infrastructure III Pte. Ltd. aggregating to ₹ 7,700.15 million, 85,766,973 Units^ by Cube Mobility Investments Pte. Ltd. aggregating to ₹ 13,036.58 million, and 35,668,684 Units^ by Seventy Second Investment Company LLC aggregating to ₹ 5,421.64 million, in the Offer *^Subject to finalization of Basis of Allotment*
Offer Price	₹ 152 per Unit, being the price at which Units pursuant to the Offer will be Allotted to successful Bidders in terms of this Offer
Offer Size	The Offer of 328,947,365 Units^ pursuant to the Offer aggregating to approximately ₹ 50,000 million *^Subject to finalization of Basis of Allotment*
Offered Units	328,947,365 Units^ aggregating to approximately ₹ 50,000 million by the Selling Unitholders, comprising of 52,073,815 Units^ by BCI IRR India Holdings Inc. aggregating to ₹ 7,915.22 million, 1,335,197 Units^ by BCI IRR India Holdings Limited Partnership aggregating to ₹ 202.95 million, 103,443,815 Units^ by Cube Highways and Infrastructure II Pte. Ltd. aggregating to ₹ 15,723.46 million, 50,658,881 Units^ by Cube Highways and Infrastructure III Pte. Ltd. aggregating to ₹ 7,700.15 million, 85,766,973 Units^ by Cube Mobility Investments Pte. Ltd. aggregating to ₹ 13,036.58 million, and 35,668,684 Units^ by Seventy Second Investment Company LLC aggregating to ₹ 5,421.64 million, in the Offer *^Subject to finalization of Basis of Allotment*
Pay-in Date	The last date specified in the CAN for payment of application monies by the Anchor Investors and Strategic Investors, which shall be no later than two Working Days from the Bid/Offer Closing Date/Pricing Date, as applicable
Price Band	Price band between the minimum price of ₹ 151 per Unit (Floor Price) and the maximum price of ₹ 152 per Unit (Cap Price). The Price Band has been decided by the Investment Manager in consultation with the Book Running Lead Managers, and was announced at least two Working Days prior to the Bid/ Offer Opening Date, on the websites of the Trust, the Sponsor and the Investment Manager, and was made available to the Stock Exchanges for the purpose of uploading on their respective websites
Pricing Date	The date on which the Investment Manager in consultation with the Book Running Lead Managers, finalized the Offer Price in accordance with the Book Building Process and in terms of the Offer Document and this Final Offer Document.
Public InvIT	An InvIT that has issued units in terms of Regulation 14(4) of the InvIT Regulations
Public Listing Date	The date on which the Units of the Trust will be listed on Stock Exchanges pursuant to the conversion process from privately listed InvIT into public InvIT
Public Offer Account	'No-lien and 'non-interest bearing' bank account opened to receive monies from the Escrow Accounts and from the ASBA Accounts on the Designated Date
Public Offer Account Bank	The bank that is a clearing member and registered with SEBI under the Securities and Exchange Board of India (Bankers to an Issue) Regulations, 1994, as a banker to an issue and with which the Public Offer Account was opened, in this case being HDFC Bank Limited

Term	Description
Qualified Institutional Buyers or QIB(s)	A qualified institutional buyer as defined under Regulation 2(1)(zs) of the InvIT Regulations
Refund Account	'No-lien' and 'non-interest bearing' account opened with the Refund Bank, from which refunds, if any, of the whole or part of the Bid Amount to Anchor Investors and Strategic Investors shall be made.
Refund Bank	Bank which is a clearing member and registered with SEBI as the bankers to an issue, under the Securities and Exchange Board of India (Bankers to an Issue) Regulations, 1994, and with whom the Refund Account, was/were opened, in this case being Kotak Mahindra Bank Limited
Registered Brokers	Stock brokers registered with the stock exchanges having nationwide terminals, other than the Book Running Lead Managers and the Syndicate Members, eligible to procure Bids in terms of the Master Circular No. SEBI/HO/MIRSD/MIRSD-PoD/P/CIR/2025/90, 'Master circular for stock brokers', dated June 17, 2025, issued by SEBI
Registrar Agreement	The agreement dated March 17, 2026, entered into between the Trustee (on behalf of the Trust), the Investment Manager, and the Registrar to the Offer in relation to the responsibilities and obligations of the Registrar to the Offer
Registrar and Unit Transfer Agent or Registrar or RTA	Registrar and share transfer agents registered with SEBI and eligible to procure RTAs Bids at the Designated RTA Locations in terms of Master Circular No. HO/38/13/(4)2026-MIRSD-POD/I/4298/2026 dated February 06, 2026, issued by SEBI
Registrar to the Offer	KFin Technologies Limited
Revision Form	Form used by the Bidders to modify the quantity of Units or the Bid Amount in any of their ASBA Forms or any previous Revision Forms. Bidders were not allowed to withdraw or lower their Bids (in terms of number of Units or the Bid Amount) at any stage
SCSB Branches	Such branches of the SCSBs that could collect the ASBA Forms, a list of which is available on the website of SEBI at https://www.sebi.gov.in/sebiweb/other/OtherAction.do?doRecognised=yes or at such other website as may be prescribed by SEBI from time to time
Self-Certified Syndicate Bank(s) or SCSB(s)	Banks registered with SEBI, offering services in relation to ASBA, a list of which is available on the website of SEBI at https://www.sebi.gov.in/sebiweb/other/OtherAction.do?doRecognisedFpi=yes&intmId=34 or https://www.sebi.gov.in/sebiweb/other/OtherAction.do?doRecognisedFpi=yes&intmId=35, as applicable, or such other website as updated from time to time, and updated from time to time
Specified Locations	Bidding centres where the Syndicate accepted ASBA Forms from Bidders
Sponsor Banks	HDFC Bank Limited and Kotak Mahindra Bank Limited, being Bankers to the Offer, appointed to act as a conduit between the Stock Exchanges and NPCI in order to push the mandate collect requests and/or payment instructions of the individual Non-Institutional Investors using the UPI Mechanism and carry out other responsibilities, in terms of the UPI circulars
Strategic Investor Allocation Price	Price at which Units will be allocated to Strategic Investors in terms of the Offer Document and the relevant unit subscription agreement, decided by the Investment Manager in consultation with the Book Running Lead Managers
Strategic Investor Offer Price	Final price at which Units will be Allotted to Strategic Investors in terms of the Offer Document and this Final Offer Document, which price will be equal to or higher than the Offer Price. The Strategic Investor Offer Price was decided by the Investment Manager in consultation with the Book Running Lead Managers
Strategic Investor Portion	Portion of the Offer being 82,236,840 Units aggregating to approximately ₹12,500 million, subject to a maximum of 25% of the Offer which was made available for allocation to Strategic Investors
Strategic Investor Unit Subscription Agreements	Collectively, the unit subscription agreements dated July 13, 2026 entered into with the Investment Manager, the Trustee, the Selling Unitholders and each of (i) Prazim Trading And Investment Company Private Limited; (ii) HDFC Life Insurance Company Limited; (iii) HDFC Pension Fund Management Limited; (iv) Axis Max Life Insurance Limited; and (v) WhiteOak Capital REIT & InvIT Alternatives Fund I
Strategic Investor(s)	A strategic investor as defined under Regulation 2(1)(zza) of the InvIT Regulations.
Syndicate Agreement	The agreement dated July 13, 2026 entered into between the Trustee (on behalf of the Trust), the Investment Manager, the Book Running Lead Managers, the Syndicate Members, the Registrar to the Offer and the Selling Unitholders in relation to collection of Bid cum Application Forms by the Syndicate

Term	Description
Syndicate Members	Intermediaries, registered with SEBI who were permitted to carry out activities as an underwriter, being, Kotak Securities Limited, HDFC Securities Limited and JM Financial Services Limited
Underwriters	Collectively, the Book Running Lead Managers and Syndicate Members
Underwriting Agreement	The agreement, dated July 27, 2026 entered into between the Trustee (on behalf of the Trust), the Underwriters, the Investment Manager, the Selling Unitholders, the Project Manager, the Erstwhile Project Manager and the Sponsor
Unit Escrow Agent	KFin Technologies Limited
Unit Escrow Agreement	The unit escrow agreement dated July 8, 2026, entered into among the Investment Manager, the Trustee (acting on behalf of the Trust), the Selling Unitholders and the Unit Escrow Agent, in relation to, inter alia, the deposit of the Units issued pursuant to the Offer
UPI	Unified Payments Interface, which is an instant payment mechanism, developed by NPCI
UPI Bidder(s)	Individual Non-Institutional Investors with an application size of approximately ₹ 500,000 in the Non-Institutional Category, and Bidding under the UPI Mechanism through ASBA Form(s) submitted with Syndicate Member, Registered Brokers, Collecting Depository Participants and Registrar and Share Transfer Agents
UPI ID	ID created on the UPI for single-window mobile payment system developed by the NPCI
UPI Mandate Request	A request (intimating the UPI Bidders, by way of a notification on the UPI linked mobile application and by way of an SMS directing the UPI Bidders to such UPI linked mobile application) to the UPI Bidders using the UPI Mechanism initiated by the Sponsor Banks to authorise blocking of funds equivalent to the Bid Amount in the relevant ASBA Account through the UPI linked mobile application, and the subsequent debit of funds in case of Allotment
UPI Mechanism	The Bidding mechanism that may be used by UPI Bidders to make Bids in the Offer in accordance with the InvIT Regulations
Working Day	Working Day, with reference to (a) announcement of Price Band; (b) Bid/Offer Period, shall mean all days, excluding Saturdays, Sundays and public holidays, on which commercial banks in Mumbai are open for business; and (c) the time period between the Bid/Offer Closing Date and the listing of the Units pursuant to the Offer on the Stock Exchanges, shall mean all trading days of Stock Exchanges, excluding Sundays and bank holidays as per circulars issued by SEBI

Technical and Industry Related Terms

Term	Description
2A	2 Axle
3A	3 Axle
AI	Artificial intelligence
ANPR	Automatic Number Plate Recognition System
ATMS	Advanced Traffic Management System
BOT	Build, operate and transfer
BTKM	Billion tonne kilometers
CAGR	Compound Annual Growth Rate
CCPR	Cold Central Plant Recycling
CJV	Cars/ Jeeps/ Vans
COS	Change of scope
DBFOT	Design, build, finance, operate and transfer
DPU	Distributions per unit
ETC	Electronic toll collection
Fee Rules	National Highways Fee (Determination of Rates and Collection) Rules, 2008
FVTPL	Fair value through profit or loss
HAM	Hybrid Annuity Model
HiMA	Highly modified asphalt
LGV/ LCV	Light Goods Vehicle/ Light Commercial Vehicles
MAV	Multi Axle Vehicle
MCA	Model Concession Agreement
MM	Major maintenance
MMR	Maximum marginal rate
MNC	Multinational company
NCR	National Capital Region
NHDP	National Highways Development Project

Term	Description
NIP	National Infrastructure Pipeline
O&M	Operation and maintenance
OCI	Other comprehensive income
PCU	Passenger Car Units
PMB	Polymer modified bitumen
PPP	Public-private partnership
PPPAC	Public Private Partnership Appraisal Committee
RFID	Radio-frequency identification device
ROU	Right-of-use
RPV	Route Patrol Vehicle
SCA	Service Concession Arrangement
SLB	Sustainability-linked bond
TMS	Toll management system
Toll Roads	The toll-based road projects operated by the Portfolio Assets
TOT	Toll, operate and transfer
VGF	Viability Gap Funding
WPI	Wholesale price index

Abbreviations

Term	Description
AIF	Alternative Investment Fund as defined in and registered with SEBI under the SEBI AIF Regulations
ASBA	Application Supported by Blocked Amount
Big 4 Accounting Firms	Collectively, Deloitte Touche Tohmatsu Limited, Ernst & Young Global Limited, PricewaterhouseCoopers and KPMG International Limited
BSE	BSE Limited
Calendar Year	Unless the context otherwise requires, shall mean the 12 months period ending December 31
CAN	Confirmation of Allocation Note
CCEA	Cabinet Committee on Economic Affairs
CCI	The Competition Commission of India
CDSL	Central Depository Services (India) Limited
CEO	Chief Executive Officer
CFO	Chief Financial Officer
Companies Act	Companies Act, 1956 and/or the Companies Act, 2013 as applicable, as amended
Companies Act, 1956	The erstwhile Companies Act, 1956 read with the rules, regulations, clarifications and modifications thereunder
Companies Act, 2013	Companies Act 2013, as amended read with rules, regulations, clarifications and modifications thereunder, as amended
Competition Act	The Competition Act, 2002, as amended
Depositories Act	Depositories Act, 1996, as amended
Depository	A depository registered with SEBI under the Securities and Exchange Board of India (Depositories and Participants) Regulations, 2018, as amended
Depository Participant	A depository participant as defined under the Depositories Act, as amended
DIN	Director Identification Number
EPC	Engineering, Procuring and Construction
ESDD Policy	Environmental and Social Due Diligence Policy
ESG	Environmental, Social and Governance
FEMA	Foreign Exchange Management Act, 1999, read with rules and regulations thereunder, as amended
FEMA Rules	Foreign Exchange Management (Non-debt Instruments) Rules, 2019, as amended
Financial Year or Fiscal Year or Fiscal	Period of 12 months ended March 31 of that particular year, unless otherwise stated
FVCI	Foreign venture capital investors, as defined under the SEBI FVCI Regulations

Term	Description
GAAR	General Anti-Avoidance Rules
GDP	Gross Domestic Product
GoI or Government	Government of India
GST	Goods and Services Tax
IFC	International Finance Corporation
IFRS	International Financial Reporting Standards
Income Tax Act/ IT Act	The Income Tax Act, 1961 or Income Tax Act, 2025, as applicable and as amended and read with rules, regulations, clarifications and modifications thereunder
Ind AS	Companies (Indian Accounting Standards) Rules, 2015, notified on February 19, 2015 by the MCA, including any amendments or modifications thereto
Indian GAAP	Accounting principles generally accepted in India, including the Accounting Standards as prescribed under Section 133 of the Companies Act, 2013 read with Companies (Accounting Standards) Rules, 2006, as amended or Companies (Indian Accounting Standard) Rules, 2015, as amended
Information Technology Act	Information Technology Act, 2000 as amended and read with rules, regulations, clarifications and modifications thereunder
InvIT	InvIT as defined under Regulation 2(1)(za) of the InvIT Regulations.
InvIT Master Circular	SEBI Master Circular no. SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025, including any amendments or modifications thereto
InvIT Regulations	Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014 as amended and other notifications, circulars, guidelines, clarifications issued by the Securities and Exchange Board of India including the InvIT Master Circular
IRDAI	Insurance Regulatory and Development Authority of India
IRR	Internal rate of return
Kms	Kilometres
LODR Regulations	Securities and Exchange Board of India (Listing Obligations and Disclosure Requirements) Regulations, 2015, as amended
MAT	Minimum alternate tax
MCA	Ministry of Corporate Affairs
MoEF	Ministry of Environment, Forest and Climate Change
MoRTH	Ministry of Road Transport and Highways
MPRDC	Madhya Pradesh Road Development Corporation Limited
NAV	Net Asset Value
NEFT	National Electronic Funds Transfer
NHAI	National Highways Authority of India
NIIF	National Investment and Infrastructure Fund
NITI	National Institution for Transforming India
NSDL	National Securities Depository Limited
NSE	National Stock Exchange of India Limited
OCD	Optionally Convertible Debenture
PAN	Permanent Account Number
RBI	Reserve Bank of India
Regulation S	Regulation S under the Securities Act
REITs	Real estate investment trust
ROFO	Right of First Offer
Rs./ Rupees/ INR/ ₹	Indian Rupees
RTGS	Real Time Gross Settlement
SCR (SECC) Regulations	Securities Contract (Regulation) (Stock Exchanges and Clearing Corporations) Regulations, 2018, as amended

Term	Description
SCRA	Securities Contracts (Regulation) Act, 1956 as amended read with rules, regulations, clarifications and modifications thereunder, as amended
SCRR	Securities Contracts (Regulation) Rules, 1957, as amended
SEBI	Securities and Exchange Board of India
SEBI Act	The Securities and Exchange Board of India Act, 1992, as amended read with rules, regulations, clarifications and modifications thereunder, as amended
SEBI AIF Regulations	Securities and Exchange Board of India (Alternative Investment Funds) Regulations, 2012, as amended
SEBI FPI Regulations	Securities and Exchange Board of India (Foreign Portfolio Investors) Regulations, 2019 as amended
SEBI FVCI Regulations	Securities and Exchange Board of India (Foreign Venture Capital Investors) Regulations, 2000 as amended
SEBI ICDR Regulations	Securities and Exchange Board of India (Issue of Capital and Disclosure Requirements) Regulations, 2018 as amended
SEBI Intermediary Regulations	Securities and Exchange Board of India (Intermediaries) Regulations, 2008 as amended
SEBI VCF Regulations	Securities and Exchange Board of India (Venture Capital Funds) Regulations, 1996 as amended
Securities Act	U.S. Securities Act of 1933, as amended
Stock Exchanges	BSE and NSE
STT	Securities transaction tax
Tax	All forms of direct and indirect taxes, duties, charges, levies, including without limitation corporate income tax, withholding tax, minimum alternate tax, sales tax, goods & services tax, value added tax, customs and excise duties, service tax, capital gains tax and all charges, interest, penalties and fines incidental or relating to any taxation falling within the aforesaid or which arise as a result of the failure to pay any taxes on the due date or to comply with any obligation relating to tax
"U.K." or "UK"	United Kingdom
U.S. GAAP	Generally Accepted Accounting Principles in the United States
U.S./USA/United States	United States of America
USD/US$	United States Dollar
VCF	Venture capital funds as defined under the SEBI VCF Regulations

PRESENTATION OF FINANCIAL DATA AND OTHER INFORMATION

Certain Conventions

All references in this Final Offer Document to "India" are to the Republic of India and its territories and possessions and all references herein to the "Government", "Indian Government", "GoI", "Central Government" or the "State Government" are to the Government of India or the relevant state government, as applicable and all references to the "U.S.", or the "United States" are to the United States of America.

Unless stated otherwise, all references to page numbers in this Final Offer Document are to the page numbers of this Final Offer Document.

Financial Data

Unless stated otherwise, the financial information in this Final Offer Document is derived from the Audited Consolidated Financial Statements. The Audited Consolidated Financial Statements have been prepared in accordance with the Indian Accounting Standard, prescribed under Section 133 of the Companies Act, 2013 (the "**Act**") to the extent not inconsistent with the InvIT Regulations (Refer note 19(a)(v) of the Audited Consolidated Financial Statements on presentation of "Unit capital" as "Equity" instead of compound financial instruments under Ind AS 32- Financial Instruments: Presentation), other relevant provisions relating to disclosures required as per the InvIT Regulations, including Chapter 3 of the InvIT Master Circular and other accounting principles generally accepted in India. For further details, please refer to "*Audited Consolidated Financial Statements*" in Annexure D.

The Audited Standalone Financial Statements of the Trust for the year ended March 31, 2026 have been prepared in accordance with the Indian Accounting Standard, prescribed under Section 133 of the Companies Act, 2013 to the extent not inconsistent with the InvIT Regulations, other relevant provisions relating to disclosures required as per of the InvIT Regulations, including Chapter 3 of the InvIT Master Circular and other accounting principles generally accepted in India. The Audited Standalone Financial Statements, along with the auditor's report, are available at the following link: https://www.cubehighwaystrust.com/uploads/SFS_OD.pdf.

The financial year for the Trust, the Investment Manager and the Portfolio Assets commences on April 1 and ends on March 31 of the next year, and accordingly, all references to a particular financial year or fiscal year, unless stated otherwise, are to the 12-month period ended on March 31 of that year.

The concession period of the WUPTPL Project, one of our Portfolio Assets, concluded on June 23, 2026, subsequent to March 31, 2026, being the date of the latest Audited Consolidated Financial Statements included in this Final Offer Document, and the asset has accordingly ceased to form part of our Portfolio Assets. Accordingly, the Audited Consolidated Financial Statements included in this Final Offer Document include the financial results of the WUPTPL Project for the relevant historical periods presented therein, and such financial statements, together with any operational and financial metrics derived therefrom, may not be comparable with, or indicative of, our future financial condition, results of operations or cash flows, which will not include any contribution from the WUPTPL Project.

Further, this Final Offer Document includes summaries of the audited financial statements of the (i) Sponsor, as of and for the years ended December 31, 2025, December 31, 2024, and December 31, 2023, prepared in accordance with IFRS; and (ii) Investment Manager, as of and for the years ended March 31, 2026, March 31, 2025, and March 31, 2024, prepared in accordance with generally accepted accounting principles in India, including the Accounting Standards as prescribed under Section 133 of the Companies Act, 2013 read with Companies (Accounting Standards) Rules, 2006, under the historical cost convention on accrual basis, derived from the financial statements of the Investment Manager for the relevant period. For further details, please see the sections entitled "*Summary Financial Information of the Sponsor*" and "*Summary Financial Information of the Investment Manager*" on pages 52 and 56, respectively. Additionally, please note that for the Sponsor, the financial year commences on January 1 and ends on December 31 of the same year.

The degree to which the financial information included in this Final Offer Document will provide meaningful information is entirely dependent on the reader's level of familiarity with Indian accounting policies and practices, the Companies Act, the Indian GAAP, Ind AS and the InvIT Regulations. The Investment Manager has not attempted to explain these differences or quantify their impact on the financial data included in this Final Offer Document, and it is urged that you consult your own advisors regarding such differences and their impact on our financial data. Any reliance by persons not familiar with Indian accounting policies and practices on the financial disclosures presented in this Final Offer Document should accordingly be limited.

In this Final Offer Document, any discrepancies in any table between the totals and the sums of the amounts listed are due to rounding. All figures and percentages have been rounded to two decimal places. However, where any figures are sourced from third-party industry sources, they may be rounded to the number of decimal places provided in those sources. In certain instances, (i) the sum or percentage change of such numbers may not conform exactly to the total figure given; and (ii) the sum of the numbers in a column or row in certain tables may not conform exactly to the total figure given for that column or row.

Certain Non-GAAP Financial Measures

In addition to our results determined in accordance with Ind AS, we believe the following Non-GAAP measures are useful to investors in evaluating our operating performance. We use the following Non-GAAP financial information to evaluate our ongoing operations and for internal planning and forecasting purposes. We believe that Non-GAAP financial information, when taken collectively with financial measures prepared in accordance with Ind AS, may be helpful to investors because it provides an additional tool for investors to use in evaluating our ongoing operating results and trends and in comparing our financial results with other companies in our industry, as it provides consistency and comparability with past financial performance. However, our management does not consider these Non-GAAP measures in isolation or as an alternative to financial measures determined in accordance with Ind AS.

Non-GAAP financial information is presented for supplemental informational purposes only, has limitations as an analytical tool and should not be considered in isolation or as a substitute for financial information presented in accordance with Ind AS. Non-GAAP financial information may be different from similarly titled Non-GAAP measures used by other organisations. The principal limitation of these Non-GAAP financial measures is that they exclude significant expenses and income that are required by Ind AS to be recorded in our financial statements, as further detailed below. In addition, they are subject to inherent limitations as they reflect the exercise of judgement by management about which expenses and income are excluded or included in determining these Non-GAAP financial measures. Investors are encouraged to review the related Ind AS financial measures and the reconciliation of Non-GAAP financial measures to their most directly identifiable Ind AS financial measures included below, and not to rely on any single financial measure to evaluate our business. For further details, please see the section entitled "*Management's Discussion and Analysis of Financial Condition and Results of Operations*" on page 356.

Reconciliation of Non-GAAP Measures

1. Net Borrowings Ratio

(Amount in ₹ million)

S. No.	Particulars	As at March 31, 2026 #	As at March 31, 2025
A	Borrowings (refer note 1)*	177,557.72	152,063.65
B	Deferred Payments (refer note 2)	119.34	485.00
C	Cash and Cash Equivalents (refer note 3)	5,190.20	8,467.08
D	Aggregate Borrowings and Deferred Payments net of Cash and Cash Equivalents (A+B-C)	172,486.86	144,081.57
E	Value of InvIT assets / Enterprise Value (refer note 4)	368,417.57	322,657.15
F	Net Borrowings Ratio (D/E)	46.82%	44.65%
G	Total Debt headroom as per SEBI regulations	70.00%	70.00%
H	Additional Debt headroom (G-F)	23.18%	25.35%

* *Borrowings numbers are on an undiscounted basis and include accrued interest on borrowings.*

\# *The requirement to disclose the Net Borrowings Ratio as part of the financial results was introduced pursuant to the SEBI Circular dated May 7, 2025 (superseded by the InvIT Master Circular), on "Review of (a) disclosure of financial information in offer document/placement memorandum, and (b) continuous disclosures and compliances by Infrastructure Investment Trusts (InvITs)". Accordingly, the Net Borrowings Ratio has not been presented for prior periods, as the requirement was not applicable for those reporting periods.*

Note 1: Lender wise and entity wise details of borrowings (undiscounted) are as follows:-

(Amount in ₹ million)

Name of Lender	Name of Entity	As at March 31, 2026	As at March 31, 2025
State Bank of India	Trust	68,183.38	65,584.46
HDFC Bank Limited	Trust	16,703.97	11,132.83
ICICI Bank Limited	Trust	1,773.80	13,316.90
Axis Bank Limited	Trust	14,476.46	8,817.52
National Bank for financing Infrastructure and Development	Trust	31,494.41	20,843.29
KNR Constructions Limited	WVEPL	150.99	150.99
Rated, listed and redeemable Non - Convertible Debentures	MBEL	1,050.00	1,250.00
Rated, listed and redeemable Non - Convertible Debt Securities	Trust	43,534.00	30,686.00
Unsecured Non-Convertible Debentures-Reliance Infrastructure Ltd.	DATRPL	-	100.00
Unsecured Non-Convertible Debentures-National Investment and Infrastructure fund	QEPL	15.92	-
Accrued Interest	Trust; MBEL and QEPL	174.79	181.66
Total Borrowings		**177,557.72**	**152,063.65**

Note 2: Deferred Payments pertain to contingent consideration of assets acquired included by an independent valuer while calculating the value of InvIT Assets / Enterprise Value.

Note 3: Entity wise breakup of cash and cash equivalents is as follows:

(Amount in ₹ million)

Name of Entity	As at March 31, 2026	As at March 31, 2025
JUHPL	25.90	-
APEPL	596.05	400.49
BWHPL	478.29	738.41
DATRPL	297.82	106.00
FRHPL	182.12	144.01
GAEPL	153.59	602.54
HTPL	118.35	303.12
JLTPL	229.85	266.91
JMTPL	89.75	537.10
JVTPL	192.95	225.10
KETPL	87.22	154.56
KMTPL	81.32	126.58
LRTPL	38.47	293.46
MBEL	80.09	621.32
MHPL	2.56	461.78
MKTPL	143.40	120.14
MSHPL	0.90	213.15
NAMEPL	426.89	455.67
NDEPL	51.08	63.13
NKTPL	590.30	1,137.14
QEPL	128.42	-
SIPL	38.57	208.32
SMTPL	133.59	105.38
SPPL	20.55	291.95
THPL	14.28	200.63
Trust	857.06	165.30
WUPTPL	68.19	482.22
WVEPL	62.64	42.67
Grand Total	**5,190.20**	**8,467.08**

Note 4: Enterprise Value of InvIT assets is based on the valuation done by an independent valuer appointed by the Trust. Entity-wise breakup is as follows**:**

(Amount in ₹ million)

Name of Entity	As at March 31, 2026	As at March 31, 2025
JUHPL	12,239.56	-
APEPL	815.59	1,315.71
BWHPL	3,216.01	3,579.87
DATRPL	77,786.20	74,916.86
FRHPL	26,470.79	26,853.11
GAEPL	38,838.97	32,781.86
HTPL	20,155.92	18,223.96
JLTPL	12,951.00	12,260.61
JMTPL	7,340.97	9,493.15
JVTPL	8,014.12	7,738.00
KETPL	10,784.58	9,526.96
KMTPL	13,991.52	13,261.16
LRTPL	8,546.26	7,709.62
MBEL	4,118.85	4,319.70
MHPL	2,746.61	2,939.71
MKTPL	16,608.25	14,168.25
MSHPL	3,733.22	4,207.50
NAMEPL	27,665.92	27,676.30
NDEPL	4,667.25	5,076.11
NKTPL	14,254.81	12,913.44
QEPL	19,251.23	-
SIPL	3,465.57	4,011.89
SMTPL	11,778.47	10,344.93
SPPL	4,196.88	4,432.32
THPL	4,700.95	5,330.37
WUPTPL	977.25	165.39
WVEPL	9,100.82	9,410.37
Grand Total	**368,417.57**	**322,657.15**

For details in relation to the valuation of the Portfolio Assets and the Trust as on March 31, 2026, please see "*Valuation Reports*" in Annexure A.

2. Growth of AUM/Value of InvIT Asset / Enterprise Value

Particulars	A (As at March 31, 2026) (Amount in ₹ million)	B (As at March 31, 2025) (Amount in ₹ million)	C=(A-B) Increase from March 31, 2025 (Amount in ₹ million)	D=C/B Increase %
AUM/Value of InvIT assets/ Enterprise Value	368,417.57	322,657.15	45,760.42	14.18%

3. Growth of NAV per unit

Particulars	A (As at March 31, 2026) (in ₹)	B (As at April 19, 2023) (in ₹)	C=(A-B) Increase from April 19, 2023 (in ₹)	D=C/B Increase %	E =A-B Total no. of days	F=E/365 in years	(A/B)^(1/F)-1 CAGR
NAV Per Unit	145.77	100.00	45.77	45.77%	1,077	2.95	13.62%

4. EBITDA and its related ratios

(Amount in ₹ million)

S. No.	Particulars	For the Fiscal ended March 31, 2026	For the Fiscal ended March 31, 2025	For the Fiscal ended March 31, 2024
A	Profit/(loss) before tax	3,246.87	(503.13)	(6,868.45)
B	Impairment charge/(reversal) of Intangible Assets	(1,421.00)	-	5,871.87
C	Depreciation and amortisation expense	14,444.75	13,129.12	11,825.72
D	Finance costs	14,653.82	11,171.01	8,731.29
E	**EBITDA (A+C+D)**	**32,345.44**	**23,797.00**	**13,688.56**
E1	**Adjusted EBITDA (A+B+C+D)**	**30,924.44**	**23,797.00**	**19,560.43**
F	Interest expense on term loan	10,061.61	9,123.24	7,672.86
G	Interest expense on non-convertible debentures	3,565.49	1,475.60	655.03
H	Interest expense on optionally convertible debentures	-	0.78	98.00
I	Interest expense on commercial papers	207.13	-	-
J	Interest expense capitalised in IAUD	-	8.20	26.22
J1	Interest expense capitalised in intangible assets	-	-	151.84
K	**Total Interest expense (F+G+H+I+J+J1)**	**13,834.23**	**10,607.82**	**8,603.95**
L	**Interest Service Coverage Ratio (in times) (E1/K)**	**2.24**	**2.24**	**2.27**
M	Repayment of Debt (Net of refinancing)	5,766.64	4,913.85	3,139.92
N	**Debt Service Coverage Ratio (in times) {E1/(K+M)}**	**1.58**	**1.53**	**1.67**
O	Borrowings* (including current maturity of non-current borrowings)	176,647.13	151,146.85	107,352.73
P	**Debt to EBITDA ratio (times) (O/E)**	5.46	6.35	7.84
P1	**Debt to Adjusted EBITDA ratio (times) (O/E1)**	5.71	6.35	5.49
Q	Total income	43,590.26	34,531.52	30,741.05
R	**EBITDA Margin (%) (E/Q)**	**74.20%**	**68.91%**	**44.53%**
S	**Adjusted EBITDA Margin (%) (E1/Q)**	**70.94%**	**68.91%**	**63.63%**

* *Borrowings numbers are on a discounted basis.*

5. EBITDA reconciliation

(Amount in ₹ million)

S. No.	Particulars	For the period ended March 31, 2026	For the period ended March 31, 2025
A	Profit/(loss) before tax	3,246.87	(503.13)
B	Impairment charge/(reversal) of Intangible Assets	(1,421.00)	-
C	Depreciation and amortisation expense	14,444.75	13,129.12
D	Finance costs	14,653.82	11,171.01
E	**EBITDA (A+C+D)**	**32,345.44**	**23,797.00**

Currency and Units of Presentation

All references to:

- "Rupees" or "₹" or "INR" or "Rs." are to Indian Rupee, the official currency of the Republic of India; and
- "USD" or "US$" or "$" or "U.S. dollars" are to the United States Dollar, the official currency of the United States.

Except as otherwise specified, certain numerical information in this Final Offer Document has been presented in "million" units. One million represents 1,000,000 and one billion represents 1,000,000,000.

Unless the context requires otherwise, any percentage amounts, as set forth in this Final Offer Document, have been calculated on the basis of the Audited Consolidated Financial Statements and the summary financial statements of (i) the Sponsor; and (ii) the Investment Manager.

Exchange Rates

This Final Offer Document contains the conversion of certain other currency amounts into Indian Rupees. These conversions should not be construed as a representation that these currency amounts could have been, or can be converted into Indian Rupees, at any particular rate.

The following table sets forth, for the periods indicated, information with respect to the exchange rate between the Rupee and the US$:

(in ₹ per US$)

Currency	As of March 31, 2026	As of March 31, 2025	As of March 31, 2024
1 US$	94.65	85.58	83.37

Source: www.fbil.org.in

Note: If the RBI reference rate is not available on a particular date due to a public holiday, the exchange rates for the previous working day have been disclosed. The reference rates are rounded off to two decimal places.

Industry and Market Data

Unless stated otherwise, industry and market data used in this Final Offer Document has been obtained or derived from the Industry Report with respect to the assessment of the roads sector in India. The Investment Manager has commissioned the Industry Report for an agreed fee to provide an independent estimation of the assessment of the roads sector in India, which is based on historical data and certain assumptions. The Investment Manager has appointed the Industry Expert pursuant to an engagement letter dated June 26, 2025. The Industry Report is issued by the Industry Expert and is subject to the following disclaimer:

*"**About Crisil Intelligence***

Crisil Intelligence, a division of Crisil Limited, provides independent research, consulting, risk solutions, and data & analytics to its clients. Crisil Intelligence operates independently of Crisil's other divisions and subsidiaries, including, Crisil Ratings Limited. Crisil Intelligence's informed insights and opinions on the economy, industry, capital markets and companies drive impactful decisions for clients across diverse sectors and geographies.

*For the preparation of this report, Crisil Intelligence has relied on third party data and information obtained from sources which in its opinion are considered reliable. Any forward-looking statements contained in this report are based on certain assumptions, which in its opinion are true as on the date of this Report and could fluctuate due to changes in factors underlying such assumptions or events that cannot be reasonably foreseen. This Report does not consist of any investment advice and nothing contained in this report should be construed as a recommendation to invest/disinvest in any entity. This industry report is intended for use only within India except to the extent of the Report being quoted, reproduced, extracted or utilised, in part or whole of, in the draft offer document ("**DOD**") to be filed by the Trust with the Securities and Exchange Board of India ("**SEBI**") and the stock exchanges where the Units are proposed to be listed ("**Stock Exchanges**"), offer document, and the final offer document to be filed with SEBI and the Stock Exchanges or any other governmental or regulatory authority, as applicable,* or any other document to be issued or filed in relation to the Offer *such as publicity or other materials, research reports, presentations and media releases, preliminary or final international offering document or any international supplement of the foregoing for distribution to investors outside India and any other corporate or investor presentations or press releases and research reports prepared by the Trust (through the Trustee or Investment Manager on behalf of the Trust) or the Sponsors or BRLMs, including their affiliates in connection to the Offer, and in any subsequent communication with any person."*

Industry publications generally state that the information contained in such publications has been obtained from various sources believed to be reliable but that their accuracy and completeness are not guaranteed and their reliability cannot be assured. Accordingly, no investment decisions should be based solely on such information. The data used in these sources may have been re-classified for the purposes of presentation. Data from these sources may also not be comparable. Such data involves risks, uncertainties and numerous assumptions and is subject to change based on various factors, including those disclosed in the section entitled "*Risk Factors - We have relied on data derived from third-party reports, which are based on certain estimates and assumptions and are subject to the limitations set out therein*" on page 106. Accordingly, investment decisions should not be based solely on such information.

The extent to which the market and industry data used in this Final Offer Document is meaningful depends on the reader's familiarity with and understanding of the methodologies used in compiling such data. There are no standard data gathering methodologies in the industry in which the business of the Trust is conducted, and methodologies and assumptions may vary widely across industry sources.

In accordance with the InvIT Regulations, "*Basis of Offer Price - Comparison with Industry Peers"* on page 133 includes information relating to our peers. Such information has been derived from publicly available sources specified herein. Such

industry sources and publications are also prepared based on information as at specific dates and may no longer be current or reflect current trends. Accordingly, investment decisions should not be based solely on such information.

Technical Reports*

The Technical Reports, prepared by the Technical Consultants, were commissioned by the Investment Manager for purposes of the Offer. The Technical Reports were issued by the Technical Consultants and are subject to the following disclaimers:

Disclaimer of Knight Frank (India) Private Limited:

*"This document includes selected provisions or a summary of the Report or the entire Report(s), being, the **Project Transit:** Technical Due Diligence of Quazigund Banihal Road Tunnel, **Project Transit:** Technical Due Diligence of Jammu Udhampur (the "**Reports**") prepared by **Knight Frank India**, solely in its capacity as the Technical Consultant (the "**Technical Consultant**"), on behalf of Cube Highways Trust (the "**Client**") for the Offer and is not a full statement of the terms of the Reports. Accordingly, such summary or excerpt is qualified in its entirety by reference to and is subject to the full text of the Reports, which are attached to the Draft Offer Document /Offer Document /Final Offer Document as Annexure B. Investors must view the summaries in the context of the full Reports, which are subject to the limitations and disclaimers in such Reports. Without limiting the generality of the foregoing, the Reports are expressly subject to the qualifications, assumptions made, procedures followed, matters considered and any limitations on the scope of work contained therein.*

Investors should note that these summaries, and the Reports, are provided only as of the date set forth therein and do not contemplate any event, circumstances or changes with respect to Offer or otherwise after such date. The foregoing summaries of the Reports may include projected information and data (financial and otherwise), and other forward-looking information, that may or may not occur or prove to be accurate. Such projected and forward-looking information is based on current expectations and projections about future events which are beyond the control of the Technical Consultant, the Client or any other participant in the Issue, and such projections and information can be affected by inaccurate assumptions. While these projections and information were prepared in good faith, no assurance can be given as to the accuracy or adequacy of such projections and information, or the assumptions underlying such projections and information.

It is to be stated that neither Knight Frank (India) Pvt Ltd nor any person acting for or on behalf of Knight Frank (India) Pvt Ltd shall have any liability or responsibility of any kind in any manner whatsoever to the Client, Investor or to any third party or to any other person to whom the Report or contents of the Report or any portion thereof will be disclosed/shared."

Disclaimer of FP India Project Management Consultancy Private Limited:

"*This document includes selected provisions or a summary of the Report or the entire Report(s), being*

1. *Project Transit: Technical Due Diligence of Jaipur Mahua Tollway Private Limited dated May 14, 2026,*
2. *Project Transit: Technical Due Diligence of Mahua Bharatpur Expressways Limited dated May 14, 2026,*
3. *Project Transit: Technical Due Diligence of Nelamangala Devihalli Expressway Private Limited dated May 14, 2026,*
4. *Project Transit: Technical Due Diligence of Ghaziabad Aligarh Expressway Private Limited dated May 14, 2026,*
5. *Project Transit: Technical Due Diligence of Farakka Raiganj Highways Private Limited dated May 14, 2026,*
6. *Project Transit: Technical Due Diligence of Walayar Vadakkencherry Expressways Private Limited dated May 14, 2026,*
7. *Project Transit: Technical Due Diligence of DA Toll Road Private Limited dated May 14, 2026,*
8. *Project Transit: Technical Due Diligence of Jhansi- Lalitpur Tollway Private Limited dated May 14, 2026,*
9. *Project Transit: Technical Due Diligence of Jhansi-Vigakhet Tollway Private Limited dated May 14, 2026,*
10. *Project Transit: Technical Due Diligence of Lucknow-Raebareli Tollway Private Limited dated May 14, 2026,*
11. *Project Transit: Technical Due Diligence of Kotwa-Muzaffarpur Tollway Private Limited dated May 14, 2026,*
12. *Project Transit: Technical Due Diligence of Hazaribagh Tollway Private Limited dated May 14, 2026,*
13. *Project Transit: Technical Due Diligence of Madurai- Kanyakumari Tollway Private Limited dated May 14, 2026,*
14. *Project Transit: Technical Due Diligence of Kanyakumari- Etturavattam Tollway Private Limited dated May 14, 2026,*
15. *Project Transit: Technical Due Diligence of Salaipudhur-Madurai Tollway Private Limited dated May 14, 2026,*
16. *Project Transit: Technical Due Diligence of Nanguneri-Kanyakumari Tollway Private Limited dated May 14, 2026,*
17. *Project Transit: Technical Due Diligence of Borgaon Watambare Highways Private Limited dated May 14, 2026,*
18. *Project Transit: Technical Due Diligence of Mangloor Highways Private Limited dated May 14, 2026,*
19. *Project Transit: Technical Due Diligence of Mangalwedha Solapur Highways Private Limited dated May 14, 2026,*
20. *Project Transit: Technical Due Diligence of Srirangam Infra Private Limited dated May 14, 2026,*

21. *Project Transit: Technical Due Diligence of Shankarampet Projects Private Limited dated May 14, 2026,*
22. *Project Transit: Technical Due Diligence of Tirumala Highways Private Limited dated May 14, 2026,*
23. *Project Transit: Technical Due Diligence of Narketpalli -Adanki-Medarletla dated May 14, 2026,*

*(the "**Reports**") prepared by FPPMC, solely in its capacity as the Technical Consultant (the "**Technical Consultant**"), on behalf of Cube Highways Fund Advisors Private Limited (the "**Client**"), being, the investment manager of the Cube Highways Trust, for the Offer and any summary of the Reports is not a full statement of the terms of the Reports. Accordingly, such summary or excerpt is qualified in its entirety by reference to and is subject to the full text of the Reports, which are attached to the Draft Offer Document / Offer Document / Final Offer Document as Annexure B. Investors must view the summaries in the context of the full Reports, which are subject to the limitations and disclaimers in such Reports. Without limiting the generality of the foregoing, the Reports are expressly subject to the qualifications, assumptions made, procedures followed, matters considered and any limitations on the scope of work contained therein.*

Investors should note that these summaries, and the Reports, are provided only as of the date set forth therein and do not contemplate any event, circumstances or changes with respect to Offer or otherwise after such date. The foregoing summaries of the Reports may include projected information and data (financial and otherwise), and other forward-looking information, that may or may not occur or prove to be accurate. Such projected and forward-looking information is based on current expectations and projections about future events which are beyond the control of the Technical Consultant, the Client or any other participant in the Offer, and such projections and information can be affected by inaccurate assumptions. While these projections and information were prepared in good faith, no assurance can be given as to the accuracy or adequacy of such projections and information, or the assumptions underlying such projections and information.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TECHNICAL CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE OFFER OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TECHNICAL CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES."

* *The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. The Investment Manager shall fulfil its obligations in respect of WUPTPL in accordance with the SEBI circular dated May 15, 2026, bearing the reference number SEBI/HO/DDHS/DDHS-PoD-2/I/11698/2026, read with the InvIT Regulations, as amended. Further, the concession period for APEPL is scheduled to expire on September 30, 2026. Accordingly, the Technical Reports do not include the reports for WUPTPL and APEPL*

Traffic Data*

The Traffic Reports, prepared by the Traffic Consultant, were commissioned by the Investment Manager for purposes of the Offer. The Traffic Reports were issued by the Traffic Consultant and are subject to the following disclaimers:

Disclaimer of Steer Davies Gleave India Private Limited:

"*This document includes selected provisions of or a summary of the*

1) Project Transit: Traffic Due Diligence of Hazaribagh Tollway Limited,

2) Project Transit: Traffic Due Diligence of Lucknow – Raebareli Tollway Limited,

3) Project Transit: Traffic Due Diligence of Madurai – Kanyakumari Tollway Limited,

4) Project Transit: Traffic Due Diligence of Kotwa – Muzaffarpur Tollway Limited,

5) Project Transit: Traffic Due Diligence of Jhansi – Lalitpur Tollway Limited,

6) Project Transit: Traffic Due Diligence of DA Toll Road Private Limited,

7) Project Transit: Traffic Due Diligence of Walayar Vadakkencherry Expressways Private Limited,

8) Project Transit: Traffic Due Diligence of Farakka - Raiganj Highways Limited,

9) Project Transit: Traffic Due Diligence of Jaipur – Mahua Tollway Limited,

10) Project Transit: Traffic Due Diligence of Mahua Bharatpur Expressways Limited,

11) Project Transit: Traffic Due Diligence of Nelamangala Devihalli Expressway Private Limited, and

12) Project Transit: Traffic Due Diligence of Ghaziabad Aligarh Expressway Private Limited

13) Project Transit: Traffic Due Diligence of NAM Expressway Private Limited

*dated April 2026 (the "**Reports**") prepared by Steer, Davies & Gleave India Private Limited, solely in its capacity as the Traffic Consultant (the "**Traffic Consultant**"), on behalf of Cube Highways Fund Advisors Private Limited (the "**Client**") for the Offer and is not a full statement of the terms of the Reports. Accordingly, such summary or excerpt is qualified in its entirety by reference to and is subject to the full text of the Reports, which are attached to the Offer Documents. Investors must view the summaries in the context of the full Reports, which are subject to the limitations and disclaimers in such Reports. Without limiting the generality of the foregoing, the Reports are expressly subject to the qualifications, assumptions made, procedures followed, matters considered and any limitations on the scope of work contained therein.*

Investors should note that these summaries, and the Reports, are provided only as of the date set forth therein and do not contemplate any event, circumstances, or changes with respect to the Offer or otherwise after such date. The foregoing summaries of the Reports may include projected information and data (financial and otherwise), and other forward-looking information, that may or may not occur or prove to be accurate. Such projected and forward-looking information is based on current expectations and projections about future events which are beyond the control of the Traffic Consultant, the Client or any other participant in the Offer, and such projections and information can be affected by inaccurate assumptions. While these projections and information were prepared in good faith, no assurance can be given as to the accuracy or adequacy of such projections and information, or the assumptions underlying such projections and information.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE OFFER OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES."

* *The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. The Investment Manager shall fulfil its obligations in respect of WUPTPL in accordance with the SEBI circular dated May 15, 2026, bearing the reference number SEBI/HO/DDHS/DDHS-PoD-2/I/11698/2026, read with the InvIT Regulations, as amended. Further, the concession period for APEPL is scheduled to expire on September 30, 2026. Accordingly, the Traffic Reports do not include the reports for WUPTPL and APEPL*

Valuation

The Valuation Reports, prepared by the Valuer, were commissioned by the Investment Manager in accordance with the InvIT Regulations and the InvIT Master Circular. The Valuation Reports issued by the Valuer is subject to the following disclaimer:

"This document includes selected provisions of or a summary of the valuation reports for Existing Portfolio Assets dated 22 May 2026 ("Report(s)") prepared by Ernst & Young Merchant Banking Services LLP (EY), solely in its capacity as the registered valuer on behalf of Cube Highways Fund Advisors Private Limited (the "Client") for the Offer and is not a full statement of the terms of the Reports. Accordingly, such summary or excerpt is qualified in its entirety by reference to and is subject to the full text of each Report, which are attached to the Offer document. Investors must view the summaries in the context of full Report, which are subject to the limitations and disclaimers in such Report. Without limiting the generality of the foregoing, the Reports are expressly subject to the qualifications, assumptions made, procedures followed, matters considered and any limitations on the scope of work contained therein.

Investors should note that these summaries, and the Reports, are provided only as of the date set forth therein and do not contemplate any event, circumstances or changes with respect to Offer or otherwise after such date. The foregoing summaries of the Reports may include projected information and data (financial and otherwise), and other forward-looking information, that may or may not occur or prove to be accurate. Such projected and forward-looking information is based on current expectations and projections about future events which are beyond the control of the EY, the Client or any other participant in the Offer, and such projections and information can be affected by inaccurate assumptions. While these projections and information were prepared in good faith, no assurance can be given as to the accuracy or adequacy of such projections and information, or the assumptions underlying such projections and information.

The total aggregate liability of EY and its officers, employees and affiliates for any loss, damage, cost or expense suffered or incurred by all persons or entities (including but not limited to the Client, the addressees to this Consent Letter, placement agents, and investors) and for all claims in respect of work performed in connection with the Offer and/or the Reports, is hereby limited to the amount of fees actually paid by the Client to EY in connection with the Reports (the "Aggregate Liability Cap"). EY is released from all liability in excess of the Aggregate Liability Cap."

Credit Rating

Please see the section entitled "*General Information – Credit ratings*" on page 130 in relation to the details of credit ratings.

Websites

The information contained on our website, the websites of the Investment Manager, the Sponsor, the Sponsor Group, the Selling Unitholders, the Trustee, the Book Running Lead Managers, the Portfolio Assets, to the extent applicable, or the other websites referenced in this Final Offer Document or that can be accessed through our websites or such other websites, neither constitute part of this Final Offer Document, nor is it incorporated by reference therein and should not form the basis of any investment decision. For details of the websites of the Trust, the Sponsor, Trustee and Book Running Lead Managers, please see the section entitled "*General Information*" on page 124.

PAST MARKET PERFORMANCE

The following table sets forth the market value of the Units traded on NSE and BSE (where the existing units of the Trust are listed since the private placement of units), indicating the value on the last date of the reporting period, the highest value during the reporting period (based on intra-day and closing price with specified dates), and the lowest value during the reporting period (based on intra-day and closing price with specified dates):

Particulars	**Market value (in ₹)**			
	NSE		**BSE**	
Market value (₹ in millions) as on March 31, 2026[3]		196,234.19		196,234.19
Highest value during the reporting period	**Date**	**Price (in ₹)**	**Date**	**Price (in ₹)**
(a) Intra-day high	March 30, 2026	146.00	March 30, 2026	146.00
(b) Closing	March 30, 2026	146.00	March 30, 2026	146.00
Lowest value during the reporting period	**Date**	**Price**	**Date**	**Price**
(a) Intra-day low	May 10, 2024	100.00	May 10, 2024	100.00
(b) Closing	May 10, 2024	100.00	May 10, 2024	100.00

(Source: www.bseindia.com and www.nseindia.com)

Note:

1. *The reporting period refers to the period from the date on which the Trust's units were initially listed (i.e., April 19, 2023) to the date of the latest available financial statements disclosed, i.e. March 31, 2026 ("**Reporting Period**").*
2. *In case of more than one day with the same high price, low price & closing price the date with the higher traded volume has been chosen.*
3. *Market value is calculated based on the closing price as on the last date of the Reporting Period multiplied by the Units outstanding as on March 31, 2026.*
4. *Since the Units were not traded on March 31, 2026 on account of a public holiday, the closing price for the preceding date (i.e. March 30, 2026) on which the Units were traded has been considered.*

FORWARD-LOOKING STATEMENTS

Certain statements contained in this Final Offer Document that are not statements of historical fact constitute "forward-looking statements". Investors can generally identify forward-looking statements by terminology such as "aim", "anticipate", "believe", "continue", "can", "could", "estimate", "expect", "intend", "likely", "may", "objective", "plan", "potential", "project", "pursue", "shall", "should", "will", "would", or other words or phrases of similar import. Similarly, statements that describe the strategies, objectives, plans or goals of the Trust are also forward-looking statements. However, these are not the exclusive means of identifying forward-looking statements.

All statements regarding the Trust's expected financial conditions, results of operations, business plans and prospects are forward-looking statements. These forward-looking statements include statements as to the Trust's business strategy, planned projects, revenue and profitability (including, without limitation, any financial or operating projections or forecasts), new business and other matters discussed in this Final Offer Document that are not historical facts. These forward-looking statements and any other projections contained in this Final Offer Document (whether made by the Trustee, Investment Manager or any third party), are predictions and involve known and unknown risks, uncertainties, assumptions and other factors that may cause the Trust's actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements or other projections.

The Valuation Reports included in this Final Offer Document are based on certain projections and accordingly, should be read together with assumptions and notes thereto. For further details, please see the "*Valuation Reports*" attached as Annexure A. The Technical Reports and Traffic Reports, attached as Annexures B and C, respectively, include projections and estimates in relation to operation and maintenance expenses (including routine and periodic maintenance expenses) and traffic data, and accordingly, should be read in conjunction with the relevant notes and assumptions thereto.

All forward-looking statements and financial projections are subject to risks, uncertainties and assumptions. Actual results may differ materially from those suggested by forward-looking statements and financial projections due to certain known or unknown risks or uncertainties associated with the Investment Manager's expectations with respect to, but not limited to, the actual growth in the infrastructure sector, the Investment Manager's ability to successfully implement the strategy, growth and expansion plans, technological changes, cash flow projections, exposure to market risks, general economic and political conditions in India, monetary and fiscal policies of India, inflation, deflation, foreign exchange rates, performance of financial markets in India or globally, changes in domestic laws, regulations and taxes, changes in competition in the infrastructure sector, the outcome of any legal or regulatory proceedings and the future impact of new accounting standards. By their nature, certain market risk disclosures are estimates and could differ materially from what actually occurs in the future. As a result, actual future gains, losses or impact on net income could materially differ from those that have been estimated.

Factors that could cause actual results, performance or achievements of the Trust to differ materially include, but are not limited to, those discussed under the sections entitled "*Risk Factors*", "*Industry Overview*", "*Our Business*" and "M*anagement's Discussion and Analysis of Financial Condition and Results of Operations*", on pages 80, 188, 262 and 356, respectively. Some of the factors that could cause the Trust's actual results, performance or achievements to differ materially from those in the forward-looking statements, financial projections and financial information include, but are not limited to, the following:

1. We may not be able to make regular distributions to Unitholders, or the level of our distributions may fall;

2. A significant portion of our revenue from operations is dependent on annuity payments from the NHAI, which may be delayed, disputed or reduced, which could adversely affect our business, results of operations, financial condition and cash flows;

3. Our failure to extend concession agreements or inability to identify and acquire new road assets that generate comparable or higher revenue from operations, profits and cash flows than the Portfolio Assets may have an adverse effect on our business, financial condition, results of operations, cash flows and our ability to make distributions to Unitholders;

4. Our toll collections and traffic volumes are subject to uncertainties, including competing roads, exemptions, toll leakage, changes in vehicle mix, and government directives, which could adversely affect our business, results of operations, financial condition and cash flows; and

5. Our concession agreements may be terminated prematurely or suspended by concessioning authorities upon the occurrence of certain events of default.

The forward-looking statements, including as contained in the Valuation Reports, the Technical Reports and the Traffic Reports reflect current views as of the dates specified therein and are not a guarantee of future performance or returns to Bidders. These statements and projections are based on certain beliefs and assumptions, which in turn are based on currently available information. Although the Investment Manager and the Sponsor believe that the expectations and the assumptions upon which such forward-looking statements are based are reasonable at this time, neither the Investment Manager nor the Sponsor can assure Bidders that such expectations will prove to be correct or accurate.

The Trust, the Investment Manager, the Sponsor, the Selling Unitholders, and the Book Running Lead Managers or any of their associates or affiliates or advisors, undertake no obligation to update or revise any of statements reflecting circumstances arising

after the date hereof or to reflect the occurrence of underlying events, whether as a result of new information, future events or otherwise after the date of this Final Offer Document. If any of these risks and uncertainties materialize, or if any of the Investment Manager's underlying assumptions prove to be incorrect, the actual results of operations or financial condition or cash flow of the Trust could differ materially from that described herein as anticipated, believed, estimated or expected. All subsequent forward-looking statements attributable to the Trust are expressly qualified in their entirety by reference to these cautionary statements. Given these uncertainties, Bidders are cautioned not to place undue reliance on such forward-looking statements and financial projections, and not to regard such statements to be a guarantee or assurance of the Trust's future performance or returns to investors.

THE OFFER

The following is a general summary of the terms of the Offer. This summary should be read in conjunction with, and is qualified in its entirety by, the detailed information appearing elsewhere in this Final Offer Document:

<table>
<tr><td>Offer</td><td>Public offer of the Units of the Trust aggregating to approximately ₹ 50,000 million* comprising an Offer for Sale of 328,947,365* Units by the Selling Unitholders</td></tr>
<tr><td>Less</td><td></td></tr>
<tr><td>Strategic Investor Portion#</td><td>82,236,840 Units* aggregating to approximately ₹ 12,500 million*, subject to a maximum of 25% of the Offer Size</td></tr>
<tr><td>The Offer (excluding Strategic Investor Portion)</td><td>246,710,525 Units* aggregating to approximately ₹ 37,500 million*</td></tr>
<tr><td>Of which</td><td></td></tr>
<tr><td>Institutional Investor Portion (not more than 75% of the Offer Size (excluding Strategic Investor Portion))</td><td>185,032,893 Units*</td></tr>
<tr><td>Non-Institutional Investor Portion (not less than 25% of the Offer Size (excluding Strategic Investor Portion))</td><td>61,677,632 Units*</td></tr>
<tr><td>Floor Price</td><td>₹ 151</td></tr>
<tr><td>Cap Price</td><td>₹ 152</td></tr>
<tr><td>Offer Price</td><td>₹ 152</td></tr>
<tr><td>Face Value</td><td>Not Applicable</td></tr>
<tr><td>Minimum Bid Size</td><td>Minimum of 95 Units and in multiples of 95 Units thereafter by Bidders (other than Anchor Investors and Strategic Investors)</td></tr>
<tr><td>Bid/ Offer Opening Date***</td><td>Wednesday, July 22, 2026</td></tr>
<tr><td>Bid/ Offer Closing Date</td><td>Friday, July 24, 2026</td></tr>
<tr><td>Sponsor</td><td>Cube Highways and Infrastructure V Pte. Ltd.</td></tr>
<tr><td>Trustee</td><td>Axis Trustee Services Limited</td></tr>
<tr><td>Investment Manager</td><td>Cube Highways Fund Advisors Private Limited</td></tr>
<tr><td>Project Manager</td><td>Cube Highways Asset & Project Advisory Private Limited</td></tr>
<tr><td>Authority for this Offer</td><td>This Offer was authorised and approved by the IM Board on January 30, 2026, and was approved by the Unitholders on February 20, 2026.

Further, the Selling Unitholders have severally authorized their respective participation in the Offer for Sale to the extent of their respective portion of the Offered Units, pursuant to the consent letters as set out below:
<table>
<tr><th>Name of the Selling Unitholder</th><th>Number of Offered Units and amount raised pursuant to the Offer ****</th><th>Date of consent letter</th><th>Date of corporate action / board resolution</th></tr>
<tr><td>BCI IRR India Holdings Inc.</td><td>52,073,815 Units*, aggregating to ₹ 7,915.22 million</td><td>July 6, 2026</td><td>July 3, 2026</td></tr>
<tr><td>BCI IRR India Holdings Limited Partnership</td><td>1,335,197 Units*, aggregating to ₹ 202.95 million</td><td>July 6, 2026</td><td>July 3, 2026</td></tr>
<tr><td>Cube Highways and Infrastructure II Pte. Ltd.</td><td>103,443,815 Units*, aggregating to ₹ 15,723.46 million</td><td>July 6, 2026</td><td>March 17, 2026</td></tr>
<tr><td>Cube Highways and Infrastructure III Pte. Ltd.</td><td>50,658,881 Units*, aggregating to ₹ 7,700.15 million</td><td>July 6, 2026</td><td>March 17, 2026</td></tr>
<tr><td>Cube Mobility Investments Pte. Ltd.</td><td>85,766,973 Units*, aggregating to ₹ 13,036.58 million</td><td>July 6, 2026</td><td>March 17, 2026</td></tr>
<tr><td>Seventy Second Investment Company LLC</td><td>35,668,684 Units*, aggregating to ₹ 5,421.64 million</td><td>July 6, 2026</td><td>July 6, 2026</td></tr>
</table></td></tr>
<tr><td>Tenure of the Trust</td><td>The Trust shall remain in force perpetually until it is dissolved or terminated in accordance with the Trust Deed. For details, please see the section entitled "Parties to the Trust" on page 134.</td></tr>
<tr><td>Units issued and outstanding as of the date of this Final Offer Document</td><td>1,344,069,762 Units</td></tr>
<tr><td>Sponsor and Sponsor Group Units as on the date of this Final Offer Document</td><td>490,381,123 Units, as on the date of this Final Offer Document

The Units held by the Sponsor Group rank pari passu with, and have the same rights as, the Units to be Allotted pursuant to this Offer.</td></tr>
</table>

Distribution	Please see the section entitled "*Distribution*" on page 352.
Indian Taxation	Please see the section entitled "*Statement of Possible Direct Tax Benefits"* on page 456.
Use of Proceeds	The Offer is limited to an Offer for Sale. For details, please see the section entitled "*Use of Proceeds*" on page 335.
Listing and timelines for listing	The existing Units of the Trust are listed on BSE and NSE. In-principle approval for listing of the Units offered pursuant to this Offer has been received from both NSE and BSE on May 7, 2026. The Investment Manager shall apply to the Stock Exchange for the final listing and trading approvals after the Allotment and the credit of the Units to the demat accounts of the Allottees.
Designated Stock Exchange	BSE
Commitment received from Strategic Investors	Please see the "*Strategic Investor Portion*" above
Closing Date	The date on which Allotment of the Units pursuant to this Offer shall be made, i.e. on or about Thursday, July 30, 2026.
Ranking	The Units being offered shall rank *pari passu* in all respects, including rights in respect of distribution. Please see the section entitled *"Rights of Unitholders"* on page 426.
Alteration of terms of the Offer	In case of any alteration of the terms of the Units, including the terms of the Offer, which may adversely affect the interest of the Unitholders, an approval from the Unitholders shall be required where the votes cast in favor of the resolution should be more than 60% of the total votes cast for the resolution.
Lock-in and Rights of Unitholders	For details, please see the sections entitled "*Information Concerning the Units*" and "*Rights of Unitholders*" on pages 332 and 426, respectively.
Risk Factors	Prior to making an investment decision, Bidders should carefully consider the matters discussed in the section entitled *"Risk Factors"* on page 80.
ISIN	INE0NR623014
Date of Strategic Investor Unit Subscription Agreements	July 13, 2026
Strategic Investor Allocation Price	₹152 per Unit
Total number of Units subscribed/ total subscription amount by Strategic Investors	82,236,840 Units aggregating to approximately ₹12,500 million

* *Subject to finalisation of Basis of Allotment of Units in the Offer.*

*** *The Anchor Investor Bidding Date was one Working Day prior to the Bid/Offer Opening Date.*

**** *With respect to the Units offered by the Selling Unitholders in the Offer for Sale, the Selling Unitholders have held Units for a period of at least one year immediately preceding the date of the Draft Offer Document and are free from any encumbrance or lock-in on the date of the Draft Offer Document.*

\# *This Offer included the participation of the Strategic Investors. Each Strategic Investor proposing to invest in the Offer has entered into a Strategic Investor Unit Subscription Agreement with the Investment Manager (on behalf of the Trust) prior to filing of the Offer Document with SEBI and the Stock Exchange(s).*

Strategic Investor	Number of Units Subscribed*	Subscription Amount (in ₹ million)
Prazim Trading And Investment Company Private Limited	62,500,000	9,500
HDFC Life Insurance Company Limited	6,578,947	1,000
HDFC Pension Fund Management Limited	6,578,947	1,000
Axis Max Life Insurance Limited	3,289,473	500
WhiteOak Capital REIT & InvIT Alternatives Fund I	3,289,473	500
Total	**82,236,840**	**12,500**

* *Subject to finalisation of Basis of Allotment of Units in the Offer.*

The Offer was a public Offer of Units under Regulation 14(4) of the InvIT Regulations read with Chapter 14 of the InvIT Master Circular and consisted of the Offer for Sale.

In accordance with the InvIT Regulations and Trust Deed, none of the Unitholders currently enjoy superior voting or any other rights over another Unitholder. Further, there shall not be multiple classes of Units. However, Unitholder(s) holding 10% or more of the total outstanding units of the Trust, either individually or collectively shall have the right, but not the obligation, to nominate any person for appointment as a unitholder nominee director (non-independent director) on the board of directors of the Investment Manager in accordance with the InvIT Regulations read with the InvIT Master Circular. Please refer to the section entitled "*Corporate Governance"* on page 171 for more information on such rights.

As the Offer is an Offer for Sale of Units by the Selling Unitholders, the Trust will not receive any proceeds from the Offer.

Selling Unitholders, other than our Sponsor, its Related Parties and its Associates, who have offered Units towards the Offer were not eligible to participate in the Offer.

No person connected with the Offer, including any person connected with the distribution of this Final Offer Document, shall offer any incentive, whether direct or indirect, in any manner, whether in cash or kind or services or otherwise, to any person for making an application for Allotment of the Units pursuant to the Offer, except for any fees or commission for services

rendered in relation to the Offer. For further details in relation to this Offer, including the method of application, please see the section entitled "*Offer Information*" on page 433.

The Offer was made through the Book Building Process, wherein not more than 75% of the Offer Size (excluding the Strategic Investor Portion) was made available for allocation to Institutional Investors on a proportionate basis, provided that the Investment Manager, in consultation with the Book Running Lead Managers, allocated up to 60% of the Institutional Investor Portion to Anchor Investors on a discretionary basis in accordance with the InvIT Regulations and InvIT Master Circular. Further, not less than 25% of the Offer Size (excluding the Strategic Investor Portion) was made available for allocation on a proportionate basis to Non-Institutional Investors, subject to the receipt of valid Bids at or above the Offer Price.

Allocation in all categories, except the Anchor Investor Portion and the Strategic Investor Portion, if any, was made on a proportionate basis. In the event of under-subscription in any category, the unsubscribed portion in that category may be allotted to investors in the other category at the discretion of the Investment Manager, in consultation with the Book Running Lead Managers and the Designated Stock Exchange.

The maximum subscription from any investor, other than the Sponsor, its related parties and its associates, taken together with Units held by them and persons acting in concert with them in the Trust, was not more than 25% of the total post-Offer unit capital of the Trust.

There shall be only one denomination of Units at any given time. The Investment Manager shall comply with the disclosure and accounting norms specified by SEBI from time to time.

The Units, on Allotment, shall be traded only in the dematerialized segment of the Stock Exchanges.

For further details in relation to this Offer, including the method of application, please see "*Offer Information*" on page 433.

OVERVIEW OF THE TRUST

The following overview is qualified in its entirety by, and is subject to, the more detailed information contained in, or referred to elsewhere, in this Final Offer Document. The statements contained in this summary that are not historical facts may be forward-looking statements. Such statements are subject to certain risks, uncertainties and assumptions that could cause actual results of the Trust to differ materially from those forecasted or projected in this Final Offer Document. Under no circumstances should the inclusion of such information herein be regarded as a representation, warranty or prediction of the accuracy of the underlying assumptions by the Trust, the Parties to the Trust or the Book Running Lead Managers or any other person or that these results will be achieved or are likely to be achieved. Investment in Units pursuant to the Offer involves risks. Bidders are advised not to rely solely on this overview, however, and should read this Final Offer Document in its entirety and in particular, the section entitled "Risk Factors" on page 80.

Structure and description of the Trust

The Settlor set up the Trust by way of the Original Trust Deed dated December 7, 2021, as a contributory irrevocable trust under the provisions of the Indian Trusts Act, 1882 at New Delhi, India such that all assets and properties of the Trust are held by the Trustee for the benefit of Unitholders subject to provisions of the Trust Deed and InvIT Regulations. The Trust was registered as an infrastructure investment trust under the InvIT Regulations on April 5, 2022, having registration number IN/InvIT/22-23/0022. The Original Trust Deed was amended and restated by a trust deed dated July 8, 2022, which was subsequently further amended and restated by the Trust Deed dated March 11, 2024. The units of the Trust were initially listed on Stock Exchanges pursuant to a private placement of Units since April 19, 2023. For details of the registered office and contact person of the Settlor, please see the section entitled "*General Information*" on page 124.

Pursuant to the resolution dated January 30, 2026 passed by the board of directors of Cube Highways Fund Advisors Private Limited acting in its capacity as the investment manager of the Trust, the subsequent resolution dated February 19, 2026, passed by the Unitholders of the Trust, the deed of adherence to the Trust Deed dated February 20, 2026 and in accordance with the InvIT Regulations, CH-I and CH-III were declassified as the sponsors of the Trust and, CH-V was inducted as the new sponsor of the Trust. For more details regarding the Sponsor please see the section entitled "*Parties to Trust*" on page 134.

Further, Cube Highways Fund Advisors Private Limited is the Investment Manager of the Trust, Cube Highways Asset & Project Advisory Private Limited* is the Project Manager to the Trust and Erstwhile Project Manager is the settlor of the Trust. For further details, please see the section entitled "*Parties to the Trust*" on page 134.

* *Cube Highways Asset & Project Advisory Private Limited has been appointed as the project manager of the Trust with effect from June 26, 2026, replacing the Erstwhile Project Manager whose engagement continued up to June 25, 2026.*

Investment Objectives

The objective of the Trust is to carry on the activities of, and to make investments as, an infrastructure investment trust, as permissible under the InvIT Regulations, and in accordance with the InvIT Documents, to the extent applicable. The investment of the Trust shall be in any manner permissible under, and in accordance with, the InvIT Documents, the InvIT Regulations and applicable law, the investment strategy, and as detailed in the Trust Deed, this Final Offer Document and the InvIT Documents, to the extent applicable, including in eligible infrastructure projects either directly or through SPVs or Holding Company(ies) or securities of Indian companies related to the infrastructure sector or government securities or money market instruments, liquid mutual funds or cash equivalents (the "**Investment Objectives**").

The Trustee shall ensure that the capital contribution shall be utilized solely for the purposes of making investments as stated above, in accordance with the InvIT Regulations and applicable law and shall not be utilized for any activities prohibited under the InvIT Regulations. Further, the Trustee shall ensure that the Trust complies with any additional conditions as may be specified by SEBI or applicable law.

Investments by the Trust shall be in compliance with the provisions of the InvIT Regulations and unless specifically provided under applicable law, the Trust shall not carry out any other principal activity or trade, in contradiction of the restrictions and requirements under applicable law. The Trust, through the Investment Manager, shall do all things necessary and conducive to the attainment of the Investment Objectives, directly or through agents or other delegates (including the Investment Manager and the Project Manager), subject to the provisions of the InvIT Regulations and any other applicable law.

The Trustee, on the advice of the Investment Manager, may, if it deems expedient, from time to time, review, revise, amend, vary or alter the Investment Objectives in accordance with the Trust Deed, subject to the provisions of the InvIT Documents, the InvIT Regulations and any other applicable law.

Fee and expenses

Annual Expenses

The expenses in relation to the Trust, other than such expenses incurred in relation to operations of the Portfolio Assets, would broadly include fee payable to: (i) the Trustee; (ii) the Investment Manager; (iii) the Project Manager; (iv) the Auditors, (v) the Valuer; and (vi) other intermediaries and consultants.

The estimated recurring expenses on an annual basis (exclusive of out-of-pocket expenses, and escalations) on a consolidated basis are as follows:

In ₹

Payable by the Trust	Estimated Expenses*
Fee payable to the Valuer	Please see Note 1
Fee payable to Trustee	Please see Note 2
Fee payable to Investment Manager	Please see Note 3
Fee payable to Project Manager	Please see Note 4
Fee payable to the Statutory Auditors	Please see Note 5
Fee payable to the Technical Consultants	28,320,000
Fee payable to the traffic consultants	24,426,000
Fee payable to Stock Exchange and Depositories	6,521,415**
Fee payable to Registrar	303,260**
Fee payable to Credit Rating Agencies	49,581,225**

* The fee and expenses are inclusive of GST. For details with respect to actual expenses incurred by the Trust for the periods ended March 31, 2026, March 31, 2025, and March 31, 2024, please refer to Audited Consolidated Financial Statements.

** The engagement is not structured on an annual basis. The fees and expenses disclosed herein are computed with reference to the financial year ending March 31, 2026.

Note 1:

The Valuer shall be entitled to a fee of ₹ 13,370,599 including out of pocket expenses incurred in connection with the performance of the services, and an administrative surcharge, to be calculated as 10 % of the out-of-pocket expenses.

Note 2:

The Trustee shall be entitled to a fee of ₹ 2,950,000 (the "**Trusteeship Fee**"), which shall be paid annually to the Trustee for the services rendered to the Trust. In addition, the Trustee shall be entitled to recover from the Trust any (i) any legitimate out of pocket expenses incurred by it in relation to its trusteeship of the Trust, and (ii) any tax or duty including GST (other than income tax) which is, or has become as on the date of collection of such tax or duty, leviable under the applicable law on the fee payable to the Trustee by the Trust, in accordance with the terms of engagement of the Trustee.

Note 3:

The Investment Manager shall be entitled to a fee from the funds of the Trust, on an arm's length basis, in accordance with the Investment Management Agreement ("**Management Fee**"). The Management Fee shall be calculated annually and shall be the higher of:

(a) 0.75% of the revenue of the Portfolio Assets ("**Fee Percentage**"); or

(b) ₹ 190 million ("**Minimum Threshold**") subject to an escalation of 7% per annum from April 1, 2023, onwards.

The Investment Manager shall raise invoices on a monthly basis in Indian Rupees. All the invoices raised by the Investment Manager to the Trustee (on behalf of the Trust) will be at an arm's length price. Each such invoice shall be raised within 30 (thirty) days from the close of every month and payable within 30 (thirty) days upon receipt thereof.

The Investment Manager may charge a delay interest at the rate of 12% per annum in case of failure of the Trustee (on behalf of the Trust) to make the payment within the time mentioned above, and such interest shall be payable for the period of delay. All payments to the Investment Manager shall be made in cash to the bank account provided in writing by the Investment Manager to the other Parties.

In addition, the Investment Manager shall be entitled to recover from the Trust any tax or duty or levies, including goods and services tax (other than income tax), which is, or may become, leviable under applicable law on the Management Fee. The Trust will be entitled to deduct or withhold applicable tax at source on the Management Fee, in accordance with the tax regulations applicable in India at the time of payment of the Management Fee. Any change in the Management Fee will be subject to approval of the Unitholders, as required under the InvIT Regulations and applicable law.

Note 4:

The Project Manager shall be entitled to a fee from the funds of the Portfolio Assets, on an arm's length basis in accordance with the Project Implementation and Management Agreement ("**PM Fee**"). The PM Fee shall be paid by each Portfolio Assets, from their respective funds. The PM Fee shall be calculated annually and shall be the higher of:

(a). 1.55 % of the standalone revenue of the relevant portfolio Asset based on the audited financial statements of such asset; or

(b). during the term of the relevant Concession Agreement for each portfolio asset, the following amounts in relation to the relevant assets ("**Minimum Threshold**") as set out in the Project Implementation and Management Agreement subject to an escalation of 7% per annum which shall be calculated basis financial years starting from April 1, 2023.

Sr. No.	Name	Minimum Threshold Amount (*in ₹ million*)
Portfolio Assets		
1.	APEPL	14.90
2.	DATRPL	114.70
3.	FRHPL	32.00
4.	GAEPL	15.10
5.	HTPL	12.30
6.	JMTPL	26.60
7.	JLTPL	10.60
8.	JVTPL	7.40
9.	KETPL	7.20
10.	KMTPL	14.30
11.	LRTPL	10.80
12.	MKTPL	12.10
13.	MBEL	12.30
14.	NKTPL	7.50
15.	NDEPL	11.60
16.	SMTPL	7.00
17.	WVEPL	10.40
18.	WUPTPL**	*
19.	BWHPL	11.30
20.	MSHPL	12.10
21.	SPPL	11.50
22.	SIPL	13.20
23.	THPL	17.00
24.	MHPL	10.60
25.	JUHPL	*
26.	QEPL	*
27.	NAMEPL	15.10

* *Not presently applicable for this asset*

** *The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. The Investment Manager shall fulfil its obligations in respect of WUPTPL in accordance with the SEBI circular dated May 15, 2026, bearing the reference number SEBI/HO/DDHS/DDHS-PoD-2/I/11698/2026, read with the InvIT Regulations, as amended.*

The payments of PM Fee shall be subject to applicable tax deduction, as may be required as per applicable law. The PM Fee shall be exclusive of GST, which shall be paid to the account of the relevant Portfolio Assets. The Project Manager may charge delay interest at the rate of 12% in case of failure to make payments by the project SPV within the agreed timelines in accordance with the provisions of the Project Implementation and Management Agreement.

Note 5:

The Auditor shall be entitled to a fee of ₹ 35.40 million as the statutory auditors of the Trust. The above fees exclude fees paid to S.B. Billimoria & Co. LLP as statutory auditors of the SPVs and the Investment Manager, one-time costs, certification costs and other similar expenses. The above amount includes only the fees payable to S.B. Billimoria & Co. LLP in its capacity as statutory auditor of the Trust. The fees are dependent on the number of entities under consolidation and the agreed scope of work and may therefore be subject to change.

Set-up expenses

In connection with the establishment and registration of the Trust, the Investment Manager has incurred expenses of ₹ 1.70 million.

Offer Expenses

The total expenses of this Offer are estimated to be ₹ 1,025.34 million. For details in relation to the Offer Expenses, please see "*Use of Proceeds – Offer Expenses*" on page 335.

Details of credit ratings

Please see the section entitled "*General Information – Credit ratings*" on page 130 in relation to the details of credit ratings.

DESCRIPTION OF THE PORTFOLIO ASSETS

Details of arrangements pertaining to the Trust

The Trust's portfolio of assets comprises of the Portfolio Assets, namely: (i) Andhra Pradesh Expressway Private Limited; (ii) Borgaon Watambare Highways Private Limited; (iii) DA Toll Road Private Limited; (iv) Farakka-Raiganj Highways Private Limited; (v) Ghaziabad Aligarh Expressway Private Limited; (vi) Hazaribagh Tollway Private Limited; (vii) Jaipur-Mahua Tollway Private Limited; (viii) Jammu Udhampur Highway Private Limited; (ix) Jhansi-Lalitpur Tollway Private Limited; (x) Jhansi-Vigakhet Tollway Private Limited; (xi) Kanyakumari–Etturavattam Tollway Private Limited; (xii) Kotwa–Muzaffarpur Tollway Private Limited; (xiii) Lucknow–Raebareli Tollway Private Limited; (xiv) Madurai-Kanyakumari Tollway Private Limited; (xv) Mahua Bharatpur Expressways Limited; (xvi) Mangalwedha-Solapur Highways Private Limited; (xvii) Mangloor Highways Private Limited; (xviii) N.A.M. Expressway Private Limited; (xix) Nanguneri-Kanyakumari Tollway Private Limited; (xx) Nelamangala Devihalli Expressway Private Limited; (xxi) Quazigund Expressway Private Limited; (xxii) Salaipudhur-Madurai Tollway Private Limited; (xxiii) Shankarampet Projects Private Limited; (xxiv) Srirangam Infra Private Limited; (xxv) Tirumala Highways Private Limited; (xxvi) Walayar Vadakkencherry Expressways Private Limited; and (xxvii) Western UP Tollway Private Limited;

The details of the Portfolio Assets as of the date of this Final Offer Document are provided below:

1. ***Andhra Pradesh Expressway Private Limited ("APEPL")***

Andhra Pradesh Expressway Private Limited is a private company incorporated on November 11, 2005, under the Companies Act, 1956 (CIN: U63031DL2005PTC349200). APEPL was originally incorporated as "*Andhra Pradesh Expressway Limited*" a public limited company. Subsequently, it converted into a private limited company, and a fresh certificate of incorporation dated April 2, 2025, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of APEPL is ₹ 3,000,000,000 (divided into 50,000,000 equity shares of ₹ 10 each and 250,000,000 preference shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 119,000,600 (divided into 11,900,060 equity shares of ₹ 10 each), as at the date of this Final Offer Document. No preference shares have been issued by APEPL as at the date of this Final Offer Document. The shareholding pattern of APEPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	11,900,059	99.99
2.	Sandeep Lakhanpal*	1	Negligible
Total		**11,900,060**	**100.00**

* *Nominee shareholder of the Trust.*

2. ***DA Toll Road Private Limited ("DATRPL")***

DA Toll Road Private Limited is a private limited company incorporated on May 26, 2010, under the Companies Act, 1956 (CIN: U45203DL2010PTC430141). Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of DATRPL is ₹ 100,000,000 (divided into 10,000,000 equity shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 90,180,000 (divided into 9,018,000 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of DATRPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	9,017,999	99.99
2.	Sandeep Lakhanpal*	1	Negligible
Total		**9,018,000**	**100.00**

* *Nominee shareholder of the Trust.*

3. ***Borgaon Watambare Highways Private Limited ("BWHPL")***

Borgaon Watambare Highways Private Limited is a private limited company incorporated on April 11, 2018, under the Companies Act, 2013 (CIN: U45203DL2018PTC447846). BWHPL was originally incorporated with the name DBL Borgaon Watambare Highways Private Limited, thereafter its name was changed to BWHPL. Consequently, a fresh certificate of incorporation dated August 22, 2022, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of BWHPL is ₹ 2,500,000 (divided into 250,000 equity shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 2,259,560 (divided into 225,956 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of BWHPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	225,955	99.99
2.	Abhijit Saukhyashil Sathe*	1	Negligible
Total		**225,956**	**100.00**

* *Nominee shareholder of the Trust.*

4. ***Mangalwedha Solapur Highways Private Limited ("MSHPL")***

Mangalwedha Solapur Highways Private Limited is a private limited company incorporated on April 11, 2018, under the Companies Act, 2013, (CIN: U45309DL2018PTC447504). MSHPL was originally incorporated with the name DBL Mangalwedha Solapur Highways Private Limited, thereafter its name was changed to MSHPL. Consequently, a fresh certificate of incorporation dated October 12, 2022, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of MSHPL is ₹ 2,500,000 (divided into 250,000 equity shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 1,918,740 (divided into 191,874 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of MSHPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	191,873	99.99
2.	Abhijit Saukhyashil Sathe*	1	Negligible
Total		**191,874**	**100.00**

* *Nominee shareholder of the Trust.*

5. ***Farakka Raiganj Highways Private Limited ("FRHPL")***

Farakka Raiganj Highways Private Limited is a private limited company incorporated on March 11, 2010, under the Companies Act, 1956 (CIN: U45400DL2010PTC428360). FRHPL was originally incorporated as "*Farakka Raiganj Highways Limited*" a public limited company. Subsequently, it converted into a private limited company, and a fresh certificate of incorporation dated September 24, 2024, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of FRHPL is ₹ 2,600,000,000 (divided into 260,000,000 equity shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 2,502,210,000 (divided into 250,221,000 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of FRHPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	250,220,999	99.99
2.	Sandeep Lakhanpal*	1	Negligible
Total		**250,221,000**	**100.00**

* *Nominee shareholder of the Trust.*

6. ***Ghaziabad Aligarh Expressway Private Limited ("GAEPL")***

Ghaziabad Aligarh Expressway Private Limited is a private limited company incorporated on December 18, 2009, under the Companies Act, 1956 (CIN: U70101DL2009PTC197148). Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of GAEPL is ₹ 1,940,000,000 (divided into 194,000,000 equity shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 1,940,000,000 (divided into 194,000,000 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of GAEPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	193,999,999	99.99
2.	Vinay C Sekar *	1	Negligible
Total		**194,000,000**	**100.00**

* *Nominee shareholder of the Trust.*

7. ***Hazaribagh Tollway Private Limited ("HTPL")***

Hazaribagh Tollway Private Limited is a private limited company incorporated on December 13, 2019, under the Companies Act, 2013 (CIN: U45500DL2019FTC358748). HTPL was originally incorporated as "*Hazaribagh Tollway Limited*" a public limited company. Subsequently, it converted into a private limited company, and a fresh certificate of incorporation dated December 5, 2023, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of HTPL is ₹ 90,000,000 (divided into 9,000,000 equity shares of ₹ 10 each), and its issued, subscribed and paid-up capital is ₹ 45,050,000 (divided into 4,505,000 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of HTPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	4,504,999	99.99
2.	Vinay C. Sekar*	1	Negligible
Total		**4,505,000**	**100.00**

* *Nominee shareholder of the Trust.*

8. ***Jhansi– Lalitpur Tollway Private Limited ("JLTPL")***

Jhansi-Lalitpur Tollway Private Limited is a private limited company incorporated on December 17, 2019, under the Companies Act, 2013 (CIN: U45100DL2019FTC358903). JLTPL was originally incorporated as "*Jhansi-Lalitpur*

Tollway Limited" a public limited company. Subsequently, it converted into a private limited company, and a fresh certificate of incorporation dated December 5, 2023, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of JLTPL is ₹ 45,000,000 (divided into 4,500,000 equity shares of ₹ 10 each), and its issued, subscribed and paid-up capital is ₹ 22,185,000 (divided into 2,218,500 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of JLTPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	2,218,499	99.99
2.	Vinay C Sekar*	1	Negligible
Total		**2,218,500**	**100.00**

* *Nominee shareholder of the Trust.*

9. *Jaipur-Mahua Tollway Private Limited ("JMTPL")*

Jaipur-Mahua Tollway Private Limited is a private limited company incorporated on March 18, 2005, under the Companies Act, 1956 (CIN: U45200DL2005PTC288617). JMTPL was originally incorporated as "*Jaipur-Mahua Tollway Private Limited*" a private limited company. Thereafter, it converted into a public limited company, "*Jaipur-Mahua Tollway Limited"*, and a new certificate of incorporation dated April 13, 2008, was issued. Subsequently, it converted into a private company, JMTPL, and a fresh certificate of incorporation dated December 5, 2023, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of JMTPL is ₹ 1,955,000,000 (divided into 195,500,000 equity shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 1,310,510,260 (divided into 131,051,026 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of JMTPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	131,051,025	99.99
2.	Vinay C. Sekar*	1	Negligible
Total		**131,051,026**	**100.00**

* *Nominee shareholder of the Trust.*

10. *Jhansi-Vigakhet Tollway Private Limited ("JVTPL")*

Jhansi-Vigakhet Tollway Private Limited is a private limited company incorporated on December 13, 2019, under the Companies Act, 2013 (CIN: U45309DL2019FTC358750). JVTPL was originally incorporated as "*Jhansi-Vigakhet Tollway Limited*" a public limited company. Subsequently, it converted into a private limited company, and a fresh certificate of incorporation dated December 2, 2023, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of JVTPL is ₹ 30,000,000 (divided into 3,000,000 equity shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 14,520,000 (divided into 1,452,000 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of JVTPL at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	1,451,999	99.99
2.	Vinay C. Sekar*	1	Negligible
Total		**1,452,000**	**100.00**

* *Nominee shareholder of the Trust.*

11. *Kanyakumari-Etturavattam Tollway Private Limited ("KETPL")*

Kanyakumari-Etturavattam Tollway Private Limited is a private limited company incorporated on December 13, 2019, under the Companies Act, 2013 (CIN: U45209DL2019FTC358745). KETPL was originally incorporated as "*Kanyakumari-Etturavattam Tollway Limited*" a public limited company. Subsequently, it converted into a private limited company, and a fresh certificate of incorporation dated December 5, 2023, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of KETPL is ₹ 75,000,000 (divided into 7,500,000 equity shares of ₹ 10 each), and its issued, subscribed and paid-up capital is ₹ 36,405,000 (divided into 3,640,500 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of KETPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	3,640,499	99.99
2.	Vinay C. Sekar*	1	Negligible
Total		**3,640,500**	**100.00**

* *Nominee shareholder of the Trust.*

12. *Shankarampet Projects Private Limited ("SPPL")*

Shankarampet Projects Private Limited is a private limited company incorporated on April 12, 2018, under the Companies Act, 2013, (CIN: U45309DL2018PTC457549). SPPL was originally incorporated with the name KNR

Shankarampet Projects Private Limited, thereafter its name has been changed to SPPL. Consequently, a fresh certificate of incorporation dated November 8, 2024, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of SPPL is ₹ 521,200,000 (divided into 521,200 equity shares of ₹ 1,000 each), and its issued, subscribed and paid-up capital is ₹ 521,150,000 (divided into 521,150 equity shares of ₹ 1,000 each), as at the date of this Final Offer Document. The shareholding pattern of SPPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	521,149	99.99
2.	Abhijit Saukhyashil Sathe*	1	Negligible
Total		**521,150**	**100.00**

* *Nominee shareholder of the Trust.*

13. ***Srirangam Infra Private Limited ("SIPL")***

Srirangam Infra Private Limited is a private limited company incorporated on March 19, 2018, under the Companies Act, 2013 (CIN: U45209DL2018PTC457231). SIPL was originally incorporated with the name KNR Srirangam Infra Private Limited, thereafter its name was changed to SIPL. Consequently, a fresh certificate of incorporation dated November 8, 2024, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of SIPL is ₹ 481,150,000 (divided into 481,150 equity shares of ₹ 1,000 each), and its issued, subscribed and paid-up capital is ₹ 481,150,000 (divided into 481,150 equity shares of ₹ 1,000 each), as at the date of this Final Offer Document. The shareholding pattern of SIPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	481,149	99.99
2.	Abhijit Saukhyashil Sathe*	1	Negligible
Total		**481,150**	**100.00**

* *Nominee shareholder of the Trust.*

14. ***Tirumala Highways Private Limited ("THPL")***

Tirumala Highways Private Limited is a private limited company incorporated on April 13, 2018, under the Companies Act, 2013 (CIN: U45500DL2018PTC457230). THPL was originally incorporated with the name KNR Tirumala Infra Private Limited, thereafter its name was changed to THPL. Consequently, a fresh certificate of incorporation dated November 8, 2024, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of THPL is ₹ 716,300,000 (divided into 716,300 equity shares of ₹ 1,000 each), and its issued, subscribed and paid-up capital is ₹ 716,250,000 (divided into 716,250 equity shares of ₹ 1,000 each), as at the date of this Final Offer Document. The shareholding pattern of THPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	716,249	99.99
2.	Abhijit Saukhyashil Sathe*	1	Negligible
Total		**716,250**	**100.00**

* *Nominee shareholder of the Trust.*

15. ***Kotwa Muzaffarpur Tollway Private Limited ("KMTPL")***

Kotwa Muzaffarpur Tollway Private Limited is a private limited company incorporated on December 13, 2019, under the Companies Act, 2013 (CIN: U45100DL2019FTC358749). KMTPL was originally incorporated as "*Kotwa Muzaffarpur Tollway Limited*" a public limited company. Subsequently, it converted into a private limited company, and a fresh certificate of incorporation dated December 5, 2023, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of KMTPL is ₹ 95,000,000 (divided into 9,500,000 equity shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 47,605,000 (divided into 4,760,500 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of KMTPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	4,760,499	99.99
2.	Vinay C. Sekar*	1	Negligible
Total		**4,760,500**	**100.00**

* *Nominee shareholder of the Trust.*

16. ***Lucknow Raebareli Tollway Private Limited ("LRTPL")***

Lucknow Raebareli Tollway Private Limited is a private limited company incorporated on December 13, 2019, under the Companies Act, 2013 (CIN: U45209DL2019FTC358746). LRTPL was originally incorporated as "Lucknow Raebareli Tollway Limited" a public limited company. Subsequently, it converted into a private limited company, and a fresh certificate of incorporation dated December 12, 2023, was issued. Its registered office is located at B-376,

Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of LRTPL is ₹ 55,000,000 (divided into 5,500,000 equity shares of ₹ 10 each), and its issued, subscribed and paid-up capital is ₹ 27,010,000 (divided into 2,701,000 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of LRTPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	2,700,999	99.99
2.	Vinay C. Sekar*	1	Negligible
Total		**2,701,000**	**100.00**

* *Nominee shareholder of the Trust.*

17. ***Mahua Bharatpur Expressways Limited ("MBEL")***

Mahua Bharatpur Expressways Limited is a public company incorporated on March 23, 2005, under the Companies Act, 1956 (CIN: U45203DL2005PLC329746). MBEL was originally incorporated with the name "Madhucon Agra-Jaipur Expressways Limited" thereafter its name was changed to MBEL. Consequently, a fresh certificate of incorporation dated February 18, 2017, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of MBEL is ₹ 1,000,000,000 (divided into 100,000,000 equity shares of ₹ 10 each), and its issued, subscribed and paid-up capital is ₹ 993,600,000 (divided into 99,360,000 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of MBEL as at the date of this Final Offer Document is provided below. MBEL has issued certain non-convertible debentures for more details please see section entitled "*Financial Indebtedness and Deferred - Payments - Principal terms of the non-convertible debentures issued by MBEL*" on page 342.

Sr. No.	Shareholder's Name**	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	99,333,994	99.97
2.	Madhucon Infra Limited**	26,000	0.03
3.	Pankaj Vasani*	1	Negligible
4.	Abhijit Saukhyashil Sathe*	1	Negligible
5.	Sandeep Lakhanpal*	1	Negligible
6.	Vinay C. Sekar*	1	Negligible
7.	Saurabh Bansal*	1	Negligible
8.	Rohan Sharma*	1	Negligible
Total		**99,360,000**	**100.00**

* *Nominee shareholder of the Trust.*

** *In accordance with Regulation 18(3)(a) of the InvIT Regulations, the Trust (acting through the Trustee), the Trustee, the Investment Manager, CH-I, CH-III, MBEL and Madhucon Infra Limited ("**Madhucon**") have entered into a letter agreement dated November 22, 2022, pursuant to which Madhucon has agreed that it shall not act in any manner that prevent the Trust (acting through the Trustee), the Investment Manager or MBEL from complying with the provisions of applicable law, including the InvIT Regulations.*

18. ***Madurai-Kanyakumari Tollway Private Limited ("MKTPL")***

Madurai–Kanyakumari Tollway Private Limited is a private limited company incorporated on December 13, 2019, under the Companies Act, 2013 (CIN: U45100DL2019FTC358752). MKTPL was originally incorporated as "*Madurai- Kanyakumari Tollway Limited*" a public limited company. Subsequently, it converted into a private limited company, and a fresh certificate of incorporation dated December 5, 2023, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of MKTPL is ₹ 77,500,000 (divided into 7,750,000 equity shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 38,255,000 (divided into 3,825,500 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of MKTPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	3,825,499	99.99
2.	Vinay C. Sekar*	1	Negligible
Total		**3,825,500**	**100.00**

* *Nominee shareholder of the Trust.*

19. ***Mangloor Highways Private Limited ("MHPL")***

Mangloor Highways Private Limited is a private limited company incorporated on April 11, 2018, under the Companies Act, 2013 (CIN: U45309DL2018PTC447486). MHPL was originally incorporated with the name DBL Mangloor Highways Private Limited, thereafter its was changed to MHPL. Consequently, a fresh certificate of incorporation dated April 30, 2025, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of MHPL is ₹ 5,000,000 (divided into 500,000 equity shares of ₹ 10 each and its issued, subscribed and paid-up capital is ₹ 3,574,820 (divided into 357,482 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of MHPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	357,481	99.99

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
2.	Vinay C. Sekar*	1	Negligible
Total		**357,482**	**100.00**

* *Nominee shareholder of the Trust.*

20. ***N.A.M. Expressway Private Limited ("NAMEPL")***

N.A.M. Expressway Private Limited is a private company incorporated on June 15, 2010, under the Companies Act, 1956 (CIN: U45209DL2010PTC362956). NAMEPL was originally incorporated as "*N.A.M. Expressway Limited*" a public limited company. Subsequently, it converted into a private limited company, and a fresh certificate of incorporation dated January 28, 2026, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092, Delhi, India. The authorised capital of NAMEPL is ₹2,335,100,000 (divided into 233,510,000 equity shares of ₹10 each), and its issued, subscribed and paid-up capital is ₹2,335,100,000 (divided into 233,510,000 equity shares of ₹10 each), as at the date of this Final Offer Document. The shareholding pattern of NAMEPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	233,509,998	99.99
2.	Sandeep Lakhanpal*	1	Negligible
3.	Vinay C. Sekar*	1	Negligible
Total		**233,510,000**	**100.00**

* *Nominee shareholder of the Trust.*

21. ***Nelamangala Devihalli Expressway Private Limited ("NDEPL")***

Nelamangala Devihalli Expressway Private Limited is a private limited company incorporated on November 20, 2017, under the Companies Act, 2013 (CIN: U45100DL2017PTC326190). NDEPL was originally incorporated with the name "*Gradient Infra Assets Advisors Private Limited*" thereafter its name was changed to NDEPL. Consequently, a fresh certificate of incorporation dated October 12, 2018, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of NDEPL is ₹100,000,000 (divided into 10,000,000 equity shares of ₹10 each), and its issued, subscribed and paid-up capital is ₹94,829,860 (divided into 9,482,986 equity shares of ₹10 each), as at the date of this Final Offer Document. The shareholding pattern of NDEPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	9,482,985	99.99
2.	Vinay C Sekar*	1	Negligible
Total		**9,482,986**	**100.00**

* *Nominee shareholder of the Trust.*

22. ***Nanguneri Kanyakumari Tollway Private Limited ("NKTPL")***

Nanguneri Kanyakumari Tollway Private Limited is a private limited company incorporated on December 13, 2019, under the Companies Act, 2013 (CIN: U45309DL2019FTC358753). NKTPL was originally incorporated as "*Nanguneri Kanyakumari Tollway Limited*" a public limited company. Subsequently, it converted into a private limited company, and a fresh certificate of incorporation dated December 5, 2023, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of NKTPL is ₹ 99,000,000 (divided into 9,900,000 equity shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 50,185,000 (divided into 5,018,500 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of NKTPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	5,018,499	99.99
2.	Vinay C. Sekar*	1	Negligible
Total		**5,018,500**	**100.00**

* *Nominee shareholder of the Trust.*

23. ***Salaipudhur-Madurai Tollway Private Limited ("SMTPL")***

Salaipudhur Madurai Tollway Private Limited is a private limited company incorporated on December 13, 2019, under the Companies Act, 2013 (CIN: U45309DL2019FTC358747). SMTPL was originally incorporated as "*Salaipudhur Madurai Tollway Limited*" a public limited company. Subsequently, it converted into a private limited company, and a fresh certificate of incorporation dated December 5 2023, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of SMTPL is ₹ 70,000,000 (divided into 7,000,000 equity shares of ₹ 10 each), and its issued, subscribed and paid-up capital is ₹ 33,590,000 (divided into 3,359,000 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of SMTPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	3,358,999	99.99

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
2.	Vinay C. Sekar*	1	Negligible
Total		**3,359,000**	**100.00**

* *Nominee shareholder of the Trust.*

24. ***Western UP Tollway Private Limited ("WUPTPL")***

Western UP Tollway Private Limited is a private limited company incorporated on April 20, 2005, under the Companies Act, 1956 (CIN: U90000DL2005PTC310964). WUPTPL was originally incorporated as "*Western UP Tollway Limited*" a public limited company. Subsequently, it converted into a private limited company, and a fresh certificate of incorporation dated March 4, 2024, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of WUPTPL is ₹ 1,200,000,000 (divided into 120,000,000 equity shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 1,148,752,040 (divided into 114,875,204 equity shares of ₹ 10 each). Further, WUPTPL has made filings with respect to a capital reduction scheme as at the date of this Final Offer Document. The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. The Investment Manager shall fulfil its obligations in respect of WUPTPL in accordance with the SEBI circular dated May 15, 2026, bearing the reference number SEBI/HO/DDHS/DDHS-PoD-2/I/11698/2026, read with the InvIT Regulations, as amended. The shareholding pattern of WUPTPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	114,875,203	99.99
2.	Vinay C. Sekar*	1	Negligible
Total		**114,875,204**	**100.00**

* *Nominee shareholder of the Trust.*

25. ***Walayar Vadakkencherry Expressways Private Limited ("WVEPL")***

Walayar Vadakkencherry Expressways Private Limited is a private limited company incorporated on August 16, 2012, under the Companies Act, 1956 (CIN: U45209DL2012PTC423717). Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of WVEPL is ₹ 9,000,000 (divided into 900,000 equity shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 9,000,000 (divided into 900,000 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of WVEPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	899,999	99.99
2.	Sandeep Lakhanpal*	1	Negligible
Total		**900,000**	**100.00**

* *Nominee shareholder of the Trust.*

26. ***Jammu Udhampur Highway Private Limited ("JUHPL")***

Jammu Udhampur Highway Private Limited is a private limited company incorporated on June 25, 2010, under the Companies Act, 1956 (CIN: U45400DL2010PTC204746). JUHPL was originally incorporated with the name "SP Jammu Udhampur Highway Private Limited" thereafter its name was changed to Athaang Jammu Udhampur Highway Limited on August 25, 2022, and thereafter its name was changed to JUHPL, consequently a fresh certificate of incorporation dated December 18, 2025, was issued. Its registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi, India 110092. The authorised capital of JUHPL is ₹ 120,000,000 (divided into 12,000,000 equity shares of ₹ 10 each), and its issued, subscribed and paid-up capital is ₹ 79,143,620 (divided into 7,914,362 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of JUHPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	7,914,361	99.99
2.	Vinay C. Sekar*	1	Negligible
Total		**7,914,362**	**100**

* *Nominee shareholder of the Trust.*

27. ***Quazigund Expressway Private Limited ("QEPL")***

Quazigund Expressway Private Limited is a private limited company incorporated on May 21, 2010, under the Companies Act, 1956 (CIN: U45203TG2010PTC068532. QEPL was originally incorporated with the name "Navayuga Quazigund Expressway Private Limited" thereafter its was changed to QEPL. Consequently, a fresh certificate of incorporation dated May 04, 2023, was issued. Its registered office is located at (3rd Floor, GMR Aero Towers - 2, Mamidipally Village, Saroor Nagar Mandal, Rangareddy, Hyderabad, Telangana,) India, 500108**. The authorised capital of QEPL is ₹ 161,150,000 (divided into 16,115,000 equity shares of ₹ 10 each) and its issued, subscribed and paid-up capital is ₹ 126,605,860 (divided into 12,660,586 equity shares of ₹ 10 each), as at the date of this Final Offer Document. The shareholding pattern of QEPL as at the date of this Final Offer Document is provided below:

Sr. No.	Shareholder's Name	No. of equity shares	Percentage (%)
1.	Cube Highways Trust	12,660,585	99.99
2.	Vinay C. Sekar*	1	Negligible
Total		**12,660,586**	**100.00**

* *Nominee shareholder of the Trust.*

** *Application for change of address has been filed with relevant authorities.*

Please note that 100% of the equity shares of the Portfolio Assets held by the Trust have been pledged. For more details regarding borrowings of the Trust please see section entitled "*Financial Indebtedness and Deferred Payments*" on page 337.

Share Purchase Agreements

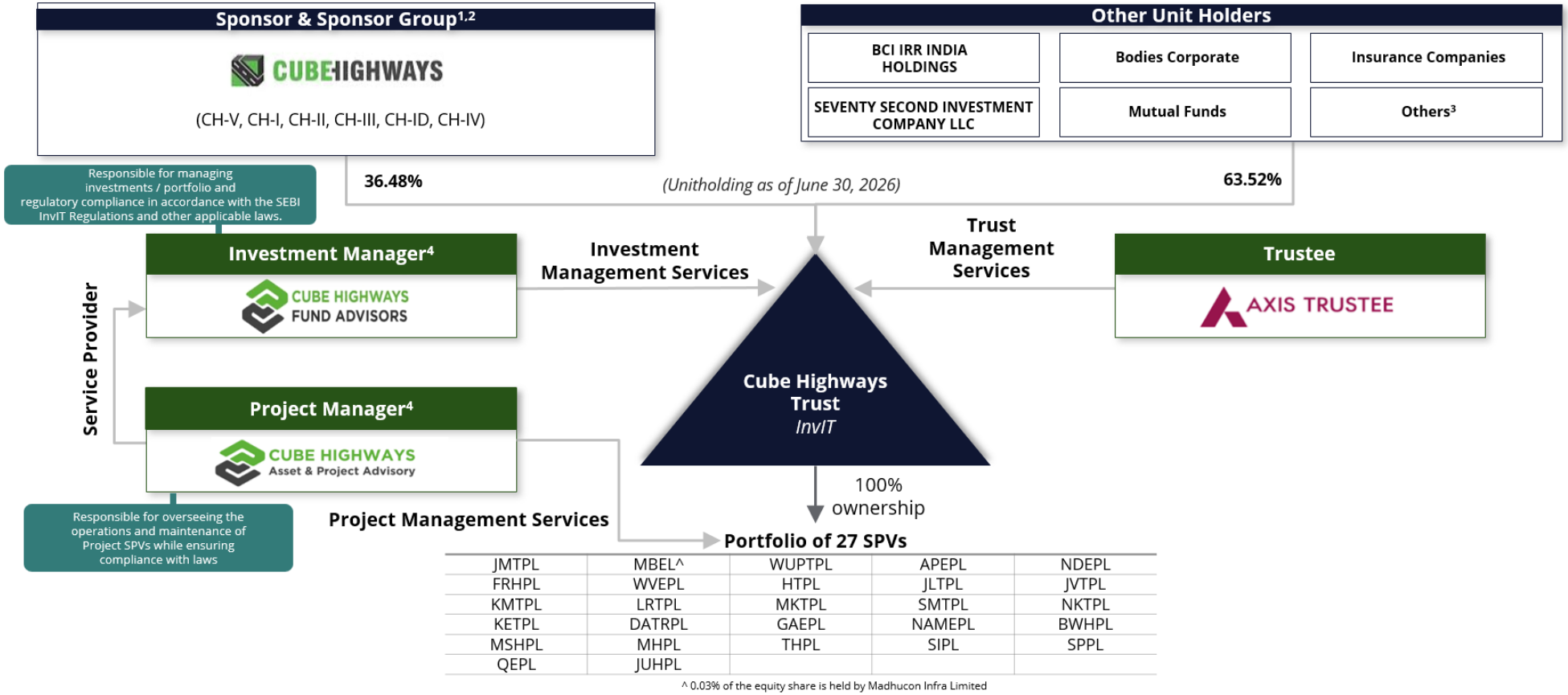
The Trust had entered into share purchase agreements and has acquired 100% of the issued, subscribed and paid-up share capital of JUHPL and QEPL from National Investment and Infrastructure Fund.

The Trust has also acquired certain Portfolio Assets pursuant to the Related Party SPAs. For further details, please see the section entitled "*Related Party Transactions –Related Party SPAs*" on page 383.

The Trust is proposing to acquire Committed Assets pursuant to the Share Purchase Agreements. For further details, please see the section entitled "*Related Party Transactions – Acquisition of the Committed Assets by the Trust*" on page 383.

Structure of the Trust

The following structure illustrates the relationship between the Trust, the Trustee, the Sponsor, the Investment Manager, the Project Manager and the Unitholders as on the date of filing this Final Offer Document:



JMTPL	MBEL^	WUPTPL	APEPL	NDEPL
FRHPL	WVEPL	HTPL	JLTPL	JVTPL
KMTPL	LRTPL	MKTPL	SMTPL	NKTPL
KETPL	DATRPL	GAEPL	NAMEPL	BWHPL
MSHPL	MHPL	THPL	SIPL	SPPL
QEPL	JUHPL			

^ 0.03% of the equity share is held by Madhucon Infra Limited

Note:

1. Cube Highways and Infrastructure V Pte. Ltd. (CH-V), Cube Highways and Infrastructure Pte. Ltd. (CH-I), Cube Highways and Infrastructure II Pte. Ltd. (CH-II), Cube Highways and Infrastructure III Pte. Ltd.(CH-III), Cube Highways and Infrastructure I-D Pte. Ltd. (CH-I-D) and Cube Mobility Investments Pte Ltd. (CH-IV)
2. CH-V is the Sponsor of the Trust, and all other entities are members of the Sponsor Group under the SEBI InvIT Regulations
3. Includes Individuals, Trusts, Alternate Investment Fund, Foreign Portfolio Investor, Financial Institutions / Banks, Non-resident Indians
4. IM & PM are associates of the Sponsor. Cube Highways Asset & Project Advisory Private Limited has been appointed as the Project Manager of the Trust with effect from June 26, 2026, replacing the Erstwhile Project Manager whose engagement continued up to June 25, 2026

SUMMARY AUDITED CONSOLIDATED FINANCIAL INFORMATION OF THE TRUST

The following tables set forth the summary financial information derived from the Audited Consolidated Financial Statements of the Trust and its Portfolio Assets which were prepared in accordance with Ind AS read with the InvIT Regulations, as of and for the years ended March 31, 2026, March 31, 2025, and March 31, 2024.

The degree to which the summary financial information included herein below will provide meaningful information is entirely dependent on the reader's level of familiarity with Indian accounting practices, Ind AS, the Companies Act and the InvIT Regulations. Accordingly, any reliance by persons not familiar with Indian accounting practices, Ind AS, the Companies Act and the InvIT Regulations on the summary financial information presented below should be limited.

(The remainder of this page is intentionally kept blank.)

Cube Highways Trust

Consolidated Balance Sheet as at the Period Mentioned Below

(*All amounts in ₹ million unless otherwise stated*)

Particulars	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
ASSETS			
Non-current assets			
Property, plant and equipment	451.72	412.91	250.89
Capital work-in-progress	70.22	3.86	14.10
Investment properties	7.93	6.73	6.80
Intangible assets	232,907.32	2,44,382.18	2,21,160.26
Intangible assets under development	36.46	222.55	1,126.94
Financial assets:			
Investments	0.01	0.01	0.01
Other financial assets	23,771.81	7,465.08	18.88
Deferred tax assets (net)	455.88	643.79	243.23
Current tax assets (net)	1,683.37	1,009.01	541.94
Other non-current assets	793.09	146.13	120.18
Total non-current assets	**260,177.81**	**2,54,292.25**	**2,23,483.23**
Current assets			
Inventories	404.01	346.54	223.64
Financial assets:			
Investments	5,000.98	-	13,527.76
Trade receivables	2,205.27	1,636.71	600.79
Cash and cash equivalents	5,190.21	8,467.08	2,416.84
Bank balances other than cash and cash equivalents	2,948.86	6,091.68	3,593.98
Other financial assets	16,747.63	7,936.75	1,808.76
Current tax assets (net)	7.23	0.02	-
Other current assets	1,299.04	1,230.52	602.42
Total current assets	**33,803.23**	**25,709.30**	**22,774.19**
Assets held for sale	3.66	-	0.10
Total assets	**293,984.70**	**2,80,001.55**	**2,46,257.52**
EQUITY AND LIABILITIES			
EQUITY			
Unit Capital	134,396.03	1,37,183.89	1,44,773.67
Other equity	(23,990.35)	(15,969.77)	(15,284.29)
Distribution-Repayment of Capital	(12,578.80)	(6,840.23)	-
Equity attributable to Non-controlling interests	2.30	0.66	0.53
Total unit holder's equity	**97,829.18**	**1,14,374.55**	**1,29,489.91**
LIABILITIES			
Non-current liabilities			
Financial liabilities			
Borrowings	171,353.74	1,46,296.27	1,02,630.24
Other financial liabilities	2.11	114.17	185.09
Provisions	6,419.87	4,390.01	2,338.04
Deferred tax liabilities (net)	3,920.08	2,289.14	311.81
Total non-current liabilities	**181,695.80**	**1,53,089.59**	**1,05,465.18**
Current liabilities			
Financial liabilities			
Borrowings	5,293.39	4,850.58	4,722.49
Trade payables			
- total outstanding dues of micro enterprises and small enterprises	1,341.05	937.36	273.52
- total outstanding dues of creditors other than micro enterprises and small enterprises	1,661.24	1,290.25	1,372.02
Other financial liabilities	1,669.08	1,536.54	1,407.31
Other current liabilities	292.96	283.74	214.69
Provisions	4,202.00	3,638.94	3,312.38
Current tax liabilities (net)	-	-	0.02
Total current liabilities	**14,459.72**	**12,537.41**	**11,302.43**
Total liabilities	**196,155.52**	**1,65,627.00**	**1,16,767.61**
Total equity and liabilities	**293,984.70**	**2,80,001.55**	**2,46,257.52**

Cube Highways Trust

Consolidated Statement of Profit and Loss for the Period Mentioned Below

(*All amounts in ₹ million unless otherwise stated*)

Particulars	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
Income			
Revenue from operations	42,388.85	33,071.44	29,161.37
Other income	1,201.41	1,460.08	1,579.68
Total income	**43,590.26**	**34,531.52**	**30,741.05**
Expenses			
Cost of construction	172.65	634.14	4,025.77
Operation and maintenance expenses	8,786.92	7,554.62	5,046.42
Employee benefits expense	721.45	514.68	429.66
Finance costs	14,653.82	11,171.01	8,731.29
Depreciation and amortisation expense	14,444.75	13,129.12	11,825.72
Impairment of intangible assets	(1,421.00)	-	5,871.87
Other expenses	2,984.80	2,031.08	1,678.77
Total expenses	**40,343.39**	**35,034.65**	**37,609.50**
Profit/(loss) before tax	**3,246.87**	**(503.13)**	**(6,868.45)**
Less: Tax expense/(income)			
Current tax	488.65	367.11	287.41
Tax for earlier years	4.58	18.54	5.40
Deferred tax	586.49	(531.58)	(102.11)
Total Tax Expense/(income)	**1,079.72**	**(145.93)**	**190.70**
Profit/(loss) after tax for the year	**2,167.15**	**(357.20)**	**(7,059.15)**
Other comprehensive income			
Items that will not be reclassified to profit or loss			
Re-measurement (losses)/gains on defined benefit obligations	1.37	0.70	0.35
Income tax relating to these items	(0.17)	(0.15)	0.10
Total other comprehensive income/(loss) for the year	**1.20**	**0.55**	**0.45**
Total comprehensive income/(loss) for the year	**2,168.35**	**(356.65)**	**(7,058.70)**
Net Income/(loss) for the year			
Attributable to:			
Unit holders	2,165.51	(357.33)	(7,059.22)
Non controlling interests	1.64	0.13	0.07
Total comprehensive income/(loss) for the year			
Attributable to:			
Unit holders	2,166.71	(356.78)	(7,058.77)
Non controlling interests	1.64	0.13	0.07

Cube Highways Trust

Consolidated Statement of Cash Flows for the Period Mentioned Below

(All amounts in ₹ million unless otherwise stated)

	Particulars	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
A.	**Cash flows from operating activities**			
	Profit/ (Loss) before tax	**3,246.87**	**(503.13)**	**(6,868.45)**
	Adjustments for:			
	Extinguishment of financial liability related contingent consideration	(24.14)	-	-
	Depreciation and amortisation expense	14,444.75	13,129.12	11,825.72
	Loss on remeasurement of Contingent Consideration	23.76	-	-
	Loss on sale/write-off of property, plant and equipment (net)	(0.93)	0.62	1.91
	Net gain on sale of mutual funds	(389.64)	(771.34)	(719.07)
	Net gain on investments measured at fair value through profit or loss	(46.63)	-	(296.31)
	Liabilities no longer required written back	(76.11)	(76.53)	(79.00)
	Reversal of impairment loss allowance on trade receivables	-	-	-
	Interest income	(444.25)	(403.34)	(435.04)
	Interest on income tax refund	(29.18)	(30.99)	(8.28)
	Impairment of intangible assets	(1,421.00)	-	5,871.87
	Impairment loss allowance on financial assets (including write-offs)	93.67	27.47	59.74
	Other assets written off	1.62	-	-
	Allowance for doubtful advances	-	12.31	-
	Finance costs	14,653.82	11,171.01	8,731.29
	Operating cash flows before working capital changes and other adjustments	**30,032.61**	**22,555.20**	**18,084.38**
	Working capital changes and other adjustments:			
	Increase in inventories	(57.47)	(61.88)	(64.03)
	Decrease/(Increase) in trade receivables	(634.25)	542.58	151.16
	Decrease/(Increase) in financial assets and non financial assets	6,643.40	4,363.99	1,605.42
	(Decrease)/Increase in trade payables	707.46	282.88	(597.79)
	Increase in provisions	2,303.17	1,570.82	2.39
	(Decrease)/Increase in financial liabilities and non financial liabilities	(236.07)	1.53	(114.97)
	Cash flow generated from operating activities post working capital changes	**38,758.85**	**29,255.12**	**19,066.56**
	Income tax (paid)/ refund (net)	(729.37)	(91.54)	(367.10)
	Net cash generated from operating activities (A)	**38,029.48**	**29,163.58**	**18,699.46**
B.	**Cash flows from investing activities**			
	Payment towards property, plant and equipment & intangible assets (after adjustment of increase/decrease in capital work-in progress, intangible assets under development (net) and advances for capital expenditure)	(604.65)	(1,928.97)	(5,107.58)
	Proceeds from sale of property, plant and equipment	-	115.93	(1.91)
	Movement in bank balances (including deposits) not considered as cash and cash equivalents (net)	7,529.48	(738.53)	(3,287.78)
	Consideration paid for acquisition of Subsidiaries	(10,532.83)	(17,884.00)	-
	Investment/(redemption) from mutual funds (net)	(4,564.71)	16,841.17	(2,187.13)
	Interest received	587.93	574.98	255.51
	Net cash used in investing activities (B)	**(7,584.78)**	**(3,019.42)**	**(10,328.89)**
C.	**Cash flows from financing activities**			
	Proceeds from issue of unit capital	-	-	38,025.92
	Expense incurred towards issue of units	-	-	(10.94)
	Proceeds from long term borrowings	48,090.00	48,790.00	1,08,800.00
	Proceeds from short term borrowings	13,292.87	-	-
	Repayment of long term borrowings	(53,520.79)	(44,094.23)	(1,33,798.23)
	Repayment of short term borrowings	(13,292.87)	-	-
	Processing Fees paid	(142.13)	(208.36)	(638.00)
	Interest paid (including interest capitalised)	(14,407.68)	(11,593.73)	(16,683.62)
	Payment of distributions to unitholders	(18,713.72)	(14,758.71)	(7,935.63)
	Net cash used in financing activities (C)	**(38,694.32)**	**(21,865.03)**	**(12,240.50)**

	Particulars	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
D.	**Net increase/(decrease) in cash and cash equivalents (A+B+C)**	**(8,249.62)**	**4,279.13**	**(3,869.93)**
E.	Cash and cash equivalents at the beginning of the year	8,163.86	2,415.24	-
	Cash and cash equivalents acquired on asset acquisition	4,877.55	1,469.49	6,285.17
	Cash and cash equivalents at the end of the year (D+E) (Refer reconciliation below)	**4,791.79**	**8,163.86**	**2,415.24**
	Reconciliation of cash and cash equivalents as per Consolidated Statement of Cash Flows			
	Cash and cash equivalents comprise of following:			
	Cash and cash equivalents	5,190.21	8,467.08	2,416.84
	Less: Earmarked balances	(398.42)	(303.22)	(1.60)
	As per Consolidated Statement of Cash Flows	**4,791.79**	**8,163.86**	**2,415.24**

SUMMARY FINANCIAL INFORMATION OF THE SPONSOR

The following tables set forth the summary financial information derived from the audited financial statements of the Sponsor which were prepared in accordance with the IFRS, as of and for the years ended December 31, 2025, December 31, 2024, and December 31, 2023.

The summary financial information of the Sponsor is included in this Final Offer Document as per the requirements of the InvIT Regulations.

The degree to which the summary financial information included herein below will provide meaningful information is entirely dependent on the reader's level of familiarity with IFRS. Accordingly, any reliance by persons not familiar with the same on the summary financial information presented below should be limited.

(The remainder of this page is intentionally kept blank.)

Cube Highways and Infrastructure V Pte. Ltd.

Statement of financial position as at December 31, 2025, December 31, 2024, and December 31, 2023

(All amounts in USD unless otherwise stated)

Particulars	As at December 31, 2025	As at December 31, 2024	As at December 31, 2023
ASSETS			
Non-current assets			
Financial assets at fair value through profit or loss	1,011,391,834	798,996,735	121,287,150
Total non-current assets	**1,011,391,834**	**798,996,735**	**121,287,150**
Current assets			
Cash and cash equivalents	4,992,636	1,360,473	9,387,269
Amount due from immediate holding company	-	-	-
Amount due from related party	217,260	15	15
Other current assets	250,082	5,766	8,043
Total current assets	**5,459,978**	**1,366,254**	**9,395,327**
Total assets	**1,016,851,812**	**800,362,989**	**130,682,477**
EQUITY AND LIABILITIES			
EQUITY			
Capital	209,865,648	166,594,292	24,603,658
Other equity	318,084,721	235,139,612	20,976,779
Total equity	**527,950,369**	**401,733,904**	**45,580,437**
LIABILITIES			
Current liabilities			
Amount due to shareholders	-	-	19,121,638
Amount due to related parties	1,670,013	724,440	177,034
Loan from shareholders	487,155,740	394,940,171	57,408,537
Trade and other payables	75,690	1,193	72,344
Share application money received pending for allotment	-	2,963,281	8,322,487
Total liabilities	**488,901,443**	**398,629,085**	**85,102,040**
Total equity and liabilities	**1,016,851,812**	**800,362,989**	**130,682,477**

Cube Highways and Infrastructure V Pte. Ltd.

Statement of profit or loss and other comprehensive income for the year ended December 31, 2025, December 31, 2024 and December 31, 2023

(All amounts in USD unless otherwise stated)

Particulars	For the Fiscal ended December 31, 2025	For the Fiscal ended December 31, 2024	For the Fiscal ended December 31, 2023
Income			
Interest income	382,542	219,243	144,713
Other income	1,672,359	-	-
Net change in fair value of financial assets at fair value through profit and loss	91,249,407	222,158,451	34,780,017
Net foreign currency gains/(losses)	33	77	(127)
Total operating income	**93,304,341**	**222,377,771**	**34,924,603**
Expenses			
Management fees	(1,654,990)	(787,118)	(170,000)
Deal costs	(5,161,508)	(4,760,484)	(4,341,862)
Other expenses	(1,042,734)	(2,667,336)	(2,818,934)
Total expenses	**(7,859,232)**	**(8,214,938)**	**(7,330,796)**
Profit/ (loss) before tax	**85,445,109**	**214,162,833**	**27,593,807**
Income tax expense	-	-	-
Profit/ (loss) for the period/year	**85,445,109**	**214,162,833**	**27,593,807**
Other comprehensive income/ (loss)	-	-	-
Total comprehensive profit/ (loss) for the year	**85,445,109**	**214,162,833**	**27,593,807**

Cube Highways and Infrastructure V Pte. Ltd.

Statement of cash flows for the year ended December 31, 2025, December 31, 2024 and December 31, 2023

(All amounts in USD unless otherwise stated)

Particulars	For the year ended December 31, 2025	For the year ended December 31, 2024	For the year ended December 31, 2023
Cash flows from operating activities:			
Profit/(loss) before tax	85,445,109	214,162,833	27,593,807
Adjustment:			
- Interest income	(382,542)	(219,243)	(144,713)
Operating cash flows before working capital changes	**85,062,567**	**213,943,590**	**27,449,094**
Working capital changes and other adjustments:			
Increase/(decrease) in trade and other payables	74,497	(71,151)	(997,614)
(Increase)/decrease in other current assets	(244,316)	2,277	707
Increase/(decrease) in amount due to shareholders	-	(19,121,638)	19,121,638
(Increase)/decrease in amount due from immediate holding company	-	-	42,500
(Increase)/decrease in amount due from related party	(217,245)	-	-
Increase/(decrease) in amount due to related parties	945,573	547,406	(430,479)
Increase/(decrease) in financial assets at fair value through profit or loss	(212,395,099)	(677,709,585)	(121,285,941)
Cash used in operations	**(126,774,023)**	**(482,409,101)**	**(76,100,095)**
Interest received	382,542	219,243	144,713
Net cash used in operating activities	**(126,391,481)**	**(482,189,858)**	**(75,955,382)**
Cash flows from financing activities			
Loan from shareholders	92,215,569	337,531,634	70,320,232
Repayment of loan to shareholders	-	-	(2,500,000)
Proceeds from issuance of ordinary shares	13,173,652	47,231,044	3,063,988
Proceeds from issuance of redeemable preference shares	26,347,305	94,462,090	6,127,975
Proceeds from issuance of nil voting shares	787,118	297,500	-
Share application money received pending for allotment	-	(5,359,206)	8,322,487
Dividend paid	(2,500,000)	-	-
Net cash generated from/(used in) financing activities	**130,023,644**	**474,163,062**	**85,334,682**
Net increase/(decrease) in cash and cash equivalents	3,632,163	(8,026,796)	9,379,300
Cash and cash equivalents at the beginning of the period	1,360,473	9,387,269	7,969
Cash and cash equivalents at the end of the period	**4,992,636**	**1,360,473**	**9,387,269**

SUMMARY FINANCIAL INFORMATION OF THE INVESTMENT MANAGER

The following tables set forth the summary financial information derived from the audited financial statements of the Investment Manager, which were prepared in accordance with Indian GAAP, as of and for the year ended March 31, 2026, March 31, 2025 and March 31, 2024.

The summary financial information as of and for the year ended March 31, 2026 has been derived from the consolidated audited financial statements of the Investment Manager. However, as there were no entities to be consolidated as of and for the years ended March 31, 2025, and March 31, 2024, the corresponding summary financial information has been derived from the standalone audited financial statements of the Investment Manager. The summary financial information of the Investment Manager is included in this Final Offer Document as per the requirements of the InvIT Regulations.

The degree to which the summary financial information included herein below will provide meaningful information is entirely dependent on the reader's level of familiarity with Indian accounting practices, Ind AS, the Companies Act and the InvIT Regulations. Accordingly, any reliance by persons not familiar with Indian accounting practices, Ind AS, the Companies Act and the InvIT Regulations on the summary financial information presented below should be limited.

Cube Highways Fund Advisors Private Limited

Consolidated Balance Sheet as at March 31, 2026

(All amounts in ₹ lakhs unless otherwise stated)

Particulars	As at March 31, 2026
Equity and Liabilities	
Shareholders' funds	
Share capital	1,465.00
Reserves and surplus	1,479.35
	2,944.35
Non-current liabilities	
Other long term liabilities	323.87
Long-term provisions	2,055.60
	2,379.47
Current liabilities	
Trade payables	
-total outstanding dues of micro enterprises and small enterprises; and	22.61
-total outstanding dues of creditors other than micro enterprises and small enterprises	335.53
Other current liabilities	373.27
Short-term provisions	28.09
	759.50
Total	**6,083.32**
Assets	
Non-current assets	
Property, Plant and Equipment	9.90
Long-term loans and advances	22.47
Other non-current assets	524.43
Deferred tax assets (net)	526.75
	1,083.55
Current assets	
Investments	-
Trade receivables	-
Cash and cash equivalents	4,573.84
Other Bank balances	-
Short-term loans and advances	25.66
Other current assets	400.27
	4,999.77
Total	**6,083.32**

Cube Highways Fund Advisors Private Limited

Consolidated Statement of Profit and Loss for the year ended March 31, 2026

(All amounts in ₹ lakhs unless otherwise stated)

Particulars	Year ended March 31, 2026
Revenue from operations	3,672.06
Other income	93.87
Total income	**3,765.93**
Expenses	
Employee benefits expense	2,861.74
Finance costs	0.38
Depreciation expense	4.48
Other expenses	613.42
Total expenses	**3,480.02**
Profit before tax	**285.91**
Tax expense	
- Current tax	460.00
- Tax related to earlier years	0.24
- Deferred tax expense/(credit)	(384.02)
Total tax expense	**76.22**
Profit for the year	**209.69**

Cube Highways Fund Advisors Private Limited

Consolidated Statement of Cash Flow for the period mentioned below:

(All amounts in ₹ lakhs unless otherwise stated)

Particulars	Year ended March 31, 2026
A. Cash flow from Operating Activities	
Profit before tax	**285.91**
Adjustments for:	
Unrealised loss on foreign currency transaction and translation (net)	-
Interest income on bank deposits	-
Gain on sale of investment	(93.35)
Depreciation expense	4.48
Liabilities no longer required written back	-
Interest on Income tax refund	-
Interest on delayed payment of MSME vendors	0.38
Interest on delayed payment of Statutory dues	-
GST input credit written off	4.85
	(83.64)
Operating profit before working capital changes	**202.27**
Changes in working capital:	
Increase/(decrease) in trade payables	90.13
Increase/(decrease) in other current liabilities	254.25
(Increase)/decrease in short-term loans and advances	46.56
(Increase)/decrease in trade receivables	273.63
(Increase)/decrease in other assets	(84.79)
Increase/(decrease) in provisions	1,521.70
Cash generated/(used) in operations	**2,303.75**
Income-tax paid (net of refund)	(533.29)
Net cash generated/(used) in operating activities (A)	**1,770.46**
Cash flow from investing activities	
Payment for purchase of property, plant and equipment	(6.24)
Maturity/(Investment) in bank deposits other than cash and cash equivalents (Net)	-
Proceeds from maturity in bank deposits other than cash and cash equivalents	-
Gain on sale of investments	93.35
Investment in mutual funds (other than those considered as cash equivalents)	-
Proceeds from redemption of mutual funds (net)	-
Interest received on bank deposits	-
Interest on Income tax refund	-
Net cash generated/(used) from investing activities (B)	**87.11**
Cash flow from financing activities	
Interest on delayed payment of Statutory dues	**-**
Net cash (used in)/generated from financing activities (C)	**-**
Net (decrease)/increase in cash and cash equivalents (A+B+C)	**1,857.57**
Cash and cash equivalents at the beginning of the year	2,716.27
Cash and cash equivalents at the end of the year	**4,573.84**
Cash and cash equivalents comprise of:	
– cash in hand	1.23
Balances with Bank	
– In current accounts	60.77
- In Liquid investments- mutual funds	4,511.84
	4,573.84

Notes:

1. The above Cash Flow Statement has been prepared under the indirect method set out in Accounting Standard - 3 "Cash Flow Statement" notified under section 133 of the Companies Act, 2013.
2. Figures in brackets indicate cash outflow.

Cube Highways Fund Advisors Private Limited

Balance Sheet as at March 31, 2025

(All amounts in ₹ lakhs unless otherwise stated)

Particulars	As at March 31, 2025
Equity and Liabilities	
Shareholders' funds	
Share capital	1,465.00
Reserves and surplus	1,269.66
	2,734.66
Non-current liabilities	
Long-term provisions	**539.36**
Current liabilities	
Trade payables	
-total outstanding dues of micro enterprises and small enterprises; and	3.26
-total outstanding dues of creditors other than micro enterprises and small enterprises	264.36
Other current liabilities	442.89
Short-term provisions	73.22
	783.73
Total	**4,057.75**
Assets	
Non-current assets	
Property, Plant and Equipment	8.14
Long-term loans and advances	-
Other non-current assets	524.43
Deferred tax assets (net)	142.73
	675.30
Current assets	
Investments	-
Trade receivables	273.63
Cash and cash equivalents	2,716.27
Other Bank balances	-
Short-term loans and advances	77.07
Other current assets	315.48
	3,382.45
Total	**4,057.75**

Cube Highways Fund Advisors Private Limited

Statement of Profit and Loss for the year ended March 31, 2025

(All amounts in ₹ lakhs unless otherwise stated)

Particulars	Year ended March 31, 2025
Revenue from operations	2,810.46
Other income	187.71
Total income	**2,998.17**
Expenses	
Employee benefits expense	1,828.34
Finance costs	0.29
Depreciation expense	5.73
Other expenses	545.56
Total expenses	**2,379.92**
Profit before tax	**618.25**
Tax expense	
- Current tax	251.07
- Tax related to earlier years	6.33
- Deferred tax expense/(credit)	(121.79)
Total tax expense	**135.61**
Profit for the year	**482.64**

Cube Highways Fund Advisors Private Limited

Statement of Cash Flow for the year ended March 31, 2025

(All amounts in ₹ lakhs unless otherwise stated)

Particulars	Year ended March 31, 2025
A. Cash flow from Operating Activities	
Profit before tax	**618.25**
Adjustments for:	
Unrealised loss on foreign currency transaction and translation (net)	-
Interest income on bank deposits	(7.97)
Gain on sale of investment	(150.39)
Depreciation expense	5.73
Liabilities no longer required written back	(23.61)
Interest on Income tax refund	(5.61)
Interest on delayed payment of MSME vendors	0.29
Interest on delayed payment of Statutory dues	-
GST input written off	-
	(181.56)
Operating profit before working capital changes	**436.69**
Changes in working capital:	
Increase/(decrease) in trade payables	(171.56)
Increase/(decrease) in other current liabilities	(44.93)
(Increase)/decrease in short-term loans and advances	(57.78)
(Increase)/decrease in trade receivables	(273.63)
(Increase)/decrease in other assets	(615.22)
Increase/(decrease) in provisions	434.62
Cash generated/(used) in operations	**(291.81)**
Income-tax paid (net of refund)	(113.00)
Net cash generated/(used) in operating activities (A)	**(404.81)**
Cash flow from investing activities	
Payment for purchase of property, plant and equipment	(5.46)
Maturity/(Investment) in bank deposits other than cash and cash equivalents (Net)	1,560.00
Proceeds from maturity in bank deposits other than cash and cash equivalents	-
Gain on sale of investments	-
Investment in mutual funds (other than those considered as cash equivalents)	-
Proceeds from redemption of mutual funds (net)	1,415.11
Interest received on bank deposits	105.35
Interest on Income tax refund	5.61
Net cash generated/(used) from investing activities (B)	**3,080.61**
Cash flow from financing activities	
Interest on delayed payment of Statutory dues	**-**
Net cash (used in)/generated from financing activities (C)	**-**
Net (decrease)/increase in cash and cash equivalents (A+B+C)	**2,675.80**
Cash and cash equivalents at the beginning of the year	40.47
Cash and cash equivalents at the end of the year	**2,716.27**
Cash and cash equivalents comprise of:	
– cash in hand	0.87
Balances with Bank	
– In current accounts	46.70
- In Liquid investments- mutual funds	2,668.70
	2716.27

Notes:

1. The above Cash Flow Statement has been prepared under the indirect method set out in Accounting Standard - 3 "Cash Flow Statement" notified under section 133 of the Companies Act, 2013.
2. Figures in brackets indicate cash outflow.

Cube Highways Fund Advisors Private Limited

Balance Sheet as at March 31, 2024

(All amounts in ₹ lakhs unless otherwise stated)

Particulars	As at March 31, 2024
Equity and Liabilities	
Shareholders' funds	
Share capital	1,465.00
Reserves and surplus	787.02
Non-current liabilities	
Long-term provisions	88.52
Current liabilities	
Trade payables	
-total outstanding dues of micro enterprises and small enterprises; and	1.97
-total outstanding dues of creditors other than micro enterprises and small enterprises	436.92
Other current liabilities	511.42
Short-term provisions	89.44
Total	**3,380.29**
Assets	
Non-current assets	
Property, Plant and Equipment	8.41
Long-term loans and advances	144.39
Deferred tax assets (net)	20.94
Current assets	
Investments	1,264.73
Cash and cash equivalents	40.47
Other Bank balances	1,560.00
Short-term loans and advances	19.28
Other current assets	322.07
Total	**3,380.29**

Cube Highways Fund Advisors Private Limited

Statement of Profit and Loss for the period mentioned below:

(All amounts in ₹ lakhs unless otherwise stated)

Particulars	Year ended March 31, 2024
Revenue from operations	2,535.34
Other income	130.25
Total income	**2,665.59**
Expenses	
Employee benefits expense	1,565.41
Finance costs	0.54
Depreciation and amortisation	4.84
Other expenses	729.96
Total expenses	**2,300.75**
Profit before tax	**364.84**
Tax expense	
- Current tax	107.92
- Deferred tax expense/(credit)	(10.84)
Total tax expense	**97.08**
Profit for the year	**267.76**

.

Cube Highways Fund Advisors Private Limited

Statement of Cash Flow for the period mentioned below:

(All amounts in ₹ lakhs unless otherwise stated)

Particulars	Year ended March 31, 2024
A. Cash flow from Operating Activities	
Profit before tax	**364.84**
Adjustments for:	
Unrealised loss on foreign currency transaction and translation (net)	-
Interest income on bank deposits	(118.23)
Gain on sale of investment	(9.82)
Depreciation on tangible assets	4.84
Interest on delayed payment of MSME vendors	0.54
Interest on delayed payment of Statutory dues	-
Operating profit before working capital changes	**242.17**
Changes in working capital:	
Increase/(decrease) in trade payables	174.83
Increase/(decrease) in other current liabilities	112.42
(Increase)/decrease in short-term loans and advances	27.37
(Increase)/decrease in other current assets	2,117.82
Increase/(decrease) in provisions	52.76
Cash generated/(used) in operations	**2,727.37**
Income-tax paid (net of refund)	(200.06)
Net cash generated/(used) in operating activities (A)	**2,527.31**
Cash flow from investing activities	
Payment for purchase of property, plant, equipment and intangible assets	(13.25)
Investment in bank deposits other than cash and cash equivalents (Net)	(3,700.00)
Proceeds from maturity in bank deposits other than cash and cash equivalents	2,140.00
Investment in mutual funds	(1,779.90)
Proceeds from redemption of mutual funds	525.00
Interest received on bank deposits	20.97
Net cash generated/(used) from investing activities (B)	**(2,807.18)**
Cash flow from financing activities	
Interest on delayed payment of statutory dues	**-**
Net cash (used in)/generated from financing activities (C)	**-**
Net (decrease)/increase in cash and cash equivalents (A+B+C)	(279.87)
Cash and cash equivalents at the beginning of the year	320.34
Cash and cash equivalents at the end of the year	**40.47**
Cash and cash equivalents comprise of:	
Balances with Bank	**40.47**
- In deposits accounts (with original maturity of less than 3 months)	**-**
– In current accounts	40.47

Notes:

1. The above Cash Flow Statement has been prepared under the indirect method set out in Accounting Standard - 3 "Cash Flow Statement" notified under section 133 of the Companies Act, 2013.
2. Figures in brackets indicate cash outflow.

SUMMARY OF INDUSTRY

Unless otherwise specified, the information in this section is derived from the industry report titled "Assessment of the Indian Road Sector" dated June, 2026 (the "Industry Report") which has been commissioned and paid for by the Investment Manager for an agreed fee and prepared only for the purposes of confirming our understanding of the industry exclusively in connection with the Offer. The Industry Report has been included in the section entitled "Material Contracts and Documents for Inspection" on page 470. The Investment Manager engaged the Industry Expert, in connection with the preparation of the Industry Report. The data included in this section includes excerpts from the Industry Report and may have been reordered by us for the purposes of presentation. Unless otherwise indicated, all financial, operational, industry and other related information derived from the Industry Report and included herein, all references to a "year" in this Final Offer Document are to a calendar year. For further details and risks in relation to commissioned reports, see "Risk Factors – We have relied on data derived from third party reports, which are based on certain estimates and assumptions and are subject to the limitations set out therein" on page 106.

Key budgetary announcements

The Indian Road network is the second largest road network in the world. There has been 6.6 times increase in MORTH allocation on road infrastructure between the Financial Year 2016 to Financial Year 2027. In the Union Budget for Financial Year 2026-2027, the Ministry of Road Transport & Highways (MoRTH) has been allocated ₹3,099 billion, representing 7.9% increase over the revised estimate for Financial Year 2025-2026 (₹2,871 billion).

Key Allocations

National Highways Authority of India (NHAI): Receives ₹1,872.93 billion, accounting for 60.4% of MoRTH's total budget. This is 10% higher than the revised estimate for Financial Year 2025-2026.

Roads & Bridges: Allocated about ₹1,220 billion, which is about 5% more than the revised estimates for Financial Year 2025-2026. This includes funding for the development and maintenance of national highways, expressways, and related bridge works.

Revenue versus Capital Expenditure

- Revenue Expenditure is estimated at ₹157.08 billion for Financial Year 2026-2027, which is 4.1% higher than the revised estimate for Financial Year 2025-2026 (₹150.90 billion).
- Capital Expenditure is budgeted at ₹2,941.67 billion, which is 8.1% more than the Financial Year 2025-2026 revised estimate of ₹2,720.51 billion.

Use of Funds & Implications

- The increase in capital outlay suggests continued emphasis on physical infrastructure (construction, expansion, and maintenance) rather than just operational or administrative costs.
- Allocation to NHAI increased, indicating government's ongoing focus on national highways (new works, expressway expansion, etc.).
- The 5% increase in roads & bridges allocation suggests a push to bolster connectivity and structural works (bridges, bypasses, etc.).

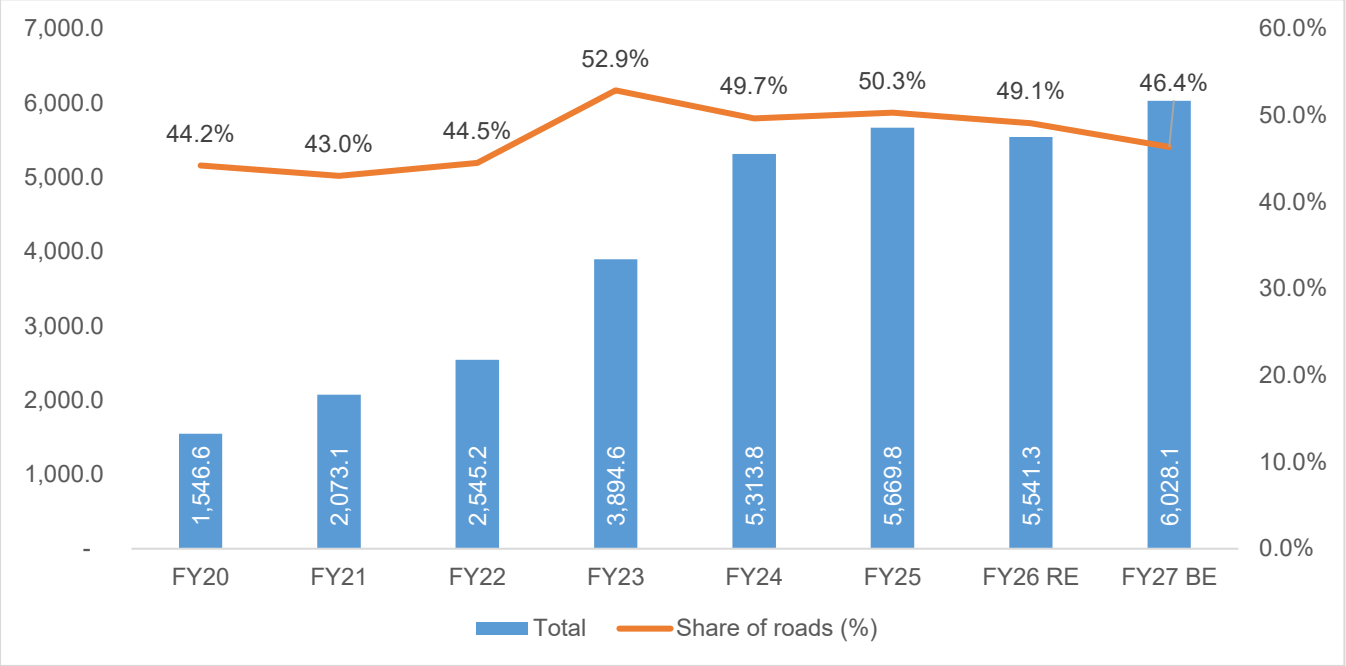
Bharatmala Pariyojana (Road & Highway Development)

- Phase I targets approximately 34,800 km, with 26,425 km awarded and 21,783 km completed by November 2025.
- Total expenditure on Bharatmala stands at ₹8.54 trillion as of November 2025.
- This effort is repositioning India's road infrastructure by improving logistics efficiency and national connectivity.

Share of roads in total infrastructure capital expenditure in India

The roads sector continues to dominate India's infrastructure investment landscape, receiving nearly half of the total infrastructure capital expenditure over Financial Year 2020- Financial Year 2027 (BE). Capital expenditure on roads rose from ₹1.5 trillion in Financial Year 2020 to ₹6.0 trillion in Financial Year 2027 (BE), supported by sustained government focus on expanding and upgrading the national road network. The sector's share of overall infrastructure capex remained robust, ranging between 43% and 53%, with the highest allocation recorded in Financial Year 2023. Despite a marginal moderation in its share in recent years, roads remain a key priority area for infrastructure development, given their critical role in enhancing connectivity, facilitating trade, and improving logistics efficiency across the country.

Share of roads in total infrastructure capital expenditure in India (in ₹ Billion)



Note: Total infrastructure values have been calculated basis Capex of Roads, Railways, Ports, Aviation sectors
Note: Capex actuals from total allocated budget have been used
Source: Budget Documents, CRISIL Intelligence

The sustained focus on roads also aligns with broader economic objectives: reducing logistics costs, improving supply chain efficiency, and enabling regional equity by connecting underserved areas. With major initiatives such as Bharatmala Pariyojana, the GatiShakti Master Plan, and asset monetisation strategies, roads are expected to remain the backbone of India's infrastructure investment story, anchoring growth and competitiveness in the years ahead.

Road network in India

Road infrastructure forms the backbone of India's transport network and is one of the most critical enablers of economic activity. With its vast geographical expanse and diverse terrain, India relies heavily on roads for mobility, trade, and regional integration. Unlike several developed economies where railways or waterways play a larger role in freight movement, India's logistics ecosystem is road-dominant, with roads accounting for nearly 87% of passenger traffic and close to 60% of freight traffic. This makes the sector not only a facilitator of day-to-day mobility but also a central pillar in ensuring supply chain efficiency, rural connectivity, and market access.

The scale of the road network underscores this importance. India has developed the second-largest road network in the world, spanning over 63 lakh km as of 2026. This network comprises national highways, state highways, district roads, and rural roads, each serving a distinct role in the country's connectivity hierarchy. While national highways make up only about 2% of the overall length, they carry around 40% of road traffic, linking state capitals, major ports, and economic hubs. State highways extend coverage to key intra-state corridors, while rural and district roads, accounting for nearly 95% of the network, provide essential last-mile connectivity to villages, agricultural mandis, production centres, and railway stations. Together, this layered network sustains both India's urban growth centres and its rural hinterland.

Road network in India

Road network	Length (km)	Percentage of total length	Percentage of total traffic	Connectivity to
National highways	146,572	approximately 2	40	Union capital, state capitals, major ports, foreign highways
State highways	178,749	approximately 3	60	Major centres within the states, national highways
Other roads	6,048,260	approximately 95		Major and other district roads, rural roads - production centres, markets, highways and railway stations
Total Network	**6,373,581**	**100**	**100**	

Source: MoRTH Annual Report 2025-26, PIB Dec 2025, Crisil Intelligence

Over the past decade, India has prioritised road development through major programmes such as Bharatmala, PMGSY and the National Infrastructure Pipeline, supported by strong budgetary allocations, digital tools like FASTag, and innovative financing models such as HAM and TOT. This push has accelerated construction, expanded access in remote areas and strengthened logistics efficiency. National highways have grown rapidly from about 91,287 km in 2014 to 146,572 km in 2025-26 with four-lane and above stretches rising sharply, improving connectivity and reducing travel time. The length of operational access-

controlled High-Speed Corridors/Expressways increased from 93 km in 2014 to 3,052 km in 2025-26, registering a CAGR of about 37.3%. State highways have grown at a moderate pace, doubling their length since Financial Year 2016, and continue to link key economic centres with the national network. Rural and other roads, supported heavily by PMGSY, have also expanded steadily, enhancing rural accessibility and contributing to socio-economic development. Overall, India's road network has seen consistent expansion driven by policy focus, flagship programmes and improved execution capabilities.

Key growth drivers and emerging trends for road sector

Policy pushes aimed at improving private participation in national highways

The following are the recent policy changes that the MoRTH and NHAI have undertaken to improve private participation in the sector and increase competition:

- Technical and financial bidder eligibility criteria tightened for HAM and EPC projects.
- Changes in the hybrid-annuity model (HAM) concession agreement aimed at protecting developers' returns and easing their cash flows during the construction period
- Changes in the Build-Operate-Toll (BOT) concession agreement to reinstate developer interest in the model
- Bidder eligibility norms for BOT (Toll) projects have been revised to facilitate participation by institutional investors such as AIFs, SWFs, pension funds and infrastructure funds, with technical qualification requirements permitted to be met through qualified technical partners, thereby broadening the investor base for highway PPP projects.

Apart from this, the government has taken various steps to support the growth in roads sector:

- **Proposed implementation of MLFF**
    - The Government of India has been exploring next generation tolling mechanisms to enhance efficiency and reduce congestion on National Highways. Earlier, a Global Navigation Satellite System (GNSS)-based tolling framework was proposed under initiatives such as the Global Navigation Satellite System-based tolling system; however, large-scale implementation challenges, including technological readiness, enforcement complexity, and user adoption concerns, limited its rollout. Subsequently, the focus has shifted towards the implementation of Multi-Lane Free Flow (MLFF) tolling, which builds upon the existing FASTag ecosystem.
    - The Government of India, through MoRTH/NHAI, has proposed the implementation of Multi-Lane Free Flow (MLFF) tolling, a barrier-less system that enables automatic toll collection using FASTag (RFID) and ANPR-based vehicle identification, eliminating the need for physical toll plazas and reducing travel time. From an infrastructure perspective, the removal of toll plazas under MLFF is expected to unlock latent capacity on highways, as bottlenecks associated with toll collection are eliminated. This effectively is expected to increase the throughput of existing road infrastructure without requiring substantial capacity augmentation, especially at the toll plaza locations. Additionally, improved traffic flow is likely to result in fuel savings, reduced emissions, and better user experience, aligning with broader policy objectives of efficiency and sustainability.
- **Annual Pass for National Highways: Key Features and Early Uptake**
    - The National Highways Authority of India (NHAI) has seen a strong initial response to its newly introduced Annual Pass, collecting nearly ₹1.5 billion upfront in the first four days through the issuance of 0.5 million passes. Tamil Nadu recorded the highest number of purchases, followed by Karnataka and Haryana. Correspondingly, the highest number of Annual Pass transactions at toll plazas were also observed in Tamil Nadu, Karnataka and Andhra Pradesh, indicating rapid early adoption in these states.

    Key Features of the Annual Pass: The Annual Pass offers significant convenience for private highway users by enabling free passage through all toll plazas on national highways and expressways upon a one-time upfront payment of ₹3,000.

    Key functionalities include:

    - The pass provides 200 toll plaza crossings annually, where each passage counts as one trip; a round trip counts as two trips.
    - It operates seamlessly on the user's existing FASTag, eliminating the need for any separate device or tag.
    - The Annual Pass can be purchased exclusively through the Raimargvatra mobile app or the NHAI website and is activated within two hours of payment.

- On state highways or expressways managed by state bodies, the FASTag will continue to function in the regular manner, and normal user charges may apply.

Coverage and Accessibility: The pass is applicable across approximately 1,150 toll plazas on the National Highway and National Expressway network. It is currently available to all non-commercial vehicles with a valid FASTag. Through wider and simpler digital access, the Annual Pass aims to improve user convenience while enhancing upfront revenue visibility for NHAI. Based on the IHMCL database for 823 toll plazas, 22.5 million trips are made using annual pass in October 2025.

Rail limitations: last-mile connectivity and capacity constraints

- Last-mile connectivity gaps: Indian Railways provides extensive reach, but rail freight and passenger services frequently face first/last-mile limitations at ports, industrial terminals and urban nodes; this forces consignments onto road for door-to-door movement. Improving road feeders and terminal linkages is a stated priority.

- Capacity and expansion constraints: The existing rail network faces line-capacity and terminal handling constraints that limit its ability to absorb additional freight growth; where rail capacity or terminal capability is inadequate, the modal share shifts towards road. Government planning documents note the need for substantial upgrades to enable rail to take higher freight share.

Demographic & urbanisation drivers

- Population growth and rapid urbanisation: Continued urban expansion and higher urban population densities increase intra-city and inter-city passenger and goods movement, placing higher demand on highways and arterial roads. National road transport policy recognises urbanisation as a core factor affecting demand and planning.

User behaviour & policy: willingness to pay tolls; NH development

- Tolling & willingness-to-pay: The institutionalisation of user-fee/tolling regimes and electronic toll collection has supported the financing and faster rollout of national highways. Policy guidance from MoRTH and NHAI shows that tolling (and improved payment technology) enables more NH projects and a steadily improving highway network which in turn increases road capacity and encourages greater vehicle usage.

- National Highways expansion: NHAI's strategic focus on expanding national highways and expressways (and connecting them to economic centres) directly increases road traffic volumes as new, faster corridors attract long-haul and regional traffic.

Supply-side improvements: mechanisation, cost and execution time

- Mechanisation and faster delivery: Adoption of modern construction technologies and mechanisation in highway construction has reduced execution time and construction unit costs, enabling quicker project completion and faster capacity addition which supports faster growth of road traffic as new capacity becomes operational. NHAI annual reports highlight emphasis on efficient execution and mechanised construction methods. Strict measures are being taken for reduction of overloading of vehicles as FASTag discourage truck drivers from overloading vehicle.

Roads remain the preferred mode for non-bulk transportation

Roads generally account for a significant share in non-bulk commodity transportation such as:

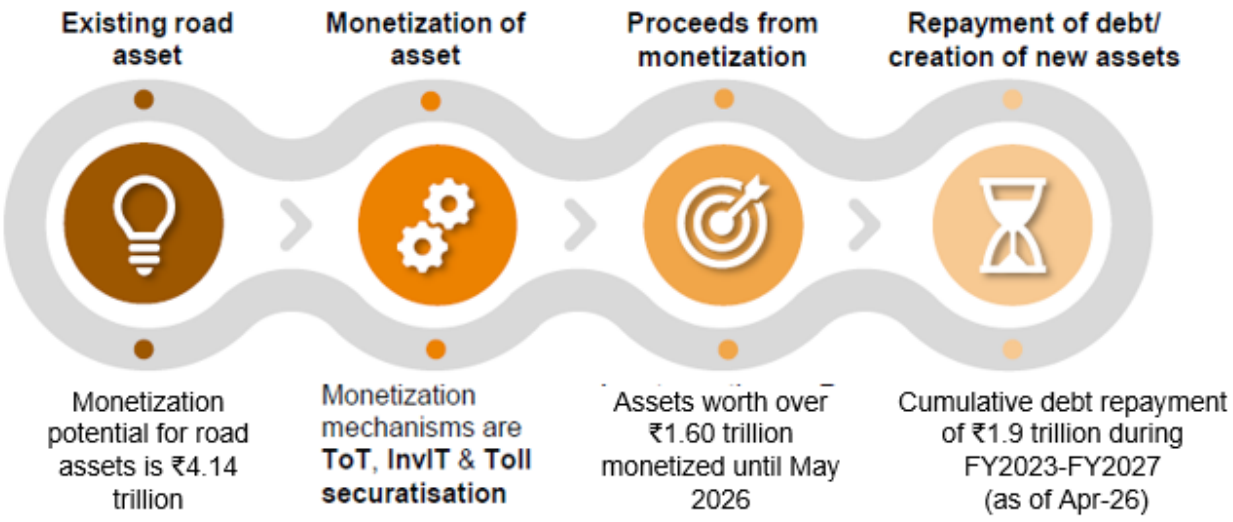
- Rail does not cater to piecemeal freight transportation. Entire rakes are provided for transportation and not just single wagons (although the Indian Railways is looking into multi-point loading, it would still not attract small-sized cargo).

- Road transport has better quality service and is more reliable.

- Road transporters operate on a much smaller scale. Also, given the large number of road-transport operators, customers have better bargaining power. These transporters also add a personal touch to their service, which is important, as these commodities are typically expensive and fragile.

- Roads provide end-to-end connectivity and safer handling, which is an important factor while transporting low-volume, but high-value commodities.

Asset monetization aids new asset creation and repayment of debt



Source: Crisil Intelligence

Toll Operate and Transfer (TOT) Model

The Toll -Operate -Transfer (TOT) model was introduced by the National Highways Authority of India (NHAI) in 2016 as part of its asset monetisation programme. Unlike traditional PPP frameworks that focus on greenfield construction, TOT is designed specifically for the monetisation of brownfield highway assets that are already operational and generating toll revenues.

Under this model, NHAI bundles completed highway stretches and auctions them to private concessionaires for a fixed concession period, typically ranging between 20 to 30 years. The winning bidder pays an upfront lump sum amount to NHAI in exchange for the right to collect tolls and operate the stretches during the concession period. The capital thus mobilised is recycled into the development of new highway projects, reducing NHAI's dependence on budgetary support and borrowings.

Key Features of TOT

- **Revenue Model:** Investors earn returns from toll collections on pre-constructed stretches, while bearing the risk of traffic performance and operational costs.
- **Risk Allocation**: Since assets are already operational, construction risk is eliminated. The concessionaire assumes traffic and O&M (operations & maintenance) risks, while regulatory risks remain under government oversight.
- **Investor Base**: The model has attracted not only domestic developers but also global institutional investors such as pension funds, sovereign wealth funds, and infrastructure investment funds, owing to its predictable cash flow profile.
- **Capital Recycling**: NHAI uses upfront proceeds from TOT to fund greenfield projects under flagship programmes like Bharatmala Pariyojana.

InvIT Model

In an InvIT transaction, infrastructure asset owners transfer operational projects into Special Purpose Vehicles (SPVs), which are then placed under the trust. The trust issues units to investors, raising funds that are subsequently deployed towards the development and management of infrastructure assets. Investors receive returns in the form of periodic distributions generated by the underlying assets.

As of February 2026, there are 29 InvITs registered with SEBI, of which 17 are road InvITs. The number of road InvITs increased more than threefold in the last six Financial Years.

Key Advantages of the InvIT Model

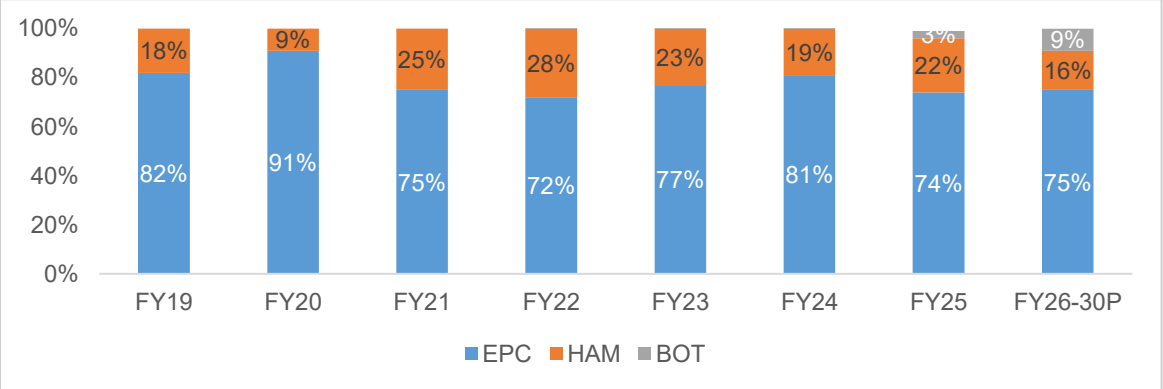
- **Unlocking capital:** Provides NHAI with upfront resources by monetising operational projects.
- **Investor diversification**: Attracts long-term domestic and global investors seeking stable yields.
- **Operational efficiency:** Professional management enhances maintenance standards and project delivery.
- **Risk sharing:** Transfers traffic and operational risks to investors, while freeing NHAI to focus on new infrastructure creation.

Trends in PPP Models for project awarding

- Private sector participation in India's road sector has evolved significantly, with distinct trends emerging across the key contract models - BOT (Toll), HAM, EPC and TOT. Each model has seen a change in risk appetite, competition, and qualification requirements as both the market and policy environment mature.

- The project awarding mix in the national highways sector has remained predominantly EPC-led, accounting for 72–91% of awards during Financial Year 2019- Financial Year 2025. While HAM emerged as the preferred PPP-based model over the past decade, its share is expected to moderate over the medium term. BOT projects, which accounted for a negligible share of awards during Financial Year 2019- Financial Year 2024, are projected to gain traction and increase to around 9% of total awards during Financial Year 2026– Financial Year 2030. The anticipated increase in BOT participation is supported by amendments to the Model Concession Agreement (MCA), improved risk allocation mechanisms, and a strong pipeline of traffic-mature highway projects, which are expected to enhance private sector participation in the roads sector.

- **BOT share to improve over the coming years**



Source: Ministry of Road Transport and Highways (MoRTH), CRISIL Intelligence

National Monetisation Pipeline Phase 2

National Monetization Pipeline Phase 2 has been announced with a monetisation of assets worth ₹16.72 trillion in pipeline spread across span of 5 years from Financial Year 2026 to Financial Year 2030. Highways sector accounts for a significant share of 24.8% (₹4.14 trillion) of these assets. Under the National Monetisation Pipeline (NMP) 2.0 framework of NITI Aayog, four distinct asset classes have been identified in the highways sector to streamline monetisation.

Sector wise split of National Monetization Pipeline Phase 2

Sectors	Total Monetization value (in ₹ Billion)	% share
Highways	4,140	24.76%
Power	2,765	16.53%
Ports	2,637	15.77%
Railways	2,623	15.68%
Coal	2,160	12.92%
Mines	1,000	5.98%
Urban Infrastructure	520	3.11%
Civil Aviation	275	1.64%
MMLPs	180	1.08%
Petroleum and Natural Gas	163	0.97%
Ropeways	100	0.60%
Warehousing and Storage	100	0.60%
Telecom	48	0.29%
Tourism	12	0.07%
Total	**16,723**	**100.00%**

Source: NMP2.0 document NITI Aayog, Crisil Intelligence

Benchmarking Analysis for Road InvITs

Road InvIT Portfolio Benchmarking: Comparison across scale, diversification, and residual life

InvIT Name	EV1 (₹ Crore)	Scale2 (Lane Kms)	EV Weighted Residual Life in years3	Unique States4 (toll assets)	Diversification Score5 (lower the better)
Cube Highways Trust	35,937.30	8,816	16.51	11	30
IRB Infrastructure Trust	70,044.00	10,674	22.52	9	35
National Highways Infra Trust[3]	56,988.00	11,967	19.82	12	-

InvIT Name	EV1 (₹ Crore)	Scale2 (Lane Kms)	EV Weighted Residual Life in years3	Unique States4 (toll assets)	Diversification Score5 (lower the better)
Vertis Infrastructure Trust (formerly Highways Infrastructure Trust)	26,351.50	8,427	13.31	8	36
Interise Trust (formerly Indinfravit Trust)	19,594.11	7,366	14.65	6	39
IRB InvIT Fund	18,255.00	4,445	16.36	7	38
Maple Infrastructure Trust	14,421.37	3,328	14.74	7	57
Oriental InfraTrust	12,200.30	3,452	10.47	4	48
Shrem Invit	11,554.20	11,742	10.98	1	25
Citius TransNet Investment Trust	10,359.20	3,579	11.96	6	41
Raajmarg Infra Investment Trust[3]	9,665.57	1,528	9.64	4	-
Indus Infra Trust (formerly Bharat Highways InvIT)	8,917.80	3,710	11.66	No toll assets	30
Roadstar Infra Investment Trust	7,027.00	2,837	11.32	5	52
Capital Infra Trust (formerly National Infrastructure Trust)	6,223.60	2,714	11.81	No toll assets	34
Nxt-Infra Trust	5,572.40	2,087	10.43	2	64
Anantam Highways Trust	4,382.90	1,091	12.84	No toll assets	38

1. The enterprise value (EV) represents the AUM for InvIT, which is considered as the sum of enterprise value (EV) for each SPV, not adjusted for cash and cash equivalents, as disclosed in the respective InvITs' annual report and valuation report. The EV is as of March 31, 2026.

2. The lane kms represented are sum of the individual asset lane km and are derived from the valuation report and annual report of respective InvITs.

3. The parameter represents EV weighted residual life in years. The residual concession period refers to the balance duration of the concession agreement for an asset from the cut-off date (March 31, 2026). Please note that for calculation of residual concession period, we have used the concession end date with extension. The residual concession periods of the InvITs were weighted using their EV as of cutoff date specified in note 1 to arrive at the EV weighted residual life.

For Raajmarg Infra Investment Trust, asset-wise EV values were unavailable in the valuation report; therefore, simple average residual life of the assets has been used

For National Highways Infra Trust, NWPPL has a combined enterprise value for Round 1 and Round 2, while each round has a different residual life. Therefore, residual life has been calculated using simple average.

4. This parameter represents the count of unique states in which toll assets of InvIT is present. The analysis is done only for toll assets, since toll revenues are directly linked to traffic volumes, which, in turn, correlate with regional economic activity and freight movement. Since Indus Infra and Capital Infra Trust have no toll assets, hence the count of unique states is not shown.

5. The diversification score is represented by Herfindahl-Hirschman Index (HHI) value, that measures the overall concentration of the portfolio. The HHI takes into account both the number of assets and their relative EV weights. A lower HHI score indicates a more diversified portfolio and less concentration risk.

Please note that the asset-level Enterprise Value (EV) split is not available for NHIT and Raajmarg. Therefore, the diversification score has not been presented for these InvITs. Please note that the reported metrics may differ from InvITs' disclosures, due to variations in methodology and calculation procedures.

Source: Valuation Reports, Annual Reports, and Financial Results March 2026 of respective InvITs, CRISIL Intelligence

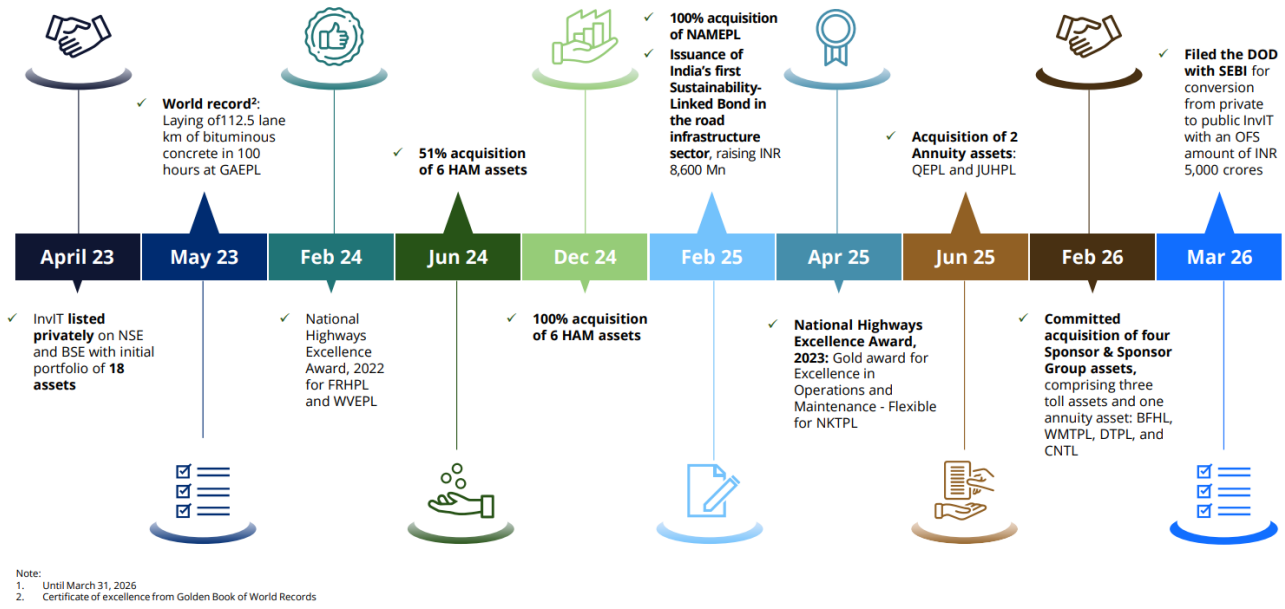
Some of the information in this section, including information with respect to our plans, strengths, and strategies, contains forward-looking statements that involve risks and uncertainties. You should read "Forward Looking Statements" on page 30 for a discussion on the risks and uncertainties related to those statements and also "Risk Factors", "Summary Audited Consolidated Financial Information of the Trust" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" on pages 80, 47, and 356, respectively, for a discussion of certain factors that may affect our business, financial condition or results of operations. Our actual results may differ materially from those expressed in or implied by these forward-looking statements.

Overview

We are an Indian infrastructure investment trust sponsored by Cube Highways and Infrastructure V Pte. Ltd. and established with the objective of acquiring and operating road and other infrastructure assets in India. We are registered with SEBI under the InvIT Regulations, and our units have been listed on the Stock Exchanges since April 19, 2023.

As of March 31, 2026, through our Portfolio Assets, we operate 27 road assets aggregating to 8,754 lane kilometers and 2,005 kilometers in distance across 12 states and one union territory in India. As of such date, our Portfolio Assets had a weighted average residual concession period of 18.0 years (weighted on the basis of pre-major maintenance EBITDA ("**pre-MM EBITDA**")) and operating history of 9.2 years, and we maintained Enterprise Value/AUM aggregating to ₹368,417.57 million, exhibiting an AUM CAGR of 19.47% since March 31, 2024. This growth has corresponded with a 45.77% increase in our NAV per Unit from listing in April 2023 through March 31, 2026, at a CAGR of 13.62%. We operate our assets under different types of concessions, with a balanced mix of toll and annuity income. As of March 31, 2026, among our Portfolio Assets, our Toll AUM to Annuity AUM ratio was 85:15. We currently operate 26 road assets, upon the conclusion of the concession period of the WUPTPL Project on June 23, 2026. For further information, see "*Our Business — Recent Developments*" on page 269.

Set out below is a brief timeline of our progress since listing until March 31, 2026:



Note:
1. Until March 31, 2026
2. Certificate of excellence from Golden Book of World Records

We are currently sponsored by Cube Highways and Infrastructure V Pte. Ltd. ("**CH-V**", or our "**Sponsor**") but were initially sponsored by Cube Highways and Infrastructure Pte. Ltd. and Cube Highways and Infrastructure III Pte. Ltd.. Our Sponsor invests in road and highway projects, as well as other select infrastructure sectors in India, focusing on acquiring mature, cash-generating highway assets, stabilizing and derisking them, and operating them while focusing on delivery of returns to our investors. Additionally, CH-V is an active growth vehicle of the Cube Group, with a strong track record of acquiring, operating, and integrating complex and diverse road assets across India. Our Sponsor and Sponsor Group together hold a portfolio of seven operational road assets spanning 2,169.8 lane kilometers, as of March 31, 2026. Our Sponsor and Sponsor Group are a part of the Cube Group, which is an institutionally-owned road infrastructure platform backed by a diversified investor base, including I Squared Capital (through ISQ Fund III Asia Infrastructure Holdings Pte. Ltd), Platinum Rock B 2014 RSC Limited (as trustee of the Platinum Stone A 2014 Trust, a wholly owned subsidiary of the Abu Dhabi Investment Authority) ("**Platinum Rock**"), Varese IRR LP ("**BCI**") and Mubadala Investment Company PJSC ("**MIC**") (through Seventy Second Investment Company LLC). We have raised ₹134,406.97 million in unit capital (excluding issue expenses of ₹10.94 million) since our settlement, and our Unitholders include several marquee investors, including BCI (through its affiliates) and MIC (through wholly owned subsidiaries) and a variety of domestic mutual funds and insurance companies, among others.

Prudent Debt Management

Our debt facilities have been rated (i) AAA/Stable by India Ratings & Research Private Limited on February 10, 2026 for term loan and bank guarantee; (ii) AAA/Stable by India Ratings & Research Private Limited on August 14, 2025 for non-convertible

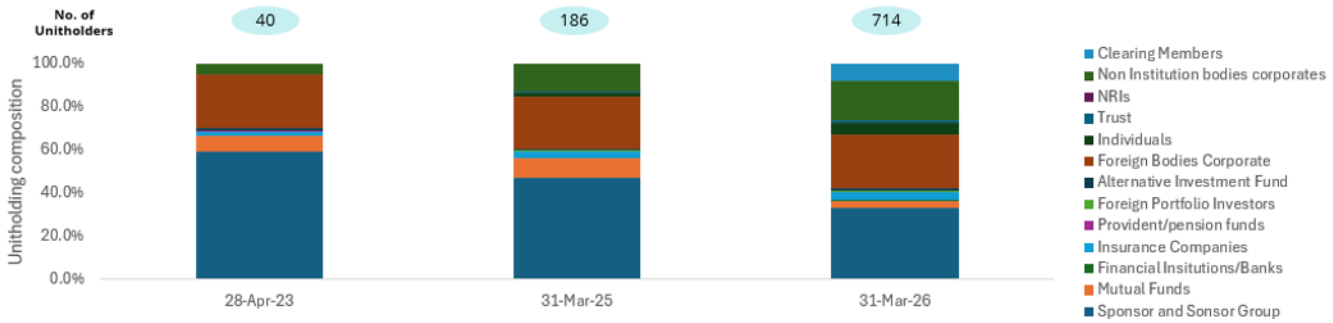
debentures and A1+ for commercial paper; (iii) AAA/Stable by ICRA on September 1, 2025 for term loan and bank guarantee; (iv) AAA/Stable by ICRA on September 1, 2025 for, non-convertible debentures; (v) AAA/Stable by CRISIL Ratings Limited on March 20, 2026 and February 10, 2026 for long term rating; and (vi) A1+ by CRISIL Ratings Limited on April 30, 2026, for short term rating. The table below sets out our key financing and borrowing information, as of March 31, 2026:

Particulars	As of March 31, 2026
Net borrowing ratio (%)	46.82%
Borrowings (₹ *in million*)*	177,557.72
Additional debt headroom (as a % of AUM)	23.18%
Weighted average cost of borrowings (%)	7.53%
Fixed-rate borrowings (%)	25.23%

* *Borrowings are on an undiscounted basis and include accrued interest on borrowings.*

Unitholder Base

Since our listing as a private InvIT in April 2023, our Unitholder base has expanded significantly, from 40 Unitholders as of April 28, 2023, to over 700 Unitholders as of March 31, 2026, reflecting increased investor participation from non-institutional investors alongside traditional institutional categories, including corporates, mutual funds, financial institutions and insurance companies. The chart below shows the growth of our Unitholder base from our listing till March 31, 2026:

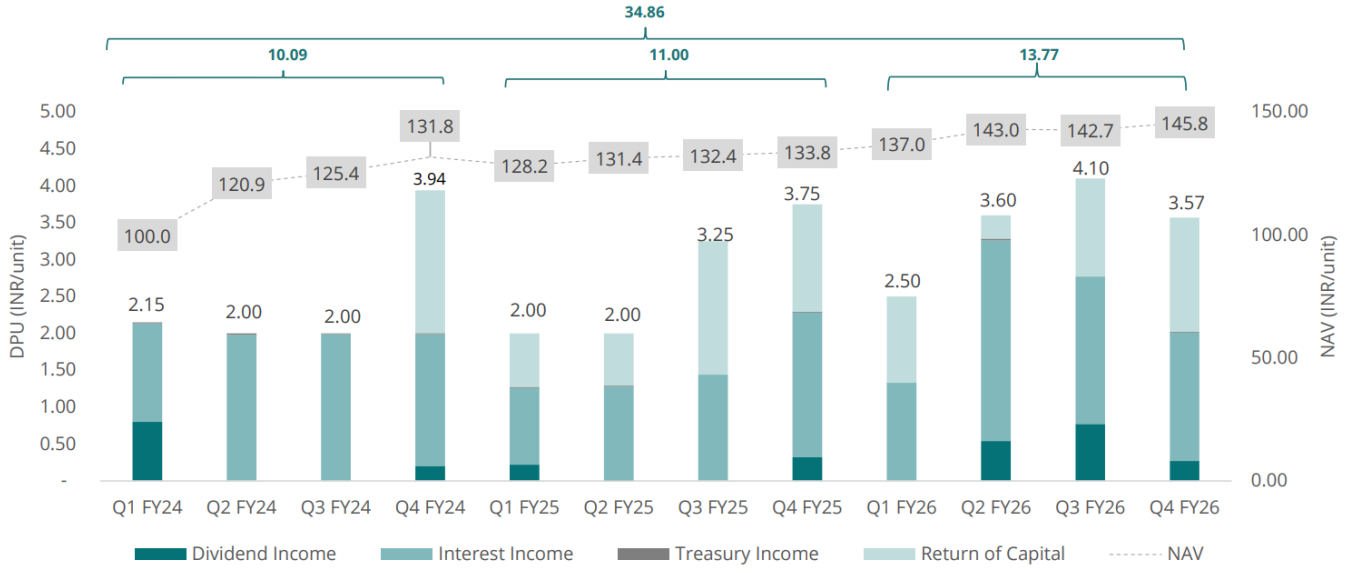


Note: Number of unique unitholders by name as per Beneficiary Position.

Further, as of June 30, 2026, our Unitholder base stood at 1,025 Unitholders.

Consistent Distributions

We have had a consistent track record of quarterly distributions since our listing. Each financial year, we have distributed, at least quarterly, a minimum of 90% of the net distributable cash flows of the Trust available for distribution to our Unitholders, as required under the InvIT Regulations. Our consolidated net distributable cash flows during the Financial Year 2026 aggregated to ₹16,256.52 million. Our cumulative distributions since listing have totalled ₹46,206.35 million (representing a cumulative distribution per unit ("**DPU**") of ₹34.86), as of March 31, 2026. The chart below provides a breakdown of our cumulative distributions per unit since listing until the Financial Year 2026:



Since listing until March 31, 2026, we have delivered an average annual DPU yield of 9.8% (computed as the average of DPU yield for the Financial Years 2024, 2025 and 2026, with DPU yield being computed as DPU divided by the average traded price of the Units on the BSE), with a total XIRR of 23.63%, according to the Industry Report. For further details, please see "*Distribution*" on page 352.

Sustainability

We have also integrated a comprehensive environmental, social and governance ("**ESG**") framework into our business and financing strategy. Our sustainability priorities are embedded across our asset operations. In February 2025, we issued India's first sustainability-linked bond in the road infrastructure sector, with coupon performance linked to defined ESG targets for greenhouse gas emission intensity, circularity in materials and gender diversity. We have adopted sustainable construction and maintenance practices, including the use of reclaimed asphalt pavement, polymer-modified bitumen and other low-carbon materials, together with rainwater harvesting, afforestation initiatives such as the Miyawaki plantation method, energy efficient procurement, efficient lighting solutions, solar panel installations, HVAC replacements, electric vehicle adoptions and are further exploring alternative fuels.

Financial Information

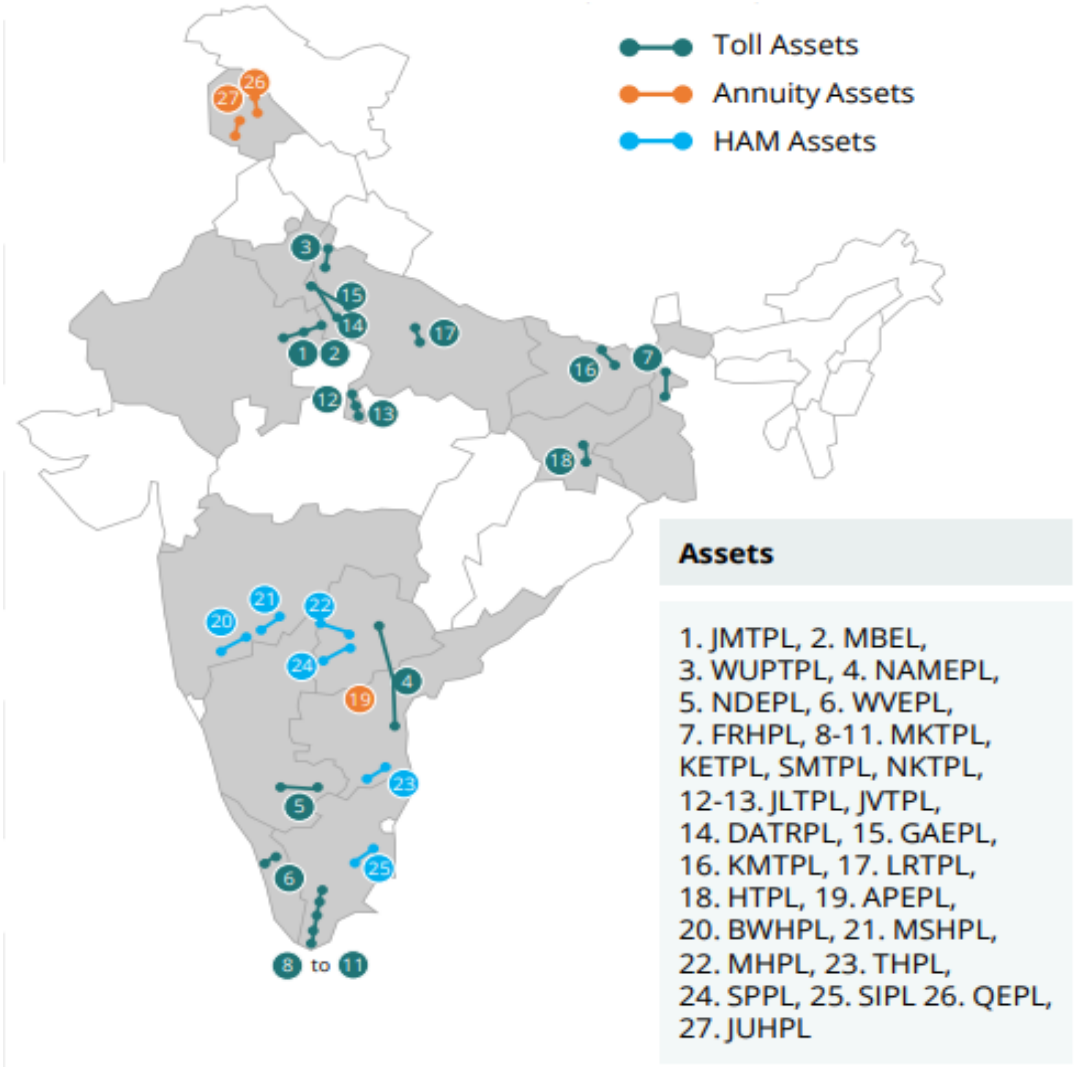
The table below sets out certain of our financial information for the Financial Years indicated:

Particulars	For the Financial Year		
	2026	2025	2024
Enterprise Value/AUM *(₹ in million)*	368,417.57	322,657.15	258,106.00
Revenue from operations *(₹ in million)*	42,388.85	33,071.44	29,161.37
Total income *(₹ in million)*	43,590.26	34,531.52	30,741.05
EBITDA *(₹ in million)*	32,345.44	23,797.00	13,688.56
Adjusted EBITDA* *(₹ in million)*	30,924.44	23,797.00	19,560.43
Net distributable cash flows *(₹ in million)*	16,256.52	10,823.81	10,761.77
Net Asset Value per Unit *(₹)*^	145.77	132.86	126.64
DPU *(₹)*	13.77	11.00	10.09
Net Debt to AUM ratio *(%)*	46.82%	44.65%	33.65%
Share of Fixed rate borrowings *(%)*	25.23%	21.19%	11.16%

* *Adjusted EBITDA is computed as follows: Profit/(loss) before tax plus the sum of impairment charge/(reversal) of intangible assets, depreciation and amortisation expense and finance costs.*

^ *Net Asset Value per Unit considers ordinary units and estimated reclassification of subordinate units to ordinary units for the Financial Years 2025 and 2024.*

The map below sets forth the location of our Portfolio Assets as of March 31, 2026:



Note: The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI.

Our Existing Portfolio

Our Portfolio Assets have a weighted average residual concession life (weighted on the basis of pre-major maintenance EBITDA ("**pre-MM EBITDA**")) of 18.0 years as of March 31, 2026 and a weighted average operating history (weighted on the basis of pre-MM EBITDA, assuming commencement of operations ("**COD**")/provisional commencement of operations ("**PCOD**") as the beginning date) of 9.2 years as of March 31, 2026. The Enterprise Value/AUM, as of March 31, 2026, was ₹287.20 billion for the 18 assets acquired at the time of our listing, ₹49.73 billion for the six HAM assets and a BOT asset acquired between June 2024 and February 2025, and ₹31.49 billion for the two BOT annuity assets acquired during June 2025. The aggregate Enterprise Value/AUM of our Portfolio Assets as of March 31, 2026 was ₹368,417.57 million.

The table below sets forth an overview of the Portfolio Assets as of March 31, 2026:

Project SPV	Type of concession	Concessioning authority	Project length and number of lanes	State/Union Territory	Residual Concession Life (in years, as of March 31, 2026)(3)	Revenue from operations for the Financial Year 2026	Enterprise Value/AUM as of March 31, 2026
Andhra Pradesh Expressway Private Limited ("**APEPL**") (2)	BOT (Annuity)	NHAI	74.6 kms 4 lanes	Telangana and Andhra Pradesh	0.50 years	₹386.29 million	₹815.59 million
DA Toll Road Private Limited ("**DATRPL**")	BOT	NHAI	179.5 kms 6 lanes	Uttar Pradesh, Haryana and Delhi	17.87 years	₹6,579.04 million	₹77,786.20 million
Farakka – Raiganj Highways Private Limited ("**FRHPL**") (1)	DBFOT	NHAI	100.1 kms 4 lanes	West Bengal	15.09 years	₹2,716.24 million	₹26,470.79 million
Ghaziabad Aligarh Expressway Private Limited ("**GAEPL**")	BOT	NHAI	126.3 kms 6 lanes	Uttar Pradesh	13.22 years	₹4,521.90 million	₹38,838.97 million
Hazaribagh Tollway Private Limited ("**HTPL**")	TOT	NHAI	73.5 kms 4 lanes	Jharkhand	24.55 years	₹1,504.47 million	₹20,155.92 million
Jaipur Mahua Tollway Private Limited ("**JMTPL**")	BOT	NHAI	109.1 kms 4 lanes	Rajasthan	5.19 years	₹2,428.28 million	₹7,340.97 million
Jhansi – Lalitpur Tollway Private Limited ("**JLTPL**")	TOT	NHAI	49.7 kms 4 lanes	Uttar Pradesh	19.55 years	₹1,089.33 million	₹12,951.00 million
Jhansi – Vigakhet Tollway Private Limited ("**JVTPL**")	TOT	NHAI	49.3 kms 4 lanes	Uttar Pradesh	19.55 years	₹758.47 million	₹8,014.12 million
Kanyakumari – Etturavattam Tollway Private Limited ("**KETPL**")	TOT	NHAI	64.2 kms 4 lanes	Tamil Nadu	24.55 years	₹876.37 million	₹10,784.58 million
Kotwa – Muzaffarpur Tollway Private Limited ("**KMTPL**")	TOT	NHAI	80.0 kms 4 lanes	Bihar	19.55 years	₹1,248.92 million	₹13,991.52 million
Lucknow – Raebareli Tollway Private Limited ("**LRTPL**")	TOT	NHAI	70.0 kms 4 lanes	Uttar Pradesh	24.55 years	₹709.12 million	₹8,546.26 million
Madurai – Kanyakumari Tollway Private Limited ("**MKTPL**")	TOT	NHAI	52.3 kms 4 lanes	Tamil Nadu	19.55 years	₹1,735.76 million	₹16,608.25 million
Mahua Bharatpur Expressways Limited ("**MBEL**")	BOT	NHAI	57.3 kms 4 lanes	Rajasthan	5.15 years	₹1,218.08 million	₹4,118.85 million
Nanguneri – Kanyakumari	TOT	NHAI	63.5 kms 4 lanes	Tamil Nadu	24.55 years	₹943.61 million	₹14,254.81 million

Project SPV	Type of concession	Concessioning authority	Project length and number of lanes	State/Union Territory	Residual Concession Life (in years, as of March 31, 2026)(3)	Revenue from operations for the Financial Year 2026	Enterprise Value/AUM as of March 31, 2026
Tollway Private Limited ("**NKTPL**")							
Nelamangala Devihalli Expressway Private Limited ("**NDEPL**")	BOT	NHAI	80.3 kms 4 lanes	Karnataka	6.83 years	₹1,241.59 million	₹4,667.25 million
Salaipudhur – Madurai Tollway Private Limited ("**SMTPL**")	TOT	NHAI	63.5 kms 4 lanes	Tamil Nadu	24.55 years	₹943.32 million	₹11,778.47 million
Walayar Vadakkencherry Expressways Private Limited ("**WVEPL**")	DBFOT (Toll)	NHAI	53.5 kms 4 lanes	Kerala	11.50 years	₹1,163.09 million	₹9,100.82 million
Western UP Tollway Private Limited ("**WUPTPL**")(4)	BOT	NHAI	78.1 kms 4 lanes	Uttar Pradesh	0.24 years	₹1,812.03 million	₹977.25 million
Borgaon Watambare Highways Private Limited ("**BWHPL**") (2)	HAM (Annuity)	NHAI	52.0 kms 4 lanes	Maharashtra	10.48 years	₹522.99 million	₹3,216.01 million
Mangalwedha Solapur Highways Private Limited ("**MSHPL**") (2)	HAM (Annuity)	NHAI	55.9 kms 4 lanes	Maharashtra	10.70 years	₹561.83 million	₹3,733.22 million
Mangloor Highways Private Limited ("**MHPL**") (2)	HAM (Annuity)	NHAI	49.0 kms 4 lanes	Telangana	10.71 years	₹350.34 million	₹2,746.61 million
Tirumala Highways Private Limited ("**THPL**") (2)	HAM (Annuity)	NHAI	61.1 kms 6 lanes	Andhra Pradesh	10.11 years	₹512.29 million	₹4,700.95 million
Srirangam Infra Private Limited ("**SIPL**") (2)	HAM (Annuity)	NHAI	38.7 kms 4 lanes	Tamil Nadu	10.16 years	₹604.60 million	₹3,465.57 million
Shankarampet Projects Private Limited ("**SPPL**") (2)	HAM (Annuity)	NHAI	46.8 kms 4 lanes	Telangana	10.51 years	₹577.31 million	₹4,196.88 million
N.A.M. Expressway Private Limited ("**NAMEPL**")	DBFOT (Toll)	Government of Andhra Pradesh and Telangana	212.9 kms 4 lanes	Andhra Pradesh and Telangana	13.66 years	₹3,467.42 million	₹27,665.92 million
Quazigund Expressway Private Limited ("**QEPL**") (2)	DBFOT (Annuity)	NHAI	16.0 kms 4 lanes	Jammu and Kashmir	5.18 years	₹1,849.35 million	₹19,251.23 million
Jammu Udhampur Highway Private Limited ("**JUHPL**") (2)	BOT (Annuity)	NHAI	48.0 kms 4 lanes	Jammu and Kashmir	5.31 years	₹2,066.86 million	₹12,239.56 million

(1) FRHPL toll fee revenue includes 100% share of overloading revenue. However, only 25% of the overloading revenue is credited to the FRHPL account, and the remaining 75% is credited to the erstwhile owner of FRHPL.

(2) APEPL, BWHPL, MSHPL, MHPL, THPL, SIPL, SPPL, QEPL and JUHPL are annuity assets and accordingly, revenue from operations corresponds to annuity income.

(3) Residual Concession Life represents actual residual life for each asset, after accounting for any extensions granted by or which may be granted by the relevant concessioning authority. Our concession agreements allow changes to the assets' concession periods based on actual traffic/revenue relative to target benchmarks, with specific multipliers for adjustments. Our estimations for residual concession life are based on our contracts and independent traffic studies.

(4) The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. Although WUPTPL contributed to our consolidated revenue from operations during the last three Financial Years, we do not expect such contribution to continue going forward.

Committed Assets and Right of First Offer Assets

Cube Highways and Infrastructure II Pte. Ltd. ("**CH-II**") and CH-V, members of the Cube Group, hold 100% of the equity shares of each of Baharampore-Farakka Highways Limited, Devanahalli Tollway Private Limited and Chenani - Nashri Tunnelway Limited, and at least 95% of the equity shares of Western MP Infrastructure & Toll Roads Private Limited, wherein Express Way Developers Limited, a third party, currently holds 5% of the equity shares (collectively, the "**Committed Assets**"). After the completion of the Offer, the Trust, acting through the Investment Manager and Trustee, intends to acquire from CH-II and CH-V, and CH-II and CH-V shall transfer to the Trust, in exchange for Units, the aforementioned equity shareholding of each of the Committed Assets held by both CH-II and CH-V (including at least 95% of the equity shares of WMTPL), together with their nominees. Any potential acquisition of equity shares of the Committed Assets (including at least 95% of the equity shares of WMTPL) is subject to satisfaction of certain conditions precedent specified under the Share Purchase Agreements and the receipt of Unitholders' approval for the specific transaction mechanism, which may be by way of a preferential issue of Units. For further details, please see "*Related Party Transactions - Acquisition of the Committed Assets by the Trust*" on page 383.

In addition, the Trust (acting through the Investment Manager) has the ability to acquire new projects through (i) a right of first offer ("**ROFO**") with our Sponsor in accordance with the right of first offer agreement dated March 17, 2026, ("**ROFO Agreement**" and such assets, the "**ROFO Assets**"); and (ii) through other acquisitions in terms of the Investment Policy.

For further details, please see "*Corporate Governance*" and "*Related Party Transactions*" on pages 171 and 376, respectively. The aggregate revenue from operations for the ROFO Assets was ₹8,805.92 million for the Financial Year 2025.

The table below sets forth an overview of the Committed Assets:

SPV	Type of concession	Concessioning authority	Project length and number of lanes	State/Union Territory	Residual Concession Life (in years, as of March 31, 2026) (1)	Revenue from operations for the Financial Year 2025(5)	AUM as of March 31, 2026(3)
Baharampore-Farakka Highways Limited ("**BFHL**")	DBFOT	NHAI	100.6 kms 4 lanes	West Bengal	14.84 years[(4)]	₹2,086.94 million	₹20,192.81 million
Western MP Infrastructure & Toll Roads Private Limited ("**WMTPL**")	BOT	Madhya Pradesh Road Development Corporation	124.2 kms 4 lanes	Madhya Pradesh	12.07 years	₹2,361.35 million	₹15,721.65 million
Devanahalli Tollway Private Limited ("**DTPL**")	DBFOT	NHAI	22.1 kms 6 lanes	Karnataka	5.80 years	₹3,237.77 million	₹14,764.77 million
Chenani-Nashri Tunnelway Limited ("**CNTL**")	DBFOT (Annuity)	NHAI	10.8 kms [(2)] 2 lanes	Jammu and Kashmir	5.94 years	₹3,389.02 million	₹22,246.10 million

(1) Residual Concession Life represents actual residual life for each asset, after accounting for any extensions granted by or which may be granted by the relevant concessioning authority. Our concession agreements allow changes to the assets' concession periods based on actual traffic/revenue relative to target benchmarks, with specific multipliers for adjustments. Our estimations for residual concession life are based on our contracts and independent traffic studies.

(2) As per the annuity letter dated February 2025, it includes ~1.9 kms of additional approach roads.

(3) As per the valuation report dated May 22, 2026.

(4) Please note that the extension for the concession period is yet to be approved by the NHAI.

(5) The financial information for these entities, being private limited companies not subject to the timelines prescribed for release of audited financials which are applicable to listed companies, pertains to their last available audited financial year, being Financial Year 2025.

The table below sets forth an overview of the ROFO Assets:

Particulars	Kokhraj Handia Expressway Private Limited ("KHEPL")	Malayagiri Highways Private Limited ("MHPL2")	Delhi Hapur Meerut Expressway Private Limited ("DHMEPL")
Equity Shareholders	CH –V	CH –V	CH –V
Project Connecting	Kokhraj to Handia	Binjabahal to Teliebani	NCR to Meerut and Hapur
Granting Authority	NHAI	NHAI	NHAI
State	Uttar Pradesh	Odisha	Delhi, Uttar Pradesh
Highway	NH19	NH49	NE3 and NH9
Project Length (Km)	84.5 km	71.6 km	82.0 km
No. of toll plazas	6	1	9
Lane configuration	4 lane	4 lane	6 lane
Toll Plazas ("TP")	Closed Tolling: TP1: Kokhraj toll plaza TP2: Shingverpur TP3: Nawabganj TP4: Soraon	TP 1: Bideibadkudar	Closed Tolling: TP1: Sarai Kale Khan TP2: Indirapuram TP3: Dundahera TP4: Dasna

Particulars	Kokhraj Handia Expressway Private Limited ("KHEPL")	Malayagiri Highways Private Limited ("MHPL2")	Delhi Hapur Meerut Expressway Private Limited ("DHMEPL")
	TP5: Sahson TP6: Handia toll plaza		TP5: Rasoolpur Sikrod TP6: Bhojpur TP7: Zainuddinpur (under construction) TP8: Kashi Toll Plaza (main line) TP9: Chhajarsi Toll Plaza (main line) (NH09)
Concession Period	20 Years	20 Years	20 Years
Residual Concession Life (as of March 31, 2026) [(1)]	18.00 Years	18.00 Years	18.00 Years
Toll/Annuity	Toll	Toll	Toll
Revenue from operations for the Financial Year 2025[(2)]	₹2,542.44 million	₹999.15 million	₹5,264.33 million
Appointed Date	April 1, 2024	April 1, 2024	April 1, 2024
Concession End Date	March 31, 2044	March 31, 2044	March 31, 2044
Current Status	100% operational	100% operational	100% operational

(1) Residual Concession Life represents actual residual life for each asset, after accounting for any extensions granted by or which may be granted by the relevant concessioning authority. Our concession agreements allow changes to the assets' concession periods based on actual traffic/revenue relative to target benchmarks, with specific multipliers for adjustments. Our estimations for residual concession life are based on our contracts and independent traffic studies.

(2) The financial information for these entities, being private limited companies not subject to the timelines prescribed for release of audited financials which are applicable to listed companies, pertains to their last available audited financial year, being Financial Year 2025.

The Investment Manager believes the following to be the key strengths of the Trust:

- Dedicated growth vehicle and access to a strong pipeline of Committed Assets, ROFO Assets and other future growth opportunities;
- Large and diversified portfolio of highway assets;
- Differentiated and proven M&A capabilities;
- Strong portfolio construction capabilities;
- Advanced asset management and maintenance expertise;
- Strong corporate finance capabilities;
- Experienced leadership and institutional backing; and
- Attractive sector fundamentals with a favourable policy environment.

Investment, Risk and Capital Management Strategies

- Active asset management to drive growth and yield;
- Calibrated expansion of the portfolio;
- Implementing prudent capital management policies; and
- Embedding sustainability and ESG practices in our business model.

For details, see "*Our Business*" on page 262.

RISK FACTORS

An investment in the Units involves risk. Prospective investors should carefully consider the risks and uncertainties described below and the information contained elsewhere in the Offer Document and this Final Offer Document, before making an investment in the Units. Investors should be aware that the price of the Units, and the income from them, may be subject to volatility. In making an investment decision, each investor must rely on its own examination of the Trust and the terms of the offering of the Units. If any of the risks described below occur, our business and prospects could be adversely affected, the trading price of the Units could decrease, and investors could lose all or part of their original investment. This section should be read in conjunction with the sections entitled "Our Business" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" on pages 262 and 356, respectively, as well as the financial statements and other financial information included elsewhere in this Final Offer Document. Prospective investors should consult their tax, financial, and legal advisors regarding any particular consequences of investing in the Offer.

Before investing in the Units, prospective investors should pay particular attention to the fact that the Trust, the Parties to the Trust, the Portfolio Assets, and each of their activities are governed by the legal, regulatory, and business environment in India, which differs from that prevailing in other countries. The risks and uncertainties described in this section may not be the only risks and uncertainties the Trust currently faces. Additional risks and uncertainties not presently known to the Trustee or the Investment Manager, or that the Trustee or the Investment Manager currently deem immaterial, may arise or may adversely affect our business, financial condition, cash flows and results of operations. If any of the following risks, or other risks that are not currently known or are now deemed immaterial, actually occur, our business prospects, results of operations, cash flows and financial condition could suffer, the price of the Units could decline, and investors may lose all or part of their investment. The financial and other related implications of the risk factors, wherever quantifiable, have been disclosed in the risk factors mentioned below. However, there are certain risk factors for which the financial effect is not quantifiable and, therefore, cannot be disclosed in such risk factors. Unless otherwise stated in the relevant risk factors set forth below, the Trustee and the Investment Manager are not in a position to specify or quantify the financial or other risks mentioned herein.

This Final Offer Document also contains forward-looking statements that involve risks, assumptions, estimates and uncertainties. Our actual results could differ materially from those anticipated in such forward-looking statements as a result of certain factors, including the considerations described below and elsewhere in this Final Offer Document, including the section entitled "Forward-Looking Statements" on page 30.

Unless otherwise stated, references in this section to "we", "our" or "us" are to the Cube Highways Trust, together with the Portfolio Assets. Furthermore, unless the context otherwise requires, the financial information used in this section is derived from the Audited Consolidated Financial Statements. The Trust acquired 51% of the shareholding in Borgaon Watambare Highways Private Limited, Mangalwedha Solapur Highways Private Limited, Mangloor Highways Private Limited, Srirangam Infra Private Limited (formerly known as KNR Srirangam Infra Private Limited), Shankarampet Projects Private Limited (formerly known as KNR Shankarampet Projects Private Limited) and Tirumala Highways Private Limited (formerly known as KNR Tirumala Infra Private Limited) (collectively, the "HAM SPVs") on June 4, 2024, and acquired the remaining 49% shareholding in the HAM SPVs on December 3, 2024. Further, the Trust acquired 100% of the shareholding in N.A.M. Expressway Private Limited ("NAMEPL") on February 12, 2025. Thereafter, the Trust acquired 100% of the shareholding in Quazigund Expressway Private Limited ("QEPL") and Jammu Udhampur Highway Private Limited (formerly known as Athaang Jammu Udhampur Highway Private Limited) ("JUHPL" and together with QEPL, the "NIIF SPVs") on June 12, 2025. Accordingly, the HAM SPVs, NAMEPL and the NIIF SPVs have been accounted for as subsidiaries in our Audited Consolidated Financial Statements with effect from June 4, 2024, February 12, 2025 and June 12, 2025, respectively. Disclosures in relation to our Portfolio Assets across this Final Offer Document include data in relation to Western UP Tollway Private Limited for the Financial Years 2026, 2025 and 2024. However, the concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. Although WUPTPL contributed to our consolidated revenue from operations during the last three Financial Years, we do not expect such contribution to continue going forward. The Investment Manager shall fulfil its obligations in respect of WUPTPL in accordance with the InvIT Regulations and applicable circulars issued by the SEBI.

Industry, macro-economic and market data, and all industry-related statements in this section have been extracted or derived from the report titled "Assessment of the Indian Road Sector" prepared and released by the Industry Expert, which has been commissioned and paid for by the Investment Manager on behalf of the Trust (the "Industry Report"). Also see "– We have relied on data derived from third-party reports, which are based on certain estimates and assumptions and are subject to the limitations set out therein" on page 106 for details of risks in relation to commissioned reports.

Risks Relating to our Business and the Concession Agreements

1. ***We may not be able to make regular distributions to Unitholders, or the level of our distributions may fall.***

The amount of future distributions, if any, will depend upon various internal and external factors, including future earnings, financial condition, cash flows, working capital requirements and capital expenditures of the Portfolio Assets and the dividends, interest payments and repayments of indebtedness that are distributed to the Trust. The income earned from the projects depends, among other things, on the amount of income generated from annuities and tolls, and on the level of operating and other expenses incurred. If the projects do not generate sufficient operating profit,

the Trust's income, cash flows, and the ability to make distributions, or the level of distributions made to Unitholders, will be adversely affected.

The ability of the Portfolio Assets to make dividend payments is subject, among other things, to applicable laws and regulations in India and any other contractual restrictions to which they may be bound. Under the terms of the InvIT Regulations, in the event any assets are sold by the Trust or SPVs (as applicable) or if the equity shareholding or interest in any SPV (as applicable) is disposed of by the Trust and the proceeds of such sale are proposed to be reinvested in another infrastructure asset, then the Trust is not obligated to make any distributions from such proceeds to the Unitholders in accordance with InvIT Regulations. The Portfolio Assets may also require debt financing and the Trust's entry into or completion of any loan arrangements with the Portfolio Assets may be delayed or not achieved. This may reduce the cash flows available to the Portfolio Assets for upstreaming to the Trust or delay such upstreaming, which could adversely affect distributions to Unitholders.

In addition, the InvIT Regulations provide that the Trust must distribute not less than 90% of the net distributable cash flows of each Portfolio Asset in proportion to its holding in each of its Portfolio Assets, subject to the applicable provisions of the Companies Act, 2013. The distributions to the Unitholders must be declared and made not less than once every six months in every Financial Year (in accordance with the Trust's distribution policy, adopted by the Investment Manager, and applicable regulations for public infrastructure investment trusts) and within five working days from the record date, being two working days from the date of such declarations, excluding the date of declaration and the record date. There is no assurance that the Trust will be able to make distributions to the Unitholders or that such distributions will be consistent across various periods. Also see "*Distribution*" on page 352.

Further, the method for calculating the net distributable cash flows of a Portfolio Asset is subject to change, and any change in applicable laws in India or elsewhere may limit the Trust's ability to pay or maintain consistent distributions to Unitholders. There is also no assurance that the expansion of the Trust's portfolio of infrastructure assets will increase the Trust's cash flows and, thereby, result in an increase in distributions to Unitholders over time.

2. ***A significant portion of our revenue from operations is dependent on annuity payments from the NHAI, which may be delayed, disputed or reduced, which could adversely affect our business, results of operations, financial condition and cash flows.***

A significant portion of our revenue from operations is derived from annuity-based and Hybrid Annuity Model ("**HAM**") projects, where fixed periodic payments are contractually payable by the NHAI. Set out below are details of revenue generated from our annuity assets for the years indicated:

Particulars*	**For the Financial Year**					
	2026		**2025**		**2024**	
	Amount (₹ in million)	***% of revenue from operations***	***Amount (₹ in million)***	***% of revenue from operations***	***Amount (₹ in million)***	***% of revenue from operations***
Revenue generated from annuity assets	7,357.09	17.36%	4,135.70	12.51%	400.32	1.37%

* *Revenue generated from annuity assets includes operation and maintenance income, finance income on annuity receivables and renewals and overlay income.*

The timely receipt of payments by our annuity and HAM projects is critical to our ability to service debt and to receive upstream cash flows at the Trust level. There have been instances of delays and deductions by NHAI in the past, citing alleged performance deficiencies, non-compliance with maintenance standards, or delays in achieving milestones. However, such delays and deductions have not, in the aggregate, materially and adversely affected our results of operations during the past three Financial Years. Annuity amounts may also be reduced due to reasons such as delayed project completion or penalties for non-performance. Any such deductions or delays could reduce the cash available for distribution to our Unitholders. Set out below are details of delays in the receipt of annuity payments by our Project SPVs across our Portfolio Assets:

SPV	Annuity due date	Actual date of receipt	Delay in receipt (in days)
APEPL	September 13, 2023	September 14, 2023	1
APEPL	September 13, 2025	September 15, 2025	2
SIPL	June 10, 2024	June 19, 2024	9
MHPL	June 28, 2024	July 2, 2024	4
MSHPL	June 29, 2024	July 2, 2024	3
SIPL	December 11, 2024	December 12, 2024	1
THPL	November 21, 2024	December 9, 2024	18
SPPL	October 19, 2024	October 23, 2024	4
MHPL	December 28, 2024	January 1, 2025	4
SIPL	June 10, 2025	June 30, 2025	20
THPL	May 21, 2025	May 27, 2025	6
MHPL	June 28, 2025	July 1, 2025	3

SPV	Annuity due date	Actual date of receipt	Delay in receipt (in days)
MSHPL	June 29, 2025	July 11, 2025	12
SIPL	December 11, 2025	December 21, 2025	10
MHPL	December 28, 2025	December 30, 2025	2
MSHPL	December 29, 2025	December 31, 2025	2
THPL	May 21, 2026	May 26, 2026	5

In addition, we have received certain notices/demands regarding the applicability and treatment of Goods and Services Tax (GST) on historical annuity receipts. Further, the relevant Portfolio Assets have made submissions (appeals/writ petitions) before the relevant adjudicating authorities/courts and these matters are currently pending. Additionally, these matters involve a sum aggregating up to ₹8,134 million excluding interest and penalty. Accordingly, if such positions are sustained or ultimately determined adversely by the relevant authorities, it could result in additional tax liability, interest and penalties. This could significantly reduce the net cash flows from our annuity assets. We are also exposed to risks of broader fiscal or policy pressures affecting NHAI. Any constraints in budgetary allocations, delays in government payments, or shifts in policy towards restructuring of HAM and annuity obligations could affect the stability of our revenue stream. There can be no assurance that payments will be made on time, in full, or without dispute.

Accordingly, our dependence on annuity and HAM payments from government authorities exposes us to risks of delay, reduction or adverse tax treatment, any of which could adversely affect our business, financial condition, results of operations, cash flows, and our ability to make distributions to Unitholders.

3. ***Our failure to extend concession agreements or inability to identify and acquire new road assets that generate comparable or higher revenue from operations, profits and cash flows than the Portfolio Assets may have an adverse effect on our business, financial condition, results of operations, cash flows and our ability to make distributions to Unitholders.***

The concession agreements of the Portfolio Assets stipulate a limited concession period. The table below sets out the details of the Portfolio Assets' residual concession periods.

Portfolio Asset	State/Union Territory	Residual Concession Life (in years, as of March 31, 2026)
APEPL	Telangana and Andhra Pradesh	0.50 years
DATRPL	Uttar Pradesh and Haryana	17.87 years
FRHPL	West Bengal	15.09 years
GAEPL	Uttar Pradesh	13.22 years
HTPL	Jharkhand	24.55 years
JMTPL	Rajasthan	5.19 years
JLTPL	Uttar Pradesh	19.55 years
JVTPL	Uttar Pradesh	19.55 years
KETPL	Tamil Nadu	19.55 years
KMTPL	Bihar	19.55 years
LRTPL	Uttar Pradesh	24.55 years
MKTPL	Tamil Nadu	19.55 years
MBEL	Rajasthan	5.15 years
NKTPL	Tamil Nadu	24.55 years
NDEPL	Karnataka	6.83 years
SMTPL	Tamil Nadu	24.55 years
WVEPL	Kerala	11.50 years
WUPTPL*	Uttar Pradesh	0.23 years
BWHPL	Maharashtra	10.48 years
MSHPL	Maharashtra	10.70 years
MHPL	Telangana	10.71 years
THPL	Andhra Pradesh	10.11 years
SIPL	Tamil Nadu	10.17 years
SPPL	Telangana	10.51 years
NAMEPL	Andhra Pradesh and Telangana	13.66 years
QEPL	Jammu and Kashmir	5.18 years
JUHPL	Jammu and Kashmir	5.31 years

* *The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI.*

For instance, the concession period of the WUPTPL Project concluded on June 23, 2026, resulting in the asset ceasing to form part of our Portfolio Assets. We cannot assure you that we will be able to identify and acquire new road assets that generate comparable or higher revenue from operations, profits and cash flows to offset the loss of cash flows previously generated by the WUPTPL Project, and any failure to do so may adversely affect our business, financial condition, results of operations, cash flows and our ability to make distributions to Unitholders. For further details of the residual concession period of each of the Portfolio Assets, see "*Our Business*" on page 262.

Certain of our concession agreements provide for the concession period to be extended if traffic volumes fall below specified thresholds or reduced if traffic volumes exceed projections. These provisions are intended to balance risks between concessionaires and authorities. However, no reduction in concession periods of any of our Portfolio Assets has been implemented during the past three Financial Years. Also see "*Legal and Other Information*" on page 405 for details of certain disputes regarding the concession periods for WVEPL and FRHPL.

However, the actual grant of extensions or reductions requires approval from the National Highways Authority of India ("**NHAI**") or state concessioning authorities, and in practice, such claims are frequently disputed or subject to protracted reviews. Where disputes arise, concessionaires are often required to initiate arbitration or litigation proceedings to enforce contractual rights. Even if successful, the resolution may take several years, and any interim uncertainty can affect traffic forecasts, valuation of assets, and refinancing assumptions. If concession extensions are not approved on time, are only partially granted, or if concession periods are reduced, our Portfolio Assets may lose operating tenure, which would reduce our expected revenue from operations, adversely affect our cash flows, and limit our ability to make distributions to Unitholders. For further details, please see the section entitled "*Legal and Other Information - Other matters considered material by the board of directors of the Investment Manager*" on page 408.

Further, a few older concession agreements measure traffic volumes in Passenger Car Units ("**PCU**"), and variations in the interpretation of PCU conversion factors (particularly for multi-axle trucks with three or more axles) may lead to differences in the computation of target traffic and resultant variation in the concession period. We have also observed that the concessioning authority has proposed revising the applicable PCU conversion ratios to reflect changes in post-COVID traffic composition and seasonal variations. Such modifications, if implemented, could alter the measured traffic base and may cause the degree of extension or reduction of concession periods to differ from the levels currently anticipated. Consequently, there can be no assurance that the final concession life determined by the authority will correspond to our internal assessments. Further, these changes may require additional review or reconciliation with lenders, independent engineers, and valuers, which could delay approvals or adversely affect our cash flows. In addition, certain assets have the option to share 25% of their toll revenues with the concessioning authority upon exceeding a prescribed PCU volume on the asset, and in the event the concessionaire of the asset elects to pay the prescribed portion of the toll revenue, the asset will not be subject to a reduction of the concession period.

There can be no assurance that we will be able to obtain extensions on the tenure of our concession agreements or acquire new road assets prior to or upon the expiry of the Portfolio Assets' concession agreements. Accordingly, the number of assets forming part of our portfolio and the revenue generated by them may vary over time. Further, even if new road assets are added to our portfolio, there can be no assurance that such road assets will generate cash flows, revenue from operations, and profits comparable to or higher than those of the Portfolio Assets whose concession periods have expired. If the Portfolio Assets are unable to extend their concession agreements, or if we are unable to acquire new road assets that generate comparable or higher cash flows, revenue, or profits than the Portfolio Assets, our business, financial condition and results of operations and our ability to make distributions to Unitholders may be adversely affected. For further details on the terms of each of the concession agreements, see "*Summary of Key Agreements – Summary of the Concession Agreements*" on page 316.

4. *Our toll collections and traffic volumes are subject to uncertainties, including competing roads, exemptions, toll leakage, changes in vehicle mix, and government directives, which could adversely affect our business, results of operations, financial condition and cash flows.*

For our toll-based projects, toll collections are their principal source of revenue. The volume of traffic and the level of toll receipts depend on a variety of factors, many of which are outside our control, such as the rise of alternatives to road infrastructure, the construction of competing roads, changes in toll rates, toll leakage and socio-economic factors affecting traffic on toll roads. In addition, traffic volumes and user willingness to pay tolls may be adversely affected by the capacity, condition and service levels of our roads (including lane availability, congestion levels and travel time reliability), the quality and timeliness of O&M, and the overall safety and security environment on and around such corridors. Any adverse change in traffic volumes or in our ability to collect tolls could adversely affect our business, results of operations, financial condition and cash flows. Set out below are details of revenue generated from our toll assets for the years indicated:

Particulars	**For the Financial Year**					
	2026		**2025**		**2024**	
	Amount (₹ in million)	***% of revenue from operations***	***Amount (₹ in million)***	***% of revenue from operations***	***Amount (₹ in million)***	***% of revenue from operations***
Revenue generated from toll assets	34,125.40	80.51%	28,275.30	85.50%	24,715.17	84.75%

Traffic on our toll roads is sensitive to competing infrastructure. New toll-free roads, parallel expressways or alternate transport modes (such as rail corridors or air travel) can divert vehicles away from our assets. For example, according to the Traffic Consultant, the Ganga Expressway and the Shamli–Gorakhpur Expressway, currently under development, are expected to provide alternate connectivity between Delhi and eastern Uttar Pradesh, and may reduce

traffic on the Ghaziabad–Aligarh Expressway and other contiguous stretches of our Portfolio Assets. Similarly, the commissioning of metro rail projects or dedicated freight corridors may shift passenger and freight traffic away from certain toll roads.

Toll rates are also subject to regulation under the National Highways Fee (Determination of Rates and Collection) Rules, 2008, as amended, and are linked to the wholesale price index ("**WPI**"), as set out in our concession agreements. These rules provide only limited escalation in toll rates and, in certain cases, cap inflation-based adjustments. Accordingly, we may not be able to increase tolling rates to cover increases in our operations or financing or other costs. Further, the NHAI had, pursuant to a September 2025 circular, sought to revise the linking factor applied for WPI adjustments in toll fee computation downward. While this circular has been superseded pursuant to an office memorandum dated June 29, 2026 issued by the Ministry of Road Transport and Highways and a circular dated July 8, 2026 issued by the NHAI, which retained the linking factor at 1.641, there can be no assurance that the linking factor will not be revised in the future. Additionally, NHAI has implemented a new scheme offering an annual user pass at ₹3,000 for certain categories of private vehicles, which may reduce per-trip toll collections on affected corridors. This new scheme has been implemented based on a formula determined by NHAI, and SPVs have executed supplemental agreements to this effect. However, the formula may be reviewed by NHAI, which may have an adverse effect on our business, results of operations, financial condition and cash flows. Any future changes to the WPI linkage or toll-escalation methodology could reduce our toll revenues. The National Highway Fee (Determination of Rates and Collection) Rules, 2008, as amended, provide for annual user fee escalation based on 3% plus 40% of the change in WPI, but the Government or NHAI may amend this formula, change the base year or defer its implementation. Any such modification, or implementation of policies such as the revised WPI linking factor or the annual user pass scheme, or any period of lower WPI growth, would directly limit annual toll increases and adversely affect our business, results of operations, financial condition and cash flows.

In addition, NHAI and state governments may, by notification or order, temporarily suspend or exempt categories of vehicles from paying tolls. For example, toll may not be levied during certain festive periods and the NHAI reserves the right to decide on the number of road users not required to pay the applicable toll rates when using the toll roads, which may be higher in urban settings. Our concession agreements also provide that certain users of the toll roads are exempt from paying user fees for non-commercial use of the roads, while frequent users are entitled to discounted fees to use the toll roads. We are also subject to fluctuations of traffic flow at new toll plazas that may not stabilize within the timelines anticipated or at all.

Toll leakage remains a persistent risk despite the introduction of electronic tolling through FASTag. Leakage may arise from deliberate evasion, fraudulent use of exempt or discounted passes, misclassification of vehicles, vandalism of toll plazas, or technology failures. Further, any failure or delay in undertaking routine or major maintenance, pavement deterioration, lane closures, or other service-level deficiencies may increase congestion and divert traffic to alternate routes, thereby adversely affecting toll collections. Security incidents may disrupt operations, result in temporary suspension of toll operations, increase O&M and insurance costs, and adversely affect user perception and traffic volumes.

Indirect economic and social factors also affect traffic. These include changes in fuel prices, vehicle ownership and financing costs, shifts in commodity production and trade flows, axle-load regulations, political or social agitation, and force majeure events such as floods, epidemics, or pandemics. In addition, seasonal variations, including monsoon-related disruptions, typically reduce traffic volumes on many of our assets. Further, the local or state agencies responsible for maintaining corridors connecting to our toll roads may not properly maintain these roadways, or their maintenance may require their closure, blocking access to our toll roads. Together, these factors may affect traffic volumes in ways that are difficult to predict.

In the event of a significant decrease in traffic volume or a reduction in toll rates on the toll roads, toll collections may decrease accordingly. While our concession agreements provide for compensation under specified circumstances, there can be no assurance that we will be able to receive such compensation in a timely manner, without dispute or deductions. For instance, there is no compensation provided for changes in traffic volumes after the specified target traffic date under the concession agreements and there are no remedies available for low inflation affecting toll collections. Accordingly, our toll revenues and traffic volumes are subject to a number of uncertainties that may reduce collections and adversely affect our business, results of operations, financial condition and ability to make distributions to Unitholders.

5. ***Our concession agreements may be terminated prematurely or suspended by concessioning authorities upon the occurrence of certain events of default.***

The Portfolio Assets comprise road assets. We will be unable to continue operating a particular road asset without a continuing concession right from the concession authority. A concession may be revoked by the concessioning authority for certain reasons set forth in the relevant concession agreement, including, but not limited to, one or more of the following:

- any failure by the relevant Portfolio Asset to comply with prescribed minimum shareholding requirements and restrictions in relation to a change in control or ownership;
- any failure by the relevant Portfolio Asset to make any payments, including negative grants, to the concession authority in a timely manner;
- any failure by the relevant Portfolio Asset to comply with operational or maintenance standards;
- any temporary or permanent halt of operations at the relevant Portfolio Asset;
- any abandonment of operations by any Portfolio Asset without the prior written consent of the concessioning authority;
- any occurrence of an event of default under any financing document where the lender has recalled any part of the loan;
- any continuation of a force majeure event, such as natural calamities, act of war, expropriation or compulsory acquisition of any project assets by the government, industrial strikes, civil commotions, boycotts and political agitations, beyond a specified time; and
- any failure by the relevant Portfolio Asset to comply with any other material terms of the relevant concession agreement.

For each of the Portfolio Assets, we have assumed that we will continue to operate the relevant project until the last date of the concession period (as amended) as per the relevant concession agreement. Even where a concession agreement is not terminated, it may expire in the ordinary course of business upon completion of its term. For instance, APEPL and WUPTPL have residual concession lives of 0.50 years and 0.23 years, respectively (each as of March 31, 2026), after which their respective concessions will expire (with WUPTPL's concession period having expired as of the date of this Final Offer Document). Upon expiry of the concession period, the relevant assets will be handed back to the concessioning authority in accordance with the terms of the concession agreements, subject to settlement of any outstanding claims and other outstanding matters and we will cease to derive revenue from operations from such assets. However, the expiry of the concession periods of APEPL and WUPTPL is not expected to have a material adverse effect on our business, results of operations, financial condition, cash flows or our ability to make distributions to Unitholders.

If a concession agreement is terminated (a) by the concessioning authority due to a default by an Portfolio Asset, or (b) by a Portfolio Asset due to a default by the concessioning authority, such SPV is entitled to termination payments or otherwise from the concessioning authority in accordance with the terms of the relevant concession agreement. There can be no assurance that the concessioning authority will pay the termination payments promptly or at all or that any termination payments will be adequate to enable us to recover our investments or returns in the relevant Portfolio Assets. Further, termination payments under the concession agreements are linked to outstanding indebtedness or costs incurred at the time of the award of the concession and may not reflect the actual investments we made in the projects at the time of termination, thereby causing a shortfall. While we have not faced any premature termination of a concession agreement, during the Financial Years 2026, 2025 and 2024, there can be no assurance that we will not face such premature terminations in the future, which may adversely affect our business, results of operations, financial condition and cash flows.

If any of the concession agreements are reduced or terminated prematurely, our business, financial condition and results of operations may be adversely affected. For further details on the termination of the concession agreements and the termination payments contemplated under the relevant concession agreements, see "*Our Business*" and "*Summary of Key Agreements - Summary of the Concession Agreements*" on pages 262 and 316, respectively.

6. ***Our revenue from operations are significantly concentrated in a few corridors and geographies, and any adverse development in these regions could adversely affect our business, results of operations, financial condition and ability to make distributions to Unitholders.***

A substantial portion of our revenue from operations is derived from toll collections and annuity income from our road assets located in a limited number of high-density traffic corridors in India. Set out below are details of our toll revenues generated from assets situated along National Highway 44 ("**NH-44**"), comprising of MKTPL, KETPL, SMTPL, NKTPL, JLTPL, JVTPL, APEPL, QEPL, JUHPL and DATRPL, and their contiguous stretches during the years indicated:

Particulars	For the Financial Year					
	2026		2025		2024	
	Amount (₹ in million)	*% of total toll revenue*	*Amount (₹ in million)*	*% of total toll revenue*	*Amount (₹ in million)*	*% of total toll revenue*
Toll revenue generated from assets situated along NH-44	12,211.95	35.79%	10,981.06	38.84%	10,333.97	41.81%

Although our Portfolio Assets span 12 states and one union territory in India, a significant proportion of our revenue from operations depends on the continued performance of a few corridors that connect key industrial, commercial, and agricultural belts. Further, a material portion of our Portfolio Assets is concentrated in the states of Uttar Pradesh, Rajasthan, Jammu and Kashmir, and Tamil Nadu, aggregating to 4,428.60 lane kilometers, 50.89% of our total lane kilometers of our Portfolio Assets.

Any local or regional economic downturn, changes in consumption or production patterns of goods transported, adverse climatic conditions, or political and social unrest in these geographies could result in a material decline in traffic volumes and toll collections. For instance, prolonged agitations, industrial strikes, or natural calamities in Uttar Pradesh or along NH-44 could disproportionately affect a large portion of our portfolio revenues. Furthermore, the development of competing expressways and alternate transport infrastructure in these corridors (such as the Ganga Expressway and the Shamli–Gorakhpur Expressway) may divert traffic away from our existing toll roads, reducing revenue from operations from affected assets.

In addition, corridor concentration increases our exposure to state-specific policy, taxation, and regulatory changes. Any unfavourable amendments to tolling policies, restrictions on vehicle movement, or prolonged delays in annuity disbursements in the states with higher exposure could disproportionately affect our business, results of operations, financial condition and cash flows. While diversification of assets into other geographies may mitigate this risk over time, there can be no assurance that we will be able to acquire assets across a sufficiently broad geographical base or that such acquisitions will be consummated on terms favourable to us.

Accordingly, the geographic and corridor concentration of our Portfolio Assets exposes us to risks associated with localised economic, political, and regulatory factors. Any adverse development in these regions could affect our business, results of operations, financial condition, and our ability to make distributions to our Unitholders.

7. ***Our concession agreements contain mandatory capacity augmentation and major maintenance obligations, which could increase our costs and reduce traffic during works, thereby adversely affecting our business, results of operations, financial condition and cash flows.***

Under the terms of our concession agreements, several of our toll roads are subject to capacity augmentation obligations or periodic major maintenance requirements, as provided therein. While such capacity augmentation requirements have not been triggered for any of our Portfolio Assets, these obligations may, upon becoming applicable, require us or, in certain cases, the relevant concessioning authority to undertake lane expansions, pavement strengthening, bridge rehabilitation, or other significant works during the concession period. For instance, in the case of JUHPL, as per the terms of the settlement agreement entered into with NHAI, the SPV is required to pay the NHAI an amount equivalent to the major maintenance cost for the descoped portion of the project section in the years when such major maintenance works are undertaken. However, if there is a dispute with NHAI regarding the interpretation of this obligation and it is resolved unfavourably, we may be required to bear the cost of a second major maintenance cycle for the descoped portion as well. This could increase the total maintenance outflow for JUHPL and adversely affect our results of operations, cash flows and distributions. In addition, in Andhra Pradesh Expressway Private Limited ("**APEPL**"), a deduction of approximately ₹8.67 million was made by the concessioning authority in January 2024 on account of certain major maintenance works.

Major maintenance is typically required every five to seven years and involves substantial expenditure on resurfacing, repairing and replacing road furniture, and rehabilitating structures. For example, across our BOT and TOT assets, periodic overlay and resurfacing cycles have required substantial expenditure, with costs rising due to inflation in construction materials such as bitumen and aggregates. These works not only increase operating and capital costs but may also result in temporary lane closures, diversions and disruptions to traffic flows. In turn, this can reduce toll collections during the period of execution. Although certain concession agreements provide for compensation for capacity augmentation works carried out by the concessioning authority, such compensation may not fully cover the traffic and revenue losses incurred by the Portfolio Assets.

In addition, where augmentation works are awarded to third-party EPC contractors by NHAI, we may remain responsible for rectifying defects arising in the augmented stretch after the expiry of the defect liability period of such contractors. If the contractors fail to adequately perform their obligations, or if latent defects arise after the defect liability period, we may be required to incur additional costs without reimbursement. Similarly, where change of scope ("**COS**") works are awarded to third-party EPC contractors by NHAI, we may remain responsible for rectifying defects arising in the COS works after the expiry of the defect liability period of such contractors.

The execution of augmentation and major maintenance works also exposes us to construction-related risks such as delays in procurement of materials, shortage of skilled labour, adverse weather conditions, cost escalation, contractor disputes, and safety incidents. Any delay in meeting the prescribed timelines could lead to penalties or termination under the concession agreements.

Accordingly, our exposure to mandatory capacity augmentation and major maintenance obligations may increase our costs, reduce revenue from operations during construction periods, and adversely affect our business, financial condition, results of operations and ability to make distributions to Unitholders.

8. ***Our ability to refinance our debt and maintain access to long-term funding is crucial to our business, and adverse conditions in the debt markets, regulatory restrictions or downgrades in our credit ratings could adversely affect our liquidity and consequently our business, results of operations, financial condition and ability to make distributions.***

We primarily rely on external debt financing at the Trust level to fund acquisitions, refinance existing borrowings and meet capital expenditure requirements. As of March 31, 2026, our consolidated borrowings (on an undiscounted basis and inclusive of accrued interest) were approximately ₹177,557.72 million, representing a net borrowing ratio of 46.82%. For details, see "*Financial Indebtedness and Deferred Payments*" on page 337. Any constraints on refinancing this debt on favorable terms, or at all, could adversely affect our liquidity position and distribution capacity.

Our financing strategy depends on continued access to the Indian bond market, bank loans, and international credit lines. However, debt may not always be available at short notice or on acceptable terms and interest rates, particularly in times of adverse market conditions, volatility in interest rates, tightening liquidity, or regulatory restrictions on infrastructure lending. Such situations could limit our ability to refinance existing debt or raise new funding or increase our cost of capital. Furthermore, as a foreign-owned and controlled entity, we are subject to restrictions on certain domestic borrowings for downstream investments, which narrows our funding options. External commercial borrowings are subject to end-use restrictions, currency risks and regulatory approvals, any of which may not be available in a timely manner or at all. Any sudden disruption in debt market liquidity could result in refinancing gaps, require early redemption of existing borrowings or require us to avail of higher-cost bridge financing, which may reduce distributable cash flows.

Our credit profile is underpinned by our current ratings of (i) AAA/Stable by India Ratings & Research Private Limited for term loan and bank guarantee; (ii) AAA/Stable by India Ratings & Research Private Limited for non-convertible debentures and A1+ for commercial paper; (iii) AAA/Stable by ICRA for term loan and bank guarantee; (iv) AAA/Stable by ICRA for non-convertible debentures; (v) AAA/Stable by CRISIL Ratings Limited for long term rating; and (vi) A1+ by CRISIL Ratings Limited for short term rating. For details, see "*General Information – Credit Ratings*" on page 130. Any future downgrade in our ratings due to sector-wide issues, deterioration in portfolio performance, or higher leverage could significantly increase borrowing costs, shorten debt maturities or reduce lender appetite for our issuances. In addition, sustainability-linked bonds issued by us in February 2025 contain step-up coupon provisions if agreed ESG targets are not met, which could further raise our cost of debt. For details, see "*Failure to meet ESG-linked performance targets could increase our cost of financing and adversely affect our cash flows and ability to make distributions*" on page 97.

We are also subject to regulatory restrictions on debt financing and refinancing under the InvIT Regulations, the InvIT Master Circular and other applicable laws. For instance, the RBI has issued draft amendment directions for instructions on lending to REITs and InvITs, where the existing guidelines in respect of lending to InvITs are proposed to be harmonized for parity with prudential safeguards proposed for lending to REITs. Also see "*Changing laws, rules and regulations and legal uncertainties may adversely affect our business, financial condition and results of operations*". Further, refinancing and new borrowings may be subject to lender consents and, where applicable, Unitholders' approvals under the InvIT Regulations. In accordance with the InvIT Regulations, aggregate consolidated borrowings of an InvIT cannot exceed 70% of the value of its assets, and borrowings above 25% require unitholder approval. Borrowings above 49% are permitted only for the acquisition or development of infrastructure projects, capital expenditure for asset performance enhancement or capacity augmentation, major maintenance expense in respect of road projects, and refinancing of eligible debt, subject to prescribed credit ratings and distribution history thresholds. Obtaining such consents or approvals may take time and could delay refinancing or restrict our ability to raise debt opportunistically. Any downgrade in our credit rating or breach of any conditions under the InvIT Regulations applicable to our borrowing limits could limit our ability to obtain additional debt capital. Also see "*We are subject to restrictive covenants under our financing agreements that could limit our flexibility in managing our business or to use cash or other assets, and any non-compliance with such covenants could adversely affect our business, results of operations, financial condition and cash flows*" on page 92.

We are also susceptible to changes in interest rates and the risks arising therefrom. Our financing agreements include variable-rate interest with a provision for periodic rate resets. Any increase in interest rates may adversely affect our results of operations, financial condition, and cash flows.

Particulars	**As of March 31,**					
	2026		**2025**		**2024**	
	Amount (₹ in million)	***% of total borrowings***	***Amount (₹ in million)***	***% of total borrowings***	***Amount (₹ in million)***	***% of total borrowings***
Variable rate borrowing*	132,632.31	74.77%	119,695.00	78.81%	95,677.28	88.84%

Particulars	As of March 31,					
	2026		2025		2024	
	Amount (₹ in million)	*% of total borrowings*	*Amount (₹ in million)*	*% of total borrowings*	*Amount (₹ in million)*	*% of total borrowings*
Fixed rate borrowing*	44,750.60	25.23%	32,186.99	21.19%	12,019.80	11.16%
Total	**177,382.91**	**100.00%**	**151,881.99**	**100.00%**	**107,697.08**	**100.00%**

* *The above borrowing amounts are undiscounted.*

If we are unable to refinance or extend existing debt on satisfactory terms, we may need to divert cash flows from operations to service debt, reduce distributions to Unitholders, or delay planned acquisitions and capital expenditure. Lenders may also exercise enforcement rights over secured assets, which could adversely affect our business, financial condition, results of operations and ability to make distributions.

9. ***We have incurred losses after tax aggregating to ₹357.20 million and ₹7,059.15 million for the Financial Years 2025 and 2024, respectively and may continue to incur losses in future years, which could adversely affect our business, cash flows and financial condition.***

We have incurred losses after tax of ₹357.20 million and ₹7,059.15 million for the Financial Years 2025 and 2024, respectively. Our results of operations may continue to fluctuate, and we may incur losses in the future due to factors such as increases in interest rates, higher borrowing costs, escalation in operating and maintenance expenditure, periodic major maintenance cycles, changes in traffic volumes, delays or deductions in annuity payments, adverse regulatory developments, or costs associated with acquisitions and integration of new assets. While we recorded a profit after tax of ₹2,167.15 million for the Financial Year 2026, there can be no assurance that we will continue to achieve profitability in future years. If we are unable to generate adequate revenue growth, we may continue to incur losses in the future, which could adversely affect our business, results of operations, financial condition and ability to make distributions to Unitholders.

10. ***The Sponsor is under no obligation to provide the Trust with access to future assets, and the Trust may be unable to bid effectively for them or fail to realize the anticipated benefits of the acquisition of such assets, which could adversely affect our business, financial condition, results of operations and cash flows.***

The Sponsor may consider offering assets to the Trust under certain conditions. For details of the ROFO Agreement and the Committed Assets, please see the sections entitled "*Related Party Transactions – Acquisition of the Committed Assets by the Trust*" on page 383.

Cube Highways and Infrastructure II Pte. Ltd. ("**CH-II**") and CH-V, members of the Cube Group, hold 100% of the equity shares of each of Baharampore-Farakka Highways Limited, Devanahalli Tollway Private Limited and Chenani Nashri Tunnelway Limited, and at least 95% of the equity shares of Western MP Infrastructure & Toll Roads Private Limited, wherein Express Way Developers Limited, a third party, currently holds 5% of the equity shares (collectively, the "**Committed Assets**"). After the completion of the Offer, the Trust, acting through the Investment Manager and Trustee, will acquire (subject to fulfilment of certain conditions precedent) from CH-II and CH-V, the aforementioned equity shareholding of each of the Committed Assets held by both CH-II and CH-V (including at least 95% of the equity shares of WMTPL), together with their nominees. Please note that the proposed acquisition of equity shares of the Committed Assets (including at least 95% of the equity shares of WMTPL) is subject to satisfaction of certain conditions precedent specified under the Share Purchase Agreements and the receipt of Unitholders' approval for the necessary processes for such acquisition, including a preferential issue of Units.

In order to assess the ability and willingness of the Trust to bid for and/or operate any ROFO Assets, terms of the concession agreement, along with technical and traffic reports may be offered to the Trust, and the Trust may be granted a limited period within which it shall be expected to undertake its due diligence and make a binding offer to the Sponsor in respect of the ROFO Assets. There can be no assurance that the Trust will be able to accurately or effectively assess the ROFO Assets on the basis of the information available to it or within the time available, and its bids may prove uncompetitive. Furthermore, the Sponsor may accept or reject any binding offer made by the Trust, based on its own internal estimate of the concession value of the ROFO Assets, regarding which the Trust will have no influence. Access to future assets held by the Sponsor or Sponsor Group or their existing or future subsidiaries will be an important source of growth in the future for the Trust, and any inability to acquire the Committed Assets or ROFO Assets or the inability to acquire other assets from the Sponsor or Sponsor Group for any reason could have an adverse effect on the Trust's business, results of operations, financial condition and prospects.

There are risks associated with our proposed acquisition of the Committed Assets, ROFO Assets and other assets, including:

- *accurately judging micro-market dynamics, growth potential and competitive environment applicable to each of the assets that we may acquire in the future, including the Committed Assets, ROFO Assets and any other infrastructure assets*. Each of the assets that we may acquire may operate in distinct corridors, with varying regional demand and industrial linkages. Traffic growth and toll revenue may be influenced by local economic

activity, connectivity, and competing infrastructure. Any deviation in local or corridor-level traffic patterns from forecasts may result in lower revenue and cash flows than projected;

- *incurring unknown or unexpected potential liabilities*. The assets that we may acquire in the future, including the Committed Assets, ROFO Assets and any other infrastructure assets, may have historic or contingent liabilities arising from operations prior to acquisition, including disputes with concessioning authorities, pending claims, maintenance deficiencies, or environmental issues. Such liabilities may not be fully identified through due diligence and could require additional provisioning or expenditure, thereby reducing returns from such assets;

- *obtaining, maintaining and complying with the conditions* prescribed under necessary permits, certificates, licenses and approvals from governmental and regulatory authorities and agencies in relation to assets that we may acquire in the future, including the Committed Assets, ROFO Assets and any other infrastructure assets. In the event that the relevant authorities communicate to us that such approvals are required, we shall be obligated to obtain the same in accordance with applicable law.

- *higher than planned expenditure to preserve and grow the value of the assets that we may acquire in the future, including the Committed Assets, ROFO Assets and any other infrastructure assets*. Certain assets, upon acquisition, may require near-term major maintenance or augmentation works following integration. Rising input costs (particularly of bitumen and aggregates), together with higher labour and logistics expenses, could increase overall O&M expenditure. In addition, aligning these legacy assets with our portfolio-wide maintenance and safety standards may require additional capital expenditure, thereby reducing near-term distributable cash flows.

11. *Our business will be subject to seasonal fluctuations, which may adversely affect our cash flows.*

Our cash flows and operating performance are affected by seasonal factors and broader climate-related risks. Traffic volumes generally decrease during the monsoon season and tend to increase during holiday and harvest periods, which vary depending on the crop harvest season in the region. Prolonged or unpredictable monsoon conditions can also limit our ability to carry out activities related to our Portfolio Assets' operation and maintenance, resulting in delays in periodic maintenance work, reduced productivity, and lower toll collections. Further, periods of high traffic volumes or growing congestion on certain corridors, particularly during peak travel seasons, festivals or urban expansion phases, may lead to diversion of traffic to alternate routes or roads, which could reduce toll collections on affected assets despite overall increases in regional traffic.

In addition to typical seasonal variations, increasing frequency and intensity of extreme weather events, such as heavy rainfall, flooding, heatwaves, and temperature fluctuations, have heightened operational risks across our portfolio. Climate change may lead to deterioration in pavement quality, rutting, cracking, waterlogging, and drainage failures, necessitating premature or additional maintenance cycles. Certain of our assets, particularly those located in hilly or geologically sensitive regions such as Jammu & Kashmir, are also exposed to risks of landslides and slope failures, which may result in temporary road closures, traffic diversions, or higher restoration costs. In turn, our Portfolio Assets may be required to incur unplanned maintenance expenditure or emergency repair costs to restore road conditions, which could increase overall lifecycle costs and reduce cash flows available for distribution.

Accordingly, adverse seasonal variations and climate-related events, including heavy rains, landslides, and temperature-induced pavement distress, could adversely affect our business, financial condition, results of operations, and cash flows, and our ability to make distributions.

Revenues from Annuity and HAM assets also display variability, as each project receives bi-annual payments at set points in the financial year. These payment schedules differ across assets, with some falling in the first and third quarters of the financial year, while others receive payments in the second and fourth. As a result, quarterly inflows are not uniform, and this timing-driven variation leads to intra-year fluctuations.

12. *Our concession agreements contain certain restrictive terms and conditions which may restrict our ability to conduct our business and limit our financing flexibility.*

The concession agreements of the Portfolio Assets contain certain restrictive covenants. For instance, the concession agreements include provisions that mandate substitution clauses in the project agreements. Such substitution clauses allow the concessioning authorities to step into project agreements in place of a Portfolio Asset in the event of suspension or termination of the concession agreements due to a breach or default by such Portfolio Asset. The concession agreements also provide that the lenders to a Portfolio Asset may substitute such SPV with new concessionaires approved by the concessioning authority in the event of a default by such SPV under the relevant concession agreement, financing agreements or other project agreements. Additionally, pursuant to a circular dated January 29, 2014 issued by the NHAI, the NHAI or lenders may substitute the Portfolio Asset in the event of a "financial default" by such SPV, which includes situations in which the NHAI or lenders have reason to believe that

such SPV is likely to face financial distress and is likely to default in its compliance with the terms of the relevant concession agreement.

While these provisions are designed to protect stakeholders and lenders, their exercise may result in loss of operational control over our Portfolio Assets. For example, our lenders have substitution rights under the financing documents that can be triggered upon a debt service default, allowing them to enforce security and replace the concessionaire. The invocation of step-in rights could disrupt operations, impair our ability to upstream cash flows, and reduce the value of our interest in the affected SPV. In such cases, our recovery may be limited to termination compensation or residual value, which may be inadequate. Accordingly, step-in rights under concession agreements create the risk that our control over projects may be restricted or lost in certain circumstances, which could adversely affect our business, results of operations, financial condition and ability to make distributions to Unitholders.

The terms of the Portfolio Assets' concession agreements require such SPVs to indemnify the concessioning authority for losses arising out of the design, engineering, construction, procurement, operation and maintenance of the toll road, defect or deficiency in the provision of services, or arising out of breach of the obligations of such SPVs under the relevant concession agreements, as applicable.

In the event the concessioning authority or a lender invokes any restrictive provision in the concession agreements or interprets any term or condition in an adverse manner, such invocation or interpretation may adversely affect our business, financial condition and results of operations. For further details on the terms of the concession agreements, see "*Summary of Key Agreements - Summary of the Concession Agreements*" on page 316. Accordingly, restrictions under our concession agreements may adversely affect our business, results of operations, financial condition, cash flows and ability to make distributions to Unitholders.

13. ***A significant portion of our Portfolio Assets is concentrated in Delhi-NCR, Uttar Pradesh and Tamil Nadu regions, and any adverse developments in this region could adversely affect our business, results of operations, financial condition and cash flows.***

As of March 31, 2026, Portfolio Assets located in Delhi-NCR, Uttar Pradesh and Tamil Nadu accounted for approximately 15.83%, 24.10% and 15.44% of our total assets under management ("**AUM**"), respectively, with an aggregate contribution of approximately 55.37% of our AUM. This concentration exposes us to region-specific risks, including adverse economic conditions, changes in traffic patterns, congestion-related diversions, regulatory or policy interventions, environmental restrictions, construction activity, social disruptions or natural events affecting these regions.

Further, the Delhi–NCR region is subject to regulatory oversight and evolving urban mobility, environmental and traffic-management measures, including restrictions on vehicle movement, tolling practices and emission norms. Similarly, assets located in Uttar Pradesh and Tamil Nadu are exposed to state-specific policy, regulatory, climatic and socio-economic factors, including changes in tolling policies, traffic management directives, regional infrastructure development priorities, monsoon-related disruptions and local administrative actions. Any such developments could adversely affect traffic volumes, toll collections, operating costs or compliance requirements for the affected assets. While we seek to mitigate geographic concentration risk through portfolio diversification, there can be no assurance that adverse developments in any of these regions will not affect our business, results of operations, cash flows, financial condition or our ability to make distributions to Unitholders.

14. ***Our concession agreements contain provisions that may be non-negotiable or untested and accordingly, subject to varying interpretations, which could lead to disputes with authorities or termination, adversely affecting our Portfolio Assets, business, results of operations, financial condition and cash flows.***

Our Portfolio Assets operate under concession agreements with the NHAI or relevant state concessioning authorities, and we have limited ability to negotiate the terms of these contracts. The concession agreements that we have entered into are based on model concession agreements prescribed by the relevant concessioning authorities. These agreements contain provisions relating to tolling rights, concession periods, traffic thresholds, annuity payments, major maintenance, termination payments and compensation events. Many of these provisions are open to interpretation, and in practice, have been the subject of disputes between concessionaires and authorities across the sector. The form of the concession agreement has evolved within the last decade and there is limited guidance available on the interpretation of a number of provisions and conditions of such concession agreements. Several provisions, such as those related to an augmentation in the capacity of the toll roads, termination payments, construction of additional competing roads by the concessioning authority, the Government or State Governments and payment of compensation for changes in law are currently untested.

For instance, in the case of NAMEPL, the concessioning authority granted conditional approval for the construction of three toll plazas, rather than the two originally contemplated under the concession agreement. The concessioning authority has required NAMEPL to pass on any additional financial benefit derived from the operation of a third toll plaza. There is an ongoing difference of interpretation regarding the methodology and computation of any additional financial benefit to be shared with the authority. The third toll plaza is currently operational and NAMEPL is

generating cash flows from its operations. However, based on our assessment as per the agreed methodology in relation to the operation of the third toll plaza, the costs incurred in relation to the construction and operation of such toll plaza exceed the cash flows generated therefrom and NAMEPL has not derived a net financial benefit from the operation of such toll plaza. Similarly, there have been instances of disagreement between concessionaires and authorities regarding the applicable "CPI centre" to be adopted for determining toll escalation, particularly where multiple CPI centres exist within a state. The choice of index can materially affect the applicable escalation factor and, consequently, toll/annuity revenue projections.

If disputes arise, we may be required to pursue lengthy arbitration or litigation processes to enforce our contractual rights. Even where the concession agreements provide for compensation, recoveries may be delayed or awarded only in part. In certain cases, adverse awards have been made against concessionaires in the road sector, despite favourable contractual language. Delays in resolution can also adversely affect the cash flows of Portfolio Assets and reduce upstream distributions. For instance, certain Portfolio Assets, including APEPL and, BWHPL, have filed claims against NHAI in respect of compensation for additional works and, delays in release of payments, respectively. Separately, authorities have raised demands and imposed penalties on certain Portfolio Assets, including MHPL, in relation to maintenance obligations, and WVEPL in relation to the reduction of the concession period, which we are contesting. Also see "*Legal and Other Information*" on page 405.

Accordingly, varying interpretations of concession agreement provisions, adverse outcomes in disputes with authorities, or premature termination could adversely affect valuations of our assets, business, results of operations, financial condition, cash flows and our ability to make distributions to Unitholders.

15. ***Payments by the Portfolio Assets, including in the event of termination of the relevant concession agreements, are subject to mandatory escrow arrangements which restrict the financial flexibility of the Portfolio Assets.***

The escrow arrangements mandated under the concession agreements require all monies that are received by each Portfolio Asset, including fees collected from the operation of the road assets and any termination payments received from the concessioning authority, to be deposited in escrow accounts and utilized only in accordance with the order prescribed under the escrow arrangements. The consent of the concessioning authority is required to amend the order of outflow of payments from any such escrow account. The escrow arrangements typically prioritize the payment of all taxes due, followed by payment of expenses in connection with the construction of the project, operation and maintenance expenses including expenses for repair works, payment of concession fees, debt service payments, negative grant/premium payable to the concessioning authority, reimbursement of expenditure incurred by the concessioning authority, any payments and damages due and payable and any reserve requirements set forth in any financing agreements, in such order. For details of the escrow arrangements, please see the section entitled "*Summary of Key Agreements - Summary of the Concession Agreements*" on page 316.

With respect to withdrawals on termination, the escrow arrangements for our DBFOT/BOT assets typically prioritize the payment of all taxes due, followed by the payment of 90% of debt due to senior lenders (excluding subordinated debt), the payment of any outstanding concession fee, the payment of damages in relation to the concession, retentions and payments arising out of liability for any defects, the remainder of debt due, subordinated debt, operation and maintenance expenses and any other payments under the concession agreement, after which the balance may be withdrawn by the Portfolio Assets for their own purposes. For our TOT assets, the withdrawals on termination under the escrow arrangements prioritize the payment of all taxes due, followed by all payments due to senior lenders, the payment of damages certified by the concessioning authority as being payable by the concessionaire, retentions and payments arising out of liability for any defects and deficiencies, operation and maintenance expenses and any other payments under the concession agreement, after which the balance may be withdrawn by the Portfolio Assets for their own purposes. Any shortfall in future termination payments received from the concessioning authorities may prevent us from recovering our investments and returns from the relevant Portfolio Assets adequately, or at all.

16. ***The business and financial performance of the Trust, the operations of the Portfolio Assets and any future assets that we may acquire, are significantly dependent on the policies of, and relationships with, government entities in India and could be affected if there are adverse changes in such policies or relationships.***

The operations of the Portfolio Assets and any future assets that we may acquire, are and will be significantly dependent on central and state government entities, in terms of policies, incentives, budgetary allocations and other resources provided by these entities for the surface transportation industry, as well as the terms of the contractual arrangements, concessions and other incentives available from these government entities for the projects. Sustained increases in budgetary allocations by the central and state governments for investments in the infrastructure sector, the development of structured and comprehensive infrastructure policies that encourage greater private sector participation and increased funding by international and multilateral development financial institutions in infrastructure projects in India have resulted in, and are expected to continue to result in, an increase in the amount of transportation infrastructure projects undertaken in India. Any adverse change in the focus or policy framework regarding infrastructure development or the surface transportation industry, or a change in the Trust's relationships with the central or state government entities in India, could adversely affect the Portfolio Assets, the opportunities for the Trust to secure new assets and in turn our business, results of operations and financial condition.

In addition, the projects in which government entities participate may be subject to delays, extensive internal processes, policy changes, changes due to local, national, and internal political pressures, changes in governmental or external budgetary allocations, and insufficient funds. Since government entities are responsible for awarding concessions and are parties to the development and operations of projects, projects are directly and significantly dependent on their support. Any withdrawal of support or adverse changes in their policies may lead to renegotiation of the agreements and could also adversely affect financing, capital expenditure, revenue from operations, and development or operations relating to the current and future assets of the Portfolio Assets.

17. ***We are subject to restrictive covenants under our financing agreements that could limit our flexibility in managing our business or using cash or other assets, and any non-compliance with such covenants could adversely affect our business, results of operations, financial condition and cash flows.***

The financing agreements that the Trust and MBEL have executed with banks and financial institutions contain and may contain, in the future certain restrictive covenants, including, but not limited to, requirements that they obtain consent from the lenders prior to:

- effecting any change in the nature or scope of the project or any change in the financing plan;
- effecting any change in capital structure (including shareholding pattern);
- making any capital expenditure other than permitted investments;
- making any dividend payments to their shareholders or making any other restricted payments (including redemption of any shares of any class, prepayment in relation to any indebtedness, payment of interest on unsecured loans, investment in any entity) except as permitted under the financing agreements;
- creating any security interest in any of the secured property;
- incurring any other indebtedness, including the issuance of debentures, other than permitted indebtedness;
- entering into any partnership, profit-sharing or royalty agreement;
- amending the constitutional documents of the Portfolio Assets;
- undertaking of any new project, making any investment, or taking any assets on lease;
- providing guarantees, indemnities or similar assurances in respect of indebtedness of any other person (other than in the ordinary course of business); and
- repaying or prepaying any subordinated loan or loans taken by Portfolio Assets from the Sponsor.

In addition, these restrictive covenants may also affect some of the Trust's rights as the shareholder of the Portfolio Assets and the Portfolio Assets' ability to pay dividends and the Trust's ability to make distributions if it is in breach of its obligations under the applicable financing agreement.

Further, the financing agreements may require the creation of security interests, including pledges over the equity shares of the Portfolio Assets and charges over their assets, bank accounts and receivables. Any invocation or enforcement of such pledges by the lenders upon an event of default could result in a change in control of the relevant Portfolio Asset, restrictions on distributions to us, or loss of our rights as shareholder, which may adversely affect our cash flows and ability to make distributions to Unitholders. In addition, the enforcement of such security may trigger cross-defaults under other financing arrangements or concession agreements.

Such financing agreements also require us to maintain certain financial ratios. In the event of any breach of any covenant contained in these financing agreements, we may be required to immediately repay our borrowings, either in whole or in part, together with any related costs. There can be no assurance that the Investment Manager will be able to secure consents from, and/or negotiate revised terms with, the lenders that are acceptable to the Trust, or at all.

Further, the financing agreements contain cross-default provisions that could automatically trigger defaults under other financing agreements. Certain lenders are also entitled to accelerate repayment of the loans at any time, in accordance with the terms of the concession agreements. While we have not faced any such instances of acceleration of repayment of loans during the Financial Years 2026, 2025 and 2024, there can be no assurance that we will not face such instances in the future, which may adversely affect our business, results of operations, financial condition and cash flows.

Any or all of the above restrictive covenants may restrict our ability to conduct business, and any breach thereof may adversely affect our results of operations, financial condition and cash flows.

18. ***We may be subject to increases in costs, including operation and maintenance costs, which we cannot recover by increasing toll fees or annuity income under the relevant concession agreements.***

The terms and conditions of the concession agreements are fixed and non-negotiable during the concession period. The costs of operating and maintaining the toll roads may be subject to cost overruns as a result of increased or unforeseen costs due to a number of factors beyond each Portfolio Asset's control, including, among other things:

- inflation or otherwise an increase in the cost of labour, materials (for example, bitumen) and insurance;
- such SPVs being required to install intelligent toll-collection systems or other new technologies for monitoring projects at their own costs, including remedial costs incurred to rectify any defects caused on account of a failure of any technology;
- such SPVs being required to install or deploy sustainable solutions to adhere to evolving and stringent environmental and social norms;
- higher axle loading, traffic volume or environmental stress leading to more extensive or more frequent heavy repairs or maintenance costs, which may be substantial;
- such SPVs being required to restore their project roads in the event of any landslides, floods, road subsidence, other natural disasters, accidents or other events causing structural damage or compromising safety;
- increase in electricity tariff rates or other fuel costs resulting in an increase in the cost of energy;
- changes in transport rules and regulations exempting certain types of vehicles from payment of toll charges and requiring substantial investment in additional infrastructure, such as installation and upgradation of charging infrastructure for electric vehicles;
- adverse weather conditions;
- an increase in minimum wages or other operating costs, including the implementation of amended labour laws and regulations;
- the introduction of a levy on the usage of water for maintenance of the toll roads, among other things, in states in which the toll roads are located;
- unforeseen legal, tax and accounting liabilities relating to road assets; or
- other unforeseen operational and maintenance costs, such as unexpected escalations in third-party fees or costs.

Set out below are details of our Operation & Maintenance expenses for the years indicated:

Particulars	**Financial Year**					
	2026		**2025**		**2024**	
	Amount (₹ in million)	***% of total expenses***	***Amount (₹ in million)***	***% of total expenses***	***Amount (₹ in million)***	***% of total expenses***
Operation & Maintenance expenses	8,786.92	21.78%	7,554.62	21.56%	5,046.42	13.42%

If our costs increase, we may be unable to offset them with higher revenues from toll fees or annuity income, due to restrictions in the concession agreements. Any significant increase in operation and maintenance costs beyond our budget, or any failure to meet quality standards, may reduce our profits, expose us to penalties imposed by the concessioning authorities, and have an adverse effect on our business, financial condition, and results of operations. Such events may also affect the ability of the Portfolio Assets to service the debt obtained from the Trust, as well as our ability to make distributions to the Unitholders. As such, the inability to change the terms and conditions, including toll fees and/or annuity income during the concession period, may adversely affect our operational and financial flexibility.

19. ***The Investment Manager is subject to regulatory reporting obligations and periodic inspections by SEBI, and any non-compliance or adverse observation may result in regulatory action.***

The Investment Manager is required to comply with ongoing reporting, disclosure and management obligations in relation to the Trust in accordance with the InvIT Regulations and the InvIT Master Circular. These obligations include, among other things, (a) making investment decisions in respect of the Trust's assets in accordance with the investment strategy, (b) overseeing the activities of the Project Manager and other service providers, (c) ensuring compliance with distribution requirements, (d) submitting periodic reports and certifications to the Trustee and stock exchanges, (e) ensuring audit and financial reporting compliance, and (f) maintaining ongoing compliance with its eligibility requirements under the InvIT Regulations. Any failure to comply with such requirements, whether timely or at all, may subject the Investment Manager, the Trust, and other Parties to the Trust to regulatory scrutiny, directions, or other enforcement actions, penalties under the InvIT Regulations, the SEBI Act, or other applicable laws.

Under the InvIT Regulations and the InvIT Master Circular, SEBI has broad supervisory and inspection powers, including the authority to inspect the Trust's books and records, as well as those of the Parties to the Trust. Pursuant to such powers, SEBI may, in appropriate circumstances, issue directions, including, inter alia, (i) requiring corrective actions, (ii) imposing restrictions on capital market access, (iii) directing the sale of assets, (iv) mandating the winding up of the Trust in accordance with applicable laws (v) or cancelling registration of the Trust, and regulatory directions subject to applicable law.

The Trust has undergone periodic inspections by SEBI as part of the regulatory oversight framework. During these inspections, SEBI has issued observations related to, amongst others, disclosure requirements, procedural compliances, and other obligations under the InvIT Regulations and InvIT Master Circular, to which the Trust has responded and taken appropriate remedial or clarifying actions, where necessary. Pursuant to an inspection conducted by SEBI for the period from May 1, 2024, to March 31, 2025, we have received inspection observations in relation to disclosures on related party transaction and on process of consultation with the Trustee. In this regard, to the extent of the observations and advisory pertaining to related party transactions, the Investment Manager has submitted a letter to SEBI indicating the corrective actions undertaken and to be undertaken by the Trust.

While the Trust strives to ensure full regulatory compliance, there is no guarantee that its responses will be accepted without reservations. Any adverse regulatory action, penalty, or directive could significantly impact the Trust's business, financial strength, operational results, or reputation. Additionally, the reporting framework for InvITs differs from that for listed equity companies in India or other regions. Therefore, the type and amount of information available to Unitholders may differ from what is typically disclosed by listed corporate entities.

20. ***Termination payments and compensation for change in law, force majeure events or authority defaults under concession agreements may not be adequate or may be disputed, which could reduce recoveries.***

Our concession agreements provide for termination payments if the contract is terminated before expiry of the concession period, with the amount depending on the reason for termination. In cases of concessionaire default, the concessioning authority is generally only required to pay up to 90% of the debt due (as specified in the relevant concession agreement), excluding equity and returns thereon. Even where higher compensation is prescribed, such as in cases of authority default, *force majeure*, or a change in law, actual recoveries remain uncertain. Further, in certain instances, compensation is provided through an extension of the concession agreements, which can adversely affect our cash flows and distributions. Our concession agreements also generally provide for compensation in the event of a change in law, authority default or force majeure, including political force majeure. Such provisions are intended to protect concessionaires from events beyond their control. However, the actual quantum and timing of compensation are subject to interpretation by the relevant concessioning authority or the relevant state authority. For example, several of our SPVs, including NDEPL and MBEL, have submitted representations before the relevant concessioning authority for extension of the concession period in relation to a decrease in traffic volumes due to the COVID-19 pandemic.

In addition, the process for claiming compensation generally requires submission of detailed documentation, certification by independent engineers, and approval from the concessioning authority, which can take considerable time. During this period, Portfolio Assets may face cash flow mismatches, as costs are incurred upfront while compensation remains uncertain. Further, in practice, authorities have disputed the computation of termination and other payments or delayed settlement, leading to prolonged arbitration and litigation. Even where concession agreements provide clear entitlements, concessioning authorities may contest the applicability of provisions or the calculation of amounts claimed. If termination and other concession payments are inadequate, delayed, or disputed, we may not recover the full value of our investments, which could adversely affect our financial condition, results of operations, and our ability to make distributions to Unitholders.

If compensation is delayed, reduced, or not awarded, our Portfolio Assets may not be able to recover costs incurred, which could reduce income available for distribution, weaken the liquidity position of the relevant entity, and adversely affect our business, financial condition, and results of operations.

21. ***Our concession agreements are subject to ongoing supervision, inspection and directives from concessioning authorities, and adverse findings or new compliance requirements may increase costs, reduce revenue from operations and adversely affect our business, results of operations, financial condition and cash flows.***

Our concession agreements require us to comply with detailed performance standards for operations, maintenance, toll collection, and safety. NHAI and state authorities have wide supervisory powers to inspect our projects, review compliance, and direct corrective action. Such reviews may lead to demands for additional work, imposition of penalties, or adverse interpretations of our contractual obligations.

For toll-based assets, the concessioning authorities may impose damages and recover them directly from the project's escrow accounts, thereby reducing the cash flows available for debt service and distributions. For annuity-based assets, the authorities may impose deductions from annuity payments in the event of alleged non-compliance with maintenance or performance standards. For instance, in the case of MHPL, the NHAI has deducted amounts from annuity payments on account of alleged deficiencies, which are currently under arbitration. Accordingly, even though

we believe we have complied with contractual standards, the concessioning authorities in India continue to exercise considerable discretion in exercising their directive powers, leading to potential revenue reductions and disputes with the concessioning authority.

In some cases, authorities may also issue new circulars or guidelines that alter technical requirements during the concession term. Compliance with such directives could require unplanned capital expenditure or result in operational disruption. Failure to comply may result in suspension of tolling rights or larger reductions in annuity payments. In addition, local authorities, municipal corporations or urban local bodies may, from time to time, require the implementation of additional safety-related measures, construction modifications or enhancements such as street lighting, pedestrian infrastructure or other localized safety interventions, which may not be expressly contemplated under the concession agreements. Compliance with such requirements may entail additional capital or operating expenditure and could disrupt ongoing operations.

Accordingly, periodic reviews and supervision under our concession agreements expose us to the risk of additional obligations, penalties, or adverse interpretations, which could adversely affect our business, results of operations, financial condition, cash flows and ability to make distributions to Unitholders.

22. ***Inadequate operation and maintenance practices by the prior concessionaire or its subcontractors prior to the O&M Handover Date of certain of the toll roads may result in higher-than-expected costs to restore or repair the toll roads and reduced traffic on, and toll collections from, such toll roads.***

The operation and maintenance of certain toll roads will be carried out by the prior concessionaire's existing subcontractors. For instance, the operation and maintenance of four of the toll roads, namely LRTPL, HTPL, JLTPL and JVTPL, will be carried out by the prior concessionaire's existing subcontractors until March 2029, March 2028, March 2027 and March 2027, respectively (each, the applicable "**O&M Handover Date**") under the relevant concession agreement (as defined in "*Summary of Key Agreements— Summary of the Concession Agreements.*" on page 316). To the extent the prior concessionaire or its subcontractors have adopted, or would adopt, inadequate maintenance practices with respect to the toll roads prior to the relevant O&M Handover Date, we may be subject to higher-than-expected costs to restore or repair the toll roads.

Under the relevant concession agreements, the prior concessionaire is obligated to maintain, or cause to be maintained, the relevant toll roads to ensure their traffic worthiness and safety are at no time materially inferior as compared to the condition seven days prior to the last date for submission of the bid in respect of such toll road and to undertake the repair of any material deterioration or damage other than normal wear and tear or pay to the concessionaire the cost and expense required to undertake such repair (as determined by the independent engineer) after the O&M Handover Date. There can be no assurance that the prior concessionaire will comply with its obligations under the concession agreements, or that, in the event of non-compliance therewith, there will be any agreement as to the liability for any material deterioration of the toll roads. Furthermore, the costs and expenses determined by the independent engineer as payable to us may not be sufficient to compensate us for the actual cost of repairing the relevant toll road. As the prior concessionaire has not provided any warranties regarding the operation and maintenance of the toll roads, we will need to bear any additional or unanticipated maintenance costs ourselves.

To the extent the prior concessionaire's subcontractors responsible for the operation and maintenance of the toll roads prior to the O&M Handover Date do not adopt the necessary operation and maintenance practices or in a manner inconsistent with the level of operation and maintenance that we would adopt, the state of the relevant toll roads may deteriorate, which may result in a diversion of traffic away from such roads. A reduction in traffic on the toll roads would result in lower toll collections, which would adversely affect our business and results of operations.

23. ***Payments to the Trust by the Portfolio Assets under the Trust Loan Agreements are dependent on the cash generation of the Portfolio Assets and may be deferred in periods of low liquidity.***

None of our Portfolio Assets, except MBEL, has availed any third-party or external debt, and all financing at the SPV level comprises secured and unsecured loans extended by the Trust (the "**Trust Loans**"). These Trust Loans are structured as long-term instruments designed to maintain liquidity within each SPV and are serviced only after statutory, operational, and maintenance obligations are met. Under the terms of the Trust Loan Agreements, repayments of principal and payment of interest are contractually subject to the availability of free cash after meeting all mandatory expenditures, taxes, and reserve requirements, consistent with the waterfall provisions under the respective escrow mechanisms and concession agreements. The Trust Loans therefore operate on a "pay-when-able" basis, where unpaid interest or principal does not constitute a default and is deferred until sufficient cash flows are generated by the relevant SPV. In periods of traffic volatility, increased maintenance expenditure, or a temporary suspension of tolling, certain SPVs may have limited or no distributable surplus, leading to the deferral of such payments. While this structure preserves the financial stability of the operating entities and protects continuity of operations, it also means that cash flows to the Trust (and consequently, distributions to Unitholders) may fluctuate based on each SPV's operating performance, working capital requirements, and lifecycle maintenance profile.

24. ***Any infrastructure project that we acquire, which is still under construction and development, may be subject to cost overruns or delays.***

We may acquire infrastructure projects that are still under construction or development, subject to certain thresholds and other considerations, in accordance with the InvIT Regulations and, in certain cases, subject to Unitholders' approval. The development of such projects is subject to substantial risks, including various planning, engineering, and construction risks, as well as regulatory hurdles related to land acquisition and the necessary environmental clearances. The concessionaire generally begins generating returns on investment only after the commencement of commercial operations, which may be delayed for various reasons. During the construction and development phases, we may also experience equipment, material, or labor unavailability; adverse weather conditions; accidents; delays in construction and clearances; and other unforeseen construction-related operational delays and defects. These factors may lead to substantial increases in the time and costs required to complete the projects that we may acquire. We may not be able to recover the additional costs and may be subject to liquidated damages or penalties in case we delay in achieving the commercial operations date for the project. During the past three Financial Years, we have not experienced any material instances of cost overruns or delays in relation to any under-construction or development-stage assets. Further, our Portfolio Assets are completed and revenue-generating. However, any future construction disruptions or delays could impede our ability to undertake future asset acquisitions and, in turn, adversely affect our financial and operational estimates, our business, prospects, financial condition, results of operations, and cash flows.

25. ***Certain actions of the Portfolio Assets require the prior approval of the relevant concessioning authority, and no assurance can be given that the concessioning authority will approve such actions in a timely manner or at all.***

Certain terms and conditions in the Portfolio Assets' concession agreements, financing agreements, and our other approvals require the concessioning authority's prior written approval to be obtained for one or more of the following actions, among others:

- amendment, modification or replacement by such Portfolio Asset of any project agreements (including financing agreements) relating to the operation of the road assets to which such Portfolio Asset is a party if the amendment, modification or replacement of such agreement increases or imposes any financial liability or obligation on the concessioning authority;

- the creation of any encumbrance or security interest over, or transfer of rights and benefits of such Portfolio Asset under, the concession agreement or any project agreements; and

- the selection or replacement of any engineering, procurement and construction contract, operation and maintenance contractor and execution of the engineering, procurement and construction agreements and the operation and maintenance agreements (to the extent applicable).

The concession agreements of certain Portfolio Assets also require the submission to the concessioning authorities, for their review and comments, all project agreements to which such Portfolio Assets are a party prior to entry, amendment or replacement of such agreements, even if such agreements do not affect the financial liability or obligations of the concessioning authorities.

The restrictions described above may limit our flexibility in conducting our business. In addition, authorities may impose conditions while granting approvals, including requirements to maintain minimum ownership levels or operational control. Failure to comply with such conditions could result in defaults under the concession agreement and financing documents. Further, if as a result of these restrictions, we are unable to pursue a favorable course of action or to respond to an unfavorable event, condition or circumstance, then our business, financial condition and results of operations may be adversely affected. These restrictions may limit our ability to restructure projects, securitize cash flows or raise debt against future revenues, unless specific approvals are obtained. Also see "*Summary of Key Agreements - Summary of the Concession Agreements*" and "*– Our concession agreements contain certain restrictive terms and conditions which may restrict our ability to conduct our business and limit our financing flexibility*" on pages 316 and 89, respectively.

26. ***Our success largely depends on the Directors, Key Management Personnel and function heads of the Investment Manager and the Project Manager, and such entities may be unable to appoint, retain such personnel or to replace them with similarly qualified personnel, which could have an adverse effect on the business, financial condition, results of operations and prospects of the Trust.***

Our performance largely depends upon the continued service and performance of the Directors, Key Management Personnel and function heads of the Investment Manager and the Project Manager. The continued operations and growth of our business will depend on the Investment Manager and the Project Manager attracting and retaining personnel with the necessary experience and expertise. Competition for qualified personnel with relevant industry expertise in India is intense due to the scarcity of qualified individuals in the toll roads business, and the aforesaid entities may not be able to retain their executive officers and key employees or attract and retain fresh talent in the future. In addition, a portion of our personnel, including Key Management Personnel, operational staff, and field teams,

are required to travel extensively and operate in close proximity to highways and project sites, which exposes them to the risk of accidents or other unforeseen events. Any death, permanent disability, abduction or prolonged unavailability of such personnel could disrupt our operations and adversely affect our asset management and performance.

Pursuant to the resolution dated February 27, 2026, the IM Board has approved the (i) change of the project manager and the appointment of Cube Highways Asset & Project Advisory Private Limited (which is a wholly owned subsidiary of the IM) as the new project manager of the Trust; and (ii) indicative draft of the PIMA. Pursuant to the receipt of the requisite approval from the NHAI on June 17, 2026, the PIMA was executed on June 26, 2026, and the change of the project manager became effective from June 26, 2026. There can be no assurance that the transition to the new Project Manager will be effected without disruption to the operations, maintenance, or project implementation activities of the Portfolio Assets.

Further, there can be no assurance that the incoming project manager will be able to retain employees of the Erstwhile Project Manager following their transfer, or that any attrition or disruption during or after the transition will not adversely affect the operations of the Trust. Any inability by the Investment Manager or the Project Manager to retain their respective Directors, Key Management Personnel and function heads, or the inability to replace such individuals with similarly qualified personnel, could have an adverse effect on the business, financial condition, results of operations and prospects of the Trust, the Portfolio Assets. For further details, see "*Our Business – Strengths – Experienced leadership and institutional backing*" on page 275 and the section entitled "*Parties to the Trust - The Project Manager – Cube Highways Asset & Project Advisory Private Limited*" on page 159.

27. ***Failure to meet ESG-linked performance targets could increase our cost of financing and adversely affect our cash flows and ability to make distributions.***

We have integrated environmental, social and governance ("**ESG**") considerations into our financing and capital allocation strategy. In February 2025, we issued India's first sustainability-linked bond in the road infrastructure sector, under which the applicable coupon rate of 7.67% per annum, payable quarterly, is linked to the achievement of specified ESG performance targets relating to greenhouse gas emission intensity, circularity in materials and gender diversity. Our ability to maintain the current cost of such financing depends, in part, on our continued compliance with, and achievement of, these ESG-linked targets within the prescribed timelines.

If we fail to meet the applicable ESG performance benchmarks, the terms of such sustainability-linked instruments provide for step-ups in interest rates or other financial consequences, thereby increasing our borrowing costs. In addition, any perceived underperformance against ESG commitments may adversely affect our credit profile, access to capital markets, investor appetite or the terms on which we are able to raise future debt or refinance existing borrowings. Higher financing costs may reduce cash flows available for distribution, adversely impact returns to Unitholders and constrain our ability to pursue future acquisitions or capital expenditure. Further, meeting ESG targets may require incremental capital expenditure, operational changes or adoption of new technologies, and there can be no assurance that such measures will be sufficient to achieve the desired outcomes within the relevant timeframes.

Accordingly, any failure to achieve ESG-linked performance targets or to align our operations with evolving sustainability expectations of our lenders, investors and regulators could adversely affect our business, financial condition, results of operations, cash flows and ability to make distributions to Unitholders.

28. ***There can be no assurance that we will be able to successfully undertake future acquisitions of infrastructure assets or efficiently manage the infrastructure assets we have acquired or may acquire in the future, which may adversely affect our growth, business, results of operations, financial condition, cash flows and ability to make distributions to our Unitholders.***

The Investment Manager's future growth strategy includes strategic acquisitions, including of the Committed Assets pursuant to the Share Purchase Agreements, the ROFO Assets pursuant to the ROFO Agreement and other assets otherwise. For details of the ROFO Agreement, please see the section entitled "*Related Party Transactions – Present and On-going Related Party Transactions – ROFO Agreement*" on page 378. While we will continue to evaluate future transactions with Sponsor and third parties, we cannot be assured that they will materialise. Also see "*—The Sponsor is under no obligation to provide the Trust with access to future assets, and the Trust may be unable to bid effectively for them or fail to realize the anticipated benefits of the acquisition of such assets, which could adversely affect our business, financial condition, results of operations and cash flows*" on page 88. We may not be able to identify or complete such acquisitions in a timely manner, and any future acquisitions will depend upon several factors, including:

- our ability to identify, finance and acquire operational toll roads and other infrastructure assets, including road assets, on a cost-effective basis;
- our ability to integrate acquired personnel, operations, products and technologies into our organisation effectively;
- unanticipated problems or legal liabilities of the acquired businesses; and

- tax or accounting issues relating to the acquired businesses.

There can be no assurance that we will be able to obtain financing for new projects as we have in the past, or that the interest rates and other terms of available financing will remain attractive. In addition, rising interest rates could adversely affect our ability to secure financing on favourable terms and increase our cost of capital. Any additional equity financing may be dilutive to our Unitholders, and any debt financing may include restrictive covenants that limit our flexibility going forward. Even if the Investment Manager is able to successfully make additional acquisitions or investments, there can be no assurance that such acquisitions or investments will produce incremental distributions to our Unitholders or that we will be able to achieve the strategic purpose of such acquisitions or operational integration or an acceptable return on such investments, which may adversely affect our profits, financial condition and distributions.

Furthermore, concession agreements and other underlying project documents for future infrastructure assets, including road assets, may also contain terms and conditions that are more restrictive than those in the Portfolio Assets' concession agreements for their underlying assets. These restrictions may restrict our flexibility in managing our business or projects and could, in turn, adversely affect our business, results of operations, financial condition, cash flows and our ability to make distributions to our Unitholders. Also see "*– Our concession agreements contain certain restrictive terms and conditions which may restrict our ability to conduct our business and limit our financing flexibility*" on page 89.

Our Trust Deed, the Investment Management Agreement and our investment policy permit us to pursue acquisitions and investments across a broader mandate of eligible infrastructure assets, subject to the receipt of necessary approvals from the board of directors of the Investment Manager, and accordingly, the risks associated with identifying, evaluating, acquiring, financing, integrating, operating and managing such assets are not limited to road assets. Any limitations under applicable law, our constitutional documents, our financing arrangements or regulatory requirements, as well as the availability, risk profile and performance of such eligible infrastructure assets, may affect our ability to execute our growth strategy and generate distributions to our Unitholders. We may have limited operating experience in such sectors, and the acquisition, integration, management and oversight of such assets may require different expertise, systems, personnel and compliance processes. Further, such assets may be subject to distinct regulatory frameworks, concession structures, maintenance requirements, revenue models and market dynamics. Any inability to effectively evaluate, integrate, operate or manage such assets, or any unforeseen liabilities, costs or risks associated with such sectors, could adversely affect our business, results of operations, financial condition, cash flows and ability to make distributions to our Unitholders.

29. ***We depend on third parties to undertake certain activities in relation to the operation and maintenance of the toll roads, and any disruptions, delay, default, fraud, corruption, unethical practices or unsatisfactory performance by these third parties could adversely affect our ability to effectively operate or maintain the toll roads. Further, the operation of the Portfolio Assets will also depend on our relationships with other stakeholders.***

We rely on third-party service providers for certain activities in relation to the operation and maintenance of our road assets. There can be no assurance that the services of such third parties will continue to be available at reasonable rates in the areas in which we conduct our operations, or at all. We may also be exposed to risks relating to the inability of such third parties to provide operations and maintenance services, as well as the quality of their services, equipment, and supplies. In particular, the non-availability of, or our inability to engage, an independent engineer may affect our ability to make timely decisions, thereby affecting our operations. We may also fail to ensure the reliability and sustainability of toll collectors required to man toll booths continuously, which may adversely affect our overall revenue. There can be no assurance that we will not experience business disruptions in the form of local or nationwide strikes or work stoppages arising out of disputes over wage increases or other problems with our workforce, our contractors' workforce, or any labour unions. Such labour disruptions may interfere with, or lead to the complete or partial shutdown of, the toll roads, resulting in a loss of toll collections, which may, as a result, adversely affect our business and results of operations. Separately, toll operations and toll collections may also be disrupted due to regional or local disturbances or public events (including elections, religious processions, among others) or actions by state corporation authorities or agencies, which may result in temporary suspension of tolling or reduced collections and adversely affect our business, results of operations, financial condition and cash flows.

We may also be exposed to civil and criminal liability in relation to the actions of other third parties, including our officers, employees and contractors, including where such third parties engage in fraud, corruption, misappropriate of funds, falsification of records or other unethical or unlawful practices in the course of providing services to us. There can be no assurance that we will not be exposed to civil and criminal liability in the future for the actions of third parties, including our officers, employees, and contractors, which may adversely affect our business, results of operations, financial condition, and cash flows.

Further, if we undertake development, we may subcontract our construction work, but we may still be liable for accidents on our projects due to defects in design and the quality of construction and repair works during their construction and operation. In addition, there can be no assurance that such contractors or their sub-contractors will continue to hold or renew valid registrations under the relevant labour laws in India, or will be able to obtain the

requisite approvals undertaking such construction and operations. Furthermore, if the sub-contractor fails to pay the labour costs of the workers engaged by them, we may be liable to pay such costs to the contracted labourers. Any delay, default, fraud, corruption, unethical behaviour or unsatisfactory performance by these third parties could adversely affect our ability to manage the operation and maintenance of the toll roads under the concession agreements in a timely manner or at all and may require us to implement traffic diversion measures, and expose us to penalties and premature termination of our concession agreements, which could have an adverse effect on our business, financial condition, and results of operations.

The operation of the Portfolio Assets will also depend on our relationships with other shareholders and stakeholders. Under the InvIT Regulations, the Trust is permitted to invest in SPVs with other shareholders or partners, subject to such other shareholders or partners executing an agreement confirming that they will not exercise any rights that prevent the Trust from complying with the InvIT Regulations. In particular, the Trust has acquired 99.97% of the equity share capital in MBEL, with a third-party shareholder holding the remaining 0.03%, and has consequently entered into an agreement with such shareholder. The shares held by the third-party shareholder in MBEL or any other shareholder in any SPVs acquired by the Trust in the future will continue to remain an asset of such shareholder and may be subject to encumbrances, regulatory proceedings and other restrictions imposed on such shareholder, which are beyond our control and may expose us to reputational or legal risks if such shareholder engage in any corrupt, fraudulent or unethical conduct that affects the SPVs or their operations.

30. ***The Portfolio Assets may be in non-compliance with terms of the concession agreements or applicable regulatory requirements, which could lead to penalties and actions, adversely affecting our business, results of operations, financial condition and cash flows.***

Under the terms of the concession agreements, any Portfolio Asset may be liable to pay damages to the concessioning authority for non-compliance with certain terms of the concession agreements, including for a delay in the fulfilment of the conditions precedent, delays in achieving commercial operations date, delays in completing punch list items specified in provisional completion certificates or for a failure to comply with the maintenance obligations set out in the agreements. In the event we fail to fulfil any condition precedent within the specified period and such delay is not as a result of a breach of the agreement by the concessioning authority or due to a *force majeure* event, the concerned Portfolio Asset will be liable to pay damages to the concessioning authority typically in an amount ranging from 0.1% to 0.2% of the performance security for each day of delay until the fulfilment of such condition precedent, subject to a maximum of 20% of the performance security.

Further, any failure by any Portfolio Asset to maintain or repair the toll roads in conformity with the maintenance requirements specified in the concession agreements, the maintenance program, maintenance manual or safety requirements, and if it fails to commence remedial works within 15 days of receipt of an inspection report from the independent engineer of the Portfolio Asset or such other period specified by the concession authority, the concessioning authority will be entitled, in addition to any other rights available to the concessioning authority, including the right to terminate the concession agreements, to take the required remedial measures at the concerned Portfolio Asset's risk and cost. In addition to covering the costs of the remedial work, concessioning authorities may levy on the concerned Portfolio Asset 20% to 25% (in case of BOT/DBFOT assets) and 50% (in case of TOT assets) of the cost of such work on the concessioning authority as damages.

The Portfolio Assets have, in the past, exchanged correspondence with the NHAI and the respective independent engineer under the relevant concession agreements, in relation to various matters including (i) payment of amounts pursuant to claims raised by the NHAI; (ii) matters where a penalty, demand or action has been recommended by the independent engineer but no further action has been taken by the NHAI; and (iii) letters issued by the NHAI without the imposition of any penalty or demand. We cannot assure you that the NHAI or any other relevant authority will not impose penalties or take action in this regard in the future.

Further, in the event that any Portfolio Asset fails to repair or rectify any defect or deficiency in respect of the toll roads in accordance with the maintenance requirements specified in the agreements, or if it is in breach of the maintenance program, maintenance manual or safety requirements, it will be liable to pay damages to the concessioning authority, in addition to any other rights available to the concessioning authority, including the right to terminate the concession agreements. The damages payable for such a breach may vary across concession agreements and may be computed by reference to factors such as the performance security, average daily fee and the estimated cost of such repair or rectification, and may accrue on a per-day basis until the breach is cured.

Further, there have been instances in the past when the Portfolio Assets may not have been in compliance with a particular regulatory compliance or filing requirement, or when there may have been a delay in such compliance or filing. For example, there have been instances in which approvals obtained or documentation issued in the old name of an entity have not been replaced with revised approvals or documentation in the new name (such as Provident Fund code allotments for JUHPL and QEPL). Certain documents for periods prior to the acquisition by the Trust may also not be available. There have also been instances of delay in filing in the past, such as filings for the issue or transfer of shares under the foreign exchange regulations, for which the Portfolio Assets have obtained compounding orders and paid the relevant penalty or late submission fee to the regulatory authority. There have also been instances of non-

filings by third-party sellers that transferred shares to our previous sponsors (or their associates). Any non-compliance or delay in filing under applicable laws in the future may subject the relevant Portfolio Asset to a penalty, which may adversely affect the business, financial condition, results of operations and cash flows of such Portfolio Asset.

31. ***Interruptions in our information technology systems or increased costs of implementing new technologies or maintaining or refurbishing existing technologies may adversely affect toll collection, operations and our ability to make distributions.***

We rely extensively on information technology systems for toll operations, including automated toll accounting, revenue reconciliation and administrative functions at our toll plazas. Nearly all our toll plazas operate on electronic toll collection systems such as FASTag, and we have migrated to an in-house Toll Management System ("**TMS**") across most of our Portfolio Assets. In addition, we have deployed technology platforms such as Road-Aid, HiRate, Build-Aid, Setu Sthiti and advanced traffic management systems (ATMS) to digitize maintenance, enhance monitoring, and improve road safety. Also see "*Our Business – Technology*" on page 310. Any failure, malfunction, or cyber incident affecting these systems may cause data accuracy issues, disrupt toll collection, delay reconciliations, or result in lost toll revenue and reputational damage. Moreover, any cyber-attack or data breach that results in unauthorised access to sensitive data could lead to reputational damage, potential litigation, and regulatory fines under emerging data privacy regimes. For example, the recently enacted "The Digital Personal Data Protection Act, 2023" (the "**DPDP Act**") on August 11, 2023. The DPDP Act has been notified, and has replaced the existing data protection provision under Section 43A of the Information Technology Act. The DPDP Act provides for the processing of digital personal data in a manner that recognizes both individuals' rights to protect their personal data and the need to process personal data for lawful purposes and matters incidental thereto. As the relevant rules have not yet been notified, the impact of the DPDP Act on our business and operations remains uncertain. For more details related to the privacy and data protection laws applicable to us, see "*Regulations and Polices*" on page 385. Compliance with new and evolving privacy and security laws, regulations and requirements may result in increased compliance costs and may constrain or require us to alter our existing data protection processes and infrastructure.

For details, see "– *Cybersecurity incidents or failures of our information technology systems could disrupt operations, compromise data and adversely affect our business, results of operations, financial condition and cash flows*" on page 101.

Further, the NHAI and the Ministry of Road Transport and Highways may introduce new technologies, such as GPS-based tolling systems, multi-lane free-flow tolling, or other tolling systems, which will require investment and may impact our revenue from operations and cash flows. The concessioning authorities, NHAI or other governmental authorities, may prescribe new service level standards from time to time. For example, requirements to suspend or waive toll collection if vehicle waiting times exceed specified thresholds at toll plazas, which could directly affect tolling operations, reduce toll revenues during peak periods and require additional operational or technological upgradation. The operation and continual upgrade of these digital systems requires significant capital and operating expenditure. Additionally, refurbishing existing equipment, including electronic tolling, automated number plate recognition and predictive asset monitoring, could involve higher-than-anticipated costs or delays. As technology standards evolve, we may be compelled to make further investments in software integration, cyber security enhancements, and the replacement of outdated systems.

While we seek to manage lifecycle costs through centralized procurement and standardization, no assurance can be given that these measures will mitigate the financial burden of system upgrades or outages. Prolonged IT interruptions or increased technology-related costs may reduce our net distributable cash flows and adversely affect our ability to make timely and adequate distributions to the Unitholders.

32. ***Any mismatch or errors in FASTag transactions, including those arising from system integration failures, network issues or other electronic tolling disruptions, may adversely affect our toll collections, thereby affecting our business, results of operations, financial condition and ability to make distributions to Unitholders.***

A significant portion of our toll collections is through electronic tolling mechanisms, including FASTag, supported by our in-house TMS. These systems require continuous and seamless integration between the hardware systems, software applications, banking and payment infrastructure, the National Payments Corporation of India ("**NPCI**") network, toll acquirers and FASTag issuers. Any mismatch or error in FASTag transactions, whether due to system integration failures, network or connectivity issues, data transmission errors, latency in settlement, incorrect vehicle classification, or failures in reconciling transactions with acquiring banks, may result in incorrect toll deductions, rejection of valid transactions, or delays in settlement.

Such issues may also arise from failures or malfunctions in our TMS, or related applications downtime or outages of external platforms such as NPCI or banking systems, inconsistencies in issuer databases, or manual interventions undertaken to resolve mismatches. The occurrence of any of these circumstances may cause delays in reconciliation and settlement, financial losses due to disputed or uncollectible amounts, and interruption in upstreaming cash flows from the project SPV(s) to us. Persistent mismatches or erroneous deductions may also result in user complaints, reputational concerns, additional administrative costs, scrutiny from concessioning authorities, or operational

directives that increase compliance requirements and costs. While we have not faced any such instances of persistent mismatches or erroneous deductions leading to operational directives during the Financial Years 2026, 2025 and 2024, there can be no assurance that we will not face such issues in the future, which may adversely affect our toll collections and, in turn, our business, results of operations, financial condition, and cash flows.

33. ***We may not be able to comply with current and changing safety, health and environmental laws and regulations in India, which could adversely affect our business.***

The operation of our road assets requires compliance with environmental laws and regulations, including those governing the discharge of pollutants, the treatment, transport, storage, and disposal of solid and hazardous wastes, and the remediation of soil and groundwater contamination. We cannot be certain that we have identified all environmental matters that may give rise to potential liability, or that current environmental regulations will not change. Environmental approvals are typically subject to ongoing compliance, including monitoring, auditing, and reporting requirements under central and state-specific environmental regulations. Also see "*Regulatory Approvals*" on page 397. There can be no assurance that such actions will not be taken by the relevant authorities in the future, which may adversely affect our ability to continue operating the relevant project profitably, or at all.

Further, changes in environmental laws and pollution control norms, including tightening of emission standards applicable to construction equipment, maintenance machinery and other vehicular fleets deployed across our Portfolio Assets, may require replacement, retrofitting or upgradation of such equipment resulting in increased capital expenditure, higher operating and maintenance costs, downtime during transition periods, or restrictions on the deployment of certain equipment or vehicles, which may adversely impact traffic operations, toll collections, annuity performance, margins and thereby affect our business, financial condition, results of operations and cash flows. The past use of hazardous materials by the concessionaire or its sub-contractors, new releases of hazardous substances, or more stringent future environmental requirements (or different methods of enforcing existing requirements) could result in additional or unforeseen expenditures or liabilities which could have an adverse effect on our business, financial condition, results of operations and cash flows.

34. ***There may be structural defects in our road infrastructure assets arising from design errors, construction defects or inadequate maintenance by previous operators and may require significant remediation expenditure, result in deterioration of asset condition or expose us to damages under our concession agreements.***

Certain of our Portfolio Assets have been acquired from, and our future acquisitions may be from, third-party developers or previous concessionaires, and the long-term structural condition of such assets is dependent on the quality of original design, engineering, construction practices and historical maintenance undertaken prior to our acquisition. Latent defects in pavements, subgrade layers, bridges, culverts, embankments, retaining structures, tunnels, or other ancillary facilities may not be apparent at the time of acquisition or may manifest only after extended operation. Such structural deficiencies may arise from factors such as design errors during construction, the use of substandard materials, improper compaction, inadequate drainage, overloading, construction-stage deviations, or failure to carry out periodic maintenance or major maintenance at the required intervals under the concession agreements. In the event such historical defects are discovered after acquisition, we may be required to undertake unplanned remediation or reconstruction works, which may materially increase our operations and maintenance costs and increase lifecycle expenditure, which may adversely affect our toll collections, thereby adversely affecting our business, results of operations, financial condition and our ability to make distributions to Unitholders.

Further, under our concession agreements, we are obligated to maintain the Portfolio Assets in accordance with prescribed performance and safety standards. Any failure to remedy structural defects within the timelines specified by the concessioning authority may result in damages, deductions, or enforcement of remedial action at our cost. In severe situations, deterioration of key structures may lead to traffic restrictions, safety concerns, reputational damage, temporary road closures, or penalties under the concession agreements, adversely affecting toll collections. Accordingly, the existence of structural defects in road infrastructure components resulting from inadequate maintenance by previous operators may adversely affect our business, results of operations, financial condition, and our ability to make distributions to our Unitholders.

35. ***Cybersecurity incidents or failures of our information technology systems could disrupt operations, compromise data and adversely affect our business, results of operations, financial condition and cash flows.***

We rely extensively on information technology systems for toll collection, revenue reconciliation, asset monitoring, maintenance management and administrative functions across our Portfolio Assets, including electronic tolling systems such as FASTag and in-house TMS. These systems store and process large volumes of transactional, operational and personal data. Any cyber incident, including cyber fraud, hacking, ransomware attacks, unauthorized access, data theft or system manipulation, could result in disruption of toll operations, loss or corruption of transaction data or operational downtime.

In addition, any failure to adequately safeguard personal or sensitive data relating to road users, employees, contractors or counterparties may result in data privacy breaches, reputational harm, contractual claims, regulatory scrutiny or

penalties under applicable data protection and information technology laws. While we have not faced any such material instances, during the Financial Years 2026, 2025 and 2024, there can be no assurance that we will not face such data privacy breaches, reputational harm, contractual claims, regulatory scrutiny or penalties in the future, which may adversely affect our business, results of operations, financial condition and cash flows. Further, loss, inaccuracy or unavailability of transaction data could also impair revenue reconciliation, dispute resolution with concessioning authorities or lenders.

While we have implemented systems, controls and monitoring mechanisms to mitigate cybersecurity and data protection risks, there can be no assurance that such measures will be sufficient to prevent cyber incidents or data breaches. The occurrence of such events could adversely affect our business operations, financial condition, results of operations, cash flows and our ability to make distributions to Unitholders.

36. ***We may be unable to obtain, maintain or renew the statutory and regulatory permits and approvals required to operate our Portfolio.***

We operate in a regulated environment, and our road operations are subject to the applicable environmental, labour, social security, public health, consumer protection, competition, operational and safety regulations, among others. Please refer to "*Regulations and Policies*" on page 385.

If we fail to obtain or renew the approvals required to undertake our businesses, or if there is any delay in obtaining them, our businesses and financial condition could be adversely affected. Further, government approvals and licenses are subject to numerous conditions, some of which are onerous and require us to incur substantial expenditure. There can be no assurance that we would be able to continuously meet such conditions or that the approvals, licenses, registrations, consents and permits issued to us would not be suspended or revoked in the event of non-compliance with any terms or conditions thereof, or pursuant to any regulatory action. This may result in interruptions to our operations and adversely affect our business, financial condition, and results of operations. Also see "*Regulatory Approvals*" on page 397.

In addition, governmental authorities may take enforcement action against us for our failure to comply with the regulations applicable to us. Any failure by us to comply with applicable laws and regulations in a timely manner or at all may result in us being subject to administrative, civil and criminal proceedings by governmental authorities, as well as civil and criminal proceedings, which could have an adverse effect on our operations or result in the imposition of fines or penalties against us, the suspension of operations, or the termination of the concession agreements. Penalties imposed by regulatory authorities on us or third parties upon whom we depend may also disrupt our business and operations. Further, we may become involved in future litigation, regulatory enforcement actions, or other proceedings, or be held responsible in any such future litigation or proceedings relating to breaches of laws or regulations, including those relating to safety, health, and environmental matters. Any damages, payment of fines or other penalties, cleanup or remediation costs, as well as other liabilities and related litigation, could adversely affect our business, prospects, financial condition, cash flows, results of operations, and our ability to make distributions to the Unitholders.

37. ***The Portfolio Assets and the Parties to the Trust are involved in legal and other proceedings, which may not be decided in their favour.***

From time to time, we, our Portfolio Assets, or our or their directors, officers or employees or the Parties to the Trust may be involved in legal, regulatory and other proceedings concerning matters that arise in the ordinary course of our business operations, including as a result of disputes with the concessioning authority in relation to the provisions of the concession agreements, labour disputes with our employees or contract workers, and disputes with our contractual counterparties, local unions, or users of the toll roads. These disputes may lead to legal, criminal, civil, regulatory and other proceedings, and may cause us to incur significant costs, delays and other disruptions to our business and operations. In addition, regulatory actions and disputes with governmental authorities may result in fines, penalties and other administrative sanctions. There can be no assurance that the outcome of any future legal, regulatory, or other proceedings that may be brought against us will not adversely affect our reputation, business, financial condition, results of operations, and prospects. The following table sets forth a summary of the material proceedings involving us:

Nature of Litigation	Number of Cases(1)	Aggregate amount involved (₹ in million)(2)
Litigation involving the Trust	Nil	Nil
Litigation involving the Portfolio Assets		
Civil Proceedings	6	2844.62
Regulatory Proceedings	8	1,761.29
Criminal Proceedings	12	Nil
Material Outstanding Claims	11	41,737.46
Litigation involving the Sponsor and their Associates and the Sponsor Group		
Civil Proceedings	2	329
Criminal Proceedings	2	1,916.91
Regulatory Proceedings	4	2,546.79

Nature of Litigation	Number of Cases(1)	Aggregate amount involved (₹ in million)(2)
Litigation involving the Trustee		
Criminal Proceedings	Nil	Nil
Regulatory Proceedings	1	0.10
Taxation Proceedings*		

Notes:
(1) Includes cases which are not quantifiable
(2) To the extent quantifiable
** For details in relation to the Taxation Proceedings, please see "Legal and Other Information – Taxation Proceedings" on page 414*

For further details, please see the section entitled "*Legal and Other Information*" on page 405.

There is an ongoing administrative matter involving certain affiliated group entities of the Sponsor. It does not involve the Trust Group or any Sponsor of the Trust. The World Bank Group's Integrity Vice Presidency ("**INT**") is currently conducting an audit of Cube Highways and Infrastructure Pte. Ltd. ("**CH-I**"), and Cube Highways and Transportation Asset Advisors Private Limited*, ("**CHTAAPL**," together with **CH-I**, the "**Relevant Entities**"), affiliated group entities of the Sponsor, as well as the then CEO of CHTAAPL. The audit pertains to the period from 2017 to 2021. This matter does not constitute a criminal or civil investigation by any government authority. In response to the audit, the Relevant Entities engaged external legal counsel ("**Counsel**") to conduct a detailed internal review of the issues raised by INT. As on the date of this Final Offer Document, Counsel's review has not identified any evidence indicating that the Relevant Entities, their personnel, or any related entities engaged in any knowing, willful, or intentional misconduct. INT and the Relevant Entities may seek to resolve this matter through a negotiated settlement or through the World Bank Group's adjudication process. At present, there is no defined timeline for the conclusion of this matter. Negotiations with INT, and any potential adjudication process, may result in non-monetary sanctions against the Relevant Entities, including potential debarment from participation in World Bank Group-funded projects for a stated period of time. As noted in the section "*Our Business*" of this Final Offer Document, the International Finance Corporation ("**IFC**"), the private sector arm of the World Bank Group, continues to maintain an active relationship with the Trust and the Sponsor, including leading the first sustainability-linked bond issuance in the toll road sector in February 2025. While the audit does not pertain to the Trust Group or its Sponsor, the association with a Sponsor Group entity means that an adverse outcome could result in reputational impact.

** Cube Highways Asset & Project Advisory Private Limited has been appointed as the project manager of the Trust with effect from June 26, 2026, replacing the Erstwhile Project Manager whose engagement continued up to June 25, 2026.*

38. ***Land acquisition, right of way and utility shifting are the responsibility of the concessioning authority under concession agreements, but delays or disputes may affect our ability to meet our obligations.***

Under our concession agreements, NHAI or the relevant state concessioning authority is responsible for providing land and right of way, and for completing the utility shifting required for the project. Timely handover of land is essential for the execution of augmentation works, carrying out maintenance, and complying with concession obligations.

In practice, concessioning authorities often face delays in land acquisition due to disputes over compensation, resistance from local communities, and prolonged regulatory approvals. For example, certain of our Portfolio Assets, including GAEPL and MBEL, have raised claims with NHAI for delays in handing over the required land parcels, leading to disputes and compensation claims.

Delays or a lack of government support regarding land handover, removal of encroachments, or utility shifting may prevent us from completing scheduled works within the timelines specified in the concession agreements. This may result in penalties, reduced concession periods, suspension of toll collection, or termination of the concession. Accordingly, delays or disputes relating to land acquisition, right-of-way or utility shifting may adversely affect our ability to perform contractual obligations, increase costs, and affect our revenue from operations, cash flows, and our ability to make distributions to Unitholders.

39. ***The Portfolio Assets' concessions are illiquid in nature, which may make it difficult for us to realize, sell or dispose of our shareholding in the Portfolio Assets.***

The Portfolio Assets' concessions are illiquid in nature, among other reasons, on account of market conditions, the residual periods of the concession agreements, various approvals, consents and confirmations required by the concessioning authorities as per the concession agreements, and a scarcity of disposal options and/or potential acquirers. As a result, it may be difficult for us to realize, sell or dispose of our shareholding in the Portfolio Assets at an attractive price, or at the appropriate time, or at all, and such illiquidity may have an adverse effect on our market value, business, prospects, financial condition and results of operations. Further, in addition to the restrictions on minimum holding period and divestment under the InvIT Regulations, we are required to comply with the provisions of the concession agreements, including holding at least 51% of each of the Portfolio Assets until two years after the completion of construction, provisional COD or appointed date, as applicable, with respect to each of our Portfolio

Assets. Further, we are required to hold any infrastructure asset for a period of not less than three years from the date of purchase of such asset by us, under the InvIT Regulations.

40. ***We may not be able to generate adequate or higher returns on our investments, which could adversely affect our business, financial condition, results of operations and ability to make distributions.***

Our ability to deliver returns depends on the performance of our road asset portfolio and the success of future acquisitions. While we target assets and make treasury investments expected to provide stable and predictable cash flows, there can be no assurance that these assets and investments will generate returns consistent with our assessments or that we will be able to enhance yields through refinancing, operational efficiencies, or asset management initiatives. Actual cash flows may also be affected by factors such as macroeconomic conditions, lower traffic volumes, changes in toll or annuity payments, higher operating costs, regulatory changes or delays in realizing synergies from acquisitions.

Further, our future acquisitions are subject to competition, the availability of suitable assets and financing conditions. If acquisition costs rise, financing becomes constrained, or the acquired assets underperform relative to expectations, our overall portfolio yields and distributions could decline. Accordingly, we may not be able to generate adequate or higher returns on our investments, which could adversely affect our business, financial condition, results of operations, cash flows and ability to make distributions to Unitholders.

41. ***We may be required to pay additional stamp duty if any concession agreement is subject to payment of stamp duty as a deed creating leasehold rights, or as a development agreement.***

Currently, concession agreements are treated as agreements which are not lease deeds (under the category of general agreements or other agreements) and stamp duty ranging between ₹100 to ₹500 is typically paid for such concession agreements. Stamp duty authorities in certain states in India have issued notices to some concessionaires, alleging inadequate stamp duty on the concession agreements executed between the concessionaires and the concessioning authorities. The stamp authorities allege that, since the concession agreements relate to the letting of tolls to the concessionaires in the form of leases or development agreements, they were required to be stamped as lease agreements or development agreements, as applicable. Accordingly, concession agreements that have not been stamped as such may be considered inadequately stamped.

The stamp duty for a lease agreement or a development agreement ranges from 1.0% to 11.0% of the annual rent or premium payable, or the market value of the property. Furthermore, the revenue departments of any state may impose penalties for the payment of inadequate stamp duty, which may extend up to 10 times the amount of the stamp duty payable. Furthermore, a recent judgment of the Supreme Court of India, ruled that a concession agreement for a BOT project should be categorized as a "lease" under the Indian Stamp Act, 1899. As a result, the stamp duty provisions that apply to leases may become applicable to these agreements. This change could lead to substantial financial consequences for the concessionaire, as lease agreements are typically subject to significant ad valorem stamp duties that vary across states, potentially increasing the financial burden. Certain of our Portfolio Assets have received notices alleging deficiency in the payment of stamp duty on their concession agreements. For further details, please see "*Legal and Other Information*" on page 405.

If any of the concession agreements were determined to be inadequately stamped, then such agreements would be inadmissible as evidence in any legal action until the deficient amount of stamp duty, together with interest and penalties, if any, was paid. Any deficiently stamped documents can also be impounded by any person having authority, by law or consent, to receive evidence, or every person who is in-charge of a public office. Such persons impounding the deficiently stamped documents can either levy the appropriate stamp duty and penalty or send them to the revenue authorities for that purpose. In addition, a person who signs an instrument chargeable with stamp duty will be subject to a fine if such an instrument is not duly stamped.

Concession agreements contain change-in-law provisions that extend to a change in the interpretation or application of any Indian law by a court of record after the date of the concession agreement or the submission of the bid documents, as the case may be. Under the terms of the concession agreements, if any financial burden exceeding a certain prescribed threshold is imposed on a concessionaire as a result of such a change in law, then it may be entitled to approach the concessioning authority to amend the concession agreement or seek compensation to place the concessionaire in its former financial condition. However, relief under the concession agreements may be limited. There can be no assurance that the relevant concessioning authority will consider additional stamp duty on the concession agreements as a change in law for which they will amend the concession agreement or agree to provide compensation to the concessionaire. Any disagreement between the relevant concessionaire and the concessioning authority may result in arbitration proceedings, which could increase costs.

Any demand for payment of a higher stamp duty or any penalty would increase the costs of the projects to the extent such additional costs are not recoverable from the concessioning authorities and could adversely affect the business, results of operations, and prospects of the Portfolio Assets.

42. ***Our insurance policies may not provide adequate protection against all risks associated with our business.***

As of March 31, 2026, the aggregate coverage under the insurance policies obtained by us was ₹432,197.86 million. The Investment Manager will maintain insurance cover on the properties and equipment required for the operations of the Portfolio Assets in amounts believed to be consistent with industry practice. Our insurance policies cover physical loss or damage to property arising from a number of specified risks and include, amongst others, comprehensive or commercial general liability, employees' compensation insurance, group medical insurance, and industrial all-risk insurance. Set out below are details of our insurance coverage over insured assets as of the dates indicated:

Particulars	As of March 31,		
	2026	2025	2024
Total assets* (*₹ in million*)	233,833.27	245,145.49	221,648.89
Insurance coverage** (*₹ in million*)	378,973.45	333,826.59	212,226.11
Insurance coverage, as a % of total tangible assets *(%)*	162.07%	136.17%	95.75%

* *Total assets include property, plant and equipment, capital work-in progress, intangible assets and inventories.*

** *Insurance coverage in this table represents asset-specific sums insured, while our aggregate insurance coverage includes additional policies such as comprehensive or commercial general liability, employees' compensation insurance, group medical insurance, and industrial all-risk insurance, which may not cover specific insurable assets.*

We have also obtained representations and warranties ("**R&W**") insurance in connection with certain acquisitions. However, recovery under such policies is subject to insurer interpretation, exclusions, de minimis thresholds, deductibles and aggregate limits, and there can be no assurance that any claim will be accepted or settled in full or on a timely basis. Accordingly, the value or timing of recoveries under our R&W insurance may be uncertain, and any shortfall could increase our exposure to acquisition-related risks.

Despite our insurance coverage, we may not be fully insured against certain business risks, including accidents that cause losses in excess of the limits specified under the relevant policies, or losses arising from events not covered by the insurance policies, which could adversely affect our business and results of operations. For example, we may incur revenue losses due to pandemics such as COVID-19, and such losses may not be covered by our insurance policies. Further, if a fire or natural disaster substantially damages or destroys some or all of the Portfolio Assets, the proceeds of any insurance claim may be insufficient to cover our expenses, including rebuilding costs. We have received insurance claims amounting to ₹29.57 million, ₹76.47 million and ₹24.57 million for physical damage to road assets and losses caused due to accidents and natural disasters during the Financial Years 2026, 2025 and 2024, respectively.

43. ***Any delay or failure in payment of statutory dues by the Trust or our Portfolio Assets may result in the imposition of penalties, which may adversely affect our business, financial condition, results of operations and cash flows.***

The Trust and our Portfolio Assets are required to pay certain statutory dues, including provident fund contributions and employee state insurance contributions, as indicated in the tables below. The tables below set forth the details of the statutory dues paid by the Trust and our Portfolio Assets, including in relation to our employees, for the years indicated below:

Nature of payment	As at March 31, 2026		As at March 31, 2025		As at March 31, 2024	
	Statutory Dues Payable	Statutory dues unpaid till date	Statutory Dues Payable	Statutory dues unpaid till date	Statutory Dues Payable	Statutory dues unpaid till date
	(₹ in million)					
Employee State Insurance*	0.04	0.04	0.04	0.02	0.06	0.04
Provident Fund*	5.06	0.69	5.51	0.69	3.62	0.30
Professional Tax*	0.24	0.03	0.29	0.03	0.33	-
Tax Deducted at Source	116.74	-	56.33	-	69.79	-
Labour Welfare Fund	-	-	-	-	0.07	-
BOCW Cess	6.37	-	10.48	-	7.80	-
Goods and Service Tax	101.15	-	193.52	-	133.02	-
Total	**229.60**	**0.76**	**266.17**	**0.75**	**214.69**	**0.34**

* *Amount not paid as on date pertains to the pre-acquisition period as relevant employee details are not available.*

While we have faced instances of marginal delays in payment of statutory dues during the past three Financial Years (which did not have any adverse effect on our business), we have not faced any other instances of delays in payment of statutory dues during such years. If we are unable to pay our statutory dues on time in the future, we could be subject to penalties which could adversely affect our business, results of operations, financial condition, cash flows and our ability to make distributions to Unitholders.

44. ***The Valuation Reports are not an opinion on the commercial merits of the Trust or the Portfolio Assets, nor are they an opinion, expressed or implied, as to the future trading price of the Units or the financial condition of the Trust upon completion of the Offer, and the valuation contained therein may not be indicative of the true value of the Portfolio Assets' assets.***

Ernst & Young Merchant Banking Services LLP has been appointed as the independent valuer (the "**Valuer**") to undertake an independent valuation of the Portfolio Assets. The Valuer has issued reports which set out its opinion as to the fair enterprise value of the Portfolio Assets as at March 31, 2026 (pursuant to a report dated May 22, 2026) (the "**Valuation Report**"). In order to issue the Valuation Report, the Valuer based its assumptions regarding the traffic volume, toll rates, operation and maintenance costs, amortization, debt repayments and non-cash net working capital projections amongst other things, on information provided by and discussions with or on behalf of us, the Sponsor and the Investment Manager, and which reflects current expectations and views regarding future events and, therefore, necessarily involves known and unknown risks and uncertainties. Please refer to the Valuation Report for a detailed description of all assumptions relied upon in the preparation thereof. The Valuation Report contains forecasts, projections and other "forward-looking" statements that relate to future events, which are, by their nature, subject to significant risks and uncertainties. The future events referred to in these forward-looking statements involve risks, uncertainties and other factors which may cause the actual results or performance to be different from any future results or performance expressed or implied by the forward-looking statements.

The Valuation Report is not an opinion on the commercial merits and structure of the Trust or the Portfolio Assets, nor is it an opinion, expressed or implied, as to the future trading price of the Units or the financial condition of the Trust upon completion of the Offer. The Valuation Report does not purport to contain all the information that may be necessary or desirable to fully evaluate the Trust, the Portfolio Assets or an investment in the Trust or the Units. The Valuation Report is not based on a comprehensive review of the business, operational or financial condition of the Portfolio Assets and, accordingly, makes no representation or warranty, expressed or implied, in this regard. The Valuation Report does not confer rights or remedies upon investors or any other person, and do not constitute and should not be construed as any form of assurance as to the financial condition or future performance of the Trust or as to any other forward-looking statements included therein, including those relating to certain macro-economic factors, by or on behalf of the Sponsor, the Investment Manager, the Project Manager, the Trust, the Selling Unitholders or the Book Running Lead Managers. Further, there can be no assurance that the valuation prepared by the Valuer reflects the true value of the net future revenue from operations of the Portfolio Assets or that other valuers would arrive at the same valuation. Accordingly, the valuation contained therein may not be indicative of the true value of each Portfolio Asset's assets. The Valuation Report has been issued on May 22, 2026, but does not take into account any subsequent developments and should not be considered as a recommendation by the Sponsor, the Investment Manager, the Project Manager, the Trust, the Selling Unitholders or the Book Running Lead Managers or any other party that any person should take any action based on the Valuation Report. To illustrate, the Valuation Report includes the value of the WUPTPL Project, the concession period of which concluded on June 23, 2026, and accordingly does not reflect its exclusion from our Portfolio Assets. Accordingly, investors should not rely solely on the Valuation Report in making an investment decision to purchase Units in the Trust.

45. ***We have relied on data derived from third-party reports, which are based on certain estimates and assumptions and are subject to the limitations set out therein.***

We have appointed Knight Frank (India) Private Limited and FP India Project Management Consultancy Services Private Limited, independent third-party technical engineering firms, as our technical consultants (the "**Technical Consultants**") to forecast the operations and maintenance expenses for each Portfolio Asset and to prepare technical reports on the Portfolio Assets, which are set out in Annexure B to this Final Offer Document (the "**Technical Reports**"). We have also appointed Steer Davies Gleave India Private Limited as our traffic consultant ("**Traffic Consultant**") to provide their analysis and forecast of traffic volumes for our toll-based Portfolio Assets (excluding annuity assets), which are set out in Annexure A to this Final Offer Document (the "**Traffic Reports**"). Furthermore, we have also included data from a report titled "*Assessment of the Indian Road Sector*" dated June 2026, prepared by the Industry Expert, (the "**Industry Report**"). The Technical Reports, Traffic Reports and the Industry Report have been commissioned and paid for by the Investment Manager.

The Technical Reports, the Traffic Reports and the Industry Report (together referred to as the "**Third Party Reports**") are subject to various limitations and are based upon certain assumptions and estimates that are subjective in nature and are based, in part, on information provided by and discussions with or on behalf of us, the Sponsor and the Investment Manager. The Third-Party Reports reflect current expectations and views regarding future events, and therefore, necessarily involve known and unknown risks and uncertainties. Industry sources and publications generally state that the information contained therein has been obtained from sources generally believed to be reliable, but that their accuracy, completeness and underlying assumptions are not guaranteed, and their reliability cannot be assured. Industry sources and publications are also prepared based on information as of specific dates and may no longer be current or reflect current trends. Industry sources and publications may also rely on estimates, projections, forecasts, and assumptions that may prove incorrect. Investors must rely on their independent examination of the Trust, and should not place undue reliance on, or base their investment decision solely on, this information.

The Third Party Reports contain forecasts, projections, and other "forward-looking" statements that relate to future events and are, by their nature, subject to significant risks and uncertainties, including population growth, gross domestic product growth, vehicle ownership rates, per capita income, agricultural output, and fuel consumption. The future events referred to in the Third-Party Reports involve risks, uncertainties and other factors which may cause the actual traffic volumes, technical information or industry estimates to be different from any future traffic volumes,

technical information, or industry estimates expressed or implied by the Third-Party Reports. There can be no assurance that the bases, estimates and assumptions adopted by the Technical Consultants, Traffic Consultant or Industry Expert for the purposes of preparing their respective reports will prove to be accurate. If any of these bases or assumptions are incorrect, future traffic volumes, technical information, or industry estimates for the Portfolio could differ from those set forth in these reports and this Final Offer Document. Additionally, the concession period of the WUPTPL Project concluded on June 23, 2026 and the concession period of the APEPL Project is expected to conclude in the quarter ended September 30, 2026, and accordingly no Traffic Reports or Technical Reports in respect of such assets have been included in the Final Offer Document. Accordingly, no investment decision should be made solely on the basis of such information.

46. ***The periods for which financial information has been included in the Audited Consolidated Financial Statements are not comparable and may not be indicative of our future financial condition and results of operations. We may not be able to operate our business successfully or generate sufficient distributable cash flows to make or sustain distributions.***

This Final Offer Document includes audited consolidated financial statements of the Trust as of and for the Financial Years 2026, 2025 and 2024. For further information, see Annexure D for "*Audited Consolidated Financial Statements*".

The Portfolio Assets (except the HAM SPVs, NAMEPL and the NIIF SPVs) were transferred to the Trust on April 17, 2023, by CH-I and CH-III, our previous sponsors, pursuant to the formation transactions undertaken as part of the initial offer through private placement of Units. The Trust was privately listed on the Stock Exchanges on April 19, 2023. The Trust acquired 51% of the shareholding in the HAM SPVs on June 4, 2024, and acquired the remaining 49% shareholding in the HAM SPVs on December 3, 2024. Further, the Trust acquired 100% of the shareholding in NAMEPL on February 12, 2025. Thereafter, the Trust acquired 100% of the shareholding in the NIIF SPVs on June 12, 2025. Accordingly, the HAM SPVs, NAMEPL and the NIIF SPVs have been accounted for as subsidiaries in our Audited Consolidated Financial Statements with effect from June 4, 2024, February 12, 2025 and June 12, 2025, respectively. Accordingly, the years for which the Audited Consolidated Financial Statements have been included in this Final Offer Document may not be comparable, and the Audited Consolidated Financial Statements may not be indicative of our financial results, cash flows and financial position in the future, including pursuant to any future acquisitions. Additionally, the concession period of the WUPTPL Project concluded on June 23, 2026, and the asset has accordingly ceased to form part of our Portfolio Assets. Consequently, our future financial statements, including for subsequent financial years and quarters, will not include any contribution from the WUPTPL Project and will accordingly not be comparable with the Audited Consolidated Financial Statements or other historical financial information included in this Final Offer Document, until such time as the financial information for the periods that included the WUPTPL Project ceases to be presented as a comparative period.

Risks Relating to the Structure of the Trust and Ownership of the Portfolio Assets

47. ***The regulatory framework governing infrastructure investment trusts in India is still evolving, and the interpretation and enforcement thereof involve uncertainties, which may have an adverse effect on the ability of certain categories of investors to invest in our Units, our business, results of operations, financial condition and our ability to make distributions to Unitholders.***

The SEBI issued the InvIT Regulations with effect from September 26, 2014. These regulations have been amended and supplemented with additional guidelines, circulars and notifications from time to time, including the InvIT Master Circular, which governs many aspects of the disclosure and securities offering requirements for InvITs. While the InvIT Regulations provide a framework for privately placed and listed infrastructure investment trusts and the Trust has been operating under such framework, the SEBI has recently amended the applicable regulatory framework and permitted such privately placed infrastructure investment trusts to convert to publicly offered infrastructure investment trusts, and the Offer was being conducted in accordance with such framework.

Because the regulatory framework governing infrastructure investment trusts is still evolving, interpretation and enforcement by regulators and courts involves uncertainties. Further, regulations and processes with respect to certain aspects of infrastructure investment trusts, including, but not limited to, the dissolution and delisting of infrastructure investment trusts and the liabilities of unitholders, have not yet been issued or adopted.

Changes to applicable regulations, from new regulations, from new interpretations by courts or regulators of existing regulations or from stricter enforcement practices by regulatory authorities of existing regulations may result in changes to the Offer structure, changes to agreements entered into or proposed to be entered into in connection with the Offer, cost increases, fines, legal fees or business interruptions. In addition, new costs may arise from audit, certification and/or self-assessment standards required to maintain compliance with new and existing InvIT Regulations. Such changes in regulation, interpretation and enforcement may render it economically infeasible to continue conducting business as an infrastructure investment trust, or otherwise adversely affect our business, financial condition and results of operations.

Because we operate in an evolving regulatory environment, it is difficult to forecast how any new laws, regulations or standards or future amendments to the InvIT Regulations will affect infrastructure investment trusts and the infrastructure sector in India, and no assurance can be given that the regulatory system will not change in a way that will impair our ability to comply with the regulations, conduct our business, compete effectively or make distributions. Failure to comply with changes in laws, regulations and standards may have an adverse effect on our business, financial condition, results of operations and prospects.

48. ***We must maintain certain investment ratios, which may present additional risks to us***.

Pursuant to the InvIT Regulations, publicly offered InvITs are required to invest not less than 80% of the value of their assets in completed and revenue-generating projects as defined under the InvIT Regulations, such as their Portfolio Assets. In addition, upon conversion to a publicly listed InvIT, we must not invest more than 20% of the value of our assets in certain other investments and financial instruments prescribed (including up to 10% of the value of our assets in under construction projects) under the InvIT Regulations. If these conditions are not fulfilled or breached on account of market movements of the price of the underlying assets or securities, the Investment Manager must inform the Trustee and ensure that these conditions are satisfied within six months of such breach (or within one year with Unitholder approval in accordance with InvIT Regulations). Such regulations may prevent us from acquiring additional assets to achieve our growth strategy. Failure to comply with these conditions may pose additional risks to us, including the divestment of some or all of our assets, the delisting of the units from the stock exchanges, and other penalties, which could adversely affect our business, financial condition, cash flows, and results of operations.

49. ***Distributions may be adversely affected due to cash trapped in the Portfolio Assets.***

Under the Companies Act, 2013, a company can declare dividends only after the mandatory transfer of profits to reserves. Further, amortisation and depreciation are non-cash expenditures and are charged to the profit and loss account. Consequently, a company may have surplus cash but no profit in the profit and loss account and thus cannot declare dividends, leaving cash trapped within the company.

In addition, where the acquisition of an SPV is funded through external debt, surplus cash available with such SPV may be required to be used solely for debt servicing and repayment, and cannot be upstreamed for distributions. If such debt repayment is restricted or deferred due to financing covenants, approvals, or cash sweep mechanisms, it may also create a cash trap.

In the event that cash is trapped in the Portfolio Assets, the Investment Manager and the Trustee may evaluate various options to extract the cash and make distributions to the Unitholders. There is no assurance that any such options to extract the cash trapped in the Portfolio Assets would not have adverse tax implications or affect our distributions, business and results of operation adversely.

Risks Related to the Trust's Relationships with the Parties to the Trust

50. ***Parties to the Trust are required to maintain the eligibility conditions specified under Regulation 4 of the InvIT Regulations on an ongoing basis. Non-compliance by the Sponsor, the Investment Manager, the Project Manager and the Trustee could result in the cancellation of the registration of the Trust.***

Each of the Parties to the Trust is required to maintain the eligibility conditions specified under Regulation 4 of the InvIT Regulations on an ongoing basis. These eligibility conditions include, among other things, that (a) the Sponsor, Investment Manager and Trustee are separate entities, (b) the Sponsor has a net worth of not less than ₹1,000 million and has a sound track record in the development of infrastructure or fund management in the infrastructure sector, (c) the Investment Manager has a net worth of not less than ₹ 100 million and has not less than five years' experience in fund management or advisory services or development in the infrastructure sector or the combined experience of the directors, partners and employees of the investment manager, each with at least five years of experience, in fund management or advisory services or development in the infrastructure sector is not less than 30 years, (d) the Trustee is registered with the SEBI under Securities and Exchange Board of India (Debenture Trustees) Regulations, 1993 and is not an associate of the Sponsor or Investment Manager, and (e) each of the Trust, the Sponsor, Investment Manager, Project Manager and Trustee are "fit and proper persons" as defined under Schedule II of the Intermediaries Regulations on an ongoing basis. Any non-compliance by the Sponsor, the Investment Manager, the Project Manager and the Trustee may result in the cancellation of the registration of the Trust.

51. ***The Sponsor and Sponsor Group, whose interests may be different from those of the other Unitholders, will be able to exercise significant influence over certain activities of the Trust.***

The Sponsor and Sponsor Group may be able to control the outcome of matters on which Unitholders are entitled to vote and for which the Sponsor is not prohibited from voting due to a conflict of interest. The interests of the Sponsor may differ from those of the other Unitholders. The Sponsor may also exercise influence over the Investment Manager and the Project Manager, who are associates of the Sponsor. Accordingly, the Investment Manager and Project Manager may also be subject to conflicts of interest with respect to the Trust. Given the influence that the Sponsor

exerts on the Investment Manager and the Project Manager, and consequently the operations and credibility of the Trust, any divestiture by the Sponsor in the Units, or any conflict of interest that it has compared to that of other Unitholders, could have an adverse effect on our business, financial condition and results of operations.

52. ***As a shareholder of the Portfolio Assets, the Trust's rights are subordinated to the rights of any creditors, debt holders and other parties specified under Indian law in the event of insolvency or liquidation of the Portfolio Assets.***

In the event of liquidation of any Portfolio Assets, any secured and unsecured creditors (at the applicable time) of the relevant Portfolio Asset will be entitled to payment from the liquidation proceeds in priority to us in our capacity as an equity shareholder of the Portfolio Assets. In addition, we have (or may in the future have) indebtedness at the InvIT level, and the relevant lenders may have the right to declare an event of default and accelerate repayment and/or enforce security, which could adversely affect our liquidity, cash flows and ability to make distributions to Unitholders. Such rights may also extend to, or be contractually linked with, loans advanced by us to our SPVs, including the ability to trigger an event of default and/or require repayment under such loans to the SPVs. Under the Insolvency and Bankruptcy Code, 2016, in the event of winding-up of any Portfolio Asset, workmen's dues and debts due to secured creditors which rank *pari passu* are required to be paid in priority over all other outstanding debt, followed by wages and salaries of employees, debts due to unsecured creditors, any amounts due to the central or state government, any other debts, preference shareholders and equity shareholders. Further, amounts payable to us in respect of any unsecured debt issued to the relevant Portfolio Asset will be subordinated in the manner set forth above. Further, should the Trust be dissolved, depending on the circumstances and the terms upon which our assets are disposed of, there is no assurance that a Unitholder will recover all or any part of its investment. There may also be uncertainty regarding the interpretation and implementation of certain provisions relating to the insolvency of a trust under the Insolvency and Bankruptcy Code, 2016.

53. ***The Trust and the Portfolio Assets have entered into certain related party transactions and expect to continue to enter into related party transactions, and there can be no assurance that such transactions will not have an adverse effect on our results of operations and financial condition.***

The Trust has entered, and will in the future enter, into certain transactions with related parties, including the Sponsor, the Project Manager, the Investment Manager, and their associates, such as for the proposed acquisition of the Committed Assets. The Portfolio Assets have also entered into transactions with related parties. Such transactions, or any future transactions with related parties, may involve conflicts of interest and impose certain liabilities on the Trust or the Portfolio Assets. There can be no assurance that previous related party transactions could not have been made on more favourable terms with unrelated parties, and there can be no assurance that such transactions or future transactions, individually or in the aggregate, will not have an adverse effect on our results of operations and financial condition. For detailed information on related party transactions, please see the section entitled "*Related Party Transactions*" on page 376.

54. ***The Investment Manager may not be able to implement our investment, risk and capital management strategies successfully. Further, the fees payable to the Project Manager are dependent on various factors.***

There is no assurance that the Investment Manager will be able to implement our investment, risk, and capital management strategies successfully, or that it will be able to expand our Portfolio Assets at any specified rate or to any specified size, or to maintain distributions at projected levels. The Investment Manager may not be able to acquire or invest on favourable terms or within a desired time frame, and it may not be able to manage the operations of its underlying assets profitably. Factors that may affect this risk include, but are not limited to, changes in the regulatory framework in India, competition for assets, partial award of concessions or licenses favoring local or other competitors of the Trust, changes in the Indian regulatory or legal environment, or macro-economic conditions. If the Investment Manager is unable to implement these strategies successfully or expand our portfolio, we will nonetheless be required to pay the Investment Manager an annual management fee, which may only be revised with the approval of the Unitholders such that the votes cast in favour of the resolution shall be at least 60% of total votes cast for the resolution, in accordance with the terms of appointment of the Investment Manager.

Even if the Investment Manager successfully grows the operating businesses of the underlying assets and acquires toll roads and other eligible infrastructure projects in India, there can be no assurance that the Investment Manager will achieve any returns on such acquisitions or capital investments.

Further, the project management/operating and maintenance expenses associated with a toll road asset are primarily based upon the actual wear-and-tear of the road, and depend upon a number of factors like climate conditions during the year, quantum of rainfall, ability of the maintenance team to control and repair damages at an early stage, quality of construction, etc. While such operating and maintenance expenses may be estimated based on prevailing rates, as have been provided in the Valuation Report and Technical Reports that have been included as Annexures A and B to this Final Offer Document, the actual operating and maintenance expenses for each Portfolio Asset may vary each year based on actual wear-and-tear of the underlying toll road and other exigencies. The fee payable to the Project Manager varies for each Portfolio Asset and is a percentage of the standalone revenue of such Portfolio Asset, subject

to certain limits as stipulated in the Project Implementation and Management Agreement. Any such payment of fees will be treated as a related party transaction. For further information, please see "*Overview of the Trust*" on page 35.

55. ***The InvIT Regulations allow for listed InvITs to undergo a change in sponsors or change in control of the sponsor or a conversion to a self-sponsored investment manager subject to certain conditions. There can be no assurance that in the future, we will not experience another instance of change in our sponsor.***

The InvIT Regulations permit listed infrastructure investment trusts to undergo a change in sponsors or a change in control of the sponsor or a conversion to a self-sponsored investment manager subject to the receipt of approval of 75% unitholders, by value, being obtained in accordance with the InvIT Regulations, and other conditions. Accordingly, with effect from February 19, 2026, CH-V has been identified as our new Sponsor. There can be no assurance that in the future, we will not experience another change in our sponsor.

56. ***Unitholders would not be able to participate in the election or removal of directors in the Investment Manager and will be able to remove the Investment Manager and Trustee only pursuant to a majority resolution.***

Pursuant to the InvIT Regulations, the Investment Manager is responsible for managing the Trust. Unitholders would not be able to participate in the nomination, election or removal of directors in the Investment Manager. However, unitholders holding not less than 10% of the total outstanding units of the InvIT, either individually or collectively, have the right to nominate one director to the board of directors of the Investment Manager. Other than such limited nomination right, the other recourse available to the Unitholders is the removal of the Investment Manager by way of a resolution where Unitholders holding at least 60% of the Units must vote in favour of the resolution. In comparison, the Companies Act, 2013, allows the removal of a director of a private limited company by an ordinary resolution. Similarly, Unitholders would not be able to participate in the nomination, election or removal of directors in the Trustee and may remove the Trustee only if they believe that the acts of the Trustee are detrimental to the interests of the Unitholders and by way of a resolution where the votes cast in favour of the resolution must meet the required percentage as set out in the InvIT Regulations. Further, the Investment Manager and the Trustee cannot be discharged until a suitable replacement is appointed in their place, and there can be no guarantees that a suitable replacement will be appointed, or that appointment will take place in a timely manner, or at all. Accordingly, unlike shareholders removing a director of a private limited company, it may not be possible for Unitholders to remove the Investment Manager or the Trustee.

57. ***Cube Highways Technologies Private Limited and the Project Manager provide services to the Trust on a non-exclusive basis, and their continued availability, prioritization and performance cannot be assured.***

Cube Highways Technologies Private Limited ("**Cube Tech**") and the Project Manager provide technical, traffic, safety and operational advisory support to each Portfolio Assets, including engineering oversight, major-maintenance planning, TMS/ATMS operation and periodic structural assessments, under the expert services agreement. The capabilities, systems and sector expertise of Cube Tech together with the expertise of the employees in the Project Manager contribute to our asset management framework. However, these services are provided by Cube Tech and the Project Manager on a non-exclusive basis to the Trust, and they may allocate resources to, or provide services for, other entities within the Cube Group or third parties, which may limit the availability of key personnel, delay execution of maintenance or engineering programmes or reduce the level of attention allocated to our assets.

Further, any change in Cube Tech's or the Project Manager's commercial priorities, service models, staffing, technology capabilities, or contractual arrangements may affect the quality or efficiency of support provided to the Trust. Accordingly, if Cube Tech or the Project Manager is unable to meet our requirements or if their services are disrupted, we may be required to appoint alternative service providers, which may not offer comparable expertise or may involve higher costs. Such developments may adversely affect the maintenance outcomes and technical oversight of our Portfolio Assets, and in turn, will adversely affect our business, results of operations, financial condition and distributions to Unitholders. Pursuant to a resolution dated February 27, 2026, the board of directors of the Investment Manager has approved to replace the existing Project Manager, Cube Highways and Transportation Assets Advisors Private Limited, and appoint Cube Highways Asset & Project Advisory Private Limited (which is a wholly owned subsidiary of the IM) as the new project manager of the Trust, subject to the receipt of necessary approvals, including approval of the National Highways Authority of India and completion of applicable regulatory and contractual formalities.

58. ***We depend on the Investment Manager, the Project Manager and the Trustee to manage our business and assets, and our rights and the rights of the Unitholders to recover claims against them are limited.***

The success of our business and growth strategy, and the operational success of our assets, will depend significantly on the managers' satisfactory performance of these services. Our recourse against the Project Manager, the Trustee and Investment Manager is limited.

The aggregate maximum liability of the Project Manager under the Project Implementation and Management Agreement in each financial year is limited to the fees payable to the Project Manager in the immediately preceding

financial year in accordance with the terms of the Project Implementation and Management Agreement. As the Project Manager is not bound by an exclusivity arrangement with the Trust, the Project Manager may fail to dedicate appropriate and adequate resources to us/ the Portfolio Assets at all times, which may affect their operations and performance.

Pursuant to the Trust Deed, the Trustee is not liable for anything done or omitted to be done or suffered by the Trustee in good faith and in accordance with, or in pursuance of any request or advice of the Investment Manager. Further, the Trustee and Investment Manager are not liable for any action or omission that results in any depletion in the value of the trust fund and consequent losses of the Unitholder, except in situations where such depletion is a result of the gross negligence or wilful default on the part of the Trustee and/ or Investment Manager, as applicable, or results from a breach by the Trustee of the Trust Deed, as determined by a court of competent jurisdiction. The liability of the Trustee shall be limited to the extent of the fees received by it, in all circumstances whatsoever except (a) in case of any negligence or misconduct or fraud on the part of the Trustee as may be determined by a court of competent jurisdiction, or (b) any failure on the part of the Trustee to protect the interests of the Unitholders.

Under the Investment Management Agreement, the Investment Manager is not liable, among other things, for any action taken or damage suffered by it after exercising due care in accordance with customary industry standards. Further, it shall not incur any liability for any act or omission which may result in a loss to a Unitholder except in the event that such loss is a result of fraud or gross negligence or dishonest acts of commission or omission or wilful default on the part of the Investment Manager, or disregard of duty or breach of duties under the Investment Management Agreement or applicable law. The Investment Management Agreement and the Trust Deed further provide that the Investment Manager is entitled to be indemnified by the Trustee (from the InvIT assets) against any direct and actual claims, actions, losses, damages, liabilities, suits, proceedings and reasonable costs and expenses including legal fees incurred in connection with the Trust, unless arising out of fraud, gross negligence, dishonest acts of commissions or omissions or wilful default on the part of the Investment Manager or disregard of duty or breach of duties under the Investment Management Agreement or the applicable law. The Investment Manager's liability to Trustee, its directors, employees and officers for breach of its obligations under the Investment Management Agreement in each financial year is limited to the aggregate fees paid to the Investment Manager for the immediately preceding financial year under the agreement, except in the event that such liability arises out of any gross negligence, wilful default or misconduct or fraud of the Investment Manager. As a result, the Trust's rights and the rights of the Unitholders to recover claims against the Investment Manager are limited. Furthermore, recourse to the Trustee may be limited under the Trust Deed.

Accordingly, the liability of the Investment Manager and the Trustee is limited under the terms of these agreements and the Unitholders may not be able to recover claims against the Trustee or the Investment Manager, including claims with respect to any Offer Documents relating to the Offer. Further, pursuant to the Trust Deed, the Trustee is not under any obligation to institute, acknowledge the service of, appear in, prosecute or defend any action, suit, proceeding or claim, which in its opinion might involve it in expense or liability unless the Investment Manager shall so request in writing and the Trustee is satisfied that the value of the investment is sufficient to provide adequate indemnity against costs, claims, damages, expenses or demands to which it may be put as Trustee as a result thereof.

If the management agreements were to be terminated or if their terms were to be altered, our business could be adversely affected, as the Trustee may not be able to immediately replace such services, and even if replacement services were immediately available, the terms offered or obtained with the new managers could be less favourable than the ones currently offered by the Investment Manager and the Project Manager.

59. ***Conflicts of interest may arise out of common business objectives shared by the Investment Manager, the Sponsor, the Project Manager, Cube Highways Technologies Private Limited and us.***

We have and will continue to rely on the resources of the Sponsor and the Cube Group, including with respect to infrastructure, technical capabilities and human resources. We may compete with existing and future private and public investment vehicles established and/or managed by the Cube Group, which may present various conflicts of interest. Certain of these divisions and entities have or may have an investment strategy similar to ours and, therefore, may compete with us. Conflicts of interest may arise in allocating or addressing business opportunities and strategies among the Project Manager, Cube Highways Technologies Private Limited, the Cube Group, and us, where our interests differ from theirs. There can be no assurance that there will be no such conflicts of interest, which may adversely affect our business, results of operations, financial condition and cash flows.

In addition, the Trustee and/or Unitholders may not be aware of any such conflict, and even if made so aware, the Trustee and the Unitholders' ability to recover claims against the Investment Manager is limited. Moreover, the Investment Manager's liability is limited under the Investment Management Agreement and the Trustee has agreed to indemnify the Investment Manager out of our assets against certain liabilities. As a result, we could experience poor performance or losses for which the Investment Manager would not be liable. See "— *We depend on the Investment Manager, the Project Manager and the Trustee to manage our business and assets, and our rights and the rights of the Unitholders to recover claims against them are limited*" on page 110.

Other present and future activities of the Cube Group, Cube Highways Technologies Private Limited, the Sponsor, the Investment Manager and the Trustee may also give rise to additional conflicts of interest affecting us and our investment activities. In the event that any such conflict of interest arises, we will attempt to resolve it in a fair and reasonable manner; however, investors should be aware that conflicts will not necessarily be resolved in our favour.

Risks related to India

60. ***We are exposed to risks associated with the road sector in India.***

We expect to continue, in the foreseeable future, to derive almost all of our revenue from operations and profits from the roads sector in India. Changes in macroeconomic conditions generally affect the road industry and could affect our business. Accordingly, our business is highly dependent on the state of the Indian economy and the prevailing macroeconomic environment. The use of our toll roads, our expansion plans and future projects depend on or will depend on macroeconomic factors that may affect the demand for the development of road infrastructure projects in India, or the timely commencement of their operations, which could in turn have an adverse effect on our growth prospects, business and cash flows. In addition, access to financing may be more expensive or not available on acceptable terms during economic downturns. Any of these factors, as well as other factors beyond our control, could have an adverse effect on our business, prospects, financial condition, results of operations, and cash flows.

61. ***Changing laws, rules and regulations and legal uncertainties may adversely affect our business, financial condition and results of operations.***

Our business, financial condition and results of operations could be adversely affected by any change in laws or interpretations of existing laws, or the promulgation of new laws, rules and regulations applicable to us and our business. For instance, the RBI has issued draft amendment directions for instructions on lending to REITs and InvITs, where the existing guidelines in respect of lending to InvITs are proposed to be harmonized for parity with prudential safeguards proposed for lending to REITs. There can be no assurance that, any regulations, guidelines or circulars issued or notified by the RBI in relation lending to InvITs will not cast onerous obligations on our Trust and restrict our ability to avail borrowings from banks and financial institutions on terms favourable to us or at all. There can be no assurance that the central or state governments will not implement new regulations and policies that will require the Trust or the Portfolio Assets to obtain additional approvals and licenses from governmental and other regulatory bodies, or impose onerous requirements and conditions on our operations. The Investment Manager cannot predict the terms of any new policy, nor can it assure you that such a policy will not be onerous.

62. ***Significant increases in the price or shortages in the supply of crude oil and products derived therefrom, including petrol and diesel fuel, could adversely affect the volume of traffic at the projects operated by the Portfolio Assets and the Indian economy in general, including the infrastructure sector.***

According to the Industry Report, fluctuations in commodity prices, often driven by international crude oil trends (affecting bitumen) or by supply chain disruptions, directly increase project costs. Crude oil prices are volatile and subject to a number of factors, including global production levels and political factors, such as war and other conflicts, particularly in the Middle East, where a substantial proportion of the world's oil reserves are located. The ongoing Iran conflict, Russia-Ukraine conflict and tariff measures imposed by the United States of America have led to significant increases and volatility in crude oil prices, affecting fuel prices in India. Further increases in the price of or shortages in the supply of crude oil could adversely affect the volume of traffic at the projects operated by the Portfolio Assets and adversely affect the Indian economy in general, including the infrastructure sector, which could have an adverse effect on our business, financial condition and results of operations. These factors may be aggravated by the imposition of trade tariffs by the United States of America on its global trading partners.

63. ***Resolution plans approved under the Insolvency and Bankruptcy Code may be challenged or set aside, creating uncertainty in relation to assets acquired through the insolvency process.***

Our past and future acquisitions may involve assets resolved under the Insolvency and Bankruptcy Code, 2016. Although resolution plans approved by the National Company Law Tribunal ("**NCLT**") and the National Company Law Appellate Tribunal ("**NCLAT**") are intended to be final and binding, such approvals may be challenged before higher judicial forums. In a recent case involving a listed company, a resolution plan approved by the NCLT and NCLAT was temporarily set aside by the Supreme Court before being reinstated, demonstrating that approved plans may still be subject to reversal or modification. For instance, CNTL, one of the Committed Assets, was acquired through a mechanism adopted for IL&FS entities, and various creditors of the IL&FS group have challenged the resolution framework before the Supreme Court of India. A number of appeals relating to the resolution framework remain pending; however, no adverse orders have been issued to date.

Such judicial uncertainty may affect the stability and enforceability of approved resolution plans and the rights of acquirers under them. If a resolution plan relating to an asset we acquire is challenged, modified, or annulled after approval, we may face delays in implementation, increased costs, or litigation exposure, and our ownership or control

of the underlying project may be affected. Any such event could adversely impact our acquisitions, portfolio valuation, business, financial condition, results of operations and our ability to make distributions to Unitholders.

64. ***We may be adversely affected by the adverse application or interpretation of competition laws in India.***

The Competition Act regulates practices having an appreciable adverse effect on competition in the relevant market in India. Under the Competition Act, any formal or informal arrangement, understanding or action in concert, which causes or is likely to cause an appreciable adverse effect on competition, is considered void and results in the imposition of substantial monetary penalties. Further, any agreement among competitors which, directly or indirectly, involves the determination of purchase or sale prices, limits or controls production, supply, markets, technical development, investment or provision of services, shares the market or source of production or provision of services by way of allocation of geographical area, type of goods or services or number of customers in the relevant market or, directly or indirectly, results in bid-rigging or collusive bidding, is presumed to have an appreciable adverse effect on competition. The Competition Act also prohibits any enterprise from abusing a dominant position. The Competition Commission of India ("**CCI**") has extraterritorial powers and can investigate any agreements, abusive conduct, or combinations occurring outside India if such agreements, conduct, or combinations have an appreciable adverse effect on competition in India. Further, future acquisitions by the Trust may also require approval from CCI if such acquisition is beyond the thresholds permitted for combinations under the Competition Act and its relevant regulations. For details, see "*Regulatory Approvals*" on page 397. There can be no assurance as to the impact of the provisions of the Competition Act on the agreements that the Project SPV(s) have entered into. However, if we are affected, directly or indirectly, by the application or interpretation of any provision of the Competition Act, or any enforcement proceedings initiated by the CCI, or any adverse publicity that may be generated due to scrutiny or prosecution by the CCI, or if any prohibition or substantial penalties are levied under the Competition Act, it could materially and adversely affect our business, prospects, financial condition, results of operations and cash flows.

65. ***Our business is dependent on economic growth in India and financial stability in Indian markets, and any slowdown in the Indian economy or in Indian financial markets could have an adverse effect on our business, results of operations, financial condition and the price of our Units.***

Our Investment Manager and we are registered in India, and the Portfolio Assets and our Investment Manager are located in India. As a result, we are highly dependent on prevailing economic conditions in India and our results of operations are significantly affected by factors that influence the Indian economy. Factors that may adversely affect the Indian economy, and hence our results of operations, may include:

- any increase in interest rates or inflation in India;
- any exchange rate fluctuations;
- any scarcity of credit or other financing in India;
- prevailing income, consumption and savings conditions among consumers and corporations in India;
- the occurrence of future epidemics or pandemics;
- volatility in, and actual or perceived trends in trading activity on, India's principal stock exchanges;
- changes in India's tax, trade, fiscal or monetary policies, which may affect India's foreign exchange reserves;
- civil unrest, riots, protests, acts of violence, terrorist attacks, political instability, terrorism or military conflict in India, including increased tensions on the Indian borders, or in countries in the region or globally, including in India's various neighbouring countries;
- the occurrence of force majeure events under the contractual arrangements of the Portfolio Assets;
- the occurrence of natural or man-made disasters;
- prevailing regional or global economic conditions;
- balance of trade movements, including export demand and movements in key imports, including oil and oil products;
- annual rainfall, which affects agricultural production; and
- other significant regulatory, policy or economic developments in or affecting India or its infrastructure sector.

Inflation rates in India have been volatile in recent years, and such volatility may continue. High inflation fluctuations may make it more difficult for us to accurately estimate or control our costs. Any increase in inflation in India can increase our expenses, whether entirely or in part, and may adversely affect our business and financial condition. If we are unable to increase our revenue from operations sufficiently to offset our increased costs due to inflation, it could adversely affect our business, prospects, financial condition, results of operations, and cash flows.

Any slowdown or perceived slowdown in the Indian economy, or in specific sectors of the Indian economy, could adversely affect our business, results of operations, financial condition, and the price of our Units.

Furthermore, the Indian economy and Indian financial markets are influenced by economic and market conditions in other countries. We operate in a global trade environment that is susceptible to trade wars and protectionist measures, including tariffs, quotas, and other restrictions on international trade. In particular, any escalation of tariff measures initiated by leading economies such as the United States of America may prompt retaliatory actions by other countries, leading to increased tariffs and heightened trade barriers globally. The global economy has also been negatively affected by the Israel-Hamas and Israel-Iran conflicts and the Russia-Ukraine war. Governments in the United States, the United Kingdom, and the European Union have imposed sanctions on certain products, industries, and parties in Iran and Russia. These conflicts could negatively affect regional and global financial markets and economic conditions, resulting in global economic uncertainty and increased costs for commodities, raw materials, energy, and transportation. Further, China is one of India's major trading partners, and there are growing concerns about a possible slowdown in the Chinese economy, as well as a strained relationship with India, which could adversely affect trade relations between the two countries. A loss of investor confidence in the financial systems of other emerging markets may lead to increased volatility in Indian financial markets and, indirectly, in the Indian economy as a whole. Any significant financial disruption could have an adverse effect on our business, financial condition, cash flows and results of operations.

66. ***Any downgrading of India's debt rating by rating agencies could have a negative effect on our business.***

India's sovereign debt rating could be downgraded due to several factors, including changes in tax or fiscal policy or a decline in India's foreign exchange reserves, all of which are outside our control. Our borrowing costs and our access to the debt capital markets depend on the sovereign credit ratings of India, which are set out below:

Rating Agency	Rating	Outlook
Fitch Ratings	BBB-	Stable
Moody's Ratings	Baa3	Stable
Morningstar DBRS	BBB	Stable
S&P Global Ratings	BBB	Stable

Any adverse revisions to India's credit ratings for domestic and international debt by international rating agencies could adversely affect our ability to raise additional external financing, and the interest rates and other commercial terms at which such additional financing is available. A downgrading of India's credit ratings may occur, for example, upon a change of government tax or fiscal policy, which are outside our control. This could have an adverse effect on our business and future financial performance, our ability to obtain financing for capital expenditures and the trading price of the Units.

67. ***Significant differences exist between Ind AS and other accounting principles, such as IFRS and U.S. GAAP, which may be material to your assessment of our results of operations, financial condition and cash flows.***

The Audited Consolidated Financial Statements of the Cube Highways Trust included in this Final Offer Document are prepared and presented in conformity with Ind AS, consistently applied during the years stated in those reports. Ind AS differs from accounting principles with which persons from other countries may be familiar, such as IFRS and U.S. GAAP. Accordingly, the degree to which the Audited Consolidated Financial Statements included in this Final Offer Document provide meaningful information is entirely dependent on your level of familiarity with Indian accounting practices. Ind AS differs from IFRS and U.S. GAAP in certain respects. In addition, as the transition to Ind AS is recent, there is no significant body of established practice that we can draw on in forming judgments regarding the implementation and application of Ind AS, as compared to other established principles generally, or in respect of specific industries, such as the industry in which we operate.

68. ***We have in this Final Offer Document included certain Non-GAAP Measures that may not be comparable with financial or industry-related statistical information of similar nomenclature computed and presented by other infrastructure trusts.***

Certain Non-GAAP Measures and certain other industry measures relating to our operations and financial performance have been included in this Final Offer Document. We have computed and disclosed such Non-GAAP Measures as we consider such information to be useful measures of the Portfolio Assets' business and financial performance. Such supplemental financial and operational information is therefore of limited utility as an analytical tool, and investors are cautioned against considering such information either in isolation or as a substitute for an analysis of our Audited Consolidated Financial Statements as reported under applicable accounting standards disclosed elsewhere in this Final Offer Document. These Non-GAAP Measures are not measures of operating performance or liquidity defined by generally accepted accounting principles and, therefore, may not be comparable to financial measures or industry-related statistical information of similar nomenclature computed and presented by other infrastructure trusts.

69. ***Fluctuations in the exchange rate of the Indian Rupee with respect to the U.S. Dollar or other currencies will affect the foreign currency equivalent of the value of the Units and any distributions.***

Fluctuations in exchange rates between the Indian Rupee and other currencies will affect the foreign currency equivalent of the Indian Rupee price of the Units. In particular, the Indian Rupee has declined significantly against the U.S. dollar recently. Such fluctuations will also affect the amount that holders of the Units will receive in foreign currency upon conversion of any cash distributions or other distributions paid in Indian Rupees by us on the Units, and any proceeds from any sale of the Units in the secondary trading market. Further, a decline in India's foreign exchange reserves may reduce liquidity and raise interest rates, which could adversely affect us.

70. ***Unitholders may not be able to enforce a judgment of a foreign court against us.***

The enforcement of civil liabilities by overseas investors in the Units, including the ability to effect service of process and to enforce judgments obtained in courts outside of India, may be adversely affected by the fact that (i) the Trust is constituted under the laws of the Republic of India, (ii) the Investment Manager and the Trustee are limited liability companies incorporated under the laws of the Republic of India, (iii) a majority of the directors and key personnel of the Investment Manager reside in India, and (iv) all of the assets of the Trust, the Portfolio Assets and the Investment Manager are located in India. As a result, it may be difficult to serve process upon the Trust, the Investment Manager, the Trustee or any of these persons outside of India or to enforce in India judgments obtained against such persons in courts outside of India.

India is not a party to any international treaty regarding the recognition or enforcement of foreign judgments. Recognition and enforcement of foreign judgments are provided for under Section 13, Section 14 and Section 44A of the Civil Procedure Code, 1908. The central government has, under Section 44A of the Civil Procedure Code, notified certain countries as reciprocating countries. Section 13 of the Civil Procedure Code provides that a foreign judgment will be conclusive regarding any matter directly adjudicated upon, between the same parties or between the parties whom they or any of them claim are litigating under the same title, except: (i) where the judgment has not been pronounced by a court of competent jurisdiction; (ii) where the judgment has not been given on the merits of the case; (iii) where it appears on the face of the proceedings that the judgment is founded on an incorrect view of international law or a refusal to recognise the law of India in cases in which such law is applicable; (iv) where the proceedings in which the judgment was obtained were opposed to natural justice; (v) where the judgment has been obtained by fraud; or (vi) where the judgment sustains a claim founded on a breach of any law in force then in India. Section 44A of the Civil Procedure Code provides that where a foreign judgment has been rendered by a superior court in any country or territory outside India, which the central government has, by notification, declared to be a reciprocating territory, it may be enforced in India by proceedings in execution as if the judgment had been rendered by the relevant court in India. However, Section 44A of the Civil Procedure Code is applicable only to monetary decrees not being in the nature of any amounts payable in respect of taxes or other charges of a similar nature or in respect of a fine or other penalties and does not include arbitration awards.

There may be considerable delays in disposing of suits in Indian courts. It is unlikely that a court in India would award damages on the same basis as a foreign court would if an action is brought in India. Furthermore, it is unlikely that an Indian court would enforce a foreign judgment if it found the damages awarded excessive or inconsistent with India's public policy. A party seeking to enforce a foreign judgment in India is required to obtain prior approval from the RBI to repatriate any amount recovered pursuant to execution, and any such amount may be subject to income tax in accordance with applicable laws. Any judgment or award in a foreign currency would be converted into Indian Rupees on the date of the judgment or award, rather than on the date of payment, which could be subject to foreign exchange risk. Generally, there are considerable delays in the processing of legal actions to enforce civil liability in India; therefore, it is uncertain whether a suit brought in an Indian court will be disposed of in a timely manner or will be subject to considerable delays.

Furthermore, the Sponsor is incorporated in Singapore and accordingly, the enforcement of civil liabilities by overseas investors in the Units, including the ability to effect service of process and to enforce judgments, against the Sponsor, will be subject to the applicable laws of Singapore.

Risks Related to the Offer and Ownership of the Units

71. ***The Trust may be dissolved, and the proceeds from the dissolution thereof may be less than the amount invested by the Unitholders.***

The Trust is an irrevocable trust registered under the Registration Act, 1908 and it may only be extinguished (i) if it is impossible to continue with the Trust or if the Trustee, on the advice of the Investment Manager, deems it impracticable to continue with the Trust and the Trustee extinguishes the same in terms of the Trust Deed; (ii) on the written recommendation of the Investment Manager and upon obtaining the prior written consent of such number of the Unitholders as is required under the InvIT Regulations; (iii) if the Units of the Trust are delisted from the Stock Exchanges; (iv) if the SEBI passes a direction for the winding up of the Trust or the delisting of the Units; or (v) in the event the Trust becomes illegal. Under the Trust Deed, in the event of dissolution, the net assets of the Trust, remaining

after settlement of all liabilities, and the retention of any reserves which the Trustee deems to be necessary to discharge contingent or unforeseen liabilities, shall be paid to the Unitholders. Should the Trust be dissolved, depending on the circumstances and the terms upon which assets of the Trust are disposed of, there is no assurance that a Unitholder will recover all or any part of their investment. There is no assurance that Unitholders will recover all or any part of their investments.

72. ***Any additional debt financing or issuance of additional Units may have an adverse effect on the Trust's distributions and future issuances of Units or sales of Units by the Sponsor or other significant Unitholders may adversely affect the trading price of the Units.***

The Investment Manager, on behalf of the Trust, may require additional debt financing or the issuance of additional Units in order to support the operating business or to make acquisitions and investments. If obtained, any such additional debt financing may decrease distributable income, and any issuance of additional Units may dilute existing Unitholders' entitlement to distributions and their unitholding.

Any future issuance of Units by the Trust could dilute investors' holdings. Any such future issuance of Units may also adversely affect the trading price of the Units, and could affect our ability to raise capital through an offering of our securities. There can be no assurance that the Investment Manager, on behalf of the Trust, will not issue further Units. In addition, any perception by investors that such issuances might occur could also affect the trading price of the Units.

The Units are tradable on the Stock Exchanges. If the Sponsor, directly or indirectly, sells or pledges or encumbers or otherwise disposes or is perceived as intending to sell or pledge or encumber or otherwise dispose a substantial number of Units, or if a secondary offering of the Units is undertaken, the market price for the Units could be adversely affected. These sales may also make it more difficult for us to raise capital by issuing new units at a time and at a price we deem appropriate. We are not required to offer pre-emptive rights to existing Unitholders when issuing new Units. Compliance with securities laws or other regulatory provisions in some jurisdictions may prevent certain investors from participating in future issuances and thereby result in dilution of their existing holdings in Units.

73. ***Unitholders are unable to require the redemption of their Units. Further, under Indian law, foreign investors are subject to restrictions that limit their ability to transfer or redeem Units, which may adversely affect the value of the Units.***

Unitholders will not have the right to redeem Units or request or require the redemption of Units by the Investment Manager while the Units are listed on the Stock Exchanges. Under foreign exchange regulations currently in force in India, transfers of units between non-residents and residents are permitted, subject to certain exceptions and if they comply with the pricing and reporting requirements specified by the RBI. If a transfer of units is not compliant with such pricing or reporting requirements and does not fall under any of the exceptions specified by RBI, then RBI's prior approval is required. Additionally, Unitholders who seek to convert Indian rupee proceeds from a sale of units in India into foreign currency and repatriate that foreign currency from India require a no-objection or a tax clearance certificate from the Indian income tax authorities. There can be no assurance that any required approval from the RBI or any other Governmental agency can be obtained on any particular terms or in a timely manner, or at all.

74. ***An active or liquid market for the Units may not develop or be sustained.***

While the Units of the Trust are currently privately listed on the Stock Exchanges, an active market for the Units may not develop or be sustained after the Listing Date pursuant to the Offer. Listing and quotation do not guarantee that a trading market for the Units will develop or, if a market does develop, that there will be liquidity in that market for the Units.

75. ***The price of the Units may decline after the Offer.***

The Offer Price has been determined by the Investment Manager in consultation with the Book Running Lead Managers, in accordance with the Book Building Process. The Offer Price may not be indicative of the market price of the Units upon completion of the Offer. The market price of the Units may also be highly volatile and could be subject to wide fluctuations. If the market price of the Units declines significantly, investors may be unable to resell their Units at or above their purchase price, if at all. There can be no assurance that the market price of the Units will not fluctuate or decline significantly in the future. The market price of the Units will depend on many factors, including, among others:

- the perceived prospects of our business and investments and the market for toll roads and other infrastructure projects;
- differences between our actual financial and operating results and those expected by investors and analysts;
- the perceived prospects of future toll roads and other infrastructure projects that may be added to our portfolio in accordance with our investment mandate;

- changes in research analysts' recommendations or projections;
- changes in general economic or market conditions;
- the market value of our assets;
- the perceived attractiveness of the Units against those of other business trusts, equity or debt securities;
- the balance of buyers and sellers of the Units;
- the size and liquidity of the Indian business trusts market;
- any changes to the regulatory system, including the tax system, both generally and specifically in relation to India business trusts;
- the ability of the Investment Manager to implement successfully its investment and growth strategies;
- foreign exchange rates;
- broad market fluctuations, including increases in interest rates and weakness of the equity and debt markets;
- variations in our quarterly operating results;
- difficulty in assessing our performance against either domestic or international benchmarks, as there are few listed comparables;
- publication of research reports about us, our affiliates, other road businesses, the road industry in general or other relevant sectors, or the failure of securities analysts to cover the Units after the Offer;
- additions or departures of key management personnel of the Investment Manager and/or the Trust Group;
- changes in the amounts of our distributions, if any, and changes in the distribution payment policy or failure to execute the existing distribution policy;
- actions by Unitholders;
- changes in market valuations of similar business entities or companies;
- announcements by us or our competitors of significant contracts, acquisitions, disposals, strategic partnerships, joint ventures or capital commitments;
- speculation in the press or investment community; and
- changes or proposed changes in laws or regulations affecting the road industry and infrastructure development in India or enforcement of these laws and regulations, or announcements relating to these matters.

To the extent that we retain operating cash flow for investment purposes, working capital reserves or other purposes, these retained funds, while increasing the value of our underlying assets, may not correspondingly increase the market price of the Units. Our failure to meet market expectations with regard to future earnings and cash distributions may adversely affect the market price of the Units.

Where new Units are issued at less than the market price of the Units, the value of an investment in the Units may be affected. In addition, Unitholders who do not, or are not able to, participate in the new issuance of Units may experience a dilution of their interest in the Trust. In addition, the Units are not capital-safe products and there is no guarantee that Unitholders can regain the amount invested, in full or in part. If the Trust is extinguished, it is possible that investors may lose part or all of their investment in the Units.

76. ***Investors will not be permitted to withdraw or lower their Bids (in terms of quantity of Units or the Bid Amount) at any stage after submitting a Bid.***

Pursuant to the InvIT Regulations and the InvIT Master Circular, investors are required to pay the Bid Amount on submission of the Bid, and are not permitted to withdraw or lower their Bids (in terms of quantity of Units or the Bid Amount) at any stage after submitting a Bid, notwithstanding adverse developments in international or national monetary policy, financial, political or economic conditions, our business, results of operations, or otherwise, at any stage after the submission of their Bids. Also see "*Offer Information - Offer Procedure*" on page 433.

77. ***The Trust will not receive any proceeds from the Offer for Sale portion, and the Selling Unitholders shall be entitled to the Offer proceeds to the extent of the Units offered by them in the Offer for Sale.***

The Offer comprises an offer for sale of 328,947,365 Units (Subject to finalization of Basis of Allotment) aggregating to approximately ₹50,000 million by the Selling Unitholders. The Selling Unitholders are, therefore, interested in the Offer proceeds to the extent of the Units offered by each of them in the Offer for Sale. The entire proceeds (net of their relevant portion of the Offer expenses) from the Offer will be paid to the Selling Unitholders in proportion to their respective portions of the Units transferred pursuant to the Offer for Sale, and the Trust will not receive any such

proceeds. Accordingly, we will not receive any proceeds from the Offer for Sale to fund our operations, capital expenditure, acquisitions or debt repayment. For details, see "*Use of Proceeds*" on page 335.

Risks Related to Tax

78. ***Changes in legislation or the rules relating to tax regimes could adversely affect our business, prospects and results of operations.***

Tax and other levies imposed by the Government and state governments may include: (i) income tax (including withholding tax and tax collection at source); (ii) goods and services tax; (iii) stamp duty; and (iv) other special taxes and surcharges that are introduced on a temporary or permanent basis from time to time. In some cases, these taxes and other levies may be changed from year to year and the Indian courts which interpret tax legislation may apply such interpretations with retroactive effect. Also, the Government in certain situations has the authority to change tax laws retrospectively.

The Finance Act, 2023, provides that unitholders shall be taxed on that portion of distributions which is not covered under the provisions of the income tax legislation in India (being the Income-tax Act, 1961 and upon its passage, the Income-tax Act, 2025 (as applicable, the "**IT Act**" or the "**ITA**")) and that which is not chargeable to tax under the relevant provisions of the ITA. Any such distribution shall be taxed under the head "income from other sources" in the hands of the unitholders as 'income' under the relevant provisions of the ITA, provided the amount received (including similar distributions in earlier years to the same unitholder or any other unitholder who held such unit(s) previously) is in excess of the amount at which units were issued by the InvIT, as reduced by the amount which would have been charged to tax under this provision in the earlier year. The aforementioned amounts received by a unitholder being a specified person covered under the relevant provisions of the ITA shall not be subject to taxes upon the fulfilment of certain conditions set out in the ITA. Further, any such distribution received by a unitholder, to the extent not chargeable to tax under the relevant provisions of the ITA and not covered under the ITA shall be reduced from the cost of units. We cannot assure you that there will be no adverse impact on the tax incidence to the unitholders pursuant to the Finance Act 2023.

Furthermore, pursuant to the Finance Act, 2024, the capital gains tax regime was amended, and the definitions of long-term capital assets, short term capital assets and their applicable tax rates were changed. The Finance Act, 2025, also introduced an amendment to the IT Act to provide that capital gains income, chargeable under the IT Act will be taxed under the rates specified in other relevant provisions of the IT Act, rather than the maximum marginal rate. India's Union Budget for Fiscal 2025 ("**Budget**") has amended the capital gains tax rates and amounts mentioned above, with effect from the date of announcement of the Budget.

A new Income-tax Act, 2025, has also been enacted by the Indian Parliament, replacing the Income-tax Act, 1961, effective from April 1, 2026, with the aim of consolidating and amending the law relating to income tax. The Government of India presented the Union Budget for the Financial Year 2027, following which the Finance Bill, 2026 ("**Finance Bill**") was introduced in the Lok Sabha on February 1, 2026. The Finance Bill has been passed by the Indian Parliament and took effect from April 1, 2026.

The investors are advised to consult their own tax advisors to understand their tax liability as per the laws prevailing on the date of disposal of the Units. Investors are advised to consult their own tax advisors and to carefully consider the potential tax consequences of owning, investing or trading in our Units. Unfavourable changes in or interpretations of existing laws, or the promulgation of new laws, rules and regulations, governing our business and operations could result in us being deemed to be in contravention of such laws requiring us to apply for additional approvals.

There have been two major reforms to Indian tax laws: the introduction of the Goods and Services Tax ("**GST**") and the introduction of general anti-avoidance rules. The GST regime came into effect on July 1, 2017, combining taxes and levies by the Government and State Governments into a unified rate structure (current slabs predominantly at 5% and 18%).

Additionally, there is limited clarity regarding the availability of input tax credit, and any unfavourable orders in this regard may adversely affect our financial position and cash flows. Further, any application of existing law or future amendments may affect our overall tax efficiency and may result in significant additional taxes becoming payable.

The GAAR regime came into effect on April 1, 2017. The GAAR regime is a broad set of provisions that grant Indian tax authorities the power to invalidate any arrangement for tax purposes if the main purpose of the taxpayer in entering into the transaction is to obtain a tax benefit. Besides the "tax benefit", the transaction should meet any one of the following specified additional tests: (i) creates rights, or obligations, which are not ordinarily created between persons dealing at arm's length; (ii) results, directly or indirectly, in the misuse, or abuse, of the provisions of the IT Act; (iii) lacks commercial substance or is deemed to lack commercial substance as prescribed under the IT Act in whole or in part; and (iv) is entered into, or carried out, by means which are, or in a manner which is, not ordinarily employed for bona fide purposes.

Such transactions are declared as impermissible avoidance arrangements, and the consequence in relation to tax arising from such arrangements, including denial of a tax benefit or a benefit under a tax treaty, shall be determined according to the circumstances of the case.

The rules notified under GAAR provide that they shall not apply to FIIs in accordance with the SEBI (Foreign Institutional Investors) Regulations, 1995, subject to the fulfilment of certain conditions. GAAR may have an adverse tax effect on the Trust, the Sponsor and the Unitholders.

In respect of non-resident unitholders, the tax rates and the consequent taxation mentioned under Statement of Possible Direct Tax Benefits shall be further subject to any benefits available under the applicable DTAA, if any, between India and the country in which the non-resident has fiscal domicile. Further, it is pertinent to meet the terms and conditions viz. Principal purpose test, beneficial ownership test, etc., as enacted in DTAAs entered into by India with various countries based on the Multilateral Convention to implement tax treaty-related measures to prevent Base Erosion and Profit Shifting ('MLI').

In addition, transactions between the Trust, its Project SPVs, the Sponsor, the Investment Manager, the Project Manager and their respective affiliates may be subject to transfer pricing regulations, withholding tax requirements and GAAR under the Income-tax Act, 2025. If the relevant tax authorities determine that such transactions or arrangements do not comply with applicable tax laws or arm's length principles, additional tax liabilities, interest or penalties may arise.

Further, pursuant to amendments introduced by the Finance Act, 2022, the applicability of section 94(7) of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025) has been extended to the units of business trust (with effect from Financial Year 2022-23), which provides that where:

- any person buys or acquires any securities or units within a period of three months prior to the record date (a date fixed for the purposes of entitlement of the holder of the securities or units, as the case may be, to receive dividends, income, or additional securities or units without any consideration, as the case may be);

- such person sells or transfers such securities within three months after such record date or such units within a period of nine months after such record date; and

- the dividend or income on such securities or unit received or receivable by such person is exempt, then, the loss, if any, arising from the sale and purchase of securities and units to the extent of dividend or income received or receivable on such securities or unit, shall be ignored for computing income chargeable to tax.

The Finance Act, 2022, extended the applicability of section 94(8) of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025) (commonly known as bonus stripping) to the units of business trusts (with effect from Financial Year 2022-23), which provides that where:

- Any person buys or acquires any units within a period of three months prior to the record date;

- Such a person is allotted additional units without any payment on the basis of holding such units on such record date;

- Such a person sells or transfers all or any of the units within a period of nine months after the record date,

- while continuing to hold all or any of the additional units referred in clause (ii) above, then, the loss, if any, arising from the sale and purchase of all or any of the units shall be ignored for computing income chargeable to tax and notwithstanding anything contained in any other provision of the ITA, the amount of loss so ignored shall be deemed to be the cost of purchase or acquisition of such additional units referred to in clause (ii) above as are held on the date of such sale or transfer.

The Investment Manager has not determined the impact of such existing or proposed legislation on our business. Uncertainty in the applicability, interpretation or implementation of any amendment to, or change in, governing law, regulation or policy, including by reason of an absence, or a limited body, of administrative or judicial precedent may be time consuming as well as costly for us to resolve, and may impact the viability of our current business or restrict our ability to grow our business in the future.

We may incur increased costs related to compliance with new requirements, which may also require management time and other resources, and any failure to comply may adversely affect our business, results of operations, and prospects.

We intend to take measures to ensure compliance with all relevant tax laws. However, the tax authorities might take a position that differs from ours regarding the tax treatment of various items.

79. ***Some of our road assets enjoy certain benefits under Section 80-IA of the IT Act, and any change in these tax benefits applicable to us may adversely affect our results of operations.***

Currently, surface transport infrastructure development projects, including toll-road concession projects, enjoy certain benefits under Section 80-IA of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025). In accordance with and subject to the condition specified in this section, the Portfolio Assets (wherein operations have been commenced up to March 31, 2017) are entitled to certain benefits for all of the operational infrastructure projects and would be entitled to a deduction of 100% of the profits derived from the development or operation and maintenance or development, operation and maintenance of the toll roads for any 10 consecutive tax assessment years out of 20 years, beginning from the year in which the concerned Portfolio Asset develops and begins to operate the infrastructure facility. Any other taxable income (for example, interest income, profit on sale of mutual funds) from deployment of temporary funds or otherwise could also be taxable under the terms of the IT Act. The incentives under Section 80-IA of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025) are available for 10 consecutive tax years out of a block of 20 years from the year of commencement of operations. Any Portfolio Asset will only be subject to minimum alternate tax ("**MAT**") if the concerned Portfolio Asset has a book profit as required to be computed under section 115JB of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025). When tax incentives expire or are terminated, our tax liability may increase, thereby affecting our profitability. Further, the Indian tax authorities may disallow the deduction if the conditions specified are not complied with, the computation of the profits and gains of the eligible business is not in accordance with the prescribed manner, or there is no assurance that such projects will continue to enjoy the tax benefits. This may affect the overall tax liabilities of the Portfolio Assets and result in significant additional taxes becoming payable, thereby adversely affecting our business, financial condition, cash flows, and results of operations, and consequently may have an adverse effect on our distributions.

Benefits under section 80-IA of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025) shall not be available to Portfolio Assets in case they have opted to pay corporate tax under the beneficial regime introduced under Section 115BAA of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025). Further, in such a case, provisions of MAT shall not be applicable.

80. ***Tax laws are subject to changes and differing interpretations, which may adversely affect our operations.***

The current tax laws and regulations in India provide certain exemptions for interest/dividend income earned by business trusts from a special purpose vehicle, as a result of which the InvIT and, subsequently, the Unitholders would be subject to relatively lower tax liabilities. These exemptions could be modified or removed at any time or clarified in a manner adverse to Unitholders, which could adversely affect our profitability and the amount available for distribution to Unitholders.

Tax laws and regulations are subject to differing interpretations by tax authorities. Differing interpretations of tax and other fiscal laws and regulations may exist within governmental ministries, including tax administrations and appellate authorities, creating uncertainty and potentially unexpected outcomes. The degree of uncertainty in tax laws and regulations, combined with significant penalties for default and a risk of aggressive action by the governmental or tax authorities, may result in tax risks in the jurisdictions in which we operate being significantly higher than expected. Any of the above events may result in a material, adverse effect on our business, financial condition, results of operations and/or prospects and our ability to make distributions to the Unitholders. Tax authorities in India may also introduce new or additional regulations applicable to our business, which could adversely affect our operations and profitability.

While the Investment Manager intends to take measures to ensure compliance with all relevant tax laws, there is no assurance that the tax authorities will not take a position that differs from ours regarding the tax treatment of various items. Any of the above events may result in an adverse effect on our business, financial condition, results of operations and/or prospects and our ability to make distributions to the Unitholders.

81. ***Impact of Income Tax Act, 2025, the provisions of which may have an unfavourable implication for us.***

The Parliament has enacted the Income Tax Act, 2025 (pursuant to the Income Tax Bill, 2025) with Presidential assent, and the Act is scheduled to be effective from 1 April 2026, replacing the existing Income Tax Act, 1961. The stated objective of the new legislation is to simplify tax laws, reduce litigation, and eliminate redundant provisions under the current regime.

While the new Income Tax Act, 2025, broadly aligns with the existing Act on key policy matters, its simplification and rationalization measures may introduce changes that could materially alter the Indian tax landscape. These changes may have adverse implications for us and for the unitholders, including potential impact on distributions, withholding tax obligations, and overall tax efficiency.

It is important to note that although the Income Tax Act, 2025 has been passed, the detailed rules and notifications required to implement its provisions have not yet been issued. Consequently, the practical application of the new law remains uncertain, and the full impact on InvITs and their investors cannot be assessed at this stage.

Unitholders are strongly advised to consult their tax advisors to understand the potential implications of the Income Tax Act, 2025, on their investment in the InvIT.

82. ***Investors may be subject to Indian taxes arising out of capital gains on the sale of Units, on any dividend or interest component of any returns from the Units or on certain distributions from the Trust.***

Under current Indian income tax laws, units of a business trust held for more than 12 months are considered long-term capital assets. In case of sale of such units through a recognised stock exchange in India and payment of securities transaction tax ("**STT**"), any gain arising in excess of ₹0.125 million is subject to long-term capital gains tax at a concessional rate of 12.5% (plus applicable surcharge and cess). However, if the said units are sold in any other manner, the same shall be subject to long-term capital gains tax at the rate of 12.5% without considering the indexation benefit and the threshold of ₹0.125 million (plus applicable surcharge and cess).

If the units are held for up to 12 months, they shall be treated as short-term capital assets. Any gain arising in case of sale of such units through a recognised stock exchange in India and subject to payment of STT, is subject to short-term capital gains tax at a concessional rate of 20% (plus applicable surcharge and cess). However, the condition for chargeability to STT shall not apply to a transaction undertaken on a recognised stock exchange located in any International Financial Services Centre, where, under applicable law, the consideration for such transaction is paid or payable in foreign currency. Further, if the said units are sold in any other manner, the same shall be subject to short-term capital gains tax at applicable tax rates of the holder (plus applicable surcharge and cess). Furthermore, in pursuance of the Finance Act, 2023, gains shall be computed by a unitholder after reducing from its cost of acquisition any amount distributed by us which is not in the nature of dividends, interest or any other income.

The aforesaid taxability in India is subject to tax treaty benefits in the case of a non-resident holder. Further, the applicable taxes on the sale of Units and on any dividend or interest component of returns from the Units will depend on the category of investor holding or selling the Units.

The Finance Act, 2020, amended the IT Act to abolish the dividend distribution tax regime and shift the incidence of taxation of dividends (declared or distributed on or after April 1, 2020) to shareholder. Under the Finance Act, 2020, a distribution made by a business trust, being in the nature of dividend income received from a special purpose vehicle, will not be subject to tax in the hands of a unitholder, so long as the special purpose vehicle has not opted to pay corporate tax under the beneficial regime introduced under Section 115BAA of the Income-tax Act, 1961 .

Similarly, a business trust (which includes an infrastructure investment trust) will not be required to withhold tax on any distributions which are in the nature of dividend income received from a special purpose vehicle, so long as such special purpose vehicle has not opted to pay corporate tax under the beneficial regime introduced under Section 115BAA of the Income-tax Act, 1961. However, where the special purpose vehicle opts to pay tax under Section 115BAA of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025), dividend income distributed by the business trust would be taxed in the hands of a non-resident unitholder at 20% (plus applicable surcharge and cess) or the applicable treaty rate and at the applicable tax rates for a resident unitholder. Further, the business trust would be required to withhold tax on such distributions made from dividends received from the special purpose vehicle. Thus, the taxability of dividends distributed by the Trust will depend on the taxation regime opted for by the Portfolio Assets.

Any distributable income in the nature of interest income and dividend income (where the Portfolio Asset has opted to pay corporate tax under the beneficial regime introduced under the Income-tax Act, 1961) in the hands of a resident investor is subject to deduction of tax at the rate of 10%. Similarly, any distributable income in the nature of interest income and dividend income (where the SPV has opted to pay corporate tax under the beneficial regime introduced under the Income-tax Act, 1961) in the hands of a non-resident is subject to deduction of tax at the rate of 5% (plus applicable surcharge and cess) and 10% (plus applicable surcharge and cess) respectively. The ultimate tax liability in the hands of the Unitholder may depend on various factors/ considerations.

The Finance Act, 2023, provides for tax on the unitholders for such portion of the distribution received by them that is not covered under section 10(23FC) or 10(23FCA) of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025) and that which is not chargeable to tax under section 115UA(2) of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025). Any distribution not covered under the aforementioned clauses shall be taxed under the head "income from other sources" in the hands of the unitholders as 'income' under section 56(2)(xii) of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025), provided the amount received (including similar distributions in earlier years to the same unitholder or any other unitholder who held such unit(s) previously) is in excess of the amount at which units were issued by the InvIT, as reduced by the amount which would have been charged to tax under this provision in the earlier year. The aforementioned amounts received by a unitholder, being a specified person covered under section 10(23FE) of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025), shall not be subject to taxes upon the fulfilment of certain conditions set out in the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025). Further, any such distribution received by a unitholder to the extent not chargeable to tax under section 56(2)(xii) and 115UA(2) of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025) and not covered under sections 10(23FC or 10(23FCA) Income-tax Act, 1961 (as superseded by the

Income-tax Act, 2025) shall be reduced from the cost of units. We cannot assure you that there will be no adverse impact on the tax incidence on unitholders under the Finance Act 2023.

Further, the treatment of buy-back proceeds has undergone significant changes due to amendments to the tax laws. As per Finance (No. 2) Act, 2024 it was specifically taxed under Section 2(22)(f) of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025). These changes have reclassified certain buy-back proceeds as dividends, potentially affecting investors' tax implications. The reclassification could result in a higher tax liability for investors who receive buy-back proceeds, as they may now be subject to dividend taxation. However, Finance Act 2026, further amended the buy-back provision to shift the tax incidence on shareholder and further additional tax on promoters in case of buy back. Such changes could impact the after-tax returns of Trust and/or its investors and may influence investment decisions. It is important for investors to consult with their tax advisors to understand the specific implications of these changes on their individual tax positions.

Furthermore, the Trust might not be able to pay or maintain distributions at current levels, ensure that distributions increase over time, or ensure that future acquisitions increase the Trust's distributable free cash flow to Unitholders. Any reduction in, or elimination or taxation of, payments of distributions could materially and adversely affect the market price of the Units.

83. ***The Trust and the Portfolio Assets may be subject to certain tax-related risks under the provisions of the Income Tax Act, 1961.***

Shortfall in the determination of fair market value of the equity shares at the time of transfer of the Portfolio Assets to the Trust may be subject to taxation in the hands of the acquirer. The equity shares of the Portfolio Assets have been transferred to the Trust. Under the provisions of section 56(2)(x) of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025), where a purchase of shares is undertaken at a value which is lower than the fair market value of the shares, such shortfall in value is subject to be taxed as income from other sources in the hands of the acquirer. The manner of determining fair market value under the Income Tax Rules, 1962 (as suitably superseded), includes the net asset method, subject to the prescribed adjustments.

The Trust is under an obligation to distribute to the Unitholders the surplus of the income earned from receipt of cash flows from the interest and dividend received from the Portfolio Assets, after the deduction of the various expenses incurred in connection with earning such income and general-purpose expenses. The provisions of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025) provide that the Trust should disclose the nature of the amount distributed to the Unitholders, i.e., whether from dividends received from the Portfolio Assets, interest income earned, etc. However, there is a lack of clarity on the method to be adopted by the Trust for allocating the various expenses incurred in earning each specific stream of income.

84. ***Depreciation claimed with respect to toll collection rights acquired by Portfolio Assets.***

Considering the diverse judicial precedents and the surrounding controversy as to whether the expenditure incurred on development and construction of infrastructural facilities like roads/ highways on BOT basis with right to collect toll is entitled for depreciation under section 32(1)(ii) of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025) or the same can be amortized by treating it as an allowable expenditure under the relevant provisions of the Act, the CBDT issued the Circular to clarify its position for tax treatment under BOT arrangements (where ownership is not vested with the taxpayer).

Circular No. 9/2014 dated April 23, 2014 issued by the CBDT clarifies that the cost of construction of infrastructure facilities (roads/highways) under BOT projects may be amortised evenly over the concessionaire period (excluding the time taken to create such facilities).

Further, the Circular explicitly clarifies that its applicability is restricted to BOT arrangements in which ownership is not vested in the taxpayer. Further, with respect to BOT projects, courts have held divergent views on the treatment of construction costs incurred by Portfolio Assets. Thus, the position remains uncertain and subject to interpretation, and tax authorities may adopt a contrary view. Any adverse interpretation could impact the tax treatment of project costs and affect profitability.

Under the Hybrid Annuity Model (HAM), the Project SPV(s) undertakes the construction and development of the infrastructure facility and receives a portion of the project cost during the construction phase, with the balance paid as an annuity during the operational period. Currently, there is no specific guidance from the tax authorities on the treatment of expenditure incurred under HAM projects.

Given the similarities between BOT and HAM, it is arguable that a similar amortization approach could apply to HAM projects. Alternatively, there is a view that the expenditure incurred by the SPV under HAM may qualify as an intangible asset (business or commercial rights) eligible for depreciation under Section 32(1)(ii) of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025).

Similarly, under TOT projects, the concessionaire does not undertake construction; it only collects tolls and operates and maintains the highway/road. We believe that the upfront concessional payment made by the SPV, corresponding to the acquisition of the toll right, may be considered akin to the acquisition of business or commercial rights, and that the SPV is likely to be eligible to claim depreciation under Section 32 of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025), under the head intangible asset.

However, tax authorities may interpret the above differently, which may adversely affect our business and profitability.

85. ***The income of the Trust in relation to which pass-through status is not granted under the IT Act may be chargeable to Indian taxes.***

Under the provisions of the IT Act, the total income of the Trust other than capital gains, interest and dividend income from the Portfolio Assets would be taxable at the maximum marginal rate ("**MMR**"). MMR is defined under the IT Act to mean the rate of income-tax (including surcharge on income-tax, if any) applicable to the highest slab of income.

In accordance with Section 115UA of the Income-tax Act, 1961 (as superseded by the Income-tax Act, 2025), the MMR applicable to the Trust, a separately assessable resident entity, is 30.00% (plus applicable surcharge and cess). However, the tax authorities may view the Trust as a "pass-through" entity, and the applicable tax rate will be the MMR applicable to its beneficiaries. If any beneficiary is chargeable to MMR at a rate higher than the rate applicable to other beneficiaries, the income of the Trust attributable to the share of such beneficiary will be taxed at a higher applicable rate. For example, if any Unitholder is a foreign company, the MMR of 35.00% (plus applicable surcharge and cess) would apply. Given divergent views, the matter may be litigated if the tax authorities adopt the latter view.

The above statements are based on current tax laws and are subject to change due to new or amended laws. Further, certain references to provisions may be to the erstwhile Income-tax Act, 1961, which have now been replaced by corresponding provisions of the Income-tax Act, 2025 (albeit, in certain cases, with differing provision numbering). Investors are advised to consult with their own tax advisors prior to taking any decision with respect to the Units or otherwise based on the summary of tax provisions set out in the section above.

GENERAL INFORMATION

The Trust

The Trust was settled on December 7, 2021, by Cube Highways and Transportation Assets Advisors Private Limited (acting as the settlor) on the instructions of the erstwhile sponsors as a contributory irrevocable trust under the provisions of the Indian Trusts Act, 1882. The Trust was registered as an infrastructure investment trust under the InvIT Regulations on April 5, 2022, having registration number IN/InvIT/22-23/0022. Further, the units of the Trust were privately listed on the Stock Exchanges since April 19, 2023. For information on the background of the Trust and the details of the Portfolio Assets, please see the sections entitled "*Overview of the Trust*" and "*Description of the Portfolio Assets*" on pages 35 and 38, respectively.

Compliance Officer of the Trust

The compliance officer of the Trust is Richa Gupta Rohatgi. Her contact details are as follows:

Richa Gupta Rohatgi
Address: Unit No. 1901, 19th Floor, Tower B, World Trade Tower, Sector-16, Noida 201 301, India
Tel: + 91 120 4868300
Fax: N.A.
E-mail: compliance.officer@cubehighways.com

Bidders can contact the Compliance Officer, Registrar or the Book Running Lead Managers in case of any pre-Offer or post-Offer related problems, such as non-receipt of Allotment Advice/letter of Allotment, non-credit of Allotted Units in the respective beneficiary account of Bidders after Allocation or non-receipt of refund orders.

The Sponsor

Cube Highways and Infrastructure V Pte. Ltd.

Registered office and address for correspondence:
65 Chulia Street, #21-05, OCBC Centre, Singapore 049 513
Contact Person of the Sponsor:
Mr. Lin Le
Director
Email ID: Cube-Singaporesecretarial@cubehighways.com
Contact No.: +65 6016 1448

The Investment Manager – Cube Highways Fund Advisors Private Limited

Registered office and address for correspondence:
B-376, Upper Ground Floor, Nirman Vihar
New Delhi 110092
Address for correspondence
Unit No. 1901, 19th Floor,
Tower-B, World Trade Tower, Plot No. C-1
Sector 16, Noida, Uttar Pradesh 201 301
Tel: + 91 120 4868300
Fax: N.A.
E-mail: vinay.sekar@cubehighways.com
Contact person: Vinay C. Sekar

The Project Manager – Cube Highways Asset & Project Advisory Private Limited

Registered office and address for correspondence:
B-376, UGF, Nirman Vihar
East Delhi, Delhi, India 110092
Address for correspondence
Unit No. 1901, 19th Floor,
Tower B, World Trade Tower, Plot No. C 1,
Noida Sector 16, Gautam Buddha Nagar, Noida,
Uttar Pradesh, India 201 301
Tel: +91 120-4868300
Fax: N.A
E-mail: corporatesecreterial@cubehighways.com
Contact person: Vinay Chandramouli Sekar

The Trustee – Axis Trustee Services Limited

Registered Office:
Axis House
P B Marg, Worli,
Mumbai 400 025
Tel: +91 22623 00451
Fax: +91 22 6230 0605
E-mail: debenturetrustee@axistrustee.com, Kumar.Saminathan@axistrustee.in
Contact Person: Mr. Kumar Saminathan
Website: www.axistrustee.com

Corporate Office/Correspondence Address:
The Ruby, 2nd Floor, SW29
Senapati Bapat Marg, Dadar West
Mumbai 400 028
Tel: +91 22 6230 0451
Fax: +91 22 6230 0700

Other Parties involved in the Trust

Auditors

S.B. Billimoria & Co. LLP
7th Floor, Building 10, Tower B
DLF Cyber City Complex, DLF City Phase II
Gurgaon, Haryana.
Tel: +91 124 679 2000
Firm Registration No.: 101496W/W100774
E-mail: pramodshukla@deloitte.com
Peer review certificate no.: 019477

Valuer

Ernst & Young Merchant Banking Services LLP
14th Floor, The Ruby,
29 Senapati Bapat Marg, Dadar West,
Mumbai - 400 028, India
Tel: +91 22 61920000
Fax Number: +91 22 61920000
Registration Number: IBBI/RV-E/05/2021/155
E-mail: jain.nilesh@in.ey.com
Contact person: Nilesh Jain

Technical Consultants

Knight Frank (India) Private Limited
1505-1508, 15th Floor,
Tower B, Signature Tower,
South City 1, Gurugram, 122001
Tel: +91 98712 00483
Fax Number: N.A
E-mail: MajGenKT.Gajria@in.knightfrank.com
Contact person: Maj Gen K T Gajria

FP India Project Management Consultancy Services Private Limited
315, Balgowind Wadi,
New Prabhadevi Road,
Prabhadevi, Mumbai – 400 025
Tel: 022 6660 3901
Fax Number: N.A
E-mail: SAmbekar@fpindia.com
Contact person: Mr. Shailendra Ambekar

Traffic Consultant

Steer Davies Gleave India Private Limited
S3, Vatika Business Centre, Vatika Triangle,

MG Road, Gurgaon, Haryana- 122002,
Registered in India.
CIN: U74999HR2016FTC064993
Tel: +91 124 4418650
Fax Number: +44 2079105001
E-mail: vaibhav.gupta@steergroup.com
Contact person: Vaibhav Gupta

Book Running Lead Managers to the Offer

Kotak Mahindra Capital Company Limited
27 BKC, 1st Floor,
Plot No. C –27, "G" Block,
Bandra Kurla Complex,
Bandra (East),
Mumbai 400 051, Maharashtra, India
Tel: +91 22 4336 0000
E-mail: CHT.invIT@kotak.com
Investor Grievance ID: kmccredressal@kotak.com
Website: https://investmentbank.kotak.com
Contact person: Ganesh Rane
SEBI Registration No.: INM000008704

HDFC Bank Limited
Investment Banking Group
Unit no. 701, 702 and 702-A, 7th floor
Tower 2 and 3, One International Centre
Senapati Bapat Marg, Prabhadevi
Mumbai 400 013
Maharashtra, India
Tel: +91 22 3395 8233
E-mail: cubehighways.invit@hdfcbank.com
Investor Grievance ID: Investor.redressal@hdfcbank.com
Website: www.hdfcbank.com
Contact Person: Gaurav Khandelwal/ Souradeep Ghosh
SEBI Registration Number: INM000011252

HSBC Securities and Capital Markets (India) Private Limited
52/60, Mahatma Gandhi Road
Fort, Mumbai 400 001
Maharashtra, India
Tel: +91 22 6864 1289
E-mail: chtinvit@hsbc.co.in
Investor Grievance ID: investorgrievance@hsbc.co.in
Website: www.business.hsbc.co.in
Contact Person: Harsh Thakkar / Harshit Tayal
SEBI Registration No.: INM000010353

JM Financial Limited
7th Floor, Cnergy,
Appasaheb Marathe Marg
Prabhadevi, Mumbai – 400 025
Maharashtra, India
Tel: +91 22 6630 3030
E-mail: cubehighways.invit@jmfl.com
Investor Grievance E-mail: grievance.ibd@jmfl.com
Website: www.jmfl.com
Contact person: Prachee Dhuri
SEBI Registration No.: INM000010361

Escrow Collection Bank

Kotak Mahindra Bank Limited
Intellion Square, 501, 5th Floor, A Wing,
Infinity IT Park, Gen. A.K. Vaidya Marg,
Malad - East, Mumbai – 400 097
Telephone: 022-69410754

Email: cmsipo@kotak.com
Attention: Sumit Panchal

Public Offer Account Bank

HDFC Bank Limited
FIG – OPS Department
Lodha – I Think Techno Campus, O 3 Level
Next to Kanjurmarg Railway Station
Kanjurmarg (East),
Mumbai – 400042
Telephone: +91 022 30752914 / 28 / 29
E-mail: tushar.gavankar@hdfc.bank.in,
Attention: Tushar Gavankar

Sponsor Banks

HDFC Bank Limited
FIG – OPS Department
Lodha – I Think Techno Campus, O 3 Level
Next to Kanjurmarg Railway Station
Kanjurmarg (East),
Mumbai – 400042
Telephone: +91 022 30752914 / 28 / 29
E-mail: tushar.gavankar@hdfc.bank.in,
Attention: Tushar Gavankar

Kotak Mahindra Bank Limited
Intellion Square, 501, 5th Floor, A Wing,
Infinity IT Park, Gen. A.K. Vaidya Marg,
Malad - East, Mumbai – 400 097
Telephone: 022-69410754
Email: cmsipo@kotak.com
Attention: Sumit Panchal

Refund Bank

Kotak Mahindra Bank Limited
Intellion Square, 501, 5th Floor, A Wing,
Infinity IT Park, Gen. A.K. Vaidya Marg,
Malad - East, Mumbai – 400 097
Telephone: 022-69410754
Email: cmsipo@kotak.com
Attention: Sumit Panchal

Legal Counsel to the Trust, and the IM as to Indian law

Cyril Amarchand Mangaldas
6th Floor, Peninsula Chambers
Peninsula Corporate Park
Ganpatrao Kadam Marg
Lower Parel
Mumbai 400 013
Maharashtra, India
Tel: +91 22 2496 4455

Legal Counsel to the Book Running Lead Managers as to Indian law

AZB & Partners
AZB House, Peninsula Corporate Park
Ganpatrao Kadam Marg, Lower Parel
Mumbai – 400 013
Maharashtra, India
Tel: +91 22 4072 9999

International Legal Counsel to the Book Running Lead Managers

Sidley Austin Singapore Pte. Ltd.

Level 31, Six Battery Road
Singapore 049909
Tel: +65 62303900

Legal Counsel to the Sponsor, Sponsor Group (including the Sponsor Group Selling Unitholders) and Seventy Second Investment Company LLC (a Selling Unitholder) as to Indian law

Shardul Amarchand Mangaldas & Co
24th Floor, Express Towers
Nariman Point
Mumbai, 400 021
Maharashtra, India
Tel.: +91 22 4933 5555

Registrar to the Offer

KFin Technologies Limited
Selenium, Tower B
Plot No- 31 & 32, Financial District
Nanakramguda, Serilingampally
Hyderabad, Rangareddi 500 032
Telangana, India
Tel.: +91 40 6716 2222/ 1800 309 4001
E-mail: cube.invit@kfintech.com
Investor Grievance E-mail: einward.ris@kfintech.com
Website: www.kfintech.com
Contact Person: M. Murali Krishna
SEBI Registration No.: INR000000221

Syndicate Member:

Kotak Securities Limited
4th floor, 12 BKC, G Block,
Bandra Kurla Complex
Bandra (East), Mumbai 400 051
Maharashtra, India
Telephone: +91 22 4285 8484
E-mail: umesh.gupta@kotak.com
Attention: Umesh Gupta

HDFC Securities Limited
I Think Techno Campus Building-B
'Alpha', 8th floor,
Opp. Crompton Greaves,
Near Kanjurmarg Station,
Kanjurmarg (East),
Mumbai - 400 042
Maharashtra, India
Telephone: +91 22 3075 3400
E-mail: customercare@hdfcsec.com
Attention: Dipesh A Kale

JM Financial Services Limited
Ground Floor, 2, 3 & 4 Kamanwala Chambers, Sir P.M. Road, Fort
Mumbai - 400 001
Maharashtra, India
Telephone: +91 22 6136 3400
E-mail: Tejas.agrawal@jmfl.com/ Sona.verghese@jmfl.com
Attention: Tejas Agrawal/ Sona Varghese

Inter-se allocation of responsibilities

Sr. No.	Activity	Responsibility	Co-ordination
1.	Due diligence of the InvIT's operations/management/ business plans/legal, etc., Sponsor's / Investment Manager's / Project Manager's	Book Running Lead Managers	Kotak

Sr. No.	Activity	Responsibility	Co-ordination
	experience, the future assets arrangements, any other related party transactions (including any name licensing or other arrangements), drafting and design of offer documents and of statutory advertisement including memorandum containing salient features of the Offer documents. The Book Running Lead Managers shall ensure compliance with stipulated requirements and completion of prescribed formalities with the Stock Exchanges and the SEBI.		
2.	Capital structuring with the relative components and formalities such as type of instruments, size of issue, allocation between primary and secondary, etc.	Book Running Lead Managers	Kotak
3.	Assist the InvIT in the process of conversion from a privately listed infrastructure trust to a publicly listed infrastructure trust	Book Running Lead Managers	Kotak
4.	Drafting and approval of all publicity material other than statutory advertisement as mentioned above including corporate advertisement, brochure, etc.	Book Running Lead Managers	JM Financial
5.	Appointment of rating agencies, registrar to the Offer, printers, advertising agency, bankers to the Offer and other intermediaries (including coordinating all agreements to be entered with such parties).	Book Running Lead Managers	JM Financial
6.	Finalising road show marketing presentation, FAQs	Book Running Lead Managers	HSBC
7.	International institutional marketing of the Offer which will cover, inter alia: • Formulating overall international institutional marketing strategy; • Finalising the list and division of international investors for one-on-one meetings; and • Finalizing international roadshow schedule and investor meeting schedules	Book Running Lead Managers	HSBC
8.	Domestic institutional marketing of the Offer which will cover, inter alia: • Formulating overall domestic institutional marketing strategy; • Finalising the list and division of domestic investors for one-on-one meetings; and • Finalizing domestic roadshow schedule and investor meeting schedules	Book Running Lead Managers	Kotak
9.	Non-institutional marketing of the Offer which will cover, inter alia: • Formulating marketing strategies, preparation of publicity budget, finalizing media, marketing and public relations strategy; finalizing centres for holding conferences for brokers, etc.; • Finalizing the brokerage & commission for Non-Institutional Investors category for the brokers and sub syndicate; • Finalizing collection centers; and • Deciding on the quantum of the Offer material and allocation amongst the printers	Book Running Lead Managers	JM Financial
10.	Coordination with stock exchanges for book building software and submitting deposit.	Book Running Lead Managers	HDFC

Sr. No.	Activity	Responsibility	Co-ordination
11.	Coordinating and finalizing the Anchor Investor/ Strategic Investor activities, minutes, intimation of anchor allocation and CAN	Book Running Lead Managers	JM Financial
12.	Managing the book and finalizing of pricing and Allocation in consultation with the Investment Manager	Book Running Lead Managers	HSBC
13.	Post bidding activities including management of escrow accounts, coordinate non-institutional and institutional allocation, coordination with Registrar and banks, intimation of allocation and dispatch of refund to Bidders, etc. The post Offer activities of the Offer will involve essential follow up steps, which include finalization of basis of allotment, trading and dealing instruments and dispatch of certificates and demat delivery of Units, with the various agencies connected with the work such as Registrar to the Offer, Bankers to the Offer and the bank handling refund business. Coordinating with Stock Exchanges and SEBI for release of security deposit post closure of the Offer and submission of all post Offer reports including the final post Offer report to SEBI, filing media compliance report with SEBI	Book Running Lead Managers	HDFC

Credit ratings

The Trust has been given a rating of (i) AAA/Stable by India Ratings & Research Private Limited as on April 30, 2026, for term loan and bank guarantee, the rationale for which is available at its website *https://www.indiaratings.co.in/search/issuerid/10193*; (ii) AAA/Stable by India Ratings & Research Private Limited as on April 30, 2026, for non-convertible debentures, the rationale for which is available at its website, *https://www.indiaratings.co.in/search/issuerid/10193*; (iii) AAA/Stable by ICRA on September 1, 2025 for term loan and bank guarantee, the rational for which is available at https://www.icra.in/Rationale/ShowRationaleReport?Id=137403 *(*iv) AAA/Stable by ICRA as on April 30, 2026, for, non-convertible debentures the rational for which is available at its website, https://www.icra.in/Rationale/ShowRationaleReport?Id=137403 (v) AAA/Stable by CRISIL Ratings Limited on April 30, 2026, for term loan and bank guarantee – long term, and A1+ for term loan and bank guarantee - short term, the rationale for which is available at its website at:

https://www.crisilratings.com/mnt/winshare/Ratings/RatingList/RatingDocs/CubeHighwaysTrust_February%2010_%202026_RR_381315.html

It is clarified that the details available on these websites do not form a part of this Final Offer Document.

Self-Certified Syndicate Banks

The list of SCSBs notified by SEBI for the ASBA process is available at http://www.sebi.gov.in/sebiweb/other/OtherAction.do?doRecognised=yes or at such other website as may be prescribed by SEBI from time to time. For a list of the SCSB branches named by the respective SCSBs to receive ASBA Forms from the Designated Intermediary, please refer to the above-mentioned link.

Syndicate SCSB Branches

In relation to Bids (other than Bids by Anchor Investors) submitted under the ASBA process to a member of the Syndicate, the list of branches of the SCSBs at the Specified Locations named by the respective SCSBs to receive deposits of Bid cum Application Forms from the members of the Syndicate is available on the website of the SEBI (www.sebi.gov.in/sebiweb/other/OtherAction.do?doRecognisedFpi=yes&intmId=35) and updated from time to time. For more information on such branches collecting Bid cum Application Forms from the Syndicate at Specified Locations, see the website of the SEBI at www.sebi.gov.in/sebiweb/other/OtherAction.do?doRecognisedFpi=yes&intmId=35 as updated from time to time.

Registered Brokers

The list of the Registered Brokers, including details such as postal address, telephone number and e-mail address, is provided on the websites of the Stock Exchanges at https://www.bseindia.com/ and https://www.nseindia.com, as updated from time to time.

Registrar and Unit Transfer Agents

The list of the RTAs eligible to accept ASBA Forms at the Designated RTA Locations, including details such as address, telephone number and e-mail address, is provided on the websites of BSE at and NSE at http://www.nseindia.com/products/content/equities/ipos/asba_procedures.htm, respectively, as updated from time to time.

Collecting Depository Participants

The list of the CDPs eligible to accept ASBA Forms at the Designated CDP Locations, including details such as name and contact details, is provided on the websites of BSE at https://www.bseindia.com/Static/PublicIssues/RtaDp.aspx and NSE at http://www.nseindia.com/products/content/equities/ipos/asba_procedures.htm, respectively, as updated from time to time.

BASIS OF OFFER PRICE

The Offer Price has been determined by the Investment Manager, in consultation with the Book Running Lead Managers, on the basis of an assessment of market demand for the Units offered through the Book Building Process, as well as quantitative and qualitative factors described below.

Bidders were requested to also refer to the sections entitled "*Risk Factors"*, "*Our Business*", and "*Summary Audited Consolidated Financial Information of the Trust*" on pages 80, 262 and 47, respectively and Annexure D (Audited Consolidated Financial Statements), to make an informed investment decision.

The Price Band is ₹ 151 to ₹ 152.

Based on the evaluation of the qualitative and quantitative factors listed below, the enterprise value and equity value at the Floor Price, the Cap Price and the Offer Price are as follows:

Particulars	At Floor Price	At Cap Price	At Offer Price
Equity Value (Post Offer)	202,954.53	204,298.60	204,298.60
Total Units Post Offer	1,344,069,762	1,344,069,762	1,344,069,762

Qualitative Factors

We believe that some of the qualitative factors which form the basis for computing the Offer Price are as follows:

- Dedicated growth vehicle and access to a strong pipeline of Committed Assets, ROFO Assets and other future growth opportunities;
- Large and diversified portfolio of highway assets;
- Differentiated and proven M&A capabilities;
- Strong portfolio construction capabilities;
- Advanced asset management and maintenance expertise;
- Strong corporate finance capabilities;
- Experienced leadership and institutional backing; and
- Attractive sector fundamentals with a favourable policy environment.

For further details, please see the section entitled "*Our Business*" on page 262.

Quantitative Factors

Some of the information presented below is based on the Audited Consolidated Financial Statements. For details, please see the section entitled "*Audited Consolidated Financial Statements*" attached as Annexure D.

Some of the quantitative factors which may form the basis for computing the Offer Price are as follows:

- **Valuation provided by the Valuer**

  The Valuer has used the discounted cash flows method to determine the value of the Project SPVs. The assumptions on which the value of the Portfolio Asset is based have been disclosed in the section entitled "*Valuation Reports*" attached as Annexure A to this Final Offer Document. For further details, please refer to the "*Valuation Reports*" attached as Annexure A to this Final Offer Document.

- **Enterprise Value / Cash flows from operations ratio in relation to Offer Price:**

Particulars	Amount (in ₹ million)	Enterprise Value/ Cashflow from operations		
		At Floor Price	At Cap Price	At Offer Price
Cash flows from operations for the financial year ended March 31, 2026*	38,029.48	9.87	9.91	9.91

* *Cash flow from operations for the financial year ended March 31, 2026, in the above table is derived from the Audited Consolidated Financial Statements.*

- **Price / Net Asset Value per Unit ratio in relation to Offer Price:**

Particulars	Amount (in ₹)	Price / Net Asset Value per Unit		
		At Floor Price	At Cap Price	At Offer Price
Net Asset Value per Unit as of March 31, 2026	145.77	1.04	1.04	1.04

- **Basic and diluted earnings per Unit:**

Year ended	Basic Earnings per Unit (in ₹) [(1)]	Diluted Earnings per Unit (in ₹) [(1)]
March 31, 2026	1.61	1.61
March 31, 2025	(0.27)	(0.27)

(1) Basic earnings per Unit and Diluted earnings per Unit are as presented in the Audited Consolidated Financial Statements.

- **Comparison with Industry Peers:**

Name	NAV per Unit (in ₹)[(1)]	Premium/ (Discount) to NAV%[(2)]
IRB Infrastructure Trust	319.73	(31.12%)
National Highways Infra Trust	150.50	11.59%
Vertis Infrastructure Trust	106.80	3.00%
Interise Trust	117.50	(6.60%)
Shrem InvIT	88.12	15.52%
Oriental InfraTrust	111.24	(10.10%)

(1) NAV as of March 31, 2026.

(2) Premium / (Discount) to NAV % has been calculated as Unit Price, divided by Net Asset Value per Unit minus one, based on the latest available price on the stock exchanges of the peers as on July 2, 2026. The respective price available is as follows:
IRB Infrastructure Trust – ₹ 220.22 on NSE as on July 2, 2026
National Highways Infra Trust – ₹ 167.95 on NSE as on July 2, 2026
Vertis Infrastructure Trust – ₹ 110.00 on NSE as on July 2, 2026
Interise Trust – ₹ 109.75 on NSE as on July 2, 2026
Shrem InvIT – ₹ 101.80 on NSE as on July 2, 2026
Oriental Infra Trust – ₹ 100.00 on NSE as on July 2, 2026

PARTIES TO THE TRUST

A. The Sponsor and Sponsor Group

Pursuant to the resolution passed by the board of directors of Cube Highways Fund Advisors Private Limited acting in its capacity as investment manager of the Cube Highways Trust dated January 30, 2026, and subsequent resolution dated February 19, 2026, passed by the Unitholders of the Trust, and in accordance with the InvIT Regulations, CH-I and CH-III have been declassified as the sponsors of the Trust and CH-V was inducted as the new sponsor of the Trust through a deed of adherence to the Trust Deed dated February 20, 2026.

Cube Highways and Infrastructure V Pte. Ltd.

History and Certain Corporate Matters

Cube Highways and Infrastructure V Pte. Ltd. was originally incorporated as a private company limited by shares under the laws of Singapore on June 17, 2021, bearing the registration number (Unique Entity Number) 202121313N.

The registered office of the Sponsor is situated at 65 Chulia Street, #21-05, OCBC Centre, Singapore 049513. Please see the section entitled "*General Information*" on page 124.

Background of Cube Highways and Infrastructure V Pte. Ltd.

CH-V is a Singapore-based company that invests in road and highway projects along with other select infrastructure sectors in India. CH-V owns and operates the ROFO Assets namely, Kohkraj Handia Expressway Limited, Delhi Hapur Meerut Expressway Private Limited and Malayagiri Highways Private Limited, and certain Committed Assets namely, BFHL, DTPL, and WMTPL.

In accordance with the eligibility criteria specified under InvIT Regulations, CH-V (relying on the experience of its associate, Cube Mobility Investments Pte. Ltd.), has a sound track record, *i.e.*, experience of at least five years in development of infrastructure or fund management in the infrastructure sector. It was holding a portfolio of 9 TOT assets for the Financial Years 2020-23, which were subsequently transferred to the Trust in the year 2023.

In accordance with the eligibility criteria specified under the InvIT Regulations, CH-V has a net worth of ₹ 50,104.80 million as on March 31, 2026.

Board of Directors of Cube Highways and Infrastructure V Pte. Ltd.

The board of directors of the Sponsor is entrusted with the overall management of the Sponsor

Please see below the names of the directors on the board of CH-V:

Sr. no.	Name of the director
1.	Ashutosh Goyal
2.	Raviraj Vipul Acharya
3.	Lin Le
4.	Zaman Velji
5.	Kunal Agarwal
6.	Angela Mary Bouzanis (alternate director to Zaman Velji)

Other Confirmations

As of the date of this Final Offer Document, the Sponsor is in compliance with the eligibility criteria provided under Regulation 4 of the InvIT Regulations, to the extent applicable to each of the Sponsor or Sponsor Group, severally, and not jointly and are "fit and proper persons" as prescribed under SEBI Intermediaries Regulations.

Sponsor Group

CH-I, CH-II, CH-III, CH-1D and Cube Mobility Investments Pte. Ltd. form part of the Sponsor Group. For details in relation to the Sponsor Group, please see the section entitled "*Definitions and Abbreviations-Trust Related Terms-Sponsor Group*" on page 10.

Neither the Sponsor nor the Sponsor Group, nor the directors of the Sponsor, or the promoters, directors, or partners of the Sponsor Group (i) are or have been debarred from accessing the securities market by SEBI; (ii) are or have been promoters, directors or persons in control of any other company or a sponsor, investment manager or trustee of any other infrastructure investment trust or an infrastructure investment trust which is debarred from accessing the capital market under any order or direction made by SEBI; and/or (iii) are or have been declared a wilful defaulter by any bank or a financial institution or consortium thereof, in accordance with the guidelines on 'wilful defaulters' issued by the RBI.

B. The Trustee – Axis Trustee Services Limited

Axis Trustee Services Limited is the Trustee in respect of the Trust. The Trustee is a debenture trustee registered with SEBI under the Securities and Exchange Board of India (Debenture Trustees) Regulations, 1993, having registration number IND000000494, which is valid until suspended or cancelled by SEBI. The Trustee's registered office is situated at Axis House, Bombay Dyeing Mills Compound, PB Marg, Worli, Mumbai 400 025. The Trustee's address for correspondence and principal place of business is situated at The Ruby, 2nd Floor, SW, 29, Senapati Bapat Marg, Dadar West, Mumbai 400 028.

Background of the Trustee

The Trustee is a wholly owned subsidiary of Axis Bank Limited. The Trustee's services are aimed at catering to the individual needs of the client and enhancing client satisfaction. As the trustee, it ensures compliance with all statutory requirements and believes in the highest ethical standards and best practices in corporate governance. It aims to provide the best services in the industry with its well trained and professionally qualified staff with a sound legal acumen. The Trustee is involved in varied facets of debenture and bond trusteeships, including, advisory functions and management functions. The Trustee also acts as a security trustee and is involved in providing services in relation to security creation, compliance and holding security on behalf of lenders.

The Trustee is involved in providing services as (i) debenture trustee; (ii) security trustee; (iii) facility agent; (iv) escrow agency; (v) custody services; (vi) trust and retention account; (vii) securitization trustee; (viii) share monitoring trustee; (ix) lender repayment trustee; (x) digital escrow agency; and (xi) trustee of a REIT, InvIT, AIF and family trust, etc. in the domestic market.

The Trustee is also an IFSC-registered intermediary authorised to provide debenture and bond trustee, private trustee, facility and escrow agent, safekeeping, and other related financial services in the overseas market, that is, International Financial Services Centers ("**GIFT City**").

The Trustee has and undertakes to ensure that it will at all times, maintain adequate infrastructure personnel and resources to perform its functions, duties and responsibilities with respect to the Trust in accordance with the InvIT Regulations, the Trust Deed and other applicable law.

The Trustee is not an Associate of the Sponsor or the Investment Manager or the Project Manager to the Trust.

Other Confirmations

Further, as of the date of this Final Offer Document, the Trustee is in compliance with the eligibility criteria provided under Regulation 4 of the InvIT Regulations and is a "fit and proper person" as prescribed under SEBI Intermediaries Regulations.

Further, neither the Trustee nor the settlors of the Trustee, any of the promoters or directors of the Trustee (i) are or have been debarred from accessing the securities market by SEBI; (ii) are or have been promoters, directors or persons in control of any other company or a sponsor, investment manager or trustee of any other infrastructure investment trust or an infrastructure investment trust which is debarred from accessing the capital market under any order or direction made by SEBI; and/or (iii) are or have been declared a wilful defaulters or fraudulent borrowers as per the list published by the RBI; or (iv) are fugitive economic offenders.

Board of Directors of the Trustee

The Board of Directors of the Trustee is entrusted with the responsibility for the overall management of the Trustee. Please see below the details in relation of the board of directors of the Trustee:

Sr. No.	Name	DIN	Designation
1.	Rahul Rajan Choudhary	10935908	Managing Director and Chief Executive Officer
2.	Parmod Kumar Nagpal	10041946	Independent Director
3.	Bipin Kumar Saraf	06416744	Non-Executive Non-Independent Director
4.	Sudipto Nag	11632764	Additional Director, Non-Executive Non-Independent Director
5.	Vipul Mehrotra*	11766964	Independent Director

** Appointed with effect from June 24, 2026*

Brief profiles of the Directors of the Trustee

1. **Rahul Rajan Choudhary** is the managing director and chief executive officer of Axis Trustee Services Limited.

2. **Parmod Kumar Nagpal** is an independent director on the board of directors of Axis Trustee Services Limited.

3. **Bipin Kumar Saraf** is a non-executive non-independent director on the board of directors of the Trustee.

4. **Sudipto Nag** is an additional director (non-executive non-independent) on the board of directors of the Trustee.

5. **Vipul Mehrotra** is an additional director (non-executive and independent) on the board of directors of the Trustee.

Key Terms of the Trust Deed

The Trustee, the CH-I and CH-III and the Settlor have entered into the trust deed dated December 7, 2021, in terms of the InvIT Regulations, which was registered under the provisions of the Indian Registration Act, 1908 on December 7, 2021. Subsequently, the parties to the trust deed entered into an amended and restated trust deed on July 8, 2022, which was further amended and restated on March 11, 2024 (as so amended, the "**Trust Deed**"). Pursuant to the deed of adherence to the Trust Deed dated February 20, 2026, the CH-V has been inducted as the Sponsor. The key terms of the Trust Deed, are provided below:

1. *Powers of the Trustee*

   The Trustee has been provided with various powers under the Trust Deed in accordance with the Indian Trusts Act, 1882 and the InvIT Regulations, including but not limited to:

   (i) the Trustee shall, in relation to the Trust, have every and all powers that a person competent to contract and acting as a legal and beneficial owner of such property;

   (ii) the Trustee shall make distributions to Unitholders in accordance with the InvIT Documents and in compliance with the InvIT Regulations and applicable law;

   (iii) the Trustee shall oversee voting of Unitholders in accordance with the InvIT Regulations;

   (iv) the Trustee shall have the power to do the following, in accordance with the InvIT Regulations, which power may be delegated to the Investment Manager in terms of the Investment Management Agreement:

      a) cause the offering of the Units through any offer document;

      b) cause any offer document to be provided to the investors;

      c) offer and allot Units or other securities, obligations or instruments of the Trust;

      d) summon and conduct meetings of the Unitholders in accordance with the relevant InvIT Documents and the InvIT Regulations; and

      e) subject to, and only in accordance with, the terms of the InvIT Documents and the InvIT Regulations, approve transfer of the Units;

   (v) the Trustee shall invest and hold the Portfolio Assets in the name of the Trust for the benefit of the Unitholders in accordance with the provisions of the InvIT Regulations, InvIT Documents, Trust Deed and the Investment Objective. The Trustee shall be empowered to make investment decisions with respect to the underlying assets or projects of the Trust including any further investments or divestments, subject to InvIT Regulations and the InvIT Documents;

   (vi) subject to the provisions of the InvIT Regulations and the distribution policy adopted by the Investment Manager, the Trustee, in consultation with the Investment Manager, shall have the power to make such reserves out of the income or capital as the Trustee may deem proper in order to, amongst other things, meet the expenses, liabilities or contingent liabilities of the Trust and any decisions of the Trustee whether made in writing or implied from its acts, so far as the applicable law may permit, shall be conclusive and binding on the Unitholders;

   (vii) the Trustee, subject to the recommendations of the Investment Manager, shall have the power to employ and pay at the expense of the Trust, any agent in any jurisdiction whether attorneys, solicitors, brokers, banks, trust companies or other agents whether associated or connected in any way with the Trustee or not, without being responsible for the default of any agent if employed in good faith to transact any business, including without limitation, the power to appoint agents to raise funds, or do any act required to be transacted or done in the execution of the trusts including the receipt and payment of moneys and the execution of documents;

   (viii) the Trustee shall, on behalf of the Trust, within a reasonable time from the date of execution of the Original Trust Deed, appoint the Investment Manager as the investment manager to the Trust, by

execution of the Investment Management Agreement, on behalf of the Trust, to manage the assets and investments of the Trust and undertake activities of the Trust;

(ix) the Trustee shall oversee the activities of the Investment Manager in the interest of the Unitholders, ensure that the Investment Manager complies with the InvIT Regulations and applicable law and shall obtain a compliance certificate from the Investment Manager on a quarterly basis or such other time period as prescribed by applicable law, in the form prescribed by SEBI, if any;

(x) the Trustee shall, on behalf of the Trust, either through itself or through the Investment Manager, within a reasonable time from the date of execution of the Original Trust Deed, appoint the project manager for the Trust, by execution of the project implementation and management agreement, for the operation and management of the Portfolio Assets;

(xi) the Trustee shall oversee activities of the Project Manager in terms of the InvIT Regulations, other applicable law and the Project Implementation and Management Agreement and shall obtain a compliance certificate from the Project Manager on a quarterly basis or such other time period as prescribed by applicable law, in the form prescribed by SEBI, if any;

(xii) the Trustee may, in consultation with the Investment Manager, appoint any custodian in order to provide custodian services, and may permit any property comprised in the Trust to be and remain deposited with a custodian or with any person or persons in India or in any other jurisdiction subject to such deposit being permissible under the applicable law;

(xiii) in the event of any capital gains tax, income tax, stamp duty or other duties, fees or taxes (and any interest or penalty chargeable thereon) whatsoever becoming payable in any jurisdiction in respect of the Trust or in respect of documents issued or executed in pursuance of the Trust Deed in any circumstances whatsoever, the Trustee shall have the power and duty to pay all such duties, fees or taxes (and any interest or penalty chargeable thereon) as well as to create any reserves for future potential tax liability out of the Trust or Portfolio Assets or the income thereof, or to the extent of the amount invested in the Units by the Unitholders, as may be permitted under applicable law and as the Trustee may reasonably deem proper, and the Trustee may pay such duties, fees or taxes (and any such interest or penalty) on behalf of the Trust;

(xiv) the Trustee shall, subject to the advice of the Investment Manager, have the power to pay expenses of the Trust out of the funds held by the Trust;

(xv) the Trustee shall, in discharge of its duties, have the power to take the opinion of legal or tax counsel in any jurisdiction concerning any disputes or differences arising under the Trust Deed or any matter relating to the Trust and the fees of such counsel shall be paid out of the funds held in the Trust;

(xvi) the Trustee may, in execution of the Trust in terms of the Original Trust Deed, or in exercise of any of the powers stipulated in the Trust Deed or by law given to the Trustee sell, rent or buy any property, or borrow property from or carry out any other transaction with the trustees of any other trust or the executors or administrators of any estate;

(xvii) the Trustee (on behalf of the Trust) shall have the power to:

a) accept any property before the time at which it is transferable or payable;

b) pay or allow any claim on any evidence that it thinks sufficient;

c) accept any security movable or immovable in lieu of any amounts payable to it;

d) alter the dates for payment of any amounts payable to it; and

e) compromise, compound, abandon or otherwise settle any claim or thing whatsoever relating to the Trust or the Trust Deed;

(xviii) the Trustee shall, subject to the advice of the Investment Manager, have the power to borrow funds including any subordinated equity, long term loans, short term loans, bonds or other loans or funds from any person or authority (whether Government or otherwise, whether Indian or overseas) for the purpose of the Trust on such terms and conditions and for such periods and subject to approval of the Unitholders in accordance with and as may be required in terms of the InvIT Regulations and applicable law. The Trustee shall, subject to the advice of the Investment Manager, also have the power to create encumbrances of any kind on the Portfolio Assets as collateral security for any such borrowings;

(xix) the Trustee may, subject to the conditions stipulated in the Trust Deed and any other InvIT Documents, InvIT Regulations, applicable law and any advice of the Investment Manager, retain

any proceeds received by the Trust from any Portfolio Assets, Holding Companies or SPVs, including through the sale of any Holding Company or SPV, for the purpose of re-investment;

(xx) the Trustee may, make rules to give effect to, and carry out the investment objectives, subject to applicable law and relevant provisions of the Trust Deed. In particular, and without prejudice to the generality of such power, the Trustee may provide the (a) manner of maintaining of the records and particulars of the Unitholders; (b) norms of investment by the Trust in accordance with the investment objectives of the InvIT and in accordance with the powers and authorities of the Trustee as set out herein; (c) matters relating to entrustment / deposit or handing over of any securities or shares of the SPVs of the Trust to any one or more custodians and the procedure relating to the holding thereof by the custodian; (d) such other administrative, procedural or other matters relating to the administration or management of the affairs of the Trust and which matters are not by the very nature required to be included or provided for in the Trust Deed or by the management thereof and which matters are not inconsistent with the provisions thereof; (e) procedure for seeking the vote of the Unitholders either by calling a meeting or through postal ballot or otherwise; and (f) procedure for summoning and conducting meetings of Unitholders;

(xxi) the Trustee shall cause the depository to maintain the depository register;

(xxii) the Trustee shall advise the Investment Manager in relation to the appointment of Valuer, Auditors, Registrar, merchant bankers, custodian, Credit Rating Agencies and any other intermediary or service provider or agent as may be applicable with respect to the activities pertaining to the Trust, in a timely manner;

(xxiii) the Trustee shall review the reports required in terms of InvIT Regulations and applicable law, as submitted by the Investment Manager. In the event such reports are not submitted in a timely manner, the Trustee, after due follow-up, shall intimate the same to SEBI;

(xxiv) the Trustee shall have the power to open one or more bank accounts and/or demat accounts for the purposes of the Trust, to deposit and withdraw money and/or securities and fully operate the same;

(xxv) the Trustee shall have the power to take up with SEBI or with the designated stock exchange(s) as applicable, any matter which has been approved in any meeting of Unitholders, if the matter requires such action;

(xxvi) the Trustee shall have the power to exercise all rights of the Trust in the SPVs, including voting rights, rights to appoint directors, whether pursuant to securities held by it, or otherwise, in such manner as it deems to be in the best interest of the Trust, and in accordance with the InvIT Regulations and applicable law. Additionally, if the Trust has invested in infrastructure projects through the Holding Company or SPVs, then the Investment Manager, in consultation with the Trustee, shall appoint the majority of the directors of the Holding Company(ies) and/or the SPV(s), in accordance with the applicable law, as well as ensure that in every general meeting including the annual general meeting of any SPV or Holding Company, the voting of the Trust is exercised, in accordance with the InvIT Regulations and applicable law;

(xxvii) the Trustee shall have the power to, in consultation with the Investment Manager (except where such action relates to the Investment Manager), institute, conduct, compromise, compound, or abandon any legal proceedings for or on behalf of or in the name of the Trust or the Trustee, and to defend, compound or otherwise deal with any such proceedings against or by the Trust or Trustee or its officers or concerning the affairs of the Trust, and also to compound and allow time for payment or satisfaction of any equity due and of any claims or demands by or against the Trust and observe and perform any decisions thereof;

(xxviii) the Trustee can make and give receipts, releases and other discharges for moneys payable to the Trust and for the claims and demands of the Trust;

(xxix) the Trustee can enter into all such negotiations and contracts, and, execute and do all such acts, deeds and things for or on behalf of or in the name of the Trust as the Trustee may consider expedient for or in relation to any of the matters or otherwise for the purposes of the Trust;

(xxx) the Trustee can sign, seal, execute, deliver and register according to law all deeds, documents, agreements, and assurances in respect of the Trust;

(xxxi) the Trustee can take into its custody and/or control all the capital, assets, property of the Trust and hold the same in trust for the Unitholders in accordance with the Trust Deed, the InvIT Regulations and applicable law;

(xxxii) the Trustee may at any time, buy back the Units from the Unitholders in accordance with the policy formulated by the Investment Manager and subject to applicable law;

(xxxiii) the Trustee may cause the Trust to pay, prepay or repay any and all debt raised from any Person in accordance with the terms therein and to redeem any debt securities or other securities, obligations or instruments in accordance with the terms thereof issued to such Persons;

(xxxiv) the Trustee can generally exercise all such powers as it may be required to exercise under the InvIT Regulations and applicable law for the time being in force and do all such matters and things as may promote the Trust or as may be incidental to or consequential upon the discharge of its functions and the exercise and enforcement of all or any of the powers and rights under the Trust Deed and applicable law; and

(xxxv) the Trustee may, delegate to the Investment Manager or the Project Manager, any powers set out above.

2. *Duties of the Trustee*

(i) The Trustee shall use best endeavours to carry on and conduct the business of the Trust in a proper and efficient manner in the best interest of the Unitholders.

(ii) The Trustee, on behalf of the Trust, shall appoint an Investment Manager and Project Manager in accordance with the InvIT Regulations and other applicable law.

(iii) The Trustee shall, on behalf of the Trust, within a reasonable time from the date of execution of the Trust Deed, enter into the Investment Management Agreement with the Investment Manager.

(iv) The Trustee shall ensure that the Investment Manager performs its obligations under the Investment Management Agreement, InvIT Regulations and other applicable law, including the following:

(a) The Trustee shall ensure that the Investment Manager complies with reporting and disclosure requirements in accordance with InvIT Regulations and in case of any delay or discrepancy, require the Investment Manager to rectify such delay or discrepancy on an urgent basis.

(b) The Trustee shall review the transactions carried out between the Investment Manager and its associates and where the Investment Manager has advised that there may be a conflict of interest, it shall obtain a certificate from a practising chartered accountant or valuer, as applicable, that such transaction is on arm's length basis.

(c) The Trustee shall review the Valuation Report submitted by the Investment Manager.

(d) The Trustee shall require the Investment Manager to set up such systems and procedures and submit such reports to the Trustee, as may be necessary for effective monitoring of the functioning of the Trust.

(e) The Trustee shall ensure that the Investment Manager convenes meetings of the Unitholders in accordance with the InvIT Regulations and oversee the voting by Unitholders and declaration of such results of such meetings, provided that where there is (i) a change or removal of the Investment Manager, or a change in control of the Investment Manager, and the Trustee will be required to obtain approval of the Unitholders the Trustee shall be responsible for convening and conducting of the meeting of the Unitholders; and (ii) any issue pertaining to the Trustee, such as change in the Trustee, the Trustee shall not be involved in any manner in the conduct of the meetings of the Unitholders. The Trustee shall ensure that the Investment Manager convenes meetings of Unitholders not less than once every year and the period between such meetings shall not exceed 15 (fifteen) months.

(v) The Trustee shall either by itself or through the Investment Manager, provide SEBI and the stock exchange(s), where applicable, such information as may be sought by SEBI or by the stock exchange(s), as applicable, pertaining to the activity of the Trust. The Trustee shall comply with intimation requirements under the InvIT Regulations and applicable law, including in relation to intimating SEBI in case of any discrepancy in the operation of the Trust with the Trust Deed, the InvIT Regulations and any offer document. The Trustee shall also immediately inform SEBI in case any act which is detrimental to the interest of the Unitholders is noted or if the Investment Manager fails to submit to the Trustee the information or reports as specified under the InvIT Regulations, in a timely fashion.

(vi) The Trustee shall at all times exercise due diligence in carrying out its duties and protecting the interests of the Unitholders. The Trustee shall, through the Investment Manager, from time to time provide such documents and information to the Unitholders, as may be required by the SEBI, the stock exchange(s), where applicable, or other governmental agency, with respect to the activities carried on by the Trust.

(vii) The Trustee shall delegate all such powers to the Investment Manager as may be required by the Investment Manager to carry out its obligations under the Investment Management Agreement and under applicable law. Further, it shall delegate all such powers to the Project Manager as may be required by the Project Manager to carry out its obligations under the Project Implementation and Management Agreement and under applicable law.

(viii) The Trustee shall obtain prior approval from the Unitholders in accordance with the InvIT Regulations and InvIT Documents before any change in, or change in control of, the Investment Manager due to removal or otherwise. In this regard, the Trustee shall also obtain prior approval from SEBI and any concessioning authority or other authorities as may be required, prior to any change in, or change in control of, the Investment Manager, in the event that such approval is required in terms of the InvIT Regulations or other applicable law or InvIT Documents. In case of change in Investment Manager due to removal or otherwise, the Trustee shall, appoint a new investment manager in accordance with the InvIT Documents, InvIT Regulations and applicable law. The Trustee shall appoint a new investment manager within the time period prescribed under the InvIT Regulations. The previous investment manager shall continue to act as such at the discretion of the Trustee until such time as the new investment manager is appointed. The Trustee shall ensure that the new investment manager shall stand substituted as a party in all the documents to which the earlier Investment Manager was a party. The Trustee shall also ensure that the earlier Investment Manager continues to be liable for all its acts of omission and commission for the period during which it served as investment manager, notwithstanding its termination.

(ix) In case of change in project manager due to removal or otherwise, the Trustee shall appoint a new project manager in accordance with the InvIT Regulations, Applicable Law and the InvIT Documents. The Trustee shall appoint a new project manager within the time period prescribed under the InvIT Regulations. The Trustee may, either *suo moto* or based on the advice of the concessioning authority(ies) appoint an administrator in connection with an infrastructure project for such terms and on such conditions as it deems fit. The previous project manager shall continue to act as the project manager till such time as a new project manager is appointed. All costs and expenses in this regard will be borne by the new project manager. The Trustee shall ensure that the new project manager shall stand substituted as a party in all the documents to which the earlier project manager was a party. The Trustee shall also ensure that the earlier project manager continues to be liable for all its acts of omission and commission for the period during which it served as project manager, notwithstanding its termination. The Trustee shall ensure that in case of change in the project manager, written consent is obtained from the concessioning authority(ies) in terms of the concession agreement(s), prior to such change, if applicable.

(x) The Trustee shall ensure that in case of change in control of the Project Manager, written consent is obtained from the concessioning authority(ies) in terms of the concession agreement(s), prior to such change, if applicable.

(xi) The Trustee shall ensure that subscription amount is kept in a separate no lien, no interest bearing bank account in name of the Trust and is only utilised for adjustment against allotment of Units or refund of money to the applicant till the time such Units are allotted or listed and the same will be utilised for objectives of the offering as will be mentioned in the relevant offer document.

(xii) The Trustee shall cause the books of accounts of the Trust to be maintained in accordance with Article 15 of the Trust Deed.

(xiii) The Trustee shall ensure that all acts, deeds and things are done for the attainment of the investment objectives of the Trust and in compliance with the InvIT Documents, the InvIT Regulations, applicable law and relevant concession agreements, as applicable, and to secure the best interests of the Unitholders.

(xiv) The Trustee shall either by itself or through the Investment Manager file such reports as may be required by SEBI or any other regulatory authority or as required under the InvIT Documents, InvIT Regulations and applicable law with regard to the activities carried on by the Trust.

(xv) The Trustee shall periodically review the status of the Unitholders' complaints and their redressal undertaken by the Investment Manager, in accordance with the InvIT Regulations.

(xvi) The Trustee and its directors, officers, employees and agents shall at all times maintain the greatest amount of confidentiality as regards the activities and assets of the Trust and such other matter connected with them and the Trust generally and shall not disclose any confidential information to any other person, other than the Investment Manager, or the Project Manager, unless such information is required to be disclosed to some regulatory authority, court or any other person under any order of court or any law in force in India.

(xvii) The Trustee shall ensure that the assets and liabilities of the Trust shall at all times be segregated from the assets and liabilities of the Trustee and the assets and liabilities of other trusts or funds managed by the Trustee. The assets held under the Trust shall be held for the exclusive benefit of the Unitholders and such assets shall not be subject to the claims of any creditor or any person claiming under any other fund or trust administered by the Trustee or by the Investment Manager respectively.

(xviii) The Trustee shall ensure that the Investment Manager shall ensure that a detailed valuation is undertaken of the Portfolio Assets by a Valuer at such intervals and in the manner as may be prescribed under the InvIT Regulations and applicable law. The Trustee shall ensure that the remuneration of the Valuer is not linked to or based on the value of the asset being valued.

(xix) The Trustee of the Trust shall not invest in Units of the Trust.

(xx) The Trustee shall fulfil its duties and obligations in terms of the InvIT Regulations.

(xxi) The Trustee shall ensure that the activities of the Trust are being operated in accordance with the provisions of the Trust Deed, the InvIT Regulations, applicable law and the InvIT Documents and in case of any discrepancy, it shall inform SEBI immediately in writing.

(xxii) The Trustee shall ensure that the Trust, the Investment Manager, the Project Manager, the Holding Companies and the Portfolio Assets adopt, policies, including corporate governance policies, policies in relation to acquisition of assets from the Sponsor and third parties, policies in relation to the net distributable cash flows, policies in relation to anti-bribery and anti-corruption, policies in relation to the investments by the Trust, policies in relation to environment, safety and health, policies in relation to anti-money laundering, policy on related party transactions and any other policies in relation to their activities related to the Trust, as may be required and applicable, prior to filing of the relevant initial offer document for the initial offer. The terms, such as, manner or requirement of Unitholders' approval for each of these policies, applicability, amendment and termination, of the respective policies shall be set out in each of the policies.

(xxiii) The Trustee shall maintain records in relation to the Trust in accordance with the InvIT Regulations and other applicable law.

(xxiv) The Trustee shall wind up the Trust in accordance with the InvIT Regulations and applicable law. Upon winding up of the Trust, the Trustee shall surrender the certificate of registration to SEBI.

(xxv) The Trustee shall, promptly on occurrence, inform the Sponsor and the Settlor of a cancellation, revocation, suspension, non-renewal of its registration to act as a trustee under Applicable Law or a breach of the terms of such registration that will materially impair its ability to perform its obligations and exercise its powers under the Trust Deed.

(xxvi) The Trustee (either by itself or through the Investment Manager) shall ensure that all related party transactions in relation to the Trust are entered into on an arm's length basis and in accordance with the InvIT Documents and applicable law (including the InvIT Regulations).

3. *Rights of the Trustee*

The Trustee shall have the following rights:

(i) The Trustee may, in consultation with the Investment Manager, in the discharge of its duties, act upon any advice obtained in writing from any bankers, accountants, brokers, lawyers, professionals, consultants, or other experts acting as advisers to the Trustee;

(ii) Subject to the applicable law, no Unitholder shall be entitled to inspect or examine the Trust's premises or properties (including any Holding Company and SPVs) without the permission of the Trustee, who shall give such permission, if necessary, in consultation with the Investment Manager. Further, no Unitholder shall be entitled to require discovery of any information in respect of any detail of the Trust's activities or any matter which may relate to the conduct of the business of the Trust and which information may, in the opinion of the Trustee and the Investment Manager adversely affect the interest of other Unitholders;

(iii) The Trustee shall be entitled to reimburse itself and shall be entitled to charge the Trust, and shall be entitled to be indemnified and be kept indemnified from the Trust with the expenses, outgoings, taxes, levies, and liabilities (including indemnity obligations of the Trust, if any) as set out in the Trust Deed; and

(iv) The Trustee may accept as sufficient evidence for the value of any investment or for the cost price or sale price thereof or for any other fact within its competence, a certificate by a Valuer or any other professional person appointed by the Investment Manager for such purpose.

4. *Liabilities of the Trustee*

The liabilities of the Trustee in terms of the Trust Deed are as follows:

(i) The Trustee shall only be chargeable for such monies, stocks, funds, shares, assets, investment, property and securities as the Trustee shall have actually received and shall not be liable or responsible for any banker, broker, custodian or other person in whose hands the same may be deposited or placed, nor for the deficiency or insufficiency in the value of any investments of the Trust nor otherwise for any involuntary loss. Any receipt signed by the Trustee for any monies, stocks, funds, shares, assets, securities, investment or property, paid, delivered or transferred to the Trustee under or by virtue of the Trust Deed or in exercise of the duties, functions and powers of the Trustee shall effectively discharge the Trustee or the person or persons paying, delivering or transferring the same therefrom or from being bound to see to the application thereof, or being answerable for the loss or misapplication thereof provided that the Trustee and such persons shall have acted in good faith, without negligence and shall have used their best efforts in connection with such dealings and matters;

(ii) The Trustee shall not be under any liability on account of anything done or omitted to be done or suffered by the Trustee in good faith in accordance with, or in pursuance of any request or advice of the Investment Manager;

(iii) The Trustee shall not be under any obligation to institute, acknowledge the service of, appear in, prosecute or defend any action, suit, proceedings or claim in respect of the provisions hereof or in respect of the Portfolio Assets or any part thereof or any corporate action which in its opinion would or might involve it in expense or liability unless the Investment Manager shall so request in writing and the Trustee is satisfied that the value of the investment is sufficient to provide adequate indemnity against costs, claims, damages, expenses or demands to which it may be put as Trustee as a result thereof. The costs in relation to such action, suit, proceedings or claims (whether undertaken upon request of Investment Manager or otherwise) incurred by the Trustee in connection with or arising out of the Trust, shall be borne by the Trust;

(iv) The Trustee shall not be liable in respect of any action taken or damage suffered by it on reliance upon any notice, resolution, direction, consent, certificate, affidavit, statement, certificate of stock, plan of reorganization or (without being limited in any way by the foregoing) other paper or document believed to be genuine and to have been passed, sealed or signed by appropriate authorities or entities;

(v) The Trustee shall not be liable to the Unitholders for doing or failing to do any act or thing which by reason of any provision of any present or future law or regulation made pursuant thereto, or of any decree, order or judgment of any court, or by reason of any request announcement or similar action (whether of binding legal effect or not) which may be taken or made by any person or body acting with or purporting to exercise the authority of any government (which legally or otherwise) it shall be directed or requested to do or perform or to forbear from doing or performing. If for any reason it becomes impossible or impracticable (as determined by the Trustee and the Investment Manager) to carry out any of the provisions of these presents the Trustee shall not be under any liability therefore or thereby;

(vi) The Trustee shall not be responsible to any Unitholder for the authenticity of any signature affixed to any document or be, in any way, liable for any forged or unauthorized signature on or for acting upon or giving effect to any such forged or unauthorized signature. The Trustee shall be entitled but not bound to require that the signature of any Unitholder to any document required to be signed by him under or in connection with these presents shall be verified to the Trustee's reasonable satisfaction;

(vii) If the Trustee is required by the InvIT Regulations or any other applicable law to provide information regarding the Trust or the Sponsor or the Unitholders, the investments made by the Trust and income therefrom and provisions of these presents and complies with such request in good faith, whether or not it was in fact enforceable, the Trustee shall not be liable to the Unitholders or to any other party as a result of such compliance or in connection with such compliance;

(viii) The Trustee shall not incur any liability for any act or omission or (as the case may be) failing to do any act or thing which may result in a loss to a Unitholder (by reason of any depletion in the value of the Portfolio Assets or otherwise), except in the event that such loss is a direct result of fraud, gross negligence, dishonest acts of commissions or omissions or wilful default on the part of the Trustee, where the Trustee fails to exercise due care in relation to its obligations under the Trust Deed, or disregard of duty or breach of duties under the Trust Deed or applicable law by the Trustee;

(ix) If the Trustee engages any external advisors or experts to discharge its obligations under the Trust Deed, or undertakes any work (in consultation with the Investment Manager, in the interest of the Unitholders) which is not covered within the scope of work of the Trustee under the Trust Deed and such additional work is beyond the obligations of the Trustee under applicable law, the Trustee shall be entitled to recover such costs, charges and expenses which the Trustee may incur in this regard, from the funds of the Trust. Further, it is clarified that, the Trustee will not be required to utilize funds held by the Trustee for any other trust for which, Axis Trustee Services Limited is appointed as a trustee, for discharging its obligations as the Trustee under the Trust Deed; and

(x) The liability of the Trustee shall be limited to the extent of the fees received by it, except (a) in case of any fraud, gross negligence, dishonest acts of commissions or omissions or willful default on the part of the Trustee, where the Trustee fails to exercise due care in relation to its obligations under the Trust Deed, or disregard of duty or breach of duties under the Trust Deed or Applicable Law by the Trustee, or (b) any failure on the part of the Trustee to protect the interests of the Unitholders, other than as specified in the Trust Deed.

5. *Offer, Listing and Delisting of Units*

(i) The Trust may issue Units in accordance with and subject to the requirements of applicable law.

(ii) The Trustee shall ensure that the Units are offered and issued in accordance with and within the time period specified under Applicable Law. The Trust shall also comply with the minimum public holding for the Units and minimum number of Unitholders as prescribed under the InvIT Regulations.

(iii) In the event the Units of the Trust are proposed to be delisted, the Trustee shall ensure that the Investment Manager applies for delisting of the Units, as applicable, to SEBI and the designated stock exchanges in accordance with the provisions of Applicable Law. In the event of mandatory delisting of the units, the Investment Manager shall ensure that such delisting is undertaken in accordance with the InvIT Regulations and Applicable Law.

(iv) The Trustee shall cause the depository to effect the book entry of Units to be issued to a depositor into such depositor's securities account.

(v) The Trust shall redeem Units only by way of a buy back or at the time of delisting of Units, as applicable, in accordance with applicable law or pursuant to any other method prescribed under applicable law.

6. *Term, discharge and removal of the Trustee and appointment of new Trustee*

(i) The Trustee shall hold the office of the Trustee until the dissolution of the Trust or the discharge of the Trustee, whichever is earlier.

(ii) The Trustee shall stand discharged as the Trustee of the Trust on the happening of any of the following events:

(a) The Board passes a resolution for the Trustee to be voluntarily wound up or any order of winding up against the Trustee is passed by any court of competent jurisdiction, in which case the Sponsor shall, within 90 (ninety) Business Days of the notice cause the appointment of a new trustee;

(b) In the event that the Trustee desires to resign, it may submit its resignation to the Investment Manager and all the Unitholders setting out reasons for the same and may nominate a new trustee, which has consented in writing to serve as the new trustee. The Unitholders with required majority (as set out in the InvIT Regulations) may approve the aforesaid resignation. A new trustee may be appointed in its place by execution of a deed of appointment between the Investment Manager (acting on behalf of the Unitholders) and the new trustee, to hold office in its place from the date of acceptance of the resignation. The date of acceptance of the Trustee's resignation shall be deemed to be the date of discharge of the Trustee. On such appointment, the Trust shall vest with the new trustee;

(c) If SEBI or any other governmental or regulatory authority passes a direction to remove the Trustee; or

(d) Removal of the Trustee in accordance with the Trust Deed.

Provided that the Trustee shall, upon it becoming aware, promptly intimate the Trust of any event or potential event which may result in any of the foregoing events set out above. In any event, the Trustee shall not be discharged unless a new trustee is appointed in its place and on such appointment of a new trustee the Trustee shall be deemed to have vacated office as Trustee of the InvIT. Further, notwithstanding the discharge of the Trustee in accordance with articles of the Trust Deed, the Trustee shall continue to be responsible and liable for all its past acts and deeds, whether by way of commission or omission, subject to the indemnity of the Trustee as provided in the Trust Deed, during its tenure as Trustee.

(iii) Post allotment or listing of the Units, as the case may be, the Unitholders may by passing a resolution with required majority as set out in the InvIT Regulations, remove the Trustee if the Unitholders have sufficient reason to believe that the acts of the Trustee are detrimental to the interests of the Unitholders. Upon such removal, a new trustee may be appointed as the trustee of the InvIT as prescribed in the InvIT Regulations.

7. *Provisions relating to Unitholders*

(i) The aggregate liability of each Unitholder in the Trust shall be limited to making the capital contribution payable by it in respect of the Units subscribed by it. For the avoidance of doubt, the Unitholders shall not be responsible or liable, directly or indirectly, for acts, omissions or commissions of the Trustee, the Investment Manager, the Sponsor, or any other person, whether or not such act, omission or commission, has been approved by the Unitholders in accordance with the InvIT Regulations or not;

(ii) Each Unit allotted to the Unitholders shall have one vote for any decisions requiring a vote of Unitholders;

(iii) No Unitholder shall enjoy superior voting or any other rights over another Unitholder;

(iv) In no event shall the Trustee or the Investment Manager be bound to make payment to any Unitholder, except out of the funds held by it for that purpose under the provisions of the Trust Deed and the InvIT Documents;

(v) A Unitholder whose name and account details are entered in the depository register shall be the only person entitled to be recognised by the Trustee as having a right, title, interest in or to the Units registered in his name and the Trustee shall recognise such holder as an absolute owner and shall not be bound by any notice to the contrary and shall also not be bound to take notice of or to see to the execution of any trust, express or implied, save as expressly provided or as required by any court of competent jurisdiction to recognise any trust or equity or interest affecting the title of the Units;

(vi) The Unitholders shall not give any directions to the Trustee or the Investment Manager (whether in a meeting of Unitholders or otherwise) if it would require the Trustee or the Investment Manager to do or omit doing anything which may result in:

(a) the Trust or the Trustee, in its capacity as the trustee of the Trust or the Investment Manager, in its capacity as the investment manager of the Trust ceasing to comply with Applicable Law;

(b) interference with the exercise of any discretion expressly conferred on the Trustee by the Trust Deed or the Investment Manager by the Investment Management Agreement provided that nothing provided herein shall limit (i) the right of the Unitholder to require the due administration of the Trust in accordance with the Trust Deed, the InvIT Documents and Applicable Law and/or (ii) the right of the Unitholders in accordance with Regulation 22(5)(f) of the InvIT Regulations to give directions to the Trustee or the Investment Manager in relation to any issue which is detrimental to the Unitholders (in the sole opinion of the Unitholders).

(vii) The depository register shall (save in case of manifest error) be conclusive evidence of the number of Units held by each depositor and in the event of any discrepancy between the entries of the depository register and any statement issued by the depository, the entries in the depository register shall prevail unless the Depositor proves to the satisfaction of the Trustee and the depository that the depository register is incorrect.

(viii) The Unitholders holding Units shall have the right to call for certain matters to be subject to their consent, in accordance with the InvIT Regulations and other applicable law.

(ix) The Unitholders holding Units may, in accordance with the provisions of the InvIT Documents and applicable law, transfer any of the Units to an investor where such investor accepts all the rights and obligations of the transferor and the Trustee or the Investment Manager shall give effect to such transfer in accordance with applicable law.

(x) No person, other than the Sponsor, their related parties and associates ("**Investor**") shall acquire Units, which when taken together with Units held by the Investor and by persons acting in concert with the Investor exceeds 25% (twenty five percent) of the value of the outstanding Units, unless prior approval of the Unitholders holding Units is obtained in accordance with the InvIT Regulations. In the event such approval is not received, the Investor shall provide an exit option to the dissenting Unitholders in terms of the InvIT Regulations and in the manner specified by SEBI.

(xi) The Trustee shall ensure that the Investment Manager obtains the consent of the Unitholders holding Units for the matters prescribed under the InvIT Regulations in accordance with the provisions of the InvIT Regulations and the InvIT Documents.

(xii) In relation to items that require the approval of Unitholders, a meeting of the Unitholders holding Units may be called after giving shorter notice if consent is given in writing or by electronic mode by not less than 95% (ninety five percent) of the Unitholders holding Units entitled to vote at such meeting.

8. *Fees and Right to Reimbursement of Expenses of the Trust Deed*

For acting as the Trustee and discharging its functions and responsibilities as the Trustee, the Trustee shall be entitled to receive from the Trust, during its tenure as Trustee, annual trusteeship fees as agreed in terms of the letter (Ref No. ATSL/CO/2020-21/122) dated August 21, 2020 amended by way of an addendum (Ref No. ATSL/CO/2021-2022/5427) dated November 25, 2021. In addition, the Trustee shall be entitled to recover from the InvIT (i) any legitimate out of pocket expenses incurred by it in relation to its trusteeship of the InvIT, and (ii) any tax or duty including goods and services tax (other than income tax) which is, or

has become as on the date of collection of such tax or duty, leviable under the Applicable Law on the fee payable to the Trustee by the InvIT.

9. *Indemnity*

In addition to the fees, distributions and expense reimbursements as described in the Trust Deed, the Portfolio Assets shall be utilized to indemnify and hold harmless the Trustee from and against any claims, losses, costs, damages, liabilities including legal fees ("**Losses**") suffered or incurred by them by reason of their activities on behalf of the InvIT, unless such Losses resulted from fraud, gross negligence, or dishonest acts of commission or omission of the Trustee, or wilful default (in the case of the Trustee) where the Trustee fails to exercise due care in relation to its obligations under the Trust Deed, or (in the case of the Trustee) disregard of duty or breach of duties under the Trust Deed or Applicable Law by the Trustee.

10. *Term and Termination*

The Trust is subject to dissolution and termination in accordance with and subject to the InvIT Regulations and applicable law:

(i) if the Trust fails to make any offer of the Units, whether by way of public issue or private placement, within the time period stipulated in the InvIT Regulations or any other time period as specified by SEBI, the Trust shall surrender its certificate to SEBI and cease to operate as an investment infrastructure trust, unless the period is extended by SEBI;

(ii) upon the liquidation of all or substantially all of the Portfolio Assets;

(iii) if there are no projects remaining under the Trust and the Trust does not invest in any project for six months thereafter;

(iv) delisting of the Units in accordance with the InvIT Regulations unless such delisting is done for purposes of conversion of a listed trust to an unlisted trust in accordance with the InvIT Regulations and the Trust retains its certificate of registration and continues to undertake the activity of a privately placed and unlisted Trust; or

(v) illegality of the Trust.

11. *Amendment*

The Trust Deed shall not be amended unless approved by the Unitholders holding Units as required under applicable law and approval of relevant regulatory authorities as may be required under Applicable Law; provided however that from the date of execution of the Trust Deed until the Units are issued and allotted to Unitholders, amendment of the Trust Deed or any of its terms or provisions shall be valid or binding provided that such amendment is set forth in writing and duly executed by the parties to the Trust Deed.

C. The Investment Manager – Cube Highways Fund Advisors Private Limited

History and Certain Corporate Matters

Cube Highways Fund Advisors Private Limited is the Investment Manager for the Trust. The Investment Manager is a private company limited by shares incorporated on April 12, 2021, at New Delhi under the Companies Act, 2013 having CIN U74999DL2021FTC379941. The Investment Manager's registered office is situated at B-376, Upper Ground Floor, Nirman Vihar, East Delhi, New Delhi 110 092. Please see the section entitled "*General Information*" on page 124.

Background of the Investment Manager

The authorised equity share capital of the Investment Manager is ₹ 150,000,000 divided into 15,000,000 Equity Shares of ₹ 10 each and the paid-up equity share capital is ₹ 146,500,000 divided into 14,650,000 Equity Shares of ₹ 10 each. Cube Highways Advisory Pte. Ltd. along with its nominee holds 100% of the equity share capital of the Investment Manager.

The principal business of the Investment Manager in terms of its memorandum of association is to:

(a) To act as the investment manager of or for any infrastructure investment trusts or any other portfolio of securities, properties and/or assets of any kind, established in India or in any other country by the Investment Manager or by any other person including bodies corporate, limited liability partnerships, partnerships, trusts, societies, associations of persons (whether incorporated or not) of any other agency or organization with respect to any class of assets, and to thereby settle, administer, manage and deploy funds, acquire, take up, manage, invest, hold, sell, deal or dispose of all or any property, investments, securities or other assets of any kind whatsoever; and

(b) To provide advisory, investment management and business consultancy services on projects relating to highways, logistics and other infrastructure assets and to render all allied services as are usually rendered by investment managers and business consultants whether directly or through third parties in India and abroad.

The cumulative experience of the key personnel (i.e. directors/ partners or employees, as applicable) of the Investment Manager in fund management, advisory services, or development in the infrastructure sector exceeds 30 years. Accordingly, the Investment Manager is qualified to act as such, in terms of Regulation 4(2)(e)(ii) of the InvIT Regulations.

In accordance with the eligibility criteria specified under the InvIT Regulations, the Investment Manager has a consolidated net worth of ₹ 294.44 million as on March 31, 2026.

The Investment Manager is a fit and proper person based on the criteria as specified under Schedule II of the SEBI Intermediaries Regulations. No disciplinary action has been taken by SEBI or any regulatory authority against the Investment Manager or its directors.

Further, neither the Investment Manager nor any of the promoters or directors of the Investment Manager: (i) are or have been debarred from accessing the securities market by SEBI; (ii) are or have been promoters, directors or persons in control of any other company or a sponsor, investment manager or trustee of any other infrastructure investment trust or an infrastructure investment trust which is debarred from accessing the capital market under any order or direction made by SEBI; or (iii) are or have been in the list of wilful defaulters published by the RBI.

Board of Directors of the Investment Manager

The IM Board is responsible for the overall management of the Investment Manager. Please see below the details in relation to the IM Board:

Sr. No.	Name	DIN	Designation
1.	Upendra Kumar Sinha	00010336	Chairman and Independent Director
2.	Jayesh Ramniklal Desai	00038123	Independent Director
3.	Surinder Chawla	09605209	Independent Director
4.	Fereshte Dhunjishaw Sethna	00284941	Independent Director
5.	Sandeep Lakhanpal	07171147	Non-Executive Director
6.	Helly Bharat Ajmera	10240609	Non-Executive Director

Sr. No.	Name	DIN	Designation
7.	Raviraj Vipul Acharya	10707405	Non-Executive Director

Brief Biographies of the Directors of the Investment Manager

Please see below the brief biographies of the directors of the Investment Manager:

1. **Upendra Kumar Sinha** has been an independent director on the board of the Investment Manager since January 25, 2022. Subsequently, he has been appointed the chairman of the IM Board as on May 27, 2026. In the past he has served as the chairman of SEBI. Prior to being the chairman of SEBI, he was the chairman and managing director of UTI Asset Management Company Limited, the chairman of the Association of Mutual Funds in India. He is also a retired officer of the Indian Administrative Service and has held several government positions in state and central governments, including as Joint Secretary (Banking) and Joint Secretary (Capital Markets) in the Ministry of Finance, Government of India. He has also been the chairman of the working group on foreign investment in India and a member of committees set up by the government, including those on liquidity management, foreign institutional investors, the corporate bond market, and investor protection.

2. **Jayesh Ramniklal Desai** has been an independent director on the board of the Investment Manager since January 25, 2022. He holds a bachelor's degree in commerce from the University of Bombay. He is a chartered accountant and admitted as an associate of the Institute of Chartered Accountants of India. He has been associated with Ernst & Young Private Limited and Coca-Cola India. He was also employed with Piramal Enterprises Limited from April 2012 to January 2017. He has also served as a director on the boards of, amongst others, TruBoard Private Limited, Ayana Renewable Power Private Limited, and Piramal Investment Advisory Services Private Limited.

3. **Surinder Chawla** has been an independent director on the board of the Investment Manager since May 20, 2022. He holds a bachelor's degree in technology in chemical engineering from the Indian Institute of Technology, Delhi. He also holds a post-graduate diploma in management from the Indian Institute of Management, Calcutta. He has over 36 years of experience and prior to joining the Investment Manager, he had worked at the International Finance Corporation, a member of the World Bank Group, as its chief investment officer.

4. **Fereshte Dhunjishaw Sethna** has been an independent director on the board of the Investment Manager since March 16, 2023. She holds a bachelor's degree in commerce and a bachelor's degree in law from the University of Bombay. She also holds a master's degree in law from the University of Bombay. She is enrolled on the roll of advocates maintained by the Bar Council of Maharashtra and Goa in 1990. She is also a director on the board of Morrisett Agro Forestry Ventures Private Limited, Morrisett One Harvests Private Limited, Morrisett Agro Plantations Private Limited, Morrisett Litigators Private Limited and Lexnovum Consultaire Private Limited.

5. **Sandeep Lakhanpal** has been a non-executive director on the board of the Investment Manager since June 30, 2022. He holds a bachelor's degree in technology and electrical engineering from Punjab Technical University, Punjab, and a master's degree in business administration with a specialisation in finance from Narsee Monjee Institute of Management Studies, Mumbai. He has over 18 years of experience. He is a managing director at I Squared Capital. Prior to joining I Squared he had been associated with Cube Highways and Transportation Assets Advisors Private Limited, as the head of business development – M&A, CRISIL as a manager in its infrastructure advisory PPP group, and with Ernst & Young as a vice president.

6. **Helly Bharat Ajmera** has been a non-executive director on the board of the Investment Manager since November 07, 2023. She has completed her post-graduation in management from the Indian Institute of Management and graduated as an engineer in telecommunications. She is senior director & head of BCI's Asia Investments. At BCI, she is responsible for investing in and managing Infrastructure & Renewable Resources investments across Asian economies, including India, the Philippines, Indonesia, Singapore, Japan, and Korea. Prior to joining BCI, she has worked with Ernst & Young.

7. **Raviraj Vipul Acharya** has been a non-executive director on the board of the Investment Manager since July 31, 2024. Raviraj V. Acharya is an Investment Manager in the Infrastructure Department at Abu Dhabi Investment Authority. He has over 9 years of experience across investments and corporate finance. Prior to joining Abu Dhabi Investment Authority in 2020, he had worked at Morgan Stanley and Edelweiss Financial Services Limited in India. He is a member of the Institute of Chartered Accountants of India.

Brief profiles of the Key Personnel of the Investment Manager

Please see below the brief biographies of the key personnel of the Investment Manager:

1. **Vinay C. Sekar** has been the Chief Executive Officer of the Investment Manager since July 11, 2022. He holds a bachelor's degree in mechanical engineering from the Indian Institute of Technology, Madras and a

post-graduate diploma in management from the Indian Institute of Management, Ahmedabad. He has over 16 years of experience in infrastructure financing and advisory services. Prior to joining the Investment Manager, he had worked with Cube Highways and Transportation Asset Advisors Private Limited, IndusInd Bank Limited and IFCI Limited.

2. **Pankaj Vasani** has been the Chief Financial Officer of the Investment Manager since July 11, 2022. He holds a bachelor's degree in commerce and a LL.B. degree from the University of Delhi. He is a member of the Institute of Chartered Accountants of India. He is also an associate of the Institute of Chartered Accountants of England and Wales and an associate Certified Public Accountant (CPA) from CPA Australia. He has experience in sectors such as telecom, media/advertising, FMCG/beverages, and the automotive industry. Prior to joining the Investment Manager, he worked with the Vodafone Group, Publicis Groupe, Coca-Cola, and Subros. Among other leadership roles, he has also served as the CEO of Cable & Wireless Global India Private Limited, within the Vodafone group.

3. **Richa Gupta Rohatgi** has been the Compliance Officer of the Investment Manager since January 30, 2025. She is an associate member of The Institute of Company Secretaries of India. She holds a bachelor's degree in law from Chaudhri Charan Singh University, Meerut and a bachelor's in commerce from Hansraj College, Delhi University. She has over 16 years of experience and prior to joining the Investment Manager, she was associated with Bharti Airtel Limited, Eldeco Infrastructure and Properties Ltd, SRL Limited, Pacific Development Corporation Limited and Religare Finvest Limited.

4. **Saurabh Bansal** has been in the employment of the Investment Manager since November 2021 and has been serving as the joint executive vice president – capital structure and budgeting of the Investment Manager since April 1, 2026. He holds a bachelor's degree in technology in electronics and communication engineering from Malaviya National Institute of Technology, Jaipur and a post graduate diploma in industrial management from National Institute of Industrial Engineering, Mumbai and has cleared level III exam of chartered financial analyst from CFA Institute (USA). He has over 13 years of experience and prior to joining the Investment Manager, have worked with Cube Highways and Transportation Asset Advisors Private Limited, Yes Bank Limited, L&T Fincorp Limited and Northern Arc Capital Limited.

5. **Abhijit Saukhyashil Sathe** has been in the employment of the Investment Manager since November 16, 2022, and has been serving as the joint executive vice president – finance of the Investment Manager since April 1, 2026. He holds a bachelor's degree in commerce from the University of Pune. He is a member of the Institute of Chartered Accountants of India. He has over 21 years of experience, and prior to joining the Investment Manager, he has worked with Vodafone group, HSBC group and the TATA group. He has also served as the Chief Financial Officer of Cable and Wireless Global India Private Limited, within the Vodafone group.

6. **Saurabh Kumar** has been in the employment of the Investment Manager since September 1, 2022. He has been serving as the vice president – strategy and investor relations of the Investment Manager since April 1, 2025. He holds a bachelor's degree in technology in civil engineering from the Indian Institute of Technology, Bombay and a post-graduate diploma in management from the Indian Institute of Management, Bangalore. He has over 10 years of experience, and prior to joining the Investment Manager, he worked with Deloitte India and Feedback Infra Private Limited.

7. **Deepan Shah** has been in the employment of the Investment Manager since November 01, 2022. He has been serving as the vice president – legal of the Investment Manager since April 1, 2025. He holds a B.A. LLB (Hons.) degree from National Law University, Delhi. He has more than 9 years of experience, and prior to joining the Investment Manager, he worked with Cube Highways and Transportation Assets Advisors Private Limited and Trilegal.

Key Terms of the Investment Management Agreement

The Investment Manager has entered into the Investment Management Agreement, in terms of the InvIT Regulations, the key terms of which, are provided below.

1. *Powers of the Investment Manager*

   The Investment Manager has been provided with various powers under the Investment Management Agreement in accordance with the InvIT Regulations, including but not limited to:

   (i) The Investment Manager shall take all decisions in relation to the management and administration of Portfolio Assets and the investments of the Trust as may be incidental or necessary for the advancement or fulfilment of the investment objectives of the Trust in accordance with the InvIT Regulations and other applicable law.

   (ii) The Investment Manager shall, subject to such approval as may be required from the Unitholders, make the investment decisions with respect to the underlying assets or projects of the Trust,

including any further investments or divestments, subject to the InvIT Regulations, the InvIT Documents and in accordance with the offer document, and in this regard is also empowered to do the following acts, through and on behalf of the Trust, including:

(a) acquire, hold, manage, trade and dispose of shares, stocks, convertibles, debentures, bonds and other equity or equity-related securities and other debt or mezzanine securities of all kinds issued by any holding company or any SPV or any infrastructure projects in India, whether in physical or dematerialised form, including power to hypothecate, pledge or create encumbrances of any kind on such securities held by the Trust in such holding companies and/or SPVs, or infrastructure projects to be used as collateral security for any borrowings by the Trust;

(b) avail commercial loans, including the power to hypothecate, pledge or create encumbrances of any kind on the Portfolio Assets as collateral security for any such loans availed by the Trust, in accordance with the InvIT Regulations and applicable law;

(c) keep the capital and monies of the Trust in deposit with banks or other institutions, whatsoever, provided that such institutions shall not be a related party or parties to the Trust (as defined in the InvIT Regulations);

(d) accept contributions made to the Trust;

(e) collect and receive the profit, interest, repayment of principal of debt or debt like, or equity or equity like, mezzanine securities, dividend, return of capital of any type by the holding companies, or SPVs, or infrastructure projects and income of the Trust as and when the same may become due and receivable;

(f) invest in securities or in units of mutual funds in accordance with the InvIT Regulations and other applicable law;

(g) invest in money market instruments including government securities, treasury bills, certificates of deposit and commercial papers in accordance with applicable law;

(h) to give, provide and agree to provide to any holding companies, or SPVs financial assistance in the form of investment in the debt securities or share capital of any class including , preference, participating, non-participating, voting, non-voting or other class, and in the form of investment in securities convertible into share capital; and

(i) to invest, acquire, purchase, hold, divest, sale, hypothecate, pledge or otherwise transfer land and building and immovable property of any kind including any rights and interest therein.

(iii) The Investment Manager along with the Trustee shall within a reasonable time from the date of execution hereof, appoint a project manager for the Trust, by execution of the Project Implementation and Management Agreement.

(iv) The Investment Manager shall oversee activities of the Project Manager with respect to compliance with the InvIT Regulations and the Project Implementation and Management Agreement and in terms of the InvIT Regulations and applicable law. The Investment Manager shall obtain a compliance certificate from the Project Manager in the form as may be specified by SEBI, on a quarterly basis or such other intervals as may be prescribed under applicable law.

(v) The Trustee authorizes the Investment Manager to do all such other acts, deeds and things as may be incidental or necessary for the advancement or fulfilment of the investment objectives of the Trust, as set out in the offer document in accordance with the InvIT Regulations and the InvIT Documents.

(vi) The Investment Manager shall have the power to issue and allot Units or other securities, obligations or instruments in accordance with the InvIT Regulations and within such time period as may be prescribed under applicable law. The Investment Manager shall have the power to accept subscriptions to Units of the Trust and issue and allot Units to Unitholders or such other Persons and undertake all related activities under applicable law. The Investment Manager shall also have the power to refund subscription money and pay necessary interest thereon, in accordance with applicable law. Further, the Investment Manager shall, subject to and only in accordance with the terms of the InvIT Documents and applicable law, have the power to transfer the Units. The power of the Investment Manager is subject to the condition that, after the initial offer, no person, other than the Sponsor, its related parties and associates (the "**Investor**") shall acquire or receive Units, which when taken together with Units held by the Investor and by persons acting in concert with the

Investor exceeds 25% (twenty five percent) of the value of the outstanding Units unless prior approval of the Unitholders is obtained in accordance with the InvIT Regulations. In the event such approval is not received, the Investor shall provide an exit option to the dissenting Unitholders in terms of the InvIT Regulations and in the manner specified by SEBI.

(vii) The Investment Manager shall cause the depository to maintain a depository register.

(viii) In accordance with the provisions of the InvIT Regulations and the relevant policies adopted by the Investment Manager, if any, the Investment Manager, shall make such reserves out of the income or capital as it may deem proper, in order to, amongst other things, meet the expenses, liabilities or contingent liabilities of the Trust and any directions of the Trustee in this behalf whether made in writing or implied from their acts shall, so far as the applicable law may permit, be conclusive and binding. Any distribution made from such reserves shall be in accordance with the InvIT Regulations and the InvIT Documents.

(ix) The Investment Manager may cause the Trust to borrow for the purposes of the Trust and the Portfolio Assets subject to any approval of the Unitholders in accordance with the InvIT Regulations and applicable law. The Investment Manager shall also have the power to cause the Trust to create encumbrances of any kind on the Portfolio Assets as collateral security for any such borrowings.

(x) The Investment Manager may cause the Trust to pay, prepay or repay any and all debt raised from any person in accordance with the terms therein and to redeem any debt securities or other securities, obligations or instruments in accordance with the terms thereof issued to persons in compliance with the InvIT Regulations and other applicable law

(xi) The Investment Manager shall have the power to exercise all rights of the Trust in the Portfolio Assets, including voting rights, rights to appoint directors, whether pursuant to securities held by it, or otherwise, in such manner as it deems to be in the best interest of the Trust, and in accordance with the InvIT Regulations, the InvIT Documents and applicable law. Additionally, if the Trust has invested in infrastructure projects through the holding company or SPVs, then the Investment Manager, in consultation with the Trustee, shall appoint the majority of the directors of the holding company(ies) and/or the SPV(s), in accordance with the applicable law, as well as ensure that in every general meeting including the annual general meeting of any SPV or holding company, the voting of the Trust is exercised, in accordance with the InvIT Regulations and applicable law.

(xii) The Investment Manager may use the services of external advisors and rely on the information provided in the due diligence process of assessing investment proposals as it deems necessary in its sole discretion.

(xiii) The Investment Manager, along with the Trustee, shall have the power to employ and pay at the expense of the Trust, any agent in any jurisdiction whether attorneys, solicitors, brokers, banks, trust, companies or other agents, without being responsible for the default of any agent if employed in good faith to transact any business, including without limitation, the power to appoint agents to raise funds, or do any act required to be transacted or done in the execution of the responsibilities in accordance with the Investment Management Agreement including the receipt and payment of moneys and the execution of documents.

(xiv) The Investment Manager may appoint any custodian in order to provide custodian services, and may permit any property comprised in the Trust to be and remain deposited with a custodian or with any person or persons in India or in any other jurisdiction subject to such deposit as authorised by the Trustee and permissible under the applicable law.

(xv) The Investment Manager, in consultation with the Trustee, shall appoint and have the power to appoint, determine the remuneration and enter into, execute, deliver and/to terminate all documents and agreements, any contracts, agreements, including share purchase agreement, deed of right of first offer and refusal, escrow agreements, debt documentation, underwriting agreements and other InvIT documents, any investment pooling agreement, agreement relating to strategic investments, co-investment agreements and other any and all documents and instruments containing customary terms including contractual indemnity with valuers, auditors, registrar and transfer agent, merchant banker, credit rating agency, or any other intermediary or service provider or agent including any amendments or supplements thereto as may be applicable with respect to the activities pertaining to the Trust in a timely manner as per the provisions of the InvIT Regulations and applicable law. The Investment Manager shall appoint an auditor for a period of not more than five consecutive years as provided in the InvIT Regulations. The Investment Manager shall have the power to determine the remuneration of the auditors in consultation with the Trustee. Provided that in the event the Investment Manager is required to take any approval of the Unitholders for approval of remuneration of the auditors or appointment of the auditors, the same shall be obtained in accordance with the requirements as set out in the InvIT Regulations. The Investment Manager shall also have the power

to determine the remuneration of the valuer. The remuneration of the valuer shall not be linked to or based on the value of the Portfolio Assets being valued.

(xvi) In the event of any capital gains tax, income tax, stamp duty or other duties, fees or taxes (and any interest or penalty chargeable thereon) whatsoever becoming payable in any jurisdiction in respect of the Trust or any part thereof or in respect of documents issued or executed in pursuance of the Trust Deed in any circumstances whatsoever, the Investment Manager shall have the power and duty to pay all such duties, fees or taxes (and any interest or penalty chargeable thereon) as well as to create any reserves for future potential tax liability (and any such interest or penalty) out of the Trust's income (and any such interest or penalty), in accordance with applicable law and as the Investment Manager may deem proper. For avoidance of doubt, it is clarified that (i) pursuant to this clause no Unitholder will be required to make a contribution as a capital commitment to the Trust (other than the issue price for Units allotted); and (ii) nothing in this clause pertains to the capital gains tax, income tax, stamp duty or other duties, fees or taxes (and any interest or penalty chargeable thereon) whatsoever becoming payable by the Unitholders, in their respective jurisdictions. The Investment Manager shall exercise due care and prudence in payment of duties and taxes of the Trust and shall endeavour to ensure that there are no material outstanding dues in that behalf, except for any claim or demand made by any tax department or authority subsequently, or any amounts disputed in good faith.

(xvii) The Investment Manager shall have the power to pay InvIT Expenses (as defined in the Investment Management Agreement) out of the funds of the Trust, or from any or all of the Portfolio Assets (as defined in the Investment Management Agreement), in such proportion as may be determined from time to time, and the Investment Manager shall be entitled to reimbursement of any such expenditure duly incurred by the Investment Manager and that is not paid out of the funds of the Trust, subject to the conditions set out in the Investment Management Agreement.

(xviii) The Investment Manager shall have the power to take the opinion of legal / tax counsel in any jurisdiction concerning any difference arising under the Investment Management Agreement or any matter in any way relating to the Investment Management Agreement or to its duties in connection with the Investment Management Agreement, provided that the cost of such opinion shall not be borne by the Trust.

(xix) Subject to applicable law, the Investment Manager shall have the power to:

(a) accept any property before the time at which it is transferable or payable;

(b) pay or allow any equity or claim on any evidence that it thinks sufficient;

(c) accept any composition or any security movable or immovable for any equity or other property;

(d) allow any time of payment of any equity; and

(e) subject to such approval as may be required from the Unitholders, compromise, compound, abandon, submit to arbitration or otherwise settle any equity account, claim or thing whatsoever relating to the Trust or the Investment Management Agreement.

(xx) Subject to the conditions laid down in any offer document, InvIT Documents and applicable law, the Investment Manager may retain the invested capital portion of any proceeds received by the Trust from any holding company or SPV, including through the sale of or any holding company or SPV for the purpose of re-investment.

(xxi) The Investment Manager may make rules to give effect to, and carry out the investment objectives, subject to applicable law. In particular, and without prejudice to the generality of such power, the Investment Manager may provide, in a manner not inconsistent with the provisions of the Investment Management Agreement, the Trust Deed, the InvIT Regulations and other applicable laws, for all or any of the following matters, namely:

(a) manner of maintaining of the records and particulars of Unitholders;

(b) norms of investment by the Trust in accordance with the investment objectives of the Trust and in accordance with the powers and authorities of the Trustee as set out in the Trust Deed and those delegated to the Investment Manager;

(c) matters relating to entrustment, deposit or handing over of any securities or SPVs of the Trust to any one or more custodians and the procedure relating to the holding thereof by the custodian;

(d) such other administrative, procedural or other matters relating to the administration or management of the affairs of the Trust and which matters are not, by their very nature, required to be included or provided for in the Trust Deed or the Investment Management Agreement by the management thereof and which matters are not inconsistent with the provisions thereof;

(e) procedure for seeking the vote of the Unitholders either by calling a meeting or through postal ballot or otherwise; and

(f) procedure for summoning and conducting of meetings of Unitholders.

(xxii) Subject to applicable law, no Unitholder shall be entitled to inspect or examine the Trust's premises or properties without the prior permission of the Investment Manager, who shall not unreasonably withhold such permission. Further, no Unitholder shall be entitled to require discovery of any information with respect to any detail of the Trust's activities or any matter which may be related to the conduct of the business of the Trust and which information may, in the opinion of the Investment Manager, adversely affect the interest of other Unitholders.

(xxiii) The Investment Manager may cause the Trust to buyback the Units from the Unitholders at the end of the term of the Trust or any other time or in any other manner in accordance with applicable law and any policies formulated by the Investment Manager in this regard, if so directed by the Trustee.

(xxiv) The Investment Manager shall provide the Trustee with advice and recommendations regarding the extension of loans from the Trust to the holding company and/or the SPVs and also subscription to debt securities or quasi-debt securities or any similar kind of securities issued by the holding company and/or SPVs to the Trust or extension of loans from the Trust in compliance with applicable law.

(xxv) The Investment Manager, in accordance with the InvIT Regulations and the Investment Management Agreement, shall have the power to exercise all rights of the Trust in the Portfolio Assets, including voting rights, rights to appoint directors, whether pursuant to securities held by it, or otherwise, in such manner as it deems to be in the best interest of the Trust, and in accordance with the InvIT Regulations and applicable law. Additionally, if the Trust has invested in infrastructure projects through the Holding Company or SPVs, then the Investment Manager, in consultation with the Trustee, shall appoint the majority of the directors of the Holding Company(ies) and/or the SPV(s), in accordance with the applicable law, as well as ensure that in every general meeting including the annual general meeting of any SPV or Holding Company, the voting of the Trust is exercised, in accordance with the InvIT Regulations and applicable law.

(xxvi) The Investment Manager shall also have the following powers and authorities, subject to the InvIT Regulations, applicable law and the InvIT Documents:

(a) to institute, conduct, compromise, compound, or abandon any legal proceedings for or on behalf of or in the name of the Trust, and to defend, compound or otherwise deal with any such proceedings against the Trust or the Investment Manager or the officers of the Investment Manager or concerning the affairs of the Trust, and also to compound and allow time for payment or satisfaction of any equity due and of any claims or demands by or against the Trust and to refer any differences to arbitration and observe and perform any awards thereof;

(b) to make and give receipts, releases and other discharges for moneys payable to the Trust and for the claims and demands of the Trust;

(c) to enter into all such negotiations and contracts, and, execute or terminate and do all such acts, deeds and things for or on behalf of or in the name of the Trust as it may consider expedient for or in relation to any of the matters or otherwise for the purposes of the Trust;

(d) to ascertain, appropriate, declare and distribute or reinvest the surplus generally or under the Trust, to determine and allocate income, profits, expenses and gains in respect of the Trust to and amongst the Unitholders, to carry forward, reinvest or otherwise deal with any surplus and to transfer such sums, as it may deem fit, to one or more reserve funds which may be established by it, in each case in accordance with the InvIT Documents and the InvIT Regulations;

(e) to open one or more bank accounts and demat accounts for the purposes of the Trust, to deposit and withdraw money and/or securities, and fully operate and manage any such accounts fully;

(f) to sign, seal, execute, deliver and register according to applicable law all deeds, documents, and assurances in respect of the Trust;

(g) to ascertain, assess and calculate the net distributable cash flows of the Trust in accordance with the Trust Deed, the distribution policy adopted by the Trust, the InvIT Regulations, InvIT Documents, and applicable law;

(h) pay out of the income of the Trust, after deducting all expenses, the income and other distributions in accordance with the Trust Deed, InvIT Regulations and applicable law;

(i) take into their custody or control all the capital, assets, property of the Trust and hold the same in trust for the Unitholders in accordance with the Trust Deed, applicable law and the InvIT Regulations;

(j) generally to exercise all such powers as it may be required to exercise under the InvIT Regulations and applicable law for the time being in force and do all such matters and things as may promote the investment objectives of the Trust or as may be incidental to or consequential upon the discharge of its functions and the exercise and enforcement of all or any of the powers and rights under the Investment Management Agreement, applicable Law, InvIT Documents and the InvIT Regulations;

(k) together with the Trustee, initiate, prosecute or defend any action or other proceedings in any court of law or through arbitration or in any other manner for recovery of debts or sums of money, right, title or interest, property, claim, matter or thing whatsoever now or hereafter to become due or payable or in any way and belonging to the Trust by any means or on any account whatsoever in respect of and pertaining to the investments made by it and the same actions or proceedings or suits to discontinue or settle, as it shall in its best judgment or discretion deem fit;

(l) to issue statement of accounts or Unit certificates (if requested) to the Unitholders on behalf of the Trustee in accordance with applicable law. To submit Units for dematerialisation and to make all applications and execute all documents with the depositories and depository participants as may be necessary in this regard;

(m) to set up such systems and procedures, and submit such reports, as may be required by the Trustee and/or Unitholders as necessary for effective monitoring of the functioning of the Trust.

2. *Duties of the Investment Manager*

The Investment Manager shall perform its duties as required under the Investment Management Agreement in accordance with the InvIT Regulations, including but not limited to:

(i) The Investment Manager shall carry out and conduct its business in a proper and efficient manner in the best interest of the Unitholders. Further, it shall at all times exercise due diligence in carrying out its duties and protecting the interest of the Unitholders.

(ii) The Investment Manager shall coordinate with the Trustee, as may be necessary, with respect to the operations of the Trust.

(iii) The Investment Manager shall ensure that the valuation of the Portfolio Assets is done by the valuer(s) in accordance with Regulation 21 of the InvIT Regulations.

(iv) The Investment Manager shall arrange for adequate insurance coverage for the Portfolio Assets in accordance with the InvIT Regulations. The Investment Manager shall ensure that assets held by the Holding Companies and the Portfolio Assets are adequately insured in accordance with the InvIT Regulations.

(v) The Investment Manager shall maintain proper books of accounts, documents and records with respect to the Trust, in the manner set out in the Trust Deed, to give a true, fair and accurate account of the investments, expenses, earnings, profits etc. of the Trust. The financial year of the Trust shall begin from the date of the Trust Deed and shall end on the immediately succeeding 31st of March and on the anniversary thereof in each succeeding year, unless otherwise determined. The Investment Manager shall ensure that audit of the accounts of the Trust by the auditors is undertaken in accordance with and in the frequency mentioned in the InvIT Regulations and such report is submitted to the stock exchange(s) within the time stipulated by the stock exchange(s), if any, and in accordance with the InvIT Regulations.

(vi) The Investment Manager shall declare distributions to Unitholders in accordance with the InvIT Regulations and InvIT Documents. Subject to applicable law, such percentage of the net distributable cash flows of the Holding Companies and SPVs, shall be distributed to the Trust, in terms of the InvIT Documents and InvIT Regulations. Such declared distributions shall be made within the time period prescribed by the InvIT Regulations. The Investment Manager shall maintain a record (for such periods as may be prescribed by the InvIT Regulations) of the distributions declared and made to the Unitholders.

(vii) The Investment Manager shall convene meetings of the Unitholders and maintain records pertaining to the meetings in accordance with the InvIT Regulations. The Investment Manager shall be responsible for all the activities pertaining to conducting of meeting of the Unitholders, subject to oversight by the Trustee in all cases other than where the meetings are on issues pertaining to the Trustee. Provided that, for Unitholder meeting related to issues related to Investment Manager such as change, removal or change in control of the Investment Manager, the Trustee shall be required to obtain approval of the Unitholders and consequently, the Unitholder meetings shall be convened and conducted by the Trustee.

(viii) The Investment Manager shall intimate the Trustee prior to any change in control of the Investment Manager to enable the Trustee to seek prior approval from the Unitholders and SEBI or any other authorities in accordance with the InvIT Documents, InvIT Regulations and applicable law, in this regard and shall ensure that no such change is given effect to, until the approval of the Unitholders and SEBI has been obtained, or the Investment Management Agreement is terminated and a new investment manager has been appointed in accordance with the terms of the Investment Management Agreement, or in compliance with any other requirement under the InvIT Documents, InvIT Regulations and applicable law.

(ix) The Investment Manager will monitor the Trust, including monitoring current and projected financial position of the Trust and the Portfolio Assets. The Investment Manager shall place before its board of directors, a report on the activity and performance of the Trust in accordance with the InvIT Regulations. The Investment Manager shall designate an employee from the team or a director as the compliance officer for monitoring of compliance with the InvIT Regulations and any circulars or guidelines issued thereunder and intimating SEBI in case of non-compliance.

(x) The Investment Manager shall maintain records pertaining to the activity of the Trust in terms of the InvIT Regulations.

(xi) The Investment Manager shall adopt, as applicable, and shall ensure that, the Trust, the Project Manager, the holding companies and the SPVs adopt policies, including corporate governance policies, policies in relation to acquisition of assets from the Sponsor and third parties, policies in relation to the net distributable cash flows, policies in relation to anti-bribery and anti-corruption, policies in relation to the investments by the Trust, policies in relation to environment, safety and health, policies for anti-money laundering, policy on related party transactions and any other policies, in relation to their activities related to the Trust as may be required and applicable, prior to filing of the relevant initial offer document for the initial offer. The terms, such as, manner or requirement of Unitholders' approval for each of these policies, applicability, amendment and termination, of the respective policies shall be set out in each of the policies.

(xii) The Investment Manager shall manage the Trust in accordance with the InvIT Regulations, the InvIT Documents, the investment objectives of the Trust and applicable laws, and shall ensure that the investments made by the Trust are in accordance with the investment conditions enumerated in the InvIT Regulations, applicable law and in accordance with the investment objectives and the InvIT Documents and are solely in the interest of Unitholders.

(xiii) The Investment Manager shall review the transactions carried out between the Project Manager and its associates and where the Project Manager has advised that there may be a conflict of interest, shall obtain confirmation from a practising chartered accountant or a valuer, as applicable, that such transaction is on an arm's length basis.

(xiv) The Investment Manager shall ensure adequate and timely redressal of all Unitholders' grievances pertaining to the activities of the Trust, in accordance with the InvIT Regulations.

(xv) The Investment Manager shall submit to the Trustee:

(a) quarterly reports on the activities of the Trust including receipts for all funds received by it and for all payments made, status of compliance with the InvIT Regulations, specifically Regulations 18, 19 and 20 of the InvIT Regulations, performance report, status of development of under-construction projects, within the time period specified under the InvIT Regulations;

(b) valuation reports as required under the InvIT Regulations within the time period specified under the InvIT Regulations;

(c) proposal to acquire, sell or develop, or bid for any asset or project or expand existing completed assets or projects along with rationale for the same;

(d) details of any action which requires approval from the Unitholders as may be stipulated under the InvIT Regulations;

(e) details of transactions it enters into with its associates;

(f) details of any other material fact including change in its directors, change in its shareholding, any legal proceedings that may have a significant bearing on the activity of the Trust, within such period as stipulated under applicable law;

(g) details of any breach of the investment conditions specified under the InvIT Regulations or of any borrowings exceeding such percentage of the value of the Portfolio Assets as may be prescribed by the InvIT Regulations, in each case, on account of market movements of the price of the Portfolio Assets;

(h) such information, document and records as pertaining to the activities of the Trust and as may be reasonably necessary for the Trustee with respect to its responsibilities under the Trust Deed or the InvIT Regulations and applicable law;

(i) such other information, document and records as pertaining to its activities, obligations, duties and responsibilities under the Investment Management Agreement or the InvIT Regulations and applicable law; and

(j) any other reports, presentations, documents, as may be required under the InvIT Documents and applicable law including the InvIT Regulations.

In the event of failure of the Investment Manager to submit information or reports as specified above, or such reports as requested by Trustee to be delivered to the Trustee, as may be necessary for effective monitoring of the functioning of the Trust, in a timely manner and in terms of the InvIT Regulations, the Trustee shall intimate SEBI.

(xvi) The Investment Manager shall submit to the Unitholders such information, document and records as pertaining to the activities of the Trust or having bearing on the operation or performance of the Trust and/or the Portfolio Assets as may be required by the Unitholders in accordance with InvIT Regulations and other applicable law and subject to compliance with Insider Trading Regulations and other applicable law.

(xvii) The Investment Manager shall be responsible for all activities pertaining to the issue and listing of the Units of the Trust, in accordance with applicable law, including:

(a) filing of offer document with SEBI;

(b) filing the offer document with SEBI and stock exchange(s), in the event the Trust is listed or proposes to be listed, within the prescribed time period;

(c) dealing with all matters up to allotment of Units to the Unitholders;

(d) obtaining in-principle approval and final listing and trading approvals from the stock exchanges, in the event the Trust is listed or proposes to be listed; and

(e) dealing with all matters relating to the issue and listing of the Units as specified under Chapter IV of the InvIT Regulations and all matters relating to the offer and issue of Units under Chapter VIA of the InvIT Regulations and any guidelines as may be issued by SEBI in this regard, as applicable. The Trust shall also comply with the minimum public holding for the Units and minimum number of Unitholders as prescribed under the InvIT Regulations.

(xviii) The Investment Manager is also responsible for ensuring that all relevant provisions of the InvIT Regulations and applicable law have been complied with and that all statements and disclosures made in any offer document are material, true, correct, not misleading and are adequate disclosures in order to enable the investors to make an informed decision and are in accordance with the InvIT Regulations and applicable law, and such offer document should not contain any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein,

in the light of the circumstances under which they were made, not misleading, and shall include such other disclosures as may be specified by SEBI.

(xix) In the event the Trust is listed and in case of occurrence of any event specified in Regulations 17(1)(a) to 17(1)(g) of the InvIT Regulations, the Investment Manager shall apply for delisting of units of the Trust to SEBI and the designated stock exchange in accordance with the InvIT Regulations and applicable law. The Investment Manager shall, on the instruction of the Trustee, wind up the Trust in accordance with applicable law. Upon winding up of the Trust, the Trustee shall surrender the certificate of registration to SEBI.

(xx) The Investment Manager shall within the time period prescribed under the InvIT Regulations, submit half-yearly reports, annual reports and any other such reports including quarterly reports, if applicable, as may be required under the InvIT Regulations to all the Unitholders electronically or through physical copies and to the designated stock exchange.

(xxi) The Investment Manager shall, in accordance with the requirements of the InvIT Regulations and other applicable law, including any requirements prescribed by SEBI or the stock exchange(s) from time to time, disclose half-yearly reports and any other such reports, as may be required under the InvIT Regulations, within the time period prescribed under the InvIT Regulations to the stock exchange(s) and provide any information having bearing on the operation or performance of the Trust, as well as price sensitive information and other information that is required in terms of the InvIT Regulations and applicable law, including in relation to intimating SEBI in case of any discrepancy in the operation of the InvIT with the InvIT Regulations and the InvIT Documents, as required under applicable law.

(xxii) The Investment Manager (along with the Trustee) shall ensure that all related party transactions in relation to the Trust and Portfolio Assets are on an arms' length basis in accordance with relevant accounting standards, in the best interests of the Unitholders, and are consistent with the Investment Objectives of the Trust and shall be disclosed in accordance with the InvIT Regulations

(xxiii) Without prejudice to any other provision of the Investment Management Agreement and the InvIT Regulations, the Investment Manager will also have the following duties and obligations:

(a) ensure that computation and declaration of net asset value of the Trust is based on the valuation done by the valuer in accordance with the InvIT Regulations and applicable law and is disclosed to the stock exchanges in accordance with the InvIT Regulations and applicable law, if applicable, within the time period specified under the InvIT Regulations;

(b) maintain regular interaction with the Trustee regarding performance of the Trust and providing the Trustee with any information in relation to the operations of the Trust as maybe required under applicable law;

(c) conducting its affairs and the affairs of the Trust in such a manner that no Unitholder will have any personal liability with respect to any liability or obligation of the Trust;

(d) keeping the Unitholders of the Trust informed and updated on investment activities of the Trust in accordance with the terms of the InvIT Documents;

(e) collecting all dividends, fees, property and other payments due and receivable by the Trust declaring distribution to the Unitholders in the manner set out in the Trust Deed and in terms of the InvIT Regulations and applicable law;

(f) to ensure that no commission or rebate or any other remuneration, arising out of transactions pertaining to the Trust is collected by it or its associates, other than as specified in the offer document or any other document as may be specified by SEBI for the purpose of the issue of the Units of the Trust;

(g) to ensure that the Portfolio Assets and/ or Holding Company(ies), have proper legal titles, to the extent applicable, and that all the material contracts entered into on behalf of the Trust or the Portfolio Assets are legal, valid, binding and enforceable by and on behalf of the Trust;

(h) to ensure that the activities of the intermediaries or agents or service providers appointed by it are in accordance with the InvIT Regulations or any guidelines or circulars issued thereunder;

(i) to ensure that any possible conflict of interest involving its role as Investment Manager is reported to the Trustee;

(j) to ensure that disclosures or reporting to Unitholders, SEBI, the Trustee and the designated stock exchange(s) are in accordance with the InvIT Regulations and applicable law;

(k) to ensure compliance with reporting and disclosure requirements under applicable law, and in case of any delay or discrepancy, to rectify such delay or discrepancy on an urgent basis;

(l) submit a compliance certificate to the Trustee, in the form and at such intervals as may be specified under the InvIT Regulations and Applicable Law;

(m) provide SEBI, the designated stock exchange and Trustee, where applicable, such information as may be sought by SEBI or by the designated stock exchange or Trustee pertaining to the activity of the Trust;

(n) to immediately notify the Trustee, the Unitholders and SEBI (if required) of any act which is detrimental to the interest of the Unitholders;

(o) to fulfil any other duty, obligation and responsibility that may be required of the Investment Manager, in accordance with, and within the timelines prescribed under (if any) the provisions of the InvIT Regulations

(p) to inform the Trustee in writing about any change in the representations and warranties provided under the Investment Management Agreement; and

(q) taking any other actions reasonably incidental to any of the foregoing, or necessary or convenient in order to fully effect or evidence any action or transaction contemplated under the Investment Management Agreement.

(xxiv) The Investment Manager shall provide to the Trustee such assistance as may be required by the Trustee in fulfilling its obligation towards the Trust under applicable law or as may be required by any regulatory authority with respect to the Trust.

(xxv) The assets and liabilities of the Trust shall at all times be segregated from the assets and liabilities of the Investment Manager. The assets held under the Trust shall be held by the Trustee for the exclusive benefit of the Unitholders and such assets shall not be subject to the claims of any creditor or any person claiming against the Investment Manager.

3. *Liabilities of the Investment Manager*

The liabilities of the Investment Manager in terms of the Investment Management Agreement are as follows:

(i) the Investment Manager shall not be liable in respect of any action taken or damage suffered by it on reliance upon any notice, resolution, direction, consent, certificate, affidavit, statement, certificate of stock, plan of reorganization or (without being limited in any way by the foregoing) other paper or document believed to be genuine and to have been passed, sealed or signed by appropriate authorities or entities, after exercising due care in accordance with customary industry standards.

(ii) the Investment Manager shall not be liable to the Unitholders for doing or failing to do any act or thing which by reason of any provision of any present or future law or regulation made pursuant thereto, or of any decree, order or judgment of any court, or by reason of any request, announcement or similar action (whether of binding legal effect or not) which may be taken or made by any person or body acting with or purporting to exercise the authority of any government (which legally or otherwise) it shall be directed or requested to do or perform or to forbear from doing or performing. If for any reason it becomes impossible or impracticable (as determined by the Trustee and the Investment Manager) to carry out any of the provisions of the Investment Management Agreement, the Investment Manager shall not be under any liability. However, it shall duly inform the Trustee and the Unitholders of the same.

(iii) if the Investment Manager is required, by the InvIT Regulations or any other applicable law to provide information regarding the Trust and/or the Unitholders, the Trust investments and income therefrom and provisions of the Investment Management Agreement and complies with such request in good faith, whether or not it was in fact enforceable, the Investment Manager shall not be liable to the Unitholder or any of them or to any other party as a result of such compliance or in connection with such compliance.

(iv) the Investment Manager shall not incur any liability for any act or omission which may result in a loss to a Unitholder (by reason of any depletion in the value of the Portfolio Assets or otherwise), except in the event that such loss is a result of fraud or gross negligence or dishonest acts of commission or omission or wilful default on the part of the Investment Manager, or disregard of

duty or breach of duties under the Investment Management Agreement or applicable law by the Investment Manager.

(v) if the distributions, after being declared, are not made within the period prescribed in the InvIT Regulations, the Investment Manager shall be liable to pay interest to the Unitholders at the rate as may be prescribed in the InvIT Regulations until the distribution is made, and such interest shall not be recovered in the form of fees or any other form payable to the Investment Manager by the Trust. In the event of delay or non-payment of such interest by the Investment Manager within 30 days of such interest becoming due, the Trustee shall set off the relevant amount against the management fees payable to the Investment Manager.

(vi) the Investment Manager shall not be liable to any Unitholder for the authenticity of any signature or of any seal affixed to any endorsement or other document affecting the title to or the transmission of Units or interests in the InvIT or of any investments of the InvIT or be in any way liable for any forged or unauthorized signature or seal affixed to such endorsement, transfer or other document, or for acting upon or giving effect to any such forged or unauthorized signature or seal, so long as the Investment Manager was not aware that such signature, seal or document was unauthorized or forged and acted in good faith thereto. The Investment Manager shall be bound to require that the signature of any Unitholder to any document required to be signed by such Unitholder, under or in connection with these presents shall be verified to its reasonable satisfaction.

4. *Indemnity*

(i) in addition to the fees, distributions and expense reimbursements described, subject to any exceptions set out in the InvIT Documents, the Trustee (on behalf of the Trust) shall, from the Portfolio Assets, indemnify and hold harmless the Investment Manager and its affiliates, respective officers, directors, shareholders, partners, members, employees, advisors and agents ("**Indemnified Parties**") from and against any direct and actual claims, actions, losses, damages, liabilities, suits, proceedings and reasonable costs and expenses including legal fees ("**Losses**") suffered or incurred by them by reason of their activities on behalf of the Trust, unless such Losses have resulted from fraud or gross negligence or dishonest acts of commission or omission or wilful default on the part of the Investment Manager, or disregard of duty or breach of duties under the Investment Management Agreement or applicable law by the Investment Manager.

(ii) the Trust (acting through the Trustee) and the Trustee's directors, employees and officers acting on behalf of the Trust (collectively, the "**Trustee Party**") shall be indemnified by the Investment Manager against any and all Losses, incurred or suffered by the Trustee Party in connection with the breach of any of the terms of this Agreement by the Investment Manager, or failure in furnishing information required by SEBI or any regulatory authority with respect to the Trust, or furnishing incorrect information by the Investment Manager under the InvIT Regulations or related to InvIT including in any offer document, or arising out of gross negligence, wilful default or misconduct or fraud on part of the Investment Manager, in carrying out its obligations under the Investment Management Agreement, the Trust Deed, the other InvIT Documents any information memorandum / offer document and applicable law. The Trustee acknowledges and agrees that the aggregate maximum liability of the Investment Manager in each financial year shall be limited to the aggregate fees paid to the Investment Manager for the immediately preceding one financial year, provided that such aggregate maximum liability shall not be applicable in the event such liability of the Investment Manager to indemnify the Trustee Party for losses or damages suffered arising out of any gross negligence, wilful default or misconduct or fraud of the Investment Manager.

5. *Termination*

(i) subject to the other provisions of the Investment Management Agreement, the Investment Management Agreement shall continue during the term of the Trust and shall terminate upon dissolution of the Trust.

(ii) the Investment Management Agreement shall be effective from the date of execution of the Investment Management Agreement and shall terminate in accordance with the terms of the Investment Management Agreement.

(iii) the appointment of the Investment Manager may be terminated by the Trustee or the Unitholders in accordance with the procedure specified under the InvIT Regulations.

(iv) the Unitholders, other than any party related to the transactions and its associates holding not less than such percentage by value as specified under the InvIT Regulations, may apply in writing to the Trustee for removal of the Investment Manager.

(v) subject to the approval of Unitholders (as required) and compliance with other requirements under applicable law, the Investment Management Agreement may be terminated:

(a) by the Investment Manager by delivery of a written notice to the Trustee, subject to appointment of new Investment Manager in accordance with the Investment Management Agreement and the InvIT Regulations; or

(b) by the Trustee in accordance with applicable law; or

(c) by any Party by delivery of a written notice to the other Party upon the bankruptcy of such other Party, or if winding up or liquidation proceedings are commenced against such other Party (and such proceedings persist for a period of more than three months).

(vi) after approval from the Unitholders and SEBI in accordance with the InvIT Regulations, the Trustee shall appoint a new investment manager and execute a new investment management agreement within three months from the termination of the earlier investment management agreement in accordance with applicable law. The Trustee shall also ensure that the new investment manager stands substituted as a party in all documents to which the Investment Manager was a party. The Investment Manager shall remain in office until the appointment of a new investment manager. The Investment Manager shall continue to be liable for all its acts and omissions and commissions during its tenure as Investment Manager notwithstanding its termination.

(vii) upon removal or replacement of the Investment Manager, the Investment Manager shall, within a period of 30 business days, transfer custody of the Trust to the Trustee and give the Trustee all books of accounts, correspondence, documents and records relating to the Trust which the Investment Manager has in its possession. In the event of removal or resignation of the Investment Manager, the Investment Manager shall be entitled to receive management fees only up to the end of its term.

Notwithstanding anything contained hereinabove, (i) in the event that the offer of Units does not occur within the time period stipulated in the InvIT Regulations or such other date as may be mutually agreed to between the Investment Manager and the Trustee, or (ii) in the event of cancellation of registration of the Trust by SEBI, or (iii) winding up of the Trust, then the Investment Management Agreement shall automatically terminate without any liability on any party.

D. The Project Manager – Cube Highways Asset & Project Advisory Private Limited

History and Certain Corporate Matters

Cube Highways and Transportation Assets Advisors Private Limited, was the erstwhile project manager whose engagement continued up to June 25, 2026. Cube Highways Asset & Project Advisory Private Limited is the current Project Manager in respect of the Trust with effect from June 26, 2026. The Project Manager is a private company incorporated on February 24, 2026, under the Companies Act, 2013 having CIN U74909DC2026PTC4691. The Project Manager's registered office is situated B-376, Upper Ground Floor, Nirman Vihar, East Delhi, Delhi, India, 110092. The Project Manager is an Indian entity providing advisory services in the infrastructure sector. Currently, it has entered into project management agreements with several companies in India for providing infrastructure advisory services.

Background of the Project Manager

The Project Manager oversees the operations and maintenance of the entire portfolio of the 26 projects (as on June 30, 2026) of the Trust.

Neither the Project Manager nor any of the promoters or directors of the Project Manager (i) are or have been debarred from accessing the securities market by SEBI; (ii) are or have been a promoter, director or person in control of any other company or a sponsor, investment manager or trustee of any other infrastructure investment trust or an infrastructure investment trust which is debarred from accessing the capital market under any order or direction made by SEBI; and/or (iii) are or have been declared a wilful defaulter by any bank or financial institution or consortium thereof in accordance with the guidelines on wilful defaulters published by the RBI.

Brief profiles of the Directors of the Project Manager

Please see below the brief biographies of the Directors of the Project Manager:

1. **Vinay Chandramouli Sekar**

He has been the director of the Project Manager since its' incorporation. He holds a bachelor's degree in mechanical engineering from the Indian Institute of Technology, Madras and a post-graduate diploma in management from the Indian Institute of Management, Ahmedabad. He has over 16 years of experience in infrastructure financing and advisory services. Prior to joining the Investment Manager, he had worked with

Cube Highways and Transportation Asset Advisors Private Limited, IndusInd Bank Limited and IFCI Limited.

2. **Dr. Mukul Shastry**

Mukul Shastry has been the Director of the Project Manager since its' incorporation. He holds a bachelor's, master's and doctorate in Law from the University of Rajasthan, Jaipur, and is an alumnus of the Indian Institute of Management, Ahmedabad, where he completed the PGPX program (one-year full time MBA). He is also a qualified company secretary and has cleared the CAIIB. His career spans legal practice, academia as an assistant professor at National Law University, Jodhpur, and central banker as a legal officer with the Reserve Bank of India

3. **Bovin Kumar**:

Bovin Kumar has been the director of the Project Manager since June 9, 2026. He holds a bachelor's degree in civil engineering from Regional Engineering College Hamirpur (HP) and master's degree in technology from Indian Institute of Technology, Kanpur. He also holds executive post-graduate diploma in international business from the Indian Institute of Foreign Trade, New Delhi. He has over 25 years of experience in designing, development and operating & maintaining of roads. Prior to joining the Project Manager he was associated with Cube Highways and Transportation Assets Advisors Private Limited as Chief Executive Officer and had worked with Ramboll, CH2MHILL (now Jacobs), Halcrow (now Jacobs), National Highways Authority of India and Ministry of Road Transport (Govt of India).

4. **Pankaj Vasani**

Pankaj Vasani has been the director of the Project Manager since June 9, 2026. He holds a bachelor's degree in commerce and a LL.B. degree from the University of Delhi. He is a member of the Institute of Chartered Accountants of India. He is also an associate of the Institute of Chartered Accountants of England and Wales and an associate Certified Public Accountant (CPA) from CPA Australia. He has experience in sectors such as telecom, media/advertising, FMCG/beverages, and the automotive industry. Prior to joining the Project Manager, he worked with the Vodafone Group, Publicis Groupe, Coca-Cola, and Subros. Among other leadership roles, he has also served as the CEO of Cable & Wireless Global India Private Limited, within the Vodafone group.

Please see below the brief biographies of the key personnel of the Project Manager:

1. **Dr. C. S. Bhagavan Raju**

Dr. C. S. Bhagavan Raju has been associated with Cube Highways Asset & Project Advisory Private Limited since June 26, 2026, as chief operating officer. Prior to this, he was associated with Cube Highways and Transportation Assets Advisors Private Limited from July 6, 2022 to June 25, 2026. He holds a bachelor's of technology in civil engineering from Jawaharlal Nehru Technological University, Kakinada, A.P, Master of Engineering from University of Poona, and a Doctor of Philosophy (PhD) in civil engineering, specializing in flexible pavements from JNTU, Kakinada, A.P. With over 32 years of experience in the roads sector, Dr. Raju has extensive expertise in quality control, construction, and project management, encompassing planning, implementation, and commissioning of infrastructure projects. Prior to joining Cube Highways and Transportation Assets, he held key positions with leading organizations such as Afcons Infrastructure, Land Transport Authority, Singapore, Soma Enterprise Ltd., Gammon Infrastructures Pvt Ltd., Ashoka Buildcon Ltd., and Megha Engineering & Infrastructure Ltd.

2. **Rahul Shankar**

Rahul Shankar has been the group chief human resources officer of Cube Highways Asset & Project Advisory Private Limited since June 26, 2026. Prior to this, he was associated with Cube Highways and Transportation Assets Advisors Private Limited from July 7, 2023, to June 25, 2026. He holds master's in business administration from Ecole Nationale des Ponts et Chaussèes and master's in political science from University of Lucknow. He has over 19 years of experience in human resources, organization development, talent development & succession planning, and employee engagement & culture transformation, across infrastructure and diversified business environments. Prior to joining Cube Highways and Transportation Assets Advisors Private Limited as chief human Resources Officer on July 7, 2023, he had worked with KEC International Limited, Kenersys Kalyani Ltd, Dalkia Energy, Punj Lloyd, and Bharti Teletech Ltd.

3. **Anuj Maitrey**

Anuj Maitrey has been associated with Cube Highways Asset & Project Advisory Private Limited since June 26, 2026, as Head-Operations. Prior to this, he was associated with Cube Highways and Transportation Assets Advisors Private Limited from September 25, 2017 to June 25, 2026. He has completed his bachelor's in technology in civil engineering, from Dr. Ram Manohar Lohia Avadh University, and holds a master's degree

in planning (transport) from School of Planning and Architecture, New Delhi and MBA from Leeds University Business School, Leeds (United Kingdom). Prior to joining Cube Highways and Transportation Assets Advisors Private Limited, Anuj has worked with Halcrow Consulting India Limited (now Jacobs), IL&FS Infrastructure Development Corporation, Isolux Corsan Concessions (now Roadis), Ramboll India, and Steer Davies Gleave, India.

4. **Neeraj Singh**

Neeraj Singh has been associated with Cube Highways Asset & Project Advisory Private Limited since June 26, 2026, as joint executive vice president – maintenance. Prior to this, he was associated with Cube Highways and Transportation Assets Advisors Private Limited from April 1, 2018 to June 25, 2026. He brings over 25 years of experience in the construction and maintenance of highways and bridges, and tunnel construction. He holds a graduate degree in civil engineering from Lingayas Vidyapeeth, Faridabad, and a diploma in Civil Engineering from Board of Technical Education, Delhi. Prior to joining Cube Highways and Transportation Assets Advisors Private Limited, he was associated with reputed organizations including Punj Lloyd, Oriental Structural Engineers, Leighton Contractors, Galfar Engineering, and Continental Engineering Corporation.

5. **Sippy N Kumar**

Sippy N Kumar has been associated with Cube Highways Asset & Project Advisory Private Limited since June 26, 2026, as the senior vice president - environment & social. Prior to this, she was associated with Cube Highways and Transportation Assets Advisors Private Limited from December 12, 2016 to June 25, 2026. She holds a bachelor's degree in environmental engineering from the Delhi College of Engineering (now Delhi Technological University), University of Delhi and pursuing executive MBA from SP Jain school of Global Management. She has over 18 years of experience in ESG, sustainability, Environment and Social (E&S) due diligence, E&S management system implementation, sustainable finance and environmental consultancy. Prior to joining the Cube Highways and Transportation Assets Advisors Private Limited as Sr VP-E&S, she had worked with SMEC (now part of Surbana Jurong Group), Halcrow (now Jacobs) and SNC Lavalin.

6. **Bhanoj Dokku**

Bhanoj Dokku has been associated with Cube Highways Asset & Project Advisory Private Limited since June 26, 2026, as vice president – strategy & analytics. Prior to this, he was associated with Cube Highways and Transportation Assets Advisors Private Limited from April 1, 2018 to June 25, 2026.. He holds a bachelor's degree in civil engineering and a postgraduate degree in Transportation Engineering from the Indian Institute of Technology, Madras. He has over nine years of experience in pavement engineering, maintenance strategy development, and highway operations and maintenance. Prior to joining Cube Highways and Transportation Assets Advisors Private Limited, he worked with Mahua Bharatpur Expressways Limited (a Portfolio Asset of the Trust) and ITS Planners and Engineers.

Key terms of the Project Implementation and Management Agreement

The Project Manager has entered into the Project Implementation and Management Agreement for the Portfolio Assets, in terms of the InvIT Regulations, the key terms of which, are provided below:

1. *Scope of Services*

The Project Manager shall, either directly or through the appointment and supervision of appropriate agents, which may be persons directly employed by the Portfolio Assets ("**Agents**"), undertake the operation, maintenance and management of the Portfolio Assets, in compliance with the Concession Agreements and applicable law.

The scope of services of the Project Manager are as follows:

(i) supervision of the engineering, procurement and construction works in relation to the Portfolio Assets as required under the Concession Agreements, including completion of all outstanding capital works in respect of the Portfolio Assets, such as any punch list items, to the extent applicable, and in procuring the completion certificate in accordance with the Concession Agreements, where applicable;

(ii) ensuring implementation of the operations and maintenance for the Portfolio Assets as stipulated under the Concession Agreements, including tolling;

(iii) undertaking periodic inspection visits of the Portfolio Assets and promptly reporting to the Trustee and the Investment Manager, any deficiency, non-compliance or failure in fulfilling the obligations of the Project Manager. The Project Manager, either by itself or by way of supervision of Agents shall undertake all steps to remedy such deficiency;

(iv) coordination and undertaking of any and all activities required to be performed by the Portfolio Assets pursuant to the Concession Agreements or pursuant to any communication from concessioning authorities or any other governmental authorities, including in relation to shifting of utilities, associated roads, felling of trees and related works with respect to the project site or any work to be undertaken pursuant to a change of scope order based on a determination of change of scope by concessioning authorities under the Concession Agreements;

(v) providing assistance wherever sought by the Portfolio Assets or considered expedient by the Project Manager, in relation to the following:

(a) liasioning with governmental authorities, in connection with the Portfolio Assets;

(b) sending appropriate responses to notices from the governmental authorities and coordinating with them to obtain appropriate approvals, if any, for the Portfolio Assets;

(c) liasioning with the independent engineer in connection with the Portfolio Assets; and

(d) submitting appropriate reports on interactions with governmental authorities in relation to the Portfolio Assets;

(e) operation of the bank accounts of the Portfolio Assets; and

(vi) provide business support services for the activities to be undertaken by the Portfolio Assets.

2. *Functions, Duties and Responsibilities of the Project Manager*

The functions, duties and responsibilities of the Project Manager in terms of the Project Implementation and Management Agreement are as follows:

(i) the Project Manager shall, either directly or through the appointment and supervision of Agents, provide the specified services in relation to the Portfolio Assets as may be necessary for the discharge of its duties under the terms of the agreement and under the InvIT Regulations.

(ii) the Project Manager shall, either directly or through Agents, oversee the progress of development, approval status and other aspects of the Portfolio Assets that may be under development or is to be established until its completion in accordance with any agreement that may be entered into in this regard, including the relevant concession agreements and discharge all obligations in respect of achieving timely completion of the infrastructure projects, wherever applicable, including the supervision of agents appointed for such purpose.

(iii) the Project Manager shall, either directly or through Agents, discharge all obligations in respect of the maintenance, operation and management of the infrastructure projects which have achieved the commercial operations date in terms of the respective concession agreements in terms of the Project Implementation and Management Agreement and the InvIT Regulations and ensure compliance with the relevant provisions of the concession agreements in this regard.

(iv) the Project Manager shall ensure that, for the purpose of provision of the services, all procurement of goods (including raw materials) and award of contracts, either directly or through Agents, is undertaken in accordance with procedures established and within the budget determined by the Project Manager in consultation with the Investment Manager.

(v) the Project Manager acknowledges that the Trustee and the Investment Manager will oversee the activities undertaken by the Project Manager in accordance with the InvIT Regulations and the InvIT Documents and accordingly, the Project Manager shall extend complete co-ordination to enable the Trustee and the Investment Manager to perform such obligations in accordance with the InvIT Regulations and the InvIT Documents. The Project Manager shall provide compliance certificate(s), as may be specified, to the Investment Manager and the Trustee in accordance with the InvIT Regulations, in the form prescribed by SEBI, if any.

(vi) the Project Manager shall at all times ensure that the transactions or arrangements entered into by the Project Manager with a related party are on an arm's-length basis and shall provide the Investment Manager with details of transactions carried out between itself and its associates and disclose any conflict of interest in such cases to the Investment Manager, in accordance with the InvIT Regulations.

(vii) the Project Manager shall intimate the Trustee prior to any change in control of the Project Manager to enable the Trustee to seek requisite approval from regulatory, statutory, legal or government authorities, lenders and any contractual counter parties in accordance with any documents pertaining to the Portfolio Assets, if applicable.

(viii) the Project Manager shall provide to the Trustee and the Investment Manager or to such other person as the Trustee and/or the Investment Manager may direct, all information that may be necessary for each of them to maintain the records of the InvIT and as may be required for making submissions to SEBI or any other Governmental Authority, including with respect to relevant approvals, consents and other documents required in relation to the Portfolio Assets and the reporting requirements under the InvIT Regulations, in a proper and timely manner, and in the format prescribed (if any), as required by the Trustee and /or the Investment Manager. Further, the Project Manager shall provide reasonable assistance to the Portfolio Assets to apply for, obtain and maintain all necessary approvals (and renewals of the same) that each of the Portfolio Assets is required to obtain from or file relevant applications for approvals with any Governmental Authority in connection with Portfolio Assets or as may be required under any third party agreement entered into by the Portfolio Assets and will oversee the progress of the Portfolio Assets in this regard.

(ix) the Project Manager shall have full authority, to receive directions and instructions from each of the Portfolio Assets and to take actions in relation to and ensure compliance with such directions and instructions and report back to each Portfolio Assets, the Trustee and the Investment Manager.

(x) the Project Manager shall promptly inform the Parties in writing of any act, occurrence or event, which the Project Manager believes is reasonably likely to increase the cost of or the time for implementation taken in relation to any InvIT asset, materially change the financial viability, quality or function of any InvIT asset or materially change the budget determined by the Project Manager in consultation with the Investment Manager in relation to the operations and maintenance of the Portfolio Assets.

(xi) if any defects are found in the maintenance, materials and workmanship of the services provided under this Agreement by the Project Manager and/or by the team members, the Project Manager shall promptly, in consultation and agreement with the other parties to the Project Implementation and Management Agreement regarding appropriate remedying of the defects, repair, replace or otherwise make good such defects as well as any damage caused by such defect at the cost of the relevant Portfolio Assets.

(xii) the duties of Project Manager shall also include the following:

(a) supervision of revenue streams from the Portfolio Assets and providing the necessary information and documents as may be required under the applicable law and the InvIT Regulations;

(b) execution and completion of activities in relation to the Portfolio Assets under development or to be developed in accordance with and in the manner contemplated in any agreement entered into by the relevant Portfolio Asset in this regard;

(c) exercising diligence and vigilance in carrying out its duties and protecting the Portfolio Assets;

(d) keeping the Investment Manager informed on all matters which have a material bearing on the operations of the Portfolio Assets;

(e) liaising with governmental authorities in respect of its obligations under the agreement;

(f) taking appropriate measures to mitigate the risks which may be encountered by the InvIT in respect of the Portfolio Assets;

(g) keeping proper records for actions taken in respect of the Portfolio Assets;

(h) appointing external consultants and advisers, including legal advisers, technical consultants and valuers, as may be required, for the purposes of rendering the services; and

(i) complying with the instructions of the Investment Manager and the Trustee and the provisions of the InvIT Regulations.

(xiii) if, in the assessment of the Project Manager, additional services are required for the purposes of carrying out its duties and obligations under the agreement and applicable law, the Project Manager shall notify the parties in writing of such requirement and obtain prior written approval of the relevant parties in this regard.

(xiv) notwithstanding anything to the contrary contained in the agreement, nothing contained in the Project Implementation and Management Agreement shall be construed to limit or restrict the

performance of any duties or obligations of the Project Manager, Investment Manager or the Trustee contained in the InvIT Regulations and other applicable law.

(xv) during the term of the Project Implementation and Management Agreement, in the event the representations provided by the Project Manager under the agreement, become untrue or incorrect or incomplete in any respect, the Project Manager shall, within a reasonable time, inform the Trustee and Investment Manager of such event.

3. *Indemnity*

If the Project Manager is required to make any payments for such taxes, levies, duties, or charges (excluding direct tax) in relation to services provided during the subsistence of the agreement, then the relevant Portfolio Asset shall promptly make good such payment and shall keep the Project Manager indemnified against any tax liability or duties that relate to the service or the agreement.

4. *Termination*

(i) The Project Implementation and Management Agreement shall remain valid and effective, unless terminated by the parties in accordance with the provisions of the agreement or extended by mutual consent expressed in writing by the Parties until the such time as the last of the Concession Agreements is in force ("**Validity Period**"). It is clarified that the Project Implementation and Management Agreement shall be terminated in respect of a particular Project SPV when such Project SPV ceases to be an SPV of the InvIT.

(ii) Prior to the expiry of its Validity Period, the Project Implementation and Management Agreement, may be terminated:

(a) by the Investment Manager after consultation with the Trustee by delivery of a prior written notice of 60 days to the Project Manager, subject to appointment of new project manager in accordance with the Project Implementation and Management Agreement and the InvIT Regulations; or

(b) by the Investment Manager after consultation with the Trustee by delivery of a written notice to the Project Manager at any time, upon breach of any of the terms, covenants, conditions or provisions of the agreement by the Project Manager and a failure of the Project Manager to remedy the said breach within a period of 60 days or such other period as may be mutually agreed to cure such breach; or

(c) by any party by delivery of a written notice to the other party upon the bankruptcy of such other party or if winding up or liquidation proceedings whether voluntary or involuntary are commenced or admitted against such other party (and such proceedings persist for a period of more than three months).

(iii) In the event that the offer of the Units does not occur within the time period stipulated in the InvIT Regulations or such other date as may be mutually agreed to between the parties, or in the event of cancellation of registration of the InvIT by SEBI, or upon winding up of the InvIT, then the Project Implementation and Management Agreement shall automatically terminate without any liability to any party.

Shared Services Agreements

Shared Services Agreement I

The Erstwhile Project Manager and the Investment Manager have entered into a shared services agreement dated September 7, 2022, as amended on January 18, 2023, and September 26, 2023, in relation to services to be provided by the Erstwhile Project Manager to the Investment Manager. Pursuant to an assignment agreement dated July 3, 2026, certain rights and obligations of Erstwhile Project Manager have been assigned to the Project Manager as per the underlying terms of the assignment agreement. Certain key terms of the SSA I are as follows:

Provision of services: The Erstwhile Project Manager shall, on and from the effective date, as defined in the SSA I (read with the assignment agreement), provide the services, as set out in the SSA I (read with the assignment agreement), to the Investment Manager (such services, the "**Support Services**"), with reasonable skill and care and keeping with the good practices for the industry in which the Trust and Sponsor/ Erstwhile Project Manager operate, and in compliance with applicable law. The Investment Manager shall authorise the Erstwhile Project Manager to take all steps and actions required for it to provide the Support Services.

Further, the Erstwhile Project Manager may subcontract any part of its obligations in relation to the Support Services to its affiliates or any third party contractor ("**Contractor**") with prior notice to the Investment Manager, provided that the Erstwhile

Project Manager shall ensure that any of its affiliates or the Contractors (i) are adequately trained, skilled and experienced at a level appropriate to provide and perform the Support Services, and (ii) provide and perform the Support Services in compliance with applicable law. The Erstwhile Project Manager shall be liable for all acts and omissions of such affiliates and the Contractors in relation to the Support Services, as well as for compliance by such affiliates and Contractors with the applicable provisions of the SSA I (read with the assignment agreement). Any breach or default by such affiliate or Contractor of any terms of the SSA I (read with the assignment agreement) shall be deemed to be a breach of the Erstwhile Project Manager.

Fee: The fee is based on a 'cost' plus mark-up basis for specified general services. The 'cost' shall be as determined in accordance with the principles described in the SSA I, and the 'mark-up' will be determined based on a suitable benchmarking report. For specified infrastructure services, the Erstwhile Project Manager shall be entitled to claim a reimbursement for all costs/expenses/fees, calculated in accordance with the SSA I (read with the assignment agreement). The Erstwhile Project Manager shall determine the cost or expenses in relation to the Support Services which may include any expenditures that are (a) directly incurred in relation to the Support Services, and (b) indirectly incurred and as may be attributable/allocable to the Support Services.

Representations and warranties: Each party represents and warrants to the other party to the SSA I (read with the assignment agreement), as follows:

(i) Each party is duly organized and validly existing under applicable law, and has the right, power and authority to execute, deliver and perform the SSA I;

(ii) The SSA I has been duly executed and delivered by such party and, assuming the due authorization, execution and delivery by all other parties, constitutes valid and binding obligations of such party enforceable against such party in accordance with its terms, subject to any principles of equity or insolvency law;

(iii) The execution and delivery of the SSA I by such party and the performance by such party of its obligations under the SSA I has been duly and validly authorized by all necessary corporate action, including on the part of the Trust, if required, and does not require any further authorization or consent of any third party;

(iv) The execution, delivery and performance by such party of the SSA I, and the compliance by it with the provisions of the SSA I will not result in:

  (a) a breach of, or constitute a default under, any agreement or instrument to which such party is a party or by which such party is bound; or

  (b) result in a violation of its constitutional documents; or

  (c) contravene any applicable law to which it is subject, or any order, writ, injunction or decree of any court or Governmental Authority to which it is subject; and

  (d) No liquidation, dissolution, winding up, commencement of bankruptcy, insolvency, liquidation or similar proceedings, whether voluntary or involuntary, with respect to it is pending or has been pending, or to the knowledge of such party, threatened.

Force majeure: The Erstwhile Project Manager shall not be liable or responsible for any failure to perform or delay in performance of their respective obligations under the SSA I (read with the assignment agreement), when such failure or delay is due or attributable to or arises out of, any force majeure event. Provided that the Erstwhile Project Manager shall, as soon as reasonably practicable, notify the other parties thereafter, provide detailed information concerning such force majeure event and documents evidencing such force majeure event, explaining the reasons for its inability to execute, or for its delay in the execution of, all or part of its obligations under the SSA I. The Erstwhile Project Manager shall take all reasonable steps within its power to recommence performance of the SSA I on the ceasing of such event. If either party has delayed the performance of, or not performed, any obligation under the SSA I due to any force majeure event, the performance of any corresponding obligations of the other party shall stand suspended to the same extent.

Termination: The SSA I shall become effective and binding on the parties on and from the effective date, as defined in the SSA I, and shall continue to be valid and in full force and effect unless terminated. The SSA I may be terminated as follows:

(i) by mutual consent of the parties in writing; or

(ii) by the Investment Manager by delivery of a written notice to the Erstwhile Project Manager at any time, including upon breach of any of the terms, covenants, conditions or provisions of the SSA I by the Erstwhile Project Manager and a failure of the Erstwhile Project Manager to remedy the said breach within a period of 30 days or such other period as may be mutually agreed to cure such breach; or

(iii) by any party by delivery of a written notice to the other party upon the bankruptcy of such other party, or if winding up or liquidation proceedings, whether voluntary or involuntary, are commenced or admitted against such other party (and such proceedings persist for a period of more than three months); or

(iv) in the event of cancellation of registration of the Trust by SEBI, or winding up of the Trust, then the SSA I shall automatically terminate without any liability to any party.

Indemnification: The Investment Manager shall be indemnified by the Erstwhile Project Manager against any claims, losses, costs, damages, liabilities, suits, proceedings, taxes and expenses, including legal fee from and incurred or suffered by the Investment Manager in connection with the breach of any of the terms of the SSA I by the Erstwhile Project Manager or its agents or arising out of gross negligence, wilful default or fraud on part of the Erstwhile Project Manager, in carrying out its obligations under the SSA I or under applicable law, subject to such maximum aggregate liability of the Erstwhile Project Manager as set out under the SSA I.

Shared Services Agreement II

The Project Manager and the Project SPVs have entered into a shared services agreement executed on July 3, 2026, in relation to SAP support services and infrastructure facilities provided by the Project Manager to the Project SPVs. Certain key terms of the SSA II are as follows:

Provision of Services: For the costs and expenses incurred by the Project Manager on account of the Project SPVs for administrative convenience, including for: (a) SAP support; and (b) infrastructure facilities to the Project SPVs, the Project SPVs have agreed to reimburse the Project Manager in the manner agreed to in the SSA II.

Expenses: The Project Manager shall seek reimbursement of expenses from the Project SPVs on a cost-to-cost basis, exclusive of any applicable goods and services taxes and subject to deduction or withholding of taxes as required under applicable law. In this regard, the Project Manager shall, on a monthly basis, issue a notice to each of the Project SPVs for reimbursement of their proportionate share in the expenses, within a period of 15 days from receipt of such notice.

Representations and warranties: Each party represents and warrants to the other party to the SSA II, as follows:

(i) Each party is duly organized and validly existing under applicable law, and has the right, power and authority to execute, deliver and perform the SSA II;

(ii) The SSA II constitutes a legal, valid and binding obligation of each party, and the execution, delivery and performance of the SSA II does not constitute a breach of, or default under, its charter documents or any contract to which it is a party;

(iii) The execution and delivery of the SSA II by such party and the performance by such party of its obligations under the SSA II has been duly and validly authorized by all necessary corporate action;

(iv) The execution, delivery and performance by such party of the SSA II, and the compliance by it with the provisions of the SSA II will not result in:

  (a) a breach of, or constitute a default under, any agreement or instrument to which such party is a party or by which such party is bound; or

  (b) result in a violation of its constitutional documents; or

  (c) contravene any applicable law to which it is subject, or any order, writ, injunction or decree of any court or Governmental Authority to which it is subject;

Audit Rights: The Project SPVs reserve the right to audit and review the reasonability of costs incurred by the Project Manager for the provision of facilities under the SSA II. Such audits may include examination of invoices, receipts, supporting documentation, and any other relevant records pertaining to the expenses, and the Project Manager shall cooperate fully and provide access to all necessary documents and information within a reasonable timeframe. Any costs found to be unreasonable or unsupported may be subject to adjustment or disallowance, subject to mutual agreement between the parties.

OTHER PARTIES INVOLVED IN THE TRUST

The Auditors

Background and terms of appointment

The Investment Manager, in consultation with the Trustee, has appointed S.B. Billimoria & Co. LLP, Chartered Accountants (Firm Registration No. 101496W/W100774 as the statutory auditors of the Trust for a term of 5 years to conduct the statutory audit of the Trust for a term of 5 consecutive financial years commencing from FY 2023-24 upto FY 2027-28 ("**Auditors**"), from list of auditors previously approved by the IM Board and unitholders of the Trust, in a timely manner and in accordance with the InvIT Regulations. The Investment Manager has appointed the Auditors for a period of not more than five consecutive years; provided that the Auditors, not being an individual, may be reappointed for a period of another five consecutive years, subject to approval of Unitholders in the annual meeting in accordance with the InvIT Regulations. The Auditors have been identified and appointed in accordance with the policy on *'Appointment of Auditor and Valuer of Cube Highways Trust'*.

The Auditor has audited the Audited Consolidated Financial Statements which have been prepared in accordance with the basis of preparation as specified in Audited Consolidated Financial Statements and the same have been included in this Final Offer Document.

Functions, Duties and Responsibilities of the Auditors

The functions, duties and responsibilities of the Auditors will be in accordance with the InvIT Regulations. Presently, in terms of the InvIT Regulations, the Auditors are required to comply with the following conditions at all times:

1. the Auditors shall conduct audit of the accounts of the Trust and draft the audit report based on the accounts examined after taking into account the relevant accounting and auditing standards, as may be specified by SEBI;

2. the Auditors shall, to the best of its information and knowledge, ensure that the accounts and financial statements give a true and fair view of the state of the affairs of the Trust, including profit or loss and cash flow for the period and such other matters as may be specified;

3. the Auditors shall have a right of access at all times to the books of accounts and vouchers pertaining to activities of the Trust; and

4. the Auditors shall have a right to require such information and explanation pertaining to activities of the Trust as it may consider necessary for the performance of its duties as auditors from the employees of the Trust or parties to the Trust or the Portfolio Assets or any other person in possession of such information.

The Valuer

Background and terms of appointment

The Investment Manager, in consultation with the Trustee, has appointed Ernst & Young Merchant Banking Services LLP with effect from May 28, 2025, as the valuer of the Trust, for the valuation ("**Valuer**"), in a timely manner and shall determine the remuneration of such Valuer, in accordance with the InvIT Regulations. The Valuer shall be identified and appointed in accordance with the policy on '*Appointment of Auditor and Valuer of Cube Highways Trust*'.

In accordance with the InvIT Regulations, the Valuer has undertaken a full valuation of the Portfolio Assets, and their reports, in relation to such valuation as on March 31, 2026 has been included in this Final Offer Document.

Functions of the Valuer

The functions, duties and responsibilities of the Valuer will be in accordance with the InvIT Regulations. Presently, in terms of the InvIT Regulations, the Valuer is required to comply with the following conditions at all times:

1. the Valuer shall ensure that the valuation of the Portfolio Assets is impartial, true and fair and is in accordance with Regulation 21 of the InvIT Regulations;

2. the Valuer shall ensure that it has adequate and robust internal controls to ensure the integrity of its valuation reports

3. the Valuer shall ensure that it has sufficient key personnel with adequate experience and qualification to perform valuations;

4. the Valuer shall ensure that it has sufficient financial resources to enable it to conduct its business effectively and meet its liabilities;

5. the Valuer and any of its employees involved in valuing of the assets of the Trust, shall not, (i) invest in Units or in the assets being valued; and (ii) sell the assets or Units held prior to being appointed as the valuer, until the time the Valuer is designated as the valuer of the Trust and not less than six months after ceasing to be valuer of the Trust;

6. the Valuer shall conduct valuation of the Trust's assets with transparency and fairness and shall render, at all times, high standards of service, exercise due diligence, ensure proper care and exercise independent professional judgment;

7. the Valuer shall act with independence, objectivity and impartiality in performing the valuation;

8. the Valuer shall discharge its duties towards the Trust in an efficient and competent manner, utilizing its knowledge, skills and experience in best possible way to complete given assignment;

9. the Valuer shall not accept remuneration, in any form, for performing a valuation of the Trust's assets from any person other than the Trust or its authorized representative;

10. the Valuer shall before accepting any assignment from any related party of the Trust, disclose to the Trust any direct or indirect consideration which the valuer may have in respect of such assignment;

11. the Valuer shall disclose to the Trust any pending business transactions, contracts under negotiation and other arrangements with the investment manager or any other party whom the Trust is contracting with and any other factors that may interfere with the Valuer's ability to give an independent and professional valuation of the assets;

12. the Valuer shall not make false, misleading or exaggerated claims in order to secure assignments;

13. the Valuer shall not provide misleading valuation, either by providing incorrect information or by withholding relevant information;

14. the Valuer shall not accept an assignment which interferes with its ability to do fair valuation; and

15. the Valuer shall, prior to performing a valuation, acquaint itself with all laws or regulations relevant to such valuation.

Policy on Appointment of Auditor and Valuer ("Appointment Policy")

The Investment Manager has adopted a policy on the appointment of auditor and valuer of the Trust, pursuant to the resolution of the IM Board dated July 11, 2022. The key terms of the Appointment Policy are set out below:

Appointment and role of the auditor of the Trust

(i) the Investment Manager, in consultation with the Trustee, shall appoint the auditor of the Trust (the "**Auditor**"), from list of auditors previously approved by the IM Board, in a timely manner and in accordance with the InvIT Regulations.

(ii) the Auditor shall at all times be any of PricewaterhouseCoopers, Deloitte Touche Tohmatsu Limited, Ernst & Young or KPMG (or their affiliates in India).

(iii) the Investment Manager shall ensure that the appointment of the Auditor and the fees payable to the Auditor is approved by the Unitholders in accordance with the InvIT Regulations.

(iv) the Investment Manager shall ensure that the removal of the Auditor and appointment of another auditor to the Trust is taken up at a meeting of the Unitholders at the request of the Unitholders, such that the removal of the Auditor shall be approved by the Unitholders in accordance with Regulation 22 (5)(f) of the InvIT Regulations.

(v) the Investment Manager shall appoint an Auditor for a period of not more than five consecutive years; provided that the Auditor, not being an individual, may be reappointed for a period of another five consecutive years, subject to approval of Unitholders in the annual meeting in accordance with the InvIT Regulations.

(vi) the Investment Manager shall ensure that the audit of accounts of the Trust by the Auditor is done not less than once in a year and such report is submitted to the stock exchanges within the timelines prescribed under the InvIT Regulations.

(vii) the Auditor shall conduct the audit of the accounts of the Trust and draft the audit report based on the accounts examined by him/her after taking into account the relevant accounting and auditing standards under applicable law, including the InvIT Regulations and any guidelines, circulars, notifications and clarifications framed or issued by SEBI, as may be specified from time to time.

(viii) the Auditor shall comply with the conditions and be entitled to the rights prescribed under the InvIT Regulations at all times, including the following:

  (a) the accounts of the Trust shall be subjected to audit by the Auditors and shall be accompanied by a report of the Auditors in such manner and at such intervals as may be prescribed under applicable law, including the InvIT Regulations;

(b) the Auditor shall, to the best of his information and knowledge, ensure that the accounts and financial statements give a true and fair view of the state of the affairs of the Trust, including profit or loss and cash flow for the period and such other matters as may be specified by SEBI;

(c) the Auditor shall have a right of access at all times to the books of accounts and vouchers pertaining to activities of the Trust; and

(d) the Auditor shall have a right to obtain such information and explanation pertaining to activities of the Trust as he may consider necessary for the performance of his duties as auditor from the employees of Trust or any holding company or parties to the Trust or any holding company or the special purpose vehicle(s) or any other person in possession of such information.

(ix) the Investment Manager, in consultation with the Trustee, shall have the right to take all necessary steps to remove the Auditor who ceases to comply with the eligibility criteria required under the InvIT Regulations and/or applicable law or for any other reason as determined by the Investment Manager. In case of removal of the Auditor and appointment of another auditor to the InvIT, approval from the Unitholders shall be required in accordance with the InvIT Regulations.

Appointment and role of valuer of the Trust

(i) the Investment Manager, in consultation with Trustee, shall appoint the valuer of the Trust ("**Valuer**"), in a timely manner and shall determine the remuneration of such Valuer, in accordance with the InvIT Regulations. A 'Valuer' shall have the meaning provided under the InvIT Regulations.

(ii) the remuneration of the Valuer shall not be linked to or based on the value of the assets being valued.

(iii) the Valuer shall not be an associate of any of the sponsor(s) of the Trust or the Investment Manager or Trustee.

(iv) the Valuer shall be eligible to act as a valuer in accordance with the InvIT Regulations or any clarifications, guidelines, notifications or exemptions issued by SEBI.

(v) A Valuer shall not undertake valuation of the same project for more than four years consecutively, provided that the Valuer may be reappointed after a period of not less than two years from the date it ceases to be the Valuer of the Trust.

(vi) the Valuer shall not undertake valuation of any assets in which it has either been involved with the acquisition or disposal within the last twelve months other than such cases where the Valuer was engaged by the Trust for such acquisition or disposal.

(vii) the Investment Manager shall ensure that the valuation of the assets of the Trust is done by the Valuer in accordance with and in the frequency stipulated in the InvIT Regulations. The Investment Manager shall ensure that the valuation reports received by it shall be submitted, and the computation and declaration of net asset value, as defined in the InvIT Regulations, of the InvIT based on the valuation done by the Valuer shall be disclosed, to the stock exchange(s) within the timelines prescribed under the InvIT Regulations.

(viii) the Valuer shall comply with the following conditions at all times:

(a) the Valuer shall ensure that the valuation of the Trust assets is impartial, true and fair and is in accordance with the InvIT Regulations;

(b) the Valuer shall ensure adequate and robust internal controls to ensure the integrity of its valuation reports, and shall maintain strict confidentiality in relation to all non-public information that comes into its possession by virtue of its engagement;

(c) the Valuer shall ensure that it has sufficient key personnel with adequate experience and qualification to perform valuations;

(d) the Valuer shall ensure that it has sufficient financial resources to enable it to conduct its business effectively and meet its liabilities;

(e) the Valuer and any of its employees involved in valuing of the assets of the Trust, shall not:

a. invest in Units of the Trust or in the assets being valued; and

b. sell the assets or Units of the Trust held prior to being appointed as the Valuer,

during the time such person is designated as Valuer of the Trust and not less than six months after ceasing to be Valuer of the InvIT;

(f) the Valuer shall conduct valuation of the Trust assets with transparency and fairness and shall render, at all times, high standards of service, exercise due diligence, ensure proper care and exercise independent professional judgment;

(g) the Valuer shall act with independence, objectivity and impartiality in performing the valuation;

(h) the Valuer shall discharge its duties towards the InvIT in an efficient and competent manner, utilizing its knowledge, skills and experience in best possible way to complete given assignment;

(i) the Valuer shall not accept remuneration, in any form, for performing a valuation of the Trust assets from any person other than the Trust or its authorized representative;

(j) the Valuer shall, before accepting any assignment from any related party of the Trust, disclose to the Trust, by disclosing to the Investment Manager or the Trustee, any direct or indirect consideration which the Valuer may have in respect of such assignment;

(k) the Valuer shall disclose to the Trust, through the Investment Manager or the Trustee, any pending business transactions, contracts under negotiation and other arrangements with the Investment Manager or any other party whom the Trust is contracting with and any other factors that may interfere with the Valuer's ability to give an independent and professional valuation of the assets, and other necessary disclosures required under the InvIT Regulations;

(l) the Valuer shall not make false, misleading or exaggerated claims in order to secure assignments;

(m) the Valuer shall not provide misleading valuation, either by providing incorrect information or by withholding relevant information;

(n) the Valuer shall not accept an assignment which interferes with its ability to do fair valuation; and

(o) the Valuer shall, prior to performing a valuation, acquaint itself with all laws or regulations relevant to such valuation.

(ix) the Investment Manager in consultation with the Trustee shall have the right to take all necessary steps to remove the Valuer who ceases to comply with the eligibility criteria required under the InvIT Regulations and/ or applicable law or for any other reason as determined by the Investment Manager. If the removal of the Valuer and appointment of another valuer to the Trust is taken up at a meeting of the Unitholders at the request of the Unitholders, such removal of the Valuer shall be approved by the Unitholders in accordance with the InvIT Regulations.

CORPORATE GOVERNANCE

The section below is a summary of the corporate governance framework in relation to the Trust, implemented by the Investment Manager and the Portfolio Assets, as applicable and as specified in this section.

1. Investment Manager

Cube Highways Fund Advisors Private Limited is the investment manager of the Trust. For further details on the background of the Investment Manager, please see the section entitled "*Parties to the Trust – The Investment Manager – Cube Highways Fund Advisors Private Limited"* on page 146.

Board of Directors

Composition of the IM Board

In addition to the applicable provisions of the Companies Act and LODR Regulations (to the extent applicable), the IM Board shall adhere to the following:

(a) The IM Board comprises of seven directors;

(b) Not less than 50% (fifty per cent) of the board of directors comprises of independent directors, determined in accordance with the Companies Act read with the InvIT Regulations and the LODR Regulations, as applicable. Such directors shall not be directors or members of the governing board of the investment manager of another infrastructure investment trust registered under the InvIT Regulations. The IM Board shall have not less than one woman independent director. The remaining directors have been appointed in accordance with the provisions of the Companies Act;

(c) The independence of directors shall/has to be determined in accordance with the Companies Act and other applicable law; and such other requirements as may be specified in the articles of association of the Investment Manager;

(d) the chairman of the board of directors may be an executive or non-executive director.

(e) collective experience of the directors covers a broad range of commercial experience, particularly experience in infrastructure sector (including the applicable sub-sector), including development, investment/fund management or advisory and financial matters.; and

(f) the shareholders of the Investment Manager shall have the right to (i) nominate three directors on the IM Board (the "**Nominee Directors**"); and (ii) nominate one or more observer on the IM Board ("**Observer**").

Unitholder(s) holding 10% or more of the total outstanding units of the Trust, either individually or collectively ("**Eligible Unitholders**") shall have the right, but not the obligation, to nominate any person for appointment as a unitholder nominee director (non-independent director) on the board of directors of the Investment Manager in accordance with the InvIT Regulations and the policy on qualification and criteria for appointment of Unitholders Nominee Directors on the IM Board (defined below) adopted by the Investment Manager. For details, please see the section entitled "*Corporate Governance — Policy on qualification and criteria for appointment of Unitholders Nominee Directors on the IM Board*" on page 186. Eligible Unitholders shall be entitled to nominate only one unitholder nominee director, subject to the Unitholding of such Eligible Unitholder exceeding the specified threshold. If the right to nominate one or more directors on the IM Board is available to any entity (or to an associate of such entity) in the capacity of shareholder of the Investment Manager or lender to the Investment Manager or the Trust (or its portfolio assets), then such entity in its capacity as Unitholder, shall not be entitled to nominate or participate in the nomination of a Unitholder nominee director, provided that such restriction relating to the right to nominate a Unitholder nominee director shall not be applicable if the right to appoint a nominee director is available in terms of the Securities and Exchange Board of India (Debenture Trustees) Regulations, 1993. Further, if the Unitholding of more than one unitholder is aggregated for the purpose of qualifying as Eligible Unitholder(s) to exercise the right to nominate a unitholder nominee director, then such unitholders shall not be eligible to participate in any other group of Eligible Unitholder(s).

For details of the current composition of the board of directors, please see the section entitled "*Parties to the Trust – The Investment Manager – Cube Highways Fund Advisors Private Limited – Board of Directors of the Investment Manager*" on page 146.

Quorum

The quorum for every meeting of the Board shall be in accordance with the Companies Act and LODR Regulations (to the extent applicable), including at least one independent director and one Nominee Director, must be present at a meeting of the IM Board, unless prohibited by applicable law, for purposes of constitution of a valid quorum. Further, the Observer shall have the right to attend all meetings of the IM Board and all the committees of the IM Board.

Frequency of meetings

The IM Board shall meet at least four times every year, with a maximum gap of 120 days between any two successive meetings or such gap as prescribed under applicable law. Additionally, the IM Board shall prior to any meeting of the Unitholders approve the agenda for Unitholders' meetings.

Sitting fee

The independent directors of the Investment Manager will receive sitting fee for attending board meetings and meetings of the committees, in accordance with the provisions of the Companies Act and other applicable law.

Articles of Association of the Investment Manager

The articles of association should not include any affirmative rights for the Investment Manager in relation to the Trust.

Matters to be decided by the committee and IM Board

The Investment Manager shall not, whether by way of a resolution of its shareholder(s), board of directors or committee of its board of directors or through any of their respective delegates or otherwise (including with respect to the Trust and the portfolio assets), take any decisions or actions with respect to certain specified matters, except with the prior approval by the committees, other than the Investment Committee and the Operations Committee, or the IM Board, in accordance with the following:

Committee matters

Notwithstanding anything contained in the Corporate Governance Policy, subject to the provisions on 'Investment Committee and Operations Committee matters' below, specific matters, as specified in the Corporate Governance Policy, shall be validly approved by the Investment Committee or the Operations Committee or the IM Board in respect of the Investment Manager or its subsidiaries, or any matters pertaining to the Trust and its portfolio assets, unless such matter has been taken up at a meeting of the members of either the Investment Committee or the Operations Committee or the IM Board, as the case may be, or by circulation, and a resolution has been passed in its favour (whether in a meeting or by circulation):

(i) by the majority of the members on such committee or the IM Board, as applicable, who are entitled to vote on such matter and not disqualified from voting due to being interested in such matter or otherwise, and

(ii) unanimously by the members on such committee or the IM Board, as applicable, who are not independent directors, and who are entitled to vote on such matter (in case of matters such as, amongst others, (a). as any removal or replacement of the auditors of the Trust, subject to certain conditions; (b). the undertaking by the Trust of any sale or disposal, or any transaction having the effect of a sale or disposal of assets, subject to certain conditions; (c). any material changes in compliance or environmental, social and governance policies of the Trust; and (d). any appointment or removal of the Project Manager or Valuer with respect to the Trust); or,

(iii) by the majority of the members on such committee or the IM Board, as applicable, who are entitled to vote on such matter and not disqualified from voting due to being interested in such matter or otherwise, and

(iv) at least two-thirds of the members on the committee or the IM Board, as applicable, who are not independent directors, and who are entitled to vote on such matter (in case of matters such as, amongst others, (a). any material change to the employee share plan and/or stock appreciation rights plan of the employees of the Investment Manager; and (b). any change in the annual budget of the Trust, subject to certain conditions);

Provided, that if such matter has already been taken up first at a meeting of the Operations Committee or Investment Committee and has been approved in the manner set out above, as applicable, read with the provisions on 'Investment Committee and Operations Committee matters' below, and such matter is then taken up at the level of the IM Board, the requirement for the unanimous approval or approval of two-thirds of the non-independent directors, as the case may be, shall not be required.

- *Investment Committee and Operations Committee matters*

  If any of the specified matters are being taken up by either the Operations Committee or Investment Committee, or the IM Board, as the case may be, in respect of the Investment Manager or its subsidiaries, or any matters pertaining to the Trust and its SPVs, a notice and agenda of such matters shall first be sent to all members of the Operations Committee or Investment Committee, as the case may be, or the directors on IM Board, as applicable, at least 10 days prior to the date on which such matter is being taken up at a meeting or by way of circulation. In the event that the members of the Operations Committee or Investment Committee, or the directors on IM Board, as applicable (each

a "**Relevant Member/Director**") are unable to attend the relevant meeting of the members of the Operations Committee or Investment Committee, as the case may be, or the IM Board, as applicable, the Relevant Member/Director shall be entitled to send in communication as to their approval or rejection of the proposed resolution on the said matter, and such decision shall be binding on the Operations Committee or Investment Committee, as the case may be, or the IM Board, as applicable. If such Relevant Member/Director is unable to attend such meeting as scheduled, and has not sent any communication as to his/her approval or rejection of the proposed resolution on the said matter by the time of commencement of the meeting of the members of the Operations Committee or Investment Committee, or the IM Board, as applicable, such Relevant Member/Director's vote shall not be considered for the requirement for unanimous approval and/or approval of two-thirds of the non-independent directors (as set out above), as the case may be, for such specified matter.

Constitution of Committees

Name of the committee	Composition	Present Members	Quorum	Frequency of meetings
Nomination and Remuneration Committee	The Nomination and Remuneration Committee should comprise at least three directors. All the directors of the committee shall be non-executive directors where at least two-thirds of the directors shall be independent directors. The nominee directors on the board shall be the members of the nomination and remuneration committee on a rotational basis. Provided that the chairperson of the Board, may be appointed as a member of the Nomination and Remuneration Committee and shall not chair such committee.	Upendra Kumar Sinha, Jayesh Ramniklal Desai, Surinder Chawla, Fereshte Dhunjishaw Sethna, Sandeep Lakhanpal, Helly Bharat Ajmera	The quorum shall be either two members or one third of the members of the committee, whichever is greater, including at least one independent director in attendance.	The nomination and remuneration committee shall meet at least once in a financial year or as necessary.
Audit Committee	The audit committee shall consist of at least three directors and shall have a maximum of four directors. At least two-thirds of the members of audit committee shall be independent directors. The non-independent director members of the audit committee shall retire annually by rotation. The chairperson of the audit committee should be an independent director and be present at annual general meeting to answer unitholders' queries. All members of the audit committee should be financially literate and at least one member should have accounting or related financial management expertise, in accordance with the LODR Regulations. The company secretary of the Investment Manager shall act as the secretary to the audit committee. The audit committee at its discretion shall invite the finance director or head of the finance function, head of internal audit and a representative of the statutory auditor and any other such executives to be present at the meetings of the committee. Provided occasionally the audit committee may meet without the presence of any such executives of the InvIT or the Investment Manager.	Upendra Kumar Sinha, Jayesh Ramniklal Desai, Fereshte Dhunjishaw Sethna, Sandeep Lakhanpal	The quorum shall either be two members or one third of the members of the audit committee, whichever is greater, including at least two independent directors in attendance.	The audit committee should meet at least four times every financial year, with a maximum gap of 120 days between any two successive meetings.
Stakeholders' Relationship Committee	The stakeholders' relationship committee shall consist of at least three directors and shall have a maximum of four directors. At least two-thirds of the members of the	Fereshte Dhunjishaw Sethna, Upendra Kumar Sinha, Surinder Chawla,	-	The stakeholders' relationship committee shall meet at least once in a financial year.

Name of the committee	Composition	Present Members	Quorum	Frequency of meetings
	committee shall be independent directors. The chairperson of the committee must be an Independent Director and be present at annual general meeting to answer Unitholders' queries.	Helly Bharat Ajmera		
Risk Management Committee	The risk management committee shall consist of at least three members. A majority of the members of the committee shall be directors on the IM Board and senior executives of the Investment Manager may be members of the risk management committee. The chairperson of this committee shall be a member of the board of directors and senior executive of the Investment Manager. At least one member of the committee shall be an independent director.	Jayesh Ramniklal Desai, Sandeep Lakhanpal, Helly Bharat Ajmera, Raviraj Vipul Acharya	The quorum shall either be two members or one third of the members of the committee, whichever is greater, including at least one director in attendance.	The risk management committee should meet at least twice every financial year, with a maximum gap of 210 days between any two successive meetings.
Investment Committee	The Investment Committee shall consist of three Nominee Directors and one independent director.	Surinder Chawla, Sandeep Lakhanpal, Helly Bharat Ajmera, Raviraj Vipul Acharya	-	The Investment Committee shall meet at least once in a year or as necessary.
Operations Committee	The Operations Committee shall consist of three Nominee Directors and one independent director.	Jayesh Ramniklal Desai, Sandeep Lakhanpal, Helly Bharat Ajmera, Raviraj Vipul Acharya	-	The Operations Committee shall meet at least once in a year or as necessary.

For details of the scope of each committee, please see below.

Nomination and Remuneration Committee

Terms of reference of the Nomination and Remuneration Committee

The key terms of reference of the Nomination and Remuneration Committee include the following:

(i) formulation of the criteria for determining qualifications, positive attributes and independence of a director and recommend to the IM Board a policy relating to, the remuneration of the directors, key managerial personnel and other employees;

(ii) for every appointment of an independent director, evaluation of the balance of skills, knowledge and experience on the IM Board and on the basis of such evaluation, prepare a description of the role and capabilities required of an independent director. The person recommended to the IM Board for appointment as an independent director shall have the capabilities identified in such description. For the purpose of identifying suitable candidates, the Nomination and Remuneration Committee may:

a. use the services of external agencies, if required;

b. consider candidates from a wide range of backgrounds, having due regard to diversity; and

c. consider the time commitments of the candidates.

(iii) formulation of criteria for evaluation of performance of independent directors and the board of directors;

(iv) devising a policy on diversity of board of directors;

(v) identifying persons who are qualified to become directors and who may be appointed in senior management in accordance with the criteria laid down, and recommend to the IM Board their appointment and removal;

(vi) whether to extend or continue the term of appointment of the independent director, on the basis of the report of performance evaluation of independent directors; and

(vii) recommend to the board, all remuneration, in whatever form, payable to senior management (if any).

Audit Committee

Terms of reference of the Audit Committee

The key terms of reference of the Audit Committee include the following:

(i) oversight of the financial reporting process of the Trust and/or the Investment Manager and the disclosure of its financial information to ensure that the financial statement is correct, sufficient and credible;

(ii) recommendation for appointment, remuneration and terms of appointment of auditors of the Trust;

(iii) approval of payment to statutory auditors for any other services rendered by the statutory auditors of the Trust;

(iv) determining the occurrence of Entitlement Events (*as defined in the Trust Deed*) issued by the Trust as set out in the Trust Deed;

(v) reviewing, with the management, the annual financial statements and auditor's report thereon before submission to the IM Board for approval, with particular reference to:

a. matters required to be included in the director's responsibility statement to be included in the IM board's report of Investment manager in terms of clause (c) of sub-section (3) of Section 134 of Companies Act 2013;

b. changes, if any, in accounting policies and practices and reasons for the same;

c. major accounting entries involving estimates based on exercise of judgment by management;

d. significant adjustments made in the financial statements arising out of audit findings;

e. compliance with listing and other legal requirements relating to financial statements;

f. disclosure of any related party transactions; and

g. modified opinion(s) in the draft audit report;

(vi) reviewing, with the management, the quarterly financial statements before submission to the IM Board for approval;

(vii) reviewing, with the management, the statement of uses / application of funds raised through an issue (public issue, rights issue, preferential issue, etc.), the statement of funds utilized for purposes other than those stated in the placement document / offer documents / notice and the report submitted by the monitoring agency monitoring the utilisation of proceeds of a public or rights issue, and making appropriate recommendations to the board to take up steps in this matter;

(viii) reviewing and monitoring the auditor's independence and performance, and effectiveness of audit process;

(ix) approval or any subsequent modification of all transactions of the Trust and/or the Investment Manager with related parties;

(x) scrutiny of inter-corporate loans and investments;

(xi) valuation of undertakings or assets of the Trust, wherever it is necessary;

(xii) evaluation of internal financial controls and risk management systems;

(xiii) reviewing, with the management, performance of statutory and internal auditors, adequacy of the internal control systems;

(xiv) reviewing the adequacy of internal audit function, if any, including the structure of the internal audit department, staffing and seniority of the official heading the department, reporting structure coverage and frequency of internal audit;

(xv) discussion with internal auditors of any significant findings and follow up thereon;

(xvi) reviewing the findings of any internal investigations by the internal auditors into matters where there is suspected fraud or irregularity or a failure of internal control systems of a material nature and reporting the matter to the IM Board;

(xvii) discussion with statutory auditors of the Trust before the audit commences, about the nature and scope of audit as well as post-audit discussion to ascertain any area of concern;

(xviii) to look into the reasons for substantial defaults in the payment to the depositors, debenture holders, shareholders (in case of non-payment of declared dividends) and creditors;

(xix) to review the functioning of the whistle blower mechanism;

(xx) approval of appointment of chief financial officer after assessing the qualifications, experience and background, etc. of the candidate;

(xxi) reviewing the utilization of loans and/ or advances from/investment by the holding company in the subsidiary exceeding rupees 100 crore or 10% of the asset size of the Trust, Holding Companies and SPVs, whichever is lower including existing loans / advances / investments existing as on the date of the adoption of the policy;

(xxii) considering and commenting on rationale, cost-benefits and impact of schemes involving merger, demerger, amalgamation etc., on the Trust and/or the Investment Manager; and

(xxiii) noting the report of compliance officer as per SEBI (Prohibition of Insider Trading) Regulations, 2015; and

The audit committee shall mandatorily review the following information:

(i) management discussion and analysis of financial condition and results of operations;

(ii) management letters / letters of internal control weaknesses issued by the statutory auditors;

(iii) internal audit reports relating to internal control weaknesses;

(iv) the appointment, removal and terms of remuneration of the internal auditor, if any, shall be subject to review by the audit committee; and

(v) the statement of deviations:

1. quarterly statement of deviation(s) including report of monitoring agency, if applicable, submitted to stock exchange(s) in terms of Regulation 32(1) of the LODR.

2. annual statement of funds utilized for purposes other than those stated in the offer document/prospectus/notice in terms of Regulation 32(7) of the LODR.

Further, the audit committee is also responsible for the implementation of the Anti-corruption Policy of the Trust in accordance with the Anti-corruption Policy. For details, please see the section entitled "*Corporate Governance- Policies of the Board of Directors of the Investment Manager in relation to the Trust – Anti-corruption Policy*" on page 181.

Stakeholders' Relationship Committee

Terms of reference of the Stakeholders' Relationship Committee

The terms of reference of the Stakeholders' Relationship Committee include the following:

(i) resolving the grievances of the security holders of the Trust and/or the Investment Manager (as applicable) including complaints related to transfer/transmission of Units, non-receipt of annual report, non-receipt of declared dividends, issue of new/duplicate certificates, general meetings etc.;

(ii) review of measures taken for effective exercise of voting rights by unitholders of the Trust and/or shareholders of the Investment Manager (as applicable);

(iii) review of adherence to the service standards adopted by the Trust and/or the Investment Manager in respect of various services being rendered by the Registrar;

(iv) review of the various measures and initiatives taken by the Trust and/or the Investment Manager for reducing the quantum of unclaimed distributions, as applicable, and ensuring timely receipt of annual reports/statutory notices by the Unitholders of the Trust; and

(v) resolving grievance of debenture holders related to creation of charge, payment of interest/ principal, maintenance of security cover and any other covenants.

Risk Management Committee

Terms of reference of the Risk Management Committee

The terms of reference of the Risk Management Committee include, amongst others, the following:

(i) formulation of a detailed risk management policy, which will include:

a. a framework for identification of internal and external risk specifically faced by the trust in particular, including financial, operational, sectoral, substantial (particularly, ESG related risks), information, cyber security risks or any other risk as may be determined by the risk management committee;

b. measures for risk mitigation including systems and processes for internal control of identified risks; and

c. business continuity plan;

(ii) ensuring that appropriate methodology, processes and systems are in place to monitor and evaluate risks associated with the business of the Trust;

(iii) monitoring and overseeing implementation of the risk management policy, including evaluating the adequacy of risk management systems;

(iv) periodically reviewing the risk management policy, at least once in two years, including by considering the changing industry dynamics and evolving complexity;

(v) keeping the board of directors informed about the nature and content of its discussions, recommendations and actions to be taken;

(vi) reviewing the appointment, removal and terms of remuneration of the chief risk officer, if any; shall be subject to review by the risk management committee and

(vii) coordinating its activities with other committees, in instances where there is any overlap with activities of such committees, as per the framework laid down by the Board.

Investment Committee

Terms of reference of the Investment Committee

Subject to the provisions under "*Matters to be decided by the committee and IM Board*" on page 172 above, and the specified matters and related provisions in the Corporate Governance Policy, the Investment Committee shall decide upon and recommend to the IM Board, matters in relation to the following:

(i) issuance of capital;

(ii) third party liabilities;

(iii) third party transactions;

(iv) constitutional documents/ parties to the Trust; and

(v) de-listing.

Operations Committee

Terms of reference of the Operations Committee

Subject to the provisions under "*Matters to be decided by the committee and IM Board*" on page 172 above, and the specified matters and related provisions in the Corporate Governance Policy, the Operations Committee shall decide upon and recommend to the IM Board, matters in relation to the following:

(i) third party transactions;

(ii) litigation;

(iii) constitutional documents/ parties to the Trust;

(iv) related party transactions;

(v) operational matters; and

(vi) bankruptcy.

Policies of the IM Board in relation to the Trust

The Investment Manager has adopted the following policies, in relation to management of the Trust and all assets of the Trust:

1. **Policy on UPSI and Dealing in Securities by the Parties ("UPSI Policy")**

   The Investment Manager has adopted the UPSI Policy pursuant to a resolution of the IM Board on July 11, 2022, which was amended on April 2, 2023, and August 10, 2023. The purpose of the policy is, *inter alia*, to ensure that the Trust complies with applicable law, including the InvIT Regulations or such other laws, regulations, rules or guidelines prohibiting insider trading and governing disclosure of material, unpublished price sensitive information ("**UPSI**").

   The key principles of the UPSI Policy are set out below:

   (i) The Investment Manager shall promptly disclose to the relevant stock exchanges all UPSI that would impact price discovery no sooner than credible and concrete information comes into being in order to make such information generally available;

   (ii) The Investment Manager shall follow uniform and universal dissemination of UPSI to avoid selective disclosure. The Investment Manager shall also make prompt dissemination of UPSI that gets disclosed selectively, inadvertently or otherwise to make such information generally available;

   (iii) The Compliance Officer shall be responsible for deciding whether a public announcement is necessary for verifying or denying rumours and then making the disclosure, in accordance with the procedure specified in the Policy for Determining Materiality of Information for Periodic Disclosures;

   (iv) The Compliance Officer shall also make an appropriate and fair response to the queries on news reports and requests for verification of market rumours by regulatory authorities, in accordance with the procedure specified in the Policy for Determining Materiality of Information for Periodic Disclosures. Further, no employee or representative of the Investment Manager who is in receipt of any inquiries relating to the Trust, including from any investors, shall respond to such inquiries. Such employee or representative of the Investment Manager shall refer the inquirer to the Compliance Officer or an any person authorised by the IM Board to deal with inquiries;

   (v) While dealing with analysts or research persons, the Investment Manager shall provide only public information. Alternatively, the information given to analysts or research persons shall be simultaneously made public at the earliest; and

   (vi) The Investment Manager shall handle all UPSI on a "need to know" basis, provided that UPSI may be disclosed to persons who need such information for furtherance of legitimate purposes, performance of duties or discharge of legal obligations in relation to the Trust.

2. **Corporate Governance Policy ("Corporate Governance Policy")**

   The Investment Manager has adopted the Corporate Governance Policy pursuant to a resolution of the IM Board dated July 11, 2022, which was amended on December 22, 2022, and July 18, 2025, in relation to Trust. The objective of the Corporate Governance Policy is to provide for the standards of governance in relation to the Trust and the Investment Manager including the constitution of the IM Board and committees of the IM Board. For details, please see the section entitled "*Corporate Governance – Investment Manager*" on page 171.

3. **Code of Conduct for the Trust (the "Code")**

   The Investment Manager has adopted the Code pursuant to a resolution of the IM Board dated July 11, 2022, in relation to the Trust. The Trust and the parties to the Trust shall comply with the Code at all time, in accordance with the InvIT Regulations.

   The key principles of the Code are set out below:

   (i) the Trust and the Parties to the Trust shall conduct all affairs of the Trust in the interest of all the Unitholders of the Trust;

(ii) the Trust and the Parties to the Trust shall make adequate, accurate, explicit and timely disclosure of relevant material information to all Unitholders, the stock exchanges and the SEBI in accordance with the InvIT Regulations and as may be specified by the stock exchanges from time to time;

(iii) the Trust and the Parties to the Trust shall try to avoid conflicts of interest, as far as possible, in managing the affairs of the Trust and keep the interest of all Unitholders paramount in all matters. In case such events cannot be avoided, it shall be ensured that appropriate disclosures are made to the Unitholders and they are fairly treated;

(iv) the Trust and the Parties to the Trust shall ensure that fees charged by them with respect to activities of the Trust shall be fair and reasonable;

(v) the Investment Manager shall carry out the business of the Trust and invest in accordance with the Investment Objectives and take investment decisions solely in the interest of Unitholders;

(vi) the Trust, the Parties to the Trust and any third party appointed by the Investment Manager shall not use any unethical means to sell, market or induce any person to buy Units of the Trust and where a third party appointed by the Investment Manager fails to comply with this condition, the Investment Manager shall be held liable for the same;

(vii) the Trust and the Parties to the Trust shall maintain high standards of integrity and fairness in all their dealings and in the conduct of their business;

(viii) the Trust and the Parties to the Trust shall render at all times high standards of service, exercise due diligence, ensure proper care and exercise independent professional judgment; and

(ix) the Trust and the Parties to the Trust shall not make any exaggerated statement, whether oral or written, either about their qualifications or capabilities or experience.

4. **Determination of Materiality of Information for Periodic Disclosures Policy ("Materiality of Information Policy")**

The Investment Manager has adopted the Materiality of Information Policy pursuant to a resolution of the IM Board dated July 11, 2022, in relation to Trust. The Materiality of Information Policy aims to outline process and procedures for determining materiality of information in relation to periodic disclosures on the Trust's website, to the Stock Exchanges and to all stakeholders at large, in relation to the Trust. The key principles of the Materiality of Information Policy are set out below:

(i) Any information concerning the InvIT is considered material to the business and affairs of the Trust if (i) it results in, or would reasonably be expected to result in a significant change in the market price or value of units of the Trust; or (ii) if there is a substantial likelihood that a reasonable unitholder would consider it important in determining whether to buy, sell or hold, or engage in other transactions concerning the Trust's units; or (iii) an investor would consider important in making an investment decision.

(ii) The Investment Manager or the Trustee shall provide to SEBI and to the Stock Exchanges, wherever applicable, such information as may be sought by SEBI or by the Stock Exchanges pertaining to the activity of the Trust.

(iii) The Trust shall also submit such information to the Designated Stock Exchange and Unitholders on a periodical basis as may be required under the listing agreements. Further, the Trust shall disclose all such information as may be specified by SEBI to the Designated Stock Exchange, Unitholders and SEBI, in the manner as may be specified by SEBI.

(iv) The Materiality of Information Policy also provides for the approval process for disclosure or dissemination of any material or unpublished price sensitive information on behalf of the Trust and authorises the compliance officer and other authorised persons to make the disclosures, as may be required.

5. **Borrowing Policy of the Trust ("Borrowing Policy")**

The Investment Manager has adopted the Borrowing Policy pursuant to a resolution of the IM Board dated July 11, 2022, in relation to Trust. The Investment Manager shall ensure that all funds borrowed by the Trust or in relation to the Trust are (i) in compliance with the InvIT Regulations, applicable prudential norms and other applicable law; (ii) availed subject to the ability of the Trust to repay such borrowings. Accordingly, the IM Board has formulated the Borrowing Policy to outline the process for borrowing monies in relation to the Trust. The key terms of the Borrowing Policy include, among other things, the following:

(i) The Investment Manager shall ensure that all funds borrowed in relation to the Trust are in compliance with the InvIT Regulations, applicable prudential norms and other applicable law. Further, the Investment Manager may decide the end use of all funds borrowed by the Trust, in compliance with the InvIT Regulations and other applicable law.

(ii) The Investment Manager shall ensure that in the event the aggregate consolidated borrowings and deferred payments (net of cash and cash equivalents) of the Trust, holding companies and the SPVs, exceed any thresholds prescribed under the InvIT Regulations in this regard, any further borrowings by the Trust shall be availed in accordance with the requirements prescribed under the InvIT Regulations. If the thresholds prescribed under the InvIT Regulations are breached on account of market movements of the price of the underlying assets or securities, the Investment Manager shall inform the same to the Trustee and ensure that the conditions prescribed under the InvIT Regulations are satisfied within the timelines prescribed under the InvIT Regulations for curing such breach.

(iii) The Trust may raise debt and avail borrowings and deferred payments from time to time, including through (i) issuance of debt securities, in accordance with applicable law, and (ii) availing loans from banks and financial institutions in accordance with applicable law (including the InvIT Regulations). The Trust shall be permitted to borrow monies through any permitted means, by any instrument, in Indian or foreign currency, as permitted by applicable law, including as prescribed by the RBI. The Investment Manager and the Trustee (on behalf of the Trust) shall be permitted to borrow monies in relation to the Trust, subject to the approval of the board of the IM Board or such other committee, including the Investment Committee of the IM Board as may be constituted in this regard.

(iv) The Trust also has the power to create mortgage or secure any of its Assets or provide guarantees in order to borrow funds. However, the Investment Manager shall not be allowed to create any obligation which would allow the liabilities to extend beyond the assets held by the Trust.

(v) The Investment Manager will not cause the Trust to undertake any obligation which will make the liabilities of the Trust unlimited except with prior approval by the 60% of the Unitholders and the obtaining of any other approvals required under applicable law. Notwithstanding anything contained in the Borrowing Policy, the Investment Manager will not cause the Trust to undertake any obligation which will result in the Trust assuming unlimited liability in respect of any related party transaction.

(vi) In addition to the above, any borrowing by the holding companies or the SPVs, incorporated under the Companies Act, 1956 or the Companies Act, 2013, will be in accordance with the conditions prescribed in the Companies Act, 1956, the Companies Act, 2013, the InvIT Regulations and other Applicable Law.

6. **Policy on Preservation of Documents ("Document Archival Policy")**

The Investment Manager has adopted the Document Archival Policy pursuant to a resolution of the IM Board dated July 11, 2022, in relation to Trust. The document archival policy aims to provide a comprehensive policy on the preservation and conservation of the records and documents of the Trust. It provides guidance on the preservation and management of documents to help ensure the authenticity, reliability and accessibility of such documents. The policy aims at identifying, classifying, storing, securing, retrieving, tracking and destroying or permanently preserving records. It stipulates the duration and manner in and place at which records and documents of the Trust shall be preserved.

7. **Policy on appointment of the auditor and valuer of the Trust**

The IM Board has adopted the policy on appointment of the auditor and valuer of the Trust pursuant to a resolution dated July 11, 2022. For details of the policy on appointment of the auditor and the valuer of the Trust, please see the section entitled "*Other Parties Involved in the Trust – Policy on appointment of Auditor and Valuer*" on page 168.

8. **Distribution Policy ("Distribution Policy")**

The IM Board has adopted the Distribution Policy pursuant to a resolution dated July 11, 2022, which was amended on December 22, 2022, and further amended on July 18, 2025. For details of the Distribution Policy, please see the section entitled "*Distribution*" on page 352.

9. **Policy on Related Party Transactions ("RPT Policy")**

The IM Board has adopted the RPT Policy pursuant to a resolution dated July 11, 2022. For details of the RPT Policy, please see the section entitled "*Related Party Transactions – Procedure for dealing with Related Party Transactions*" on page 376.

10. **Insurance Policy**

The IM Board has adopted the insurance policy pursuant to its resolution dated July 11, 2022. In accordance with the insurance policy, the Investment Manager shall necessitate and validate that the respective holding companies and special purpose vehicles, either by themselves or through their agents or brokers shall obtain insurance policies with a financially sound and reputable insurer(s) adequately covering for:

(i) liability of the directors and officers;

(ii) property all risks or fire and other named perils (including natural perils and strike, riot and malicious damage) based on new replacement cost of assets;

(iii) terrorism (standalone or as an add-on to property/material damage policy);

(iv) employee/workmen compensation in case of death or bodily injury caused to employees due to an injury/accident arising at the workplace;

(v) public liability; and

(vi) all kinds of risks required to be covered in accordance with applicable law and the relevant project agreements.

11. **Environmental and Social Due Diligence Policy ("ESDD Policy")**

The IM Board has adopted the ESDD policy pursuant to its resolution dated July 11, 2022. The ESDD policy aims to provide a criteria for selection of future projects. The key terms of the ESDD Policy are:

(i) Prior to the acquisition of an eligible infrastructure project, the Investment Manager shall undertake the following steps:

a. review the Environmental Impact Assessment ("**EIA**") and environment and social management system, of such eligible infrastructure asset, if available. The Investment Manager shall also evaluate the compliances of environmental issues as highlighted in the EIA and highlight significant areas of concern to the IM Board and Unitholders;

b. ensure that all requisite environmental approvals are obtained and renewed, as and when required. In the event that the environmental clearance is not obtained by an eligible infrastructure project, such project shall not be acquired except for where all the applications have been timely filed and the approval or clearance is expected soon;

c. conduct due diligence to assess the outstanding litigation involving the land utilized or to be utilized for purposes of the eligible infrastructure project; and

d. undertake diligence of the concerns of stakeholders expressed in public domain and instances of protests or civil action in relation to adverse environmental impacts; and

(ii) The Investment Manager may propose an environmental and social action plan to the Board, for purposes of resolving the key issues and gaps identified in the environmental and social due diligence.

12. **Policy on Investment**

The IM Board adopted the investment policy pursuant to its resolution dated 11 July 2022. The investment policy specified the assets in which the Trust was entitled to invest. The Trust was only entitled to invest in, and acquire (directly or indirectly), the initial portfolio assets of the Trust including NAMEPL (*formerly* N.A.M. Expressway Limited, Chenani Nashri Tunnelway Limited, Borgaon Watambare Highways Private Limited, Mangalwedha Solapur Highways Private Limited, Mangloor Highways Private Limited, SIPL (*formerly* KNR Srirangam Infra Private Limited), SPPL (*formerly* KNR Shankarampet Projects Private Limited) and THPL (*formerly* KNR Tirumala Infra Private Limited). Pursuant to the policy, the Trust could invest in, and acquire directly or indirectly, any securities or assets from the Sponsor or other affiliates of CH-I and CH-III or any other securities or asset subject to the approval of the IM Board or any other approvals as may have been required in accordance with applicable law.

13. **Anti-corruption Policy**

The IM Board has adopted the anti-corruption policy pursuant to its resolution dated July 11, 2022 which was amended on April 2, 2023. The anti-corruption policy aims to ensure that the InvIT sets up adequate procedures in order to prevent its involvement in any activity relating to bribery, facilitation of payments that

are not permitted under applicable law, or corruption, even where the involvement may be unintentional. The key terms of the policy are:

(i) The Investment Manager shall not and shall ensure that the Holdcos/SPVs shall not engage in (nor authorize or permit any of its affiliates or any other person acting on its behalf, to engage in) any Corrupt Practices, Fraudulent Practices, Coercive Practices or Collusive Practices (*as defined in the policy*), or enter into any transaction: (i) with, or for the benefit of, any of the individuals or entities named on lists promulgated by; or (ii) related to any activity prohibited by, the United Nations Security Council or its committees pursuant to any resolution under Chapter VII of the United Nations Charter (collectively, "**Sanctionable Practices**") with respect to the Trust or any transaction contemplated with respect to the Trust.

(ii) The Project Manager shall not and shall endeavour to ensure that all contractual counterparties and sub-contractors shall not engage in (nor authorize or permit any of its affiliates or any other person acting on its behalf, to engage in) any Corrupt Practices, Fraudulent Practices, Coercive Practices or Collusive Practices (*as defined in the policy*), or enter into any Sanctionable Practices with respect to the Trust or any transaction contemplated with respect to the Trust.

(iii) The Investment Manager shall not authorize or permit any of its directors, officers, employees or agents, acting on behalf of the Investment Manager or the Holdcos/SPVs (the "**Representatives**") to engage in any Sanctionable Practice with respect to the Trust or any transaction contemplated with respect to the Trust. As a preventive measure, the Investment Manager shall ensure that this Policy is applicable to the third-party service providers by way of incorporation in the agreement or contracts to be entered into with them.

(iv) The Audit Committee shall be responsible for the implementation of this policy. The Audit Committee shall set up procedures or recommend to the IM Board procedures to implement this policy, if required. The Investment Manager shall also develop and disseminate tools and conduct training for Representatives to facilitate the implementation of this policy.

(v) The Investment Manager and the Project Manager shall ensure that the Representatives and all contractual counterparties and sub-contractors agree to comply with the policy under their respective terms of employment or contract/engagement with the Investment Manager and/or the Project Manager or as per the instructions or authorizations of the Investment Manager and/or the Project Manager, as the case may be.

(vi) To minimize the risk of doing business with a corrupt third party, complete assessment of the third party shall be undertaken to confirm that it is a legitimate business with a reputation for integrity. The management of the Investment Manager will have internal control mechanisms in place, to try to avoid dealing with corrupt third parties.

(vii) The Investment Manager shall establish a vigil mechanism for its directors and employees to report their genuine concerns and grievances. The Audit Committee shall oversee the vigil mechanism and if any of the members of the committee have a conflict of interest in a given case, they should recuse themselves and the others on the committee would deal with the matter on hand. The vigil mechanism shall provide for adequate safeguards against victimisation of employees and directors who avail of the vigil mechanism and also provide for direct access to the chairperson of the Audit Committee, in exceptional cases. Provided that In case of repeated frivolous complaints being filed by a director or an employee, the Audit Committee may take suitable action against the concerned director or employee including reprimand.

The Investment Manager undertakes on behalf of the Trust that it shall comply with such disclosure and accounting norms as specified by SEBI from time to time.

14. **Valuation Policy**

The IM Board adopted the valuation policy pursuant to its resolution dated July 11 2022, which was amended on December 22, 2022.

15. **Nomination and Remuneration Policy ("NR Policy")**

The Investment Manager has adopted the NR Policy pursuant to a resolution of its board of directors on April 2, 2023. The NR Policy aims to provide a framework for nomination and remuneration of members of the IM Board , its key managerial personnel, and other employees of the Investment Manager. The key terms of the NR Policy are set out below:

(i) The NR Policy reflect the remuneration philosophy and principles of the Investment Manager and the Trust, and consider the pay and employment conditions with peers / competitive market to ensure that pay structures are appropriately aligned.

(ii) The remuneration of the independent directors of the Investment Manager will be paid by way of sitting fees and commission. This remuneration will be determined by the Nomination and Remuneration Committee and recommended to the IM Board for its approval.

(iii) No remuneration shall be payable by the Investment Manager to non-independent directors.

(iv) The Investment Manager's total compensation for its managerial personnel will consist of:

a. fixed compensation;

b. variable compensation in the form of annual incentive;

c. work related facilities and perquisites; and

d. any other component as recommended by the NRC and approved by the Board.

(v) KMP of the Investment Manager will also be eligible for work related facilities and perquisites as may be determined through human resources policies issued from time to time based on the grade of the KMP.

16. **Policy on Code of Conduct for Board of Directors and Senior Management Personnel (the "CoC")**

The Investment Manager has adopted the CoC pursuant to a resolution of the IM Board dated April 2, 2023, for all members of board of directors and senior management personnel of the Investment Manager. The senior management personnel of the Investment Manager shall include officers and personnel of the Investment Manager who are members of its core management team, excluding the IM Board, and shall also comprise all members of management, one level below the chief executive officer or managing director or whole time director or manager (including chief executive officer or manager, in case they are not part of the IM Board) and shall specifically include the compliance officer and chief financial officer, as applicable ("**Senior Management Personnel**").

The key terms of the CoC are set out below:

(i) The CoC enables the Investment Manager to publicly state to the external stakeholders of the Trust (suppliers, customers, consumers, Unitholders, etc.), the way in which they intend to carry out their business and their business in relation to the Trust.

(ii) In accordance with the CoC, the IM Board and Senior Management Personnel should:

a. demonstrate the highest standards of integrity, business ethics, and corporate governance;

b. perform their roles with competence, diligence, in good faith and in the best interests of the Trust and the Unitholders of the Trust;

c. provide expertise and experience in their areas of specialization and share learnings at the meetings of the IM Board with best interests of the Trust and its stakeholders along with the Unitholders in mind. They should point the Investment Manager's management in the 'right' direction based on their experience and judgement;

d. give careful and independent consideration to the affairs of the Investment Manager and the Trust and all documents placed before them to satisfy themselves with the soundness of key decisions taken by the management. They should call for additional information, where necessary, for making such judgements;

e. not engage in any business, relationship or any activity which detrimentally conflicts with the interest of the Trust or bring discredit to the Investment Manager or the Trust. Any situation that creates a conflict of interest between personal interests and the Trust or its Unitholders' interest must be avoided at all costs;

f. follow all the guidelines put forth in the policy for prevention of insider trading;

g. not disclose any confidential / privileged information of the Investment Manager or the Trust and should direct any media queries or approaches to the appropriate spokesperson within the Investment Manager; and

h. not achieve or attempt to achieve any undue gain or advantage either to himself or to his relatives, partners, or associates.

(iii) The CoC also sets out the duties of the independent directors on the IM Board, including, amongst others, (a) undertaking appropriate induction and regularly update and refresh their skills, knowledge and familiarity with the Investment Manager and the Trust; (b) seeking appropriate clarification or amplification of information and, where necessary, take and follow appropriate professional advice and opinion of outside experts at the expense of the Trust; and (c) striving to attend all meetings of the IM Board and of the committees of the IM Board, which the independent director(s) is a member of.

(iv) All members of the IM Board and Senior Management Personnel shall affirm compliance with the CoC on an annual basis.

17. **Policy to Promote Diversity of Board of Directors (the "Diversity Policy")**

The Investment Manager has adopted the Diversity Policy pursuant to a resolution of the IM Board dated April 2, 2023. The key terms of the Diversity Policy are set out below:

(i) The Nomination and Remuneration Committee shall ensure that the IM Board shall have an optimum combination of non-independent, independent and woman directors in accordance with requirements of the InvIT Regulations, LODR Regulations and other statutory, regulatory and contractual obligations of the Investment Manager and the Trust.

(ii) The Nomination and Remuneration Committee shall review the profile of the prospective candidates for appointment as a director on the IM Board taking in consideration knowledge, experience, financial literacy / expertise, global market awareness and other relevant factors as may be considered appropriate and the IM Board shall be so formulated with mix of members to maintain high level of ethical standards. The Nomination and Remuneration Committee shall also take into consideration the provisions of the InvIT Regulations, LODR Regulations and other statutory, regulatory and contractual obligations of the Investment Manager.

18. **Risk Management Policy in relation to the Trust ("RM Policy")**

The Investment Manager has adopted the RM Policy pursuant to a resolution of its board of directors on April 2, 2023. The RM Policy aims to provide a framework for management of risks associated with the business of the Trust. The key terms of the RM Policy are set out below:

(i) *Principles of risk management:* The risk management committee shall provide reasonable assurance in protection of business value of the Trust from uncertainties and consequent losses.

(ii) *General:* Risk management process includes four activities:

a. Risk identification;

b. Risk assessment;

c. Risk mitigation and monitoring; and

d. Reporting.

(iii) *Risk identification:* The purpose of risk identification is to identify internal and external risks specifically faced by the Trust, in particular including financial, operational, sectoral, sustainability (particularly, environment, social and governance related risks), information, cyber security risks or any other risk as may be determined by the Risk Management Committee and identify all other events that can have an adverse impact on the achievement of the business objectives.

(iv) *Risk assessment:* Assessment involves quantification of the impact of Risks to determine potential severity and probability of occurrence.

(v) *Risk mitigation:* All identified risks should be mitigated using any of the following risk mitigation plans:

a. Risk avoidance: by not performing an activity that could carry any risk. Avoidance may seem the answer to all Risks but avoiding Risks also means losing out on the potential gain that accepting (retaining) the risk may have allowed;

b. Risk transfer: mitigation by having another party to accept the risk, either partial or total, typically by contract or by hedging / insurance;

c. Risk reduction: Employing methods/solutions that reduce the severity of the loss; and

d. Risk retention: Accepting the loss when it occurs. Risk retention is a viable strategy for small risks where the cost of insuring against the risk would be greater than the total losses sustained. All Risks that are not avoided or transferred are retained by default.

(vi) *Monitoring and reviewing risks:* The risk management committee shall formulate the policies for effective identification, monitoring, mitigation of the risks. The Risk Management Committee shall take cognizance of risks which may impact business continuity while framing risk responses. Existing process of Risk Assessment of identified Risks and its mitigation plan will be appraised by the Risk Management Committee to the Board on an annual basis.

19. **Vigil Mechanism and Whistle Blower Policy ("Whistleblower Policy")**

The Investment Manager has adopted the Whistleblower Policy pursuant to a resolution of its board of directors on April 2, 2023. The key terms of the Whistleblower Policy are set out below:

(i) Any communication made in good faith that discloses or demonstrates information that may evidence unethical or improper activity, including of a Leak (as defined in the UPSI Policy) ("**Protected Disclosure**") should be made by the relevant whistle-blower ("**Whistleblower**") to the Compliance Officer.

(ii) Protected Disclosure should be in writing so as to ensure a clear understanding of the issues raised and should be either typed or written in legible writing in English, Hindi or a regional language. The protective disclosure or reporting can also be made by electronic mail.

(iii) Protected Disclosure should be forwarded with a cover letter which shall bear the identity of the Whistleblower.

(iv) Protected Disclosure should be factual and not speculative and should contain as much specific information as possible in order to allow proper investigation.

(v) The Whistleblower is not required or expected to conduct any investigation and shall not have the right to participate in any investigation conducted by the Compliance Officer in relation to Protected Disclosure made by such Whistleblower.

(vi) The Compliance Officer, on finding the Protected Disclosure to be proper, shall forward the details of the Protected Disclosure to the Empowered Committee (as defined in the Whistleblower Policy). The Empowered Committee will apply due diligence on Protected Disclosure received from the Compliance Officer and conclude if it is of administrative or of disciplinary nature and whether it requires further investigation or decide appropriate course of action including closure of the complaint. The decision taken by the Empowered Committee on the Protected Disclosure along with its justification shall be put up to Board or to any person authorised by the Board in this regard for approval.

(vii) The Investment Manager shall ensure that no Whistleblower who has made any Protected Disclosure is subjected to victimization by initiation of any proceedings or otherwise merely on the grounds that such Whistleblower had made any Protected Disclosure or rendered assistance in any inquiry.

(viii) If any Whistleblower is being victimized or likely to be victimized on the ground of making any Protected Disclosure, filing a complaint or rendering assistance in any inquiry pursuant to the Protected Disclosure made by such Whistleblower, such Whistleblower may approach or file an application to the chairman, managing director or the members (including the chairman) of the Audit Committee of the Investment Manager seeking redress in the matter and such authority shall take such action as it deems fit and may give suitable directions to protect the Whistleblower being victimized and avoid any further victimization.

(ix) Every effort will be made to protect Whistleblowers' identity and under no circumstances shall such identity be discussed with any unauthorized person. Utmost care should be taken by the Compliance Officer that the Protected Disclosure made by any Whistleblower is kept confidential and identity of the Whistleblower is not revealed. In case any such information is disclosed, necessary action shall be taken against the concerned employee making such disclosure.

20. **Investors' Grievance and Redressal Policy ("Investor Grievance Redressal Policy")**

The Investment Manager has adopted the Investor Grievance Redressal Policy pursuant to a resolution of its board of directors dated February 9, 2025. The main purpose of Investor Grievance Redressal Policy is to allow stakeholder (unitholder) engagement to be undertaken in a systematic manner that will allow the various

stakeholder groups to express their individual views and opinions, and Investment Manager of the Trust to appropriately respond to them.

21. **Policy for filing of claims by unitholders and debenture holders for unclaimed amounts ("Policy on Unclaimed Distribution")**

The Investment Manager has adopted the Policy on Unclaimed Distribution pursuant to a resolution of its board of directors dated November 23, 2024. The main purpose of Policy on Unclaimed Distribution is to provide a comprehensive process to be followed by unitholders and debenture holders for claiming their unclaimed or unpaid amounts and processing of same by the Investment Manager. It stipulates the format in which claim shall be submitted by the unitholder, the procedure and documentation for making claim, the documents required to be submitted in support of the claim, manner and timeline of submission, conditions for rejection of claim, option of re-filing of a claim and the process to be followed for verification of claims.

22. **Policy on qualification and criteria for appointment of Unitholders Nominee Directors on the IM Board**

The Investment Manager has adopted the policy on qualification and criteria for appointment of Unitholders Nominee Directors pursuant to a resolution of its board of directors on October 08, 2023. The policy provides the framework wherein the investment manager to the Trust is required to formulate and adopt a policy providing for qualifications, criteria for appointment, and evaluation parameters of individuals nominated for Unitholder Nominee Director. Accordingly, the policy prescribes requisite procedures and guidelines for, inter alia, the appointment of Unitholder Nominee Directors and the criteria for evaluation of the individuals nominated as Unitholder Nominee Directors.

23. **Framework on succession planning for the Board and Senior Management of Cube Highways Fund Advisors Private Limited**

The Investment Manager has adopted the framework on succession planning for the Board and Senior Management of Cube Highways Fund Advisors Private Limited pursuant to a resolution of its board of directors on August 09, 2024.

(i) The objectives of the framework on succession planning for the Board and Senior Management of the IM are:

a) To identify and nominate suitable candidates for the Board's approval to fill vacancies which may arise in the Board from time to time;

b) To identify the competency requirements of critical and key positions, assess potential candidates and develop required competency through planned development and learning initiatives;

c) To identify the key job incumbents in senior management positions and recommend whether the concerned individual be granted an extension in term/service or be replaced with an identified internal or external candidate or recruit other suitable candidate(s); and

d) To ensure the systematic and long-term development of individuals in the senior management level to replace as and when the need arises due to deaths, disabilities, retirements, and other unexpected occurrence.

(ii) The Framework shall be applicable for succession planning of the managing director/whole-time/ executive directors, non-executive directors, independent directors and other members of the Board and senior management.

(iii) The Nomination and Remuneration Committee of the Board (the "**NRC**") shall review the leadership and management needs of the Investment Manager from time to time. The NRC shall assess the suitability of a person who is being considered for appointment as a director of the Investment Manager, based on his / her educational qualification, experience, expertise and track record and shall recommend to the Board, the terms and conditions of his/her appointment, including remuneration.

(iv) The NRC may, at its discretion, recommend to the Board, appointment of suitable candidate(s) in senior management level with a view to ensure a continuous availability of managerial talent at senior levels to meet the organizational needs.

(v) The recommendations of the NRC shall be placed before the Board for approval. The senior management team shall always strive to develop in-house capabilities by enriching work exposure.

2. Portfolio Assets

Representatives on the Board of Directors of the Portfolio Assets

The Investment Manager, in consultation with the Trustee, has appointed the majority of the members of the board of directors of each of the Portfolio Assets, in accordance with the requirements prescribed under the InvIT Regulations.

Unless otherwise specified, the information in this section is derived from the industry report titled "Assessment of the Indian Road Sector" dated June, 2026 (the "Industry Report") which has been commissioned and paid for by the Investment Manager for an agreed fee and prepared only for the purposes of confirming our understanding of the industry exclusively in connection with the Offer. The Industry Report has been included in the section entitled "Material Contracts and Documents for Inspection" on page 470. The Investment Manager engaged the Industry Expert, in connection with the preparation of the Industry Report. The data included in this section includes excerpts from the Industry Report and may have been reordered by us for the purposes of presentation. Unless otherwise indicated, all financial, operational, industry and other related information derived from the Industry Report and included herein, all references to a "year" in this Final Offer Document are to a calendar year. For further details and risks in relation to commissioned reports, see "Risk Factors – We have relied on data derived from third party reports, which are based on certain estimates and assumptions and are subject to the limitations set out therein" on page 106.

Macroeconomic overview of India

Review and outlook of real GDP growth

According to the IMF's April 2026 database, India remains one of the world's largest economies and among the fastest-growing major economies globally. While its ranking has shifted to sixth place, India continues to demonstrate strong economic fundamentals, with real GDP growth projected in the range of 6-7%, significantly outpacing most global peers.

India's economic growth remained resilient in Financial Year 2026 despite an increasingly uncertain global environment. According to the National Statistical Office (NSO), real GDP growth for Financial Year 2026 was recorded at 7.7%, marginally higher than earlier estimates and among the strongest growth rates globally. The upward revision was driven by stronger-than-anticipated economic activity in the fourth quarter, reflecting the continued strength of domestic demand and investment activity.

Real GDP growth stood at 7.80% in the fourth quarter of Financial Year 2026, slightly lower than the 8.00% recorded in the preceding quarter but above the average growth rate of 7.40% observed over the previous ten quarters. Growth momentum was sustained despite disruptions arising from geopolitical tensions in West Asia and heightened global uncertainty.

The Indian economy is estimated to have recorded a CAGR of 7.36% between Financial Years 2023 and 2026, supported by favourable domestic macroeconomic conditions, moderate inflation, declining unemployment, strong private consumption and sustained public capital expenditure. The financial environment also remained supportive, characterised by ample liquidity and improved credit availability.

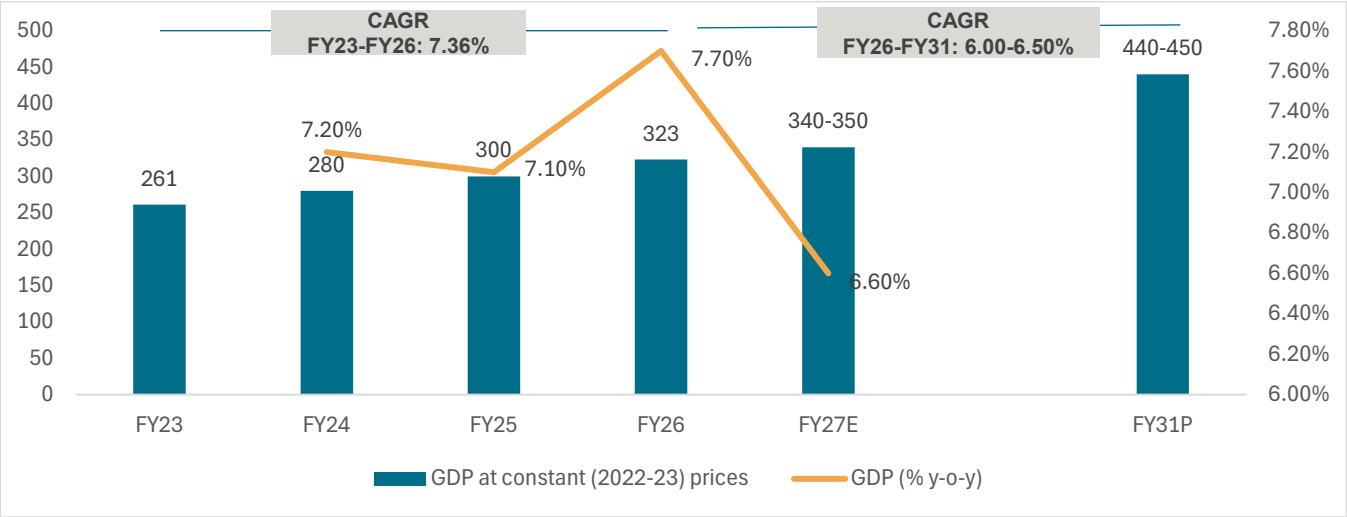
Looking ahead, real GDP growth is projected to moderate to 6.60% in Financial Year 2027. While growth is expected to remain robust relative to global peers, several downside risks have emerged. Elevated crude oil and commodity prices, softer global economic growth, geopolitical uncertainties and the possibility of a below-normal monsoon are expected to weigh on economic activity. Higher energy and commodity prices may increase input costs for businesses, particularly in manufacturing sectors dependent on imported raw materials. At the same time, continued supply chain disruptions could affect input availability and profitability across industries.

Despite these headwinds, domestic demand is expected to remain supportive. Private consumption is likely to remain supported by lower interest rates, tax relief measures, direct benefit transfers and moderating inflation. Investment activity is also expected to remain healthy, driven by opportunities in emerging sectors such as green hydrogen, semiconductors, battery manufacturing and data centres, alongside the government's continued emphasis on infrastructure development and capital expenditure.

Weather-related risks remain a key concern for Financial Year 2027. The India Meteorological Department (IMD) has projected rainfall at 92% of the long-period average, indicating below-normal monsoon conditions. Any adverse impact on agricultural production could affect rural incomes and consumption, thereby posing a challenge to overall growth.

Overall, while economic growth is expected to ease from the elevated levels witnessed in Financial Year 2026, strong domestic demand, improving investment activity and continued policy support are expected to sustain India's position as one of the fastest-growing major economies.

India's GDP growth trend and outlook (based on 2022-23 GDP series)



Note 1: E- estimated, P – projected
Note 2: A new national accounts series has been released with 2022-23 as the base year, superseding the 2011-12 series, with figures available Financial Year 2023 onwards
Source: National Statistical Office (NSO) second advance estimate, IMF, Crisil Intelligence estimates

Despite the repeated global shocks after the pandemic, including the uncertainties in Eastern Europe and the hike in US tariffs, the Indian economy has remained on a high growth path, expanding 7.40% on average per year between Financial Years 2024 and 2026. This has been due to support from domestic factors led by public infrastructure spending Improvements in public digital infrastructure through the Unified Payments Interface (UPI) along with recent steps, including the rationalisation of goods and services tax rates and the simplification of labour codes, have started to move the needle. Domestic consumption is expected to continue driving India's growth momentum, underpinned by rising income levels, a skilled working population, and high-quality job creation. Complementary structural reforms, including land reforms and improved ease of doing business, are likely to further strengthen demand, reinforcing domestic resilience against external shocks.

New GST reforms impact

The introduction of GST 2.0, with its simplified two-slab structure (5% and 18%) and extensive rate rationalisation, is expected to significantly boost India's infrastructure and overall economic growth. The reduction in GST on cement from 28% to 18% and on construction materials such as marble, granite, and sand-lime bricks from 12% to 5% will directly lower project costs for roads, housing, and urban infrastructure. This will enhance affordability in the housing market, accelerate project execution, and create new employment opportunities in construction and allied sectors.

By easing compliance, streamlining refunds, and correcting inverted duty structures, GST 2.0 will improve cash flows for developers and contractors, especially MSMEs engaged in infrastructure supply chains. The reforms are designed to expand domestic manufacturing and boost demand for materials such as steel, cement, and machinery, creating a multiplier effect across core industries.

Lower taxation on farm machinery, auto parts, and services, along with exemption of insurance and healthcare premiums, will further stimulate consumption and investment. As infrastructure construction intensifies under public and private investment programs, these reforms will sustain economic momentum through stronger domestic demand, improved ease of doing business, and enhanced fiscal buoyancy. In essence, GST 2.0 is not merely a tax rationalisation measure but a structural reform that supports India's long-term vision of inclusive and infrastructure-led growth, aligning fiscal simplification with national development priorities.

Review and outlook of GDP growth in key global economies

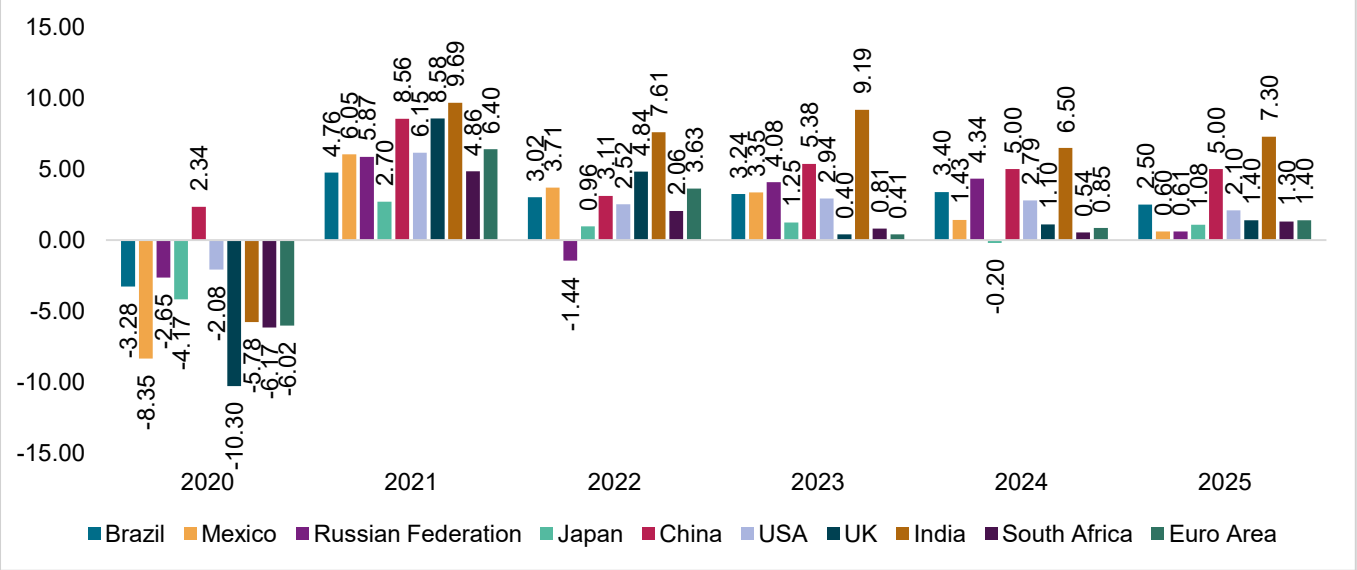
The global economy experienced a sharp contraction in 2020 following the outbreak of the COVID-19 pandemic, which disrupted economic activity across both advanced and emerging economies. This was followed by a strong rebound in 2021, supported by the easing of restrictions, fiscal stimulus measures and the revival of consumer and business activity. However, growth moderated during 2022–2024 as economies grappled with elevated inflation, tighter monetary policies, geopolitical tensions and lingering supply chain disruptions.

Despite these headwinds, economic performance varied across regions. Emerging economies generally demonstrated greater resilience than advanced economies, supported by stronger domestic demand and investment activity. India consistently remained among the fastest-growing major economies, while China maintained moderate growth. In contrast, growth across advanced economies such as the United States, United Kingdom, Japan and the Euro Area softened amid tighter financial conditions and weaker external demand.

In 2025, India remained one of the fastest-growing major economy, driven by robust domestic consumption, sustained infrastructure investment and a favourable policy environment. China continued to record relatively strong growth, while Brazil

and the United States witnessed moderate expansion. Growth across the UK, Japan and the Euro Area remained comparatively subdued, reflecting ongoing macroeconomic challenges and weaker demand conditions. Overall, emerging economies continued to outperform advanced economies and remained the primary contributors to global economic growth.

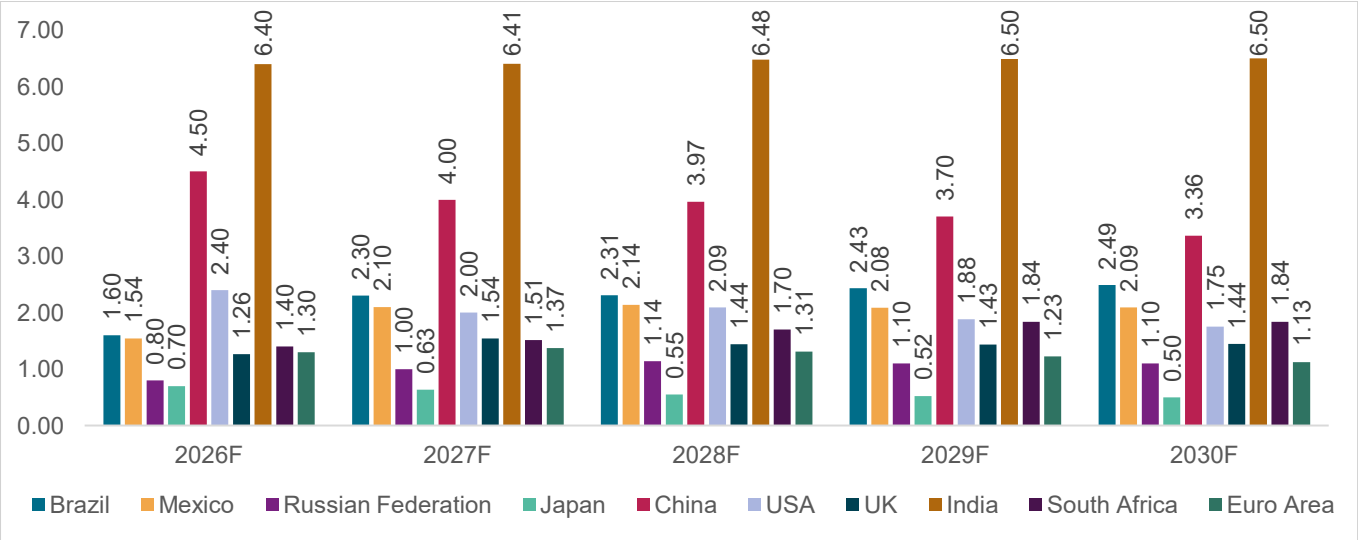
Review of GDP growth (% y-o-y) of key economies



Note: On Calendar Year (Calendar Year) basis except India. Data points for India are on Financial Year (Financial Year) basis.
** Euro area comprises 20 member countries of the EU*
Source: International Monetary Fund (IMF); World Economic Outlook (WEO) - April 2026 update, CRISIL Intelligence

Global growth is projected to stabilize at moderate levels over the medium term. Advanced economies are expected to grow steadily but at subdued rates, reflecting structural constraints and slower productivity gains. In contrast, emerging markets are likely to remain key growth drivers, led by India's consistently strong outlook (approximately 6.50%) and China's gradual but moderating expansion. Overall, the outlook indicates a transition toward a more balanced but lower-growth environment, supported by easing inflation, improved financial conditions, and gradual normalization of global demand

Outlook of GDP growth (% y-o-y) of key economies



Note: On Calendar Year (Calendar Year) basis except India. Data points for India are on Financial Year (Financial Year) basis.
** Euro area comprises 19 member countries of the EU*
Source: International Monetary Fund (IMF); World Economic Outlook (WEO) – April 2026 update, CRISIL Intelligence

Nominal GDP

The global economic landscape continues to be dominated by the United States and China, which are expected to maintain their positions as the world's largest and second-largest economies, respectively, through Financial Year 2026. Germany remains the third-largest economy, while India is projected to retain its position as the fourth-largest economy globally.

Despite fluctuations in exchange rates and global economic conditions, India's nominal GDP is expected to remain above US$4 trillion, supported by strong domestic demand, infrastructure investments and industrial growth. The United Kingdom overtakes Japan to become the fifth-largest economy in Financial Year 2025, reflecting shifting global economic dynamics.

Nominal GDP TOP 6 Countries ($ billion)

Country	Financial Year 2024	Rank	Financial Year 2025	Rank	Financial Year 2026	Rank
United States	29,298.03	1	30,767.08	1	32,383.92	1
China	18,945.11	2	19,626.25	2	20,851.59	2
Germany	4,684.18	3	5,048.06	3	5,452.86	3
India	4,190.01	4	4,435.16	4	4,379.25	4
Japan	3,760.81	5	3,916.31	6	4,153.19	6
United Kingdom	3,695.36	6	4,003.02	5	4,264.79	5

Source: World Bank, CRISIL Intelligence

Trend in Inflation

An inflation reset

The CPI series has been revised to a 2024 base from the 2012 base, using updated consumption baskets from the latest HCES. The new series aims to better reflect current price trends.

- The revision goes beyond simple reweighting of items based on updated consumption basket shares, it also includes methodological changes such as a different treatment of missing prices, consideration of free social transfers (including public distribution system items), changes to the housing index and the inclusion of new price data from e-commerce and online platforms.
- The consumer basket has been reclassified to mostly align with the United Nations-developed Classification of Individual Consumption According to Purpose (COICOP) 2018, the latest structure. This should improve comparability with retail inflation measures of other countries.
- The NSO has provided pre-January headline index values (back series), leaving the historical inflation trajectory broadly unchanged from the old series.

Trends in CPI

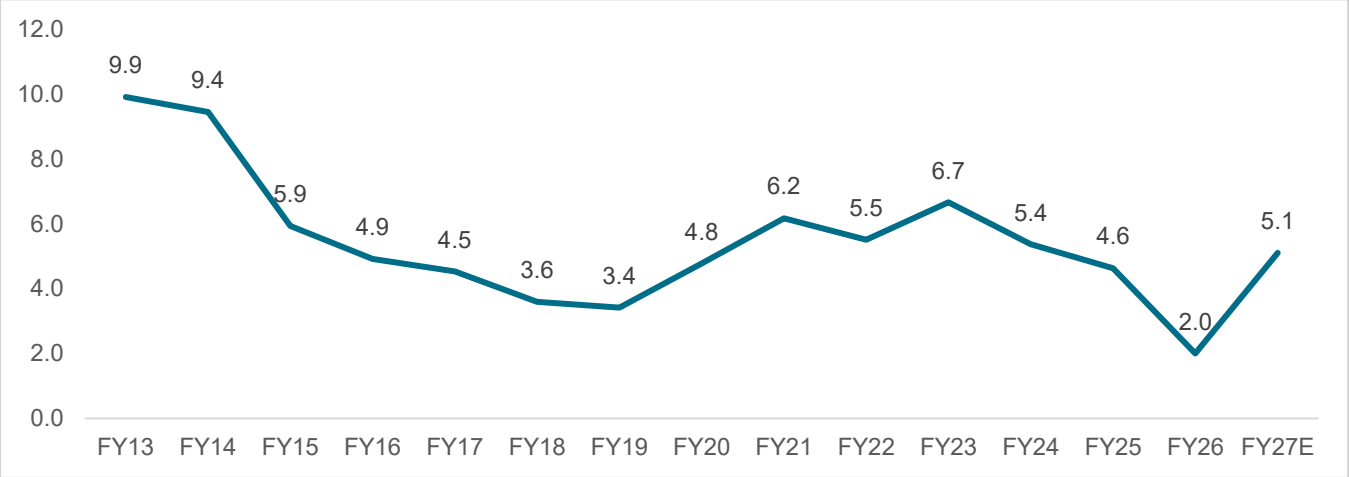
Consumer Price Inflation (CPI) in India has witnessed significant moderation over the past decade, declining from 9.9% in Financial Year 2013 to 3.4% in Financial Year 2019, supported by improved supply-side management, prudent monetary policy, and a stable macroeconomic environment. Inflationary pressures resurfaced during the pandemic and post-pandemic recovery period, with CPI rising from 4.8% in Financial Year 2020 to a peak of 6.7% in Financial Year 2023, driven by supply chain disruptions, elevated commodity prices, and global economic uncertainties.

Subsequently, inflation eased to 5.4% in Financial Year 2024 and further to 4.6% in Financial Year 2025 as food and fuel price pressures moderated. CPI is estimated to have declined sharply to 2.0% in Financial Year 2026, supported by favorable base effects, lower food inflation, and relatively stable energy prices.

Recent inflation trends indicate that the transmission of global cost pressures to retail consumers has remained limited. Despite the escalation of the West Asia conflict and the associated increase in wholesale prices, CPI inflation rose only marginally to 3.48% in April 2026 from 3.40% in March 2026, suggesting that consumers have remained largely shielded from higher input and energy costs. Core inflation also remained stable, reflecting the delayed pass-through of producer costs to end consumers.

Looking ahead, CPI inflation is projected to increase to 5.1% in Financial Year 2027. The expected rise is primarily attributable to the low-base effect of Financial Year 2026, the likelihood of higher energy and input costs being passed on to consumers and increasing price pressures across key consumption categories. Nevertheless, inflation is expected to remain within a manageable range and significantly below the elevated levels observed during Financial Year 2013-Financial Year 2014, indicating a relatively stable medium-term inflation outlook.

CPI trendline



Source: Ministry of Statistics and Programme Implementation (MOSPI), CRISIL Intelligence

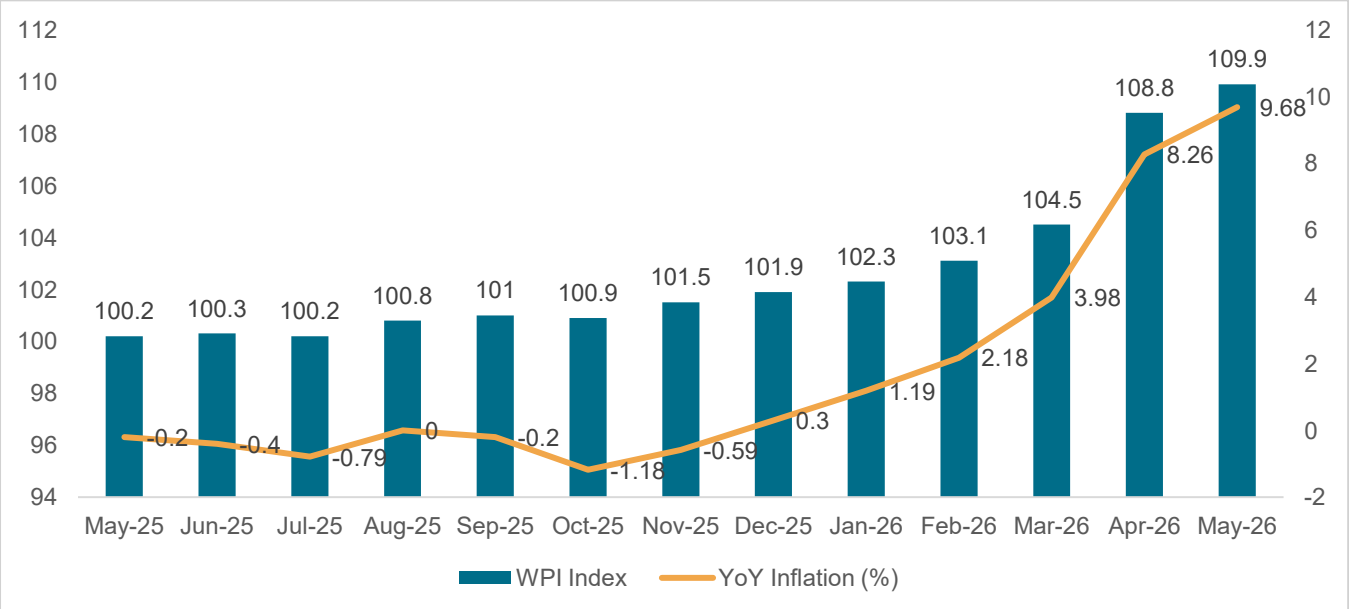
Trends in WPI

India's Wholesale Price Index (WPI) inflation witnessed a significant uptick during Financial Year 2025-2026, reflecting rising price pressures across key commodity groups. After remaining subdued and largely negative between May and November 2025, WPI inflation gradually accelerated from 0.3% in December 2025 to 1.2% in January 2026 and 2.2% in February 2026. The upward trend intensified thereafter, with inflation reaching 4.0% in March 2026, 8.3% in April 2026 and 9.7% in May 2026. Correspondingly, the all-commodities WPI index increased from 100.2 in May 2025 to 109.9 in May 2026, indicating broad-based wholesale price inflation across the economy.

The sharp rise in WPI inflation during the latter part of Financial Year 2025-2026 was primarily driven by higher prices in fuel and power, primary articles and manufactured products. In May 2026, inflation in Fuel & Power stood at 30.3%, followed by Manufactured Products at 7.5% and Primary Articles at 5.0%. According to the Office of the Economic Adviser, mineral oils, crude petroleum and natural gas, chemicals and chemical products, and basic metals were among the key contributors to wholesale inflation during April–May 2026.

Despite the recent increase in wholesale prices, the trend reflects a recovery in industrial and commodity demand, alongside higher energy costs and global commodity price movements. Going forward, WPI inflation is expected to remain sensitive to fluctuations in crude oil prices, global supply-chain dynamics, geopolitical developments and domestic demand conditions. Sustained monitoring of input costs and commodity markets will remain crucial for assessing inflationary pressures across the economy.

WPI trendline



Source: DPIIT, CRISIL Intelligence

Outlook

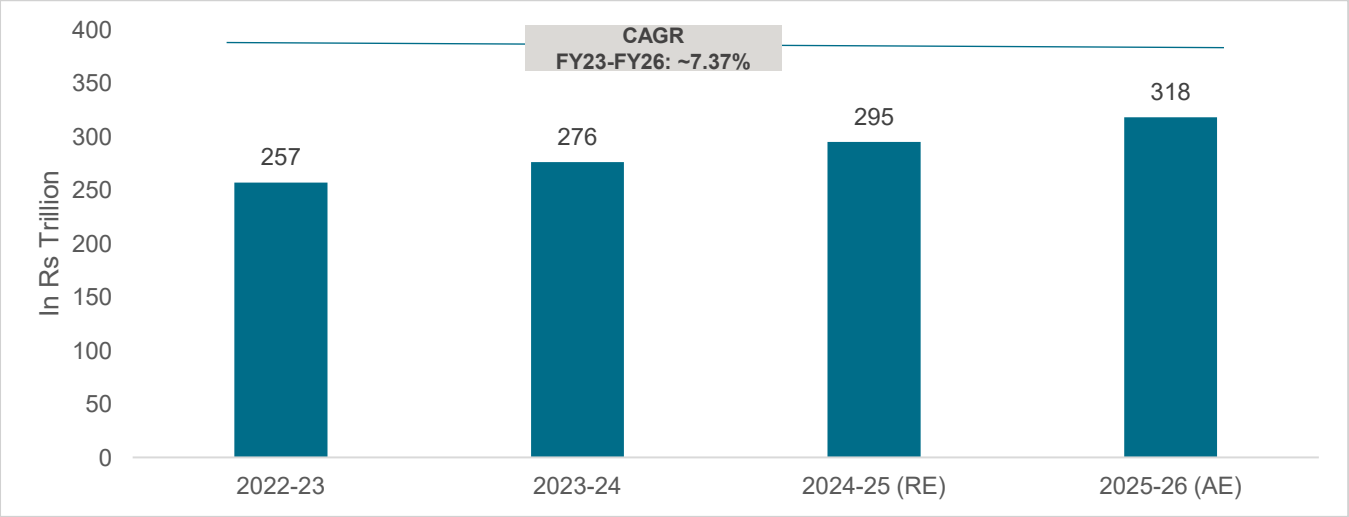
The government's continued fiscal consolidation efforts, thrust on capital expenditure, and the implementation of GST 2.0 reforms are expected to further anchor inflation expectations over the medium term. In alignment with the Reserve Bank's medium-term inflation target of 4% (within a tolerance band of ±2%) till Financial Year 2030, policy efforts remain focused on anchoring inflation expectations while maintaining conditions conducive to growth. The trajectory over the medium term is expected to converge close to the target of Viksit Bharat 2047, supported by easing supply bottlenecks, moderation in commodity prices, and structural policy reforms. This macroeconomic backdrop of robust growth contained inflation, and a gradually easing interest rate environment translates into rising traffic volumes on roads and lower financing costs.

Per Capita GNI

India's Gross National Income (GNI), measured at constant prices (2022-23 series), has demonstrated a strong and resilient upward trajectory over the past decade, reflecting sustained economic expansion.

Post-pandemic, the economy has exhibited a robust recovery, with GNI rebounding to ₹257 trillion in Financial Year 2023 and continuing its upward momentum to ₹276 trillion in Financial Year 2024. This growth trajectory has further strengthened in recent years, reaching ₹295 trillion in Financial Year 2025 (RE) and ₹318 trillion in Financial Year 2026 (AE).

Gross National Income (2022-23 series)



Note: FRE: First Revised Estimates; SAE: Second Advance Estimate
Source: MOSPI Press note of new series, Feb 2026, CRISIL Intelligence

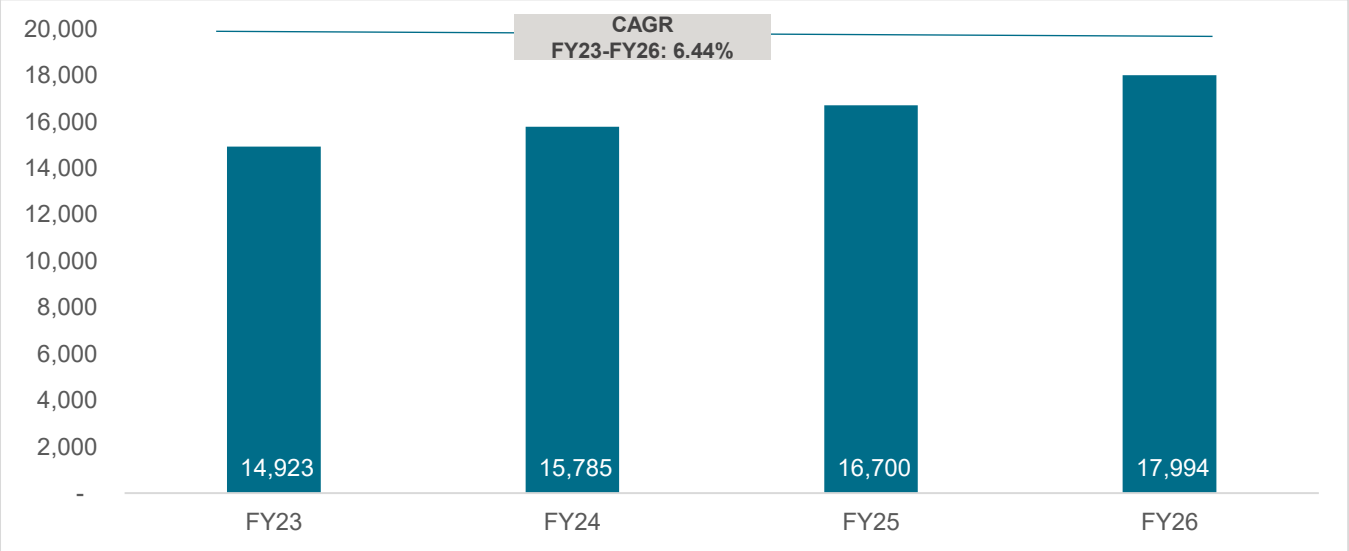
Review of private final consumption growth

Private final consumption expenditure (PFCE) reflects the overall consumption patterns and spending capacity of households within an economy. When PFCE increases it often translates to increased demand for various goods and services.

PFCE at constant prices clocked 6.4% CAGR between Financial Years 2023 and 2026, maintaining its dominant share in the GDP pie. The growth in PFCE highlights the resilience of consumer spending, supported by improving economic activity, rising income levels, and strengthening consumer confidence. The sustained increase in household expenditure has played a crucial role in supporting overall economic growth, particularly as domestic consumption remains one of the primary drivers of India's GDP.

PFCE grew by 5.78% in Financial Year 2024, followed by 5.80% in Financial Year 2025 and 7.75% in Financial Year 2026, indicating a gradual acceleration in consumption demand. The stronger growth observed in Financial Year 2026 suggests continued recovery in discretionary spending and improving purchasing power, supported by favorable economic conditions.

PFCE at constant prices (2022-23 series)



Source: MoSPI, CRISIL Intelligence

Historical trends in FDI inflows

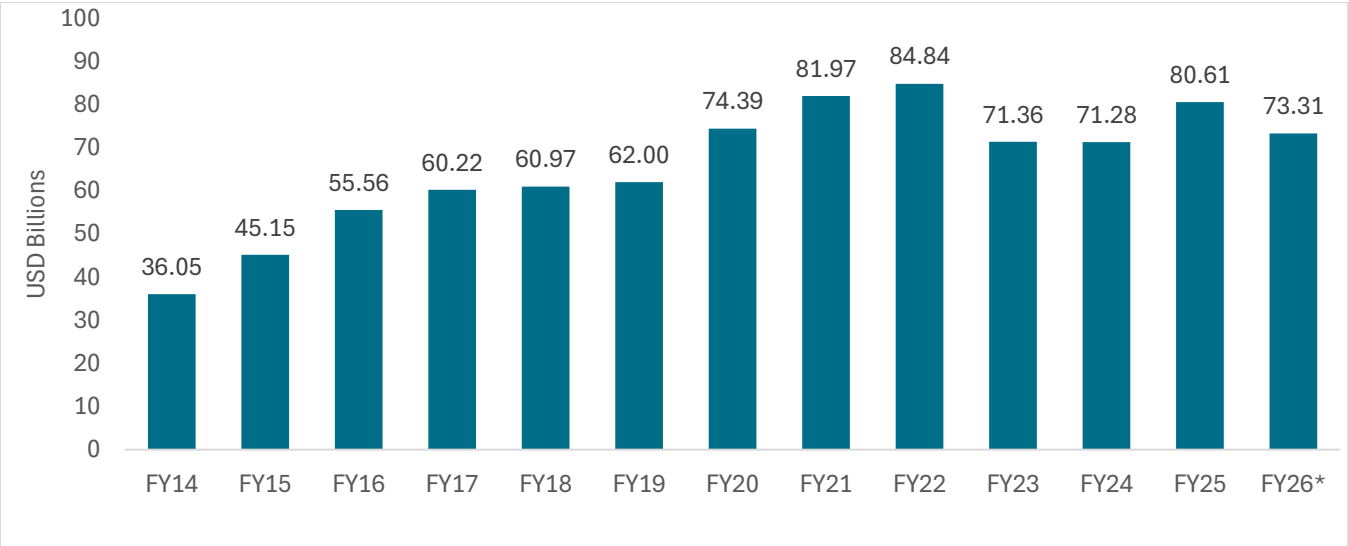
Under the new foreign investment policy, the Government of India constituted the Foreign Investment Promotion Board (FIPB), whose main function was to invite and facilitate foreign investments. The FIPB ceased to exist as per the decision taken by the finance ministry in 2017. The government has now empowered individual departments to clear FDI proposals in consultation with the Department of Industrial Policy and Promotion (DIPP) within the set timelines. From a baseline of less than $1 billion in 1990, India has become one of the most important FDI destinations in the world.

Foreign Direct Investment (FDI) inflows to India have shown a steady upward trajectory over the past decade, reflecting growing investor confidence and India's emergence as a preferred global investment destination. FDI equity inflows rose from US$36.05 billion in Financial Year 2014 to US$84.84 billion in Financial Year 2021, registering more than a two-fold increase during this period.

After peaking in Financial Year 2021, inflows moderated slightly to US$81.97 billion in Financial Year 2022, followed by a decline to around US$71.36 billion in Financial Year 2023 and Financial Year 2024. The marginal recovery to US$80.61 billion in Financial Year 2025 indicates renewed investor interest, likely driven by continued policy reforms, infrastructure development, and India's resilience amid global economic uncertainties.

Overall, the data suggests that India continues to remain one of the most attractive destinations for FDI, supported by its strong macroeconomic fundamentals, improving ease of doing business, and government initiatives such as Make in India, Production Linked Incentive (PLI) schemes, and focus on manufacturing and digital transformation.

FDI equity inflows to India ($ billion)



Source: DIPP, CRISIL Intelligence
**Note: Financial Year 2026 number is for the period April-December 2025*

Monetary Policy and Interest Rate

The Monetary Policy Committee (MPC) continued its easing cycle through Financial Year 2025-2026, which began in February 2025 with a 25 basis points (bps) reduction, followed by another 50-bps cut in April 2025, bringing the policy repo rate down to 5.50 per cent. Further rate cut of 25 bps was announced in Dec 2025 which brought repo rate to 5.25% which remains unchanged after April 2026 MPC meeting. The policy stance also remained unchanged at neutral, in continuation of the earlier accommodative phase.

The RBI also announced a 100-bps reduction in the Cash Reserve Ratio (CRR) in its September 2025 meeting to ease liquidity conditions, reaffirming its focus on maintaining financial stability and supporting economic recovery.

Policy Rationale and Economic Context

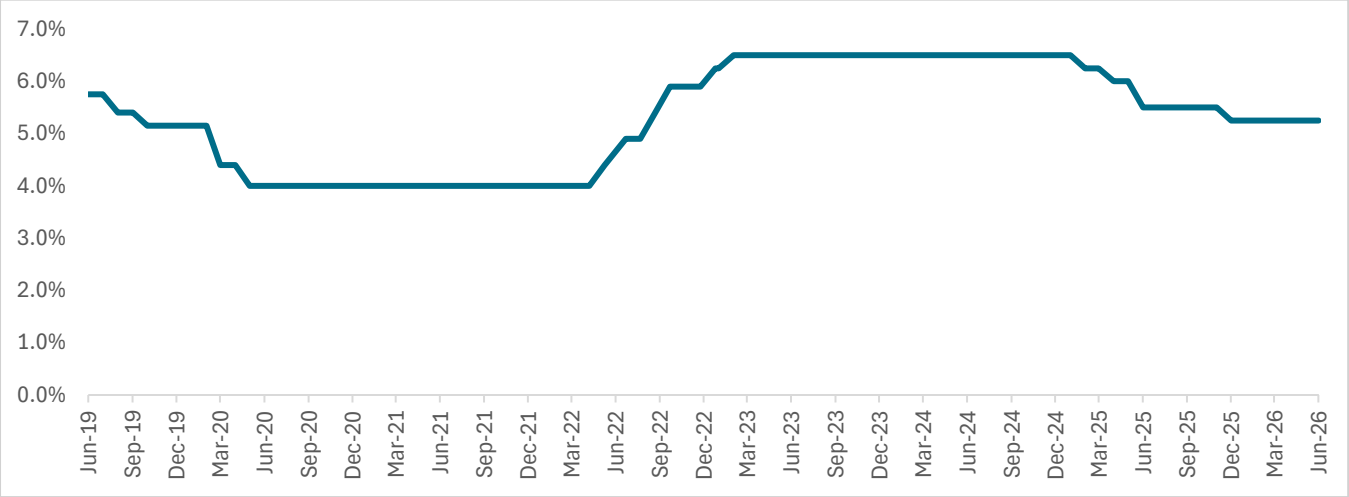
The easing measures were undertaken amid heightened global uncertainties, including tariff-related trade disruptions, a strong US dollar, and volatile capital flows, which weighed on global growth and inflation prospects. On the domestic front, sustained rural demand, healthy government capital expenditure, and a stable financial system provided resilience, allowing monetary policy to pivot towards supporting growth. In April 2025, the MPC's decision to reduce the repo rate reflected its confidence in the durable alignment of headline inflation with the 4% target over the medium term, alongside the need to sustain growth momentum.

Policy Stance and Outlook

The movement of the policy repo rate reflects the Reserve Bank of India's counter-cyclical monetary approach, calibrated in response to shifts in growth and inflation dynamics. During 2019-early 2020, the RBI reduced the repo rate from 6.50% to 5.15% to address slowing economic growth. With the onset of COVID-19, the rate was further cut to a historic low of 4.0% in 2020 and maintained through 2021 to support liquidity and economic recovery.

Subsequently, rising inflation driven by global supply disruptions and commodity price shocks prompted a tightening cycle from May 2022, with the repo rate increased to 6.50% by early 2023 and held through 2024 to anchor inflation expectations. As inflation moderated and growth remained resilient, the RBI initiated a calibrated easing cycle in 2025, reducing the repo rate to approximately 5.25%. As of June 2026, the rate has been held steady, reflecting a balanced stance amid stable domestic conditions and external uncertainties.

Repo rate stands at mid-2022 levels



Source: RBI, CRISIL Intelligence

PLI Scheme boosting industrial investments (EV etc)

The Production Linked Incentive (PLI) scheme's primary objective is to make manufacturing in India globally competitive by removing sectoral obstacles, creating economies of scale and ensuring efficiency. It is designed to create a complete component ecosystem in India and make the country an integral part of the global supply chain. Furthermore, the government hopes to reduce India's dependence on raw material imported from China. The scheme is expected to boost economic growth over the medium term and create more employment opportunities, as many of the sectors covered under the scheme are labour-intensive. It will be implemented over Financial Years 2022 to 2029. These schemes provide incentives on incremental sales to manufacturers, encouraging them to scale up production and invest in new technology. The goal is to create economies of size and scale, particularly in sectors such as electronics, pharmaceuticals, and manufacturing.

In Budget 2026-27, the government has increased its allocation to the PLI scheme to approximately ₹13,041 crores for Financial Year 2027, aimed at driving growth across industries and enhancing competitiveness. The increase in outlay is notable for automobiles (accounting for almost half of the allocation) and white goods.

Budgeted incentives for each sector under the PLI scheme in budget 2026-27

Sector	Segment	Financial Year 2027 Budget Estimates (₹ Crore) *	
Automobile	Advance chemistry cell (ACC) battery	86	6,026
	Automobiles and auto components	5,940	
Electronics	Mobile manufacturing and specified electronic components	1,345	2,531
	Electronic/technology products/IT hardware	182	
	White goods (ACE and LED)	1,004	
Pharma and medical equipment	Critical key starting materials/drug intermediaries and active pharmaceutical ingredients	66	2,499
	Manufacturing of medical devices	183	
	Pharmaceutical drugs	2,250	
Food	Food products	1,200	1,200
Textile	Textile products: man-made / (MMF) and technical textiles	405	405
Steel	Specialty steel	380	380
Aviation	Drones and drone components	-	-
Total			**13,041**

Note: ACE: Appliance and consumer electronics; LED: Light-emitting diode
Source: Budget Document 2026-27, Crisil Intelligence

Improving infrastructure to raise efficiencies in logistics

India's logistics sector has long been hampered by fragmented infrastructure, modal imbalances and high costs; policy makers aim to reduce these frictions through coordinated infrastructure investments and a single-window planning approach. The National Logistics Policy (2022) provides the broad policy framework to reduce cost & time inefficiencies, promote multimodal transport, and strengthen data-driven decision making across jurisdictions. The policy explicitly encourages integration of ports, rail, road, inland waterways and warehousing to lower logistics cost and improve competitiveness of Indian goods.

At the project and programme level, the Government is building the physical backbone needed for efficient freight movement. The PM GatiShakti National Master Plan creates an integrated, geo-tagged digital platform to align 16 ministries and accelerate multimodal connectivity, enabling faster project clearances and coordinated investments across road, rail, ports and airports. Complementary flagship programmes such as Bharatmala (for national highways and multi-modal logistics parks) and Sagarmala (port modernization and port-led development) are explicitly designed to shift freight to more efficient modes, shorten transit times, and reduce door-to-door logistics cost.

Rail and coastal/waterway interventions are central to modal shift and cost reduction. The development of Dedicated Freight Corridors (DFCCIL) creates high-axle-load, double-stack rail capacity that speeds up freight movement and frees up conventional network capacity for passenger traffic; DFCCIL-enabled terminals and private freight terminals are also being linked to Multi-Modal Logistics Parks (MMLPs) to enable seamless rail–road–port transfers. Similarly, investments under Sagarmala and the inland waterways programme are expanding coastal and inland shipping options to take long-haul cargo off roads, lowering costs and emissions. Together these measures (road corridors + DFCs + ports + inland waterways + MMLPs) are designed to reduce transit times, cut inventory carrying costs, and improve supply-chain reliability.

To measure and sustain improvement, the Government tracks state-level logistics performance and encourages state logistics policies and reforms. The LEADS (Logistics Ease Across Different States) initiative and related Commerce/Industry reporting provide a benchmarking tool for states to prioritise investments in warehousing, last-mile connectivity and quality of freight infrastructure; many states are now aligning their logistics action plans with the National Logistics Policy and PM GatiShakti to attract industry and lower logistics costs. Implementation challenges remain (land, financing, and last-mile connectivity), but the combined approach national policy, integrated planning platform, targeted corridor & port programmes, and state benchmarking constitutes the official roadmap for raising logistics efficiency in India.

Population growth & urbanization

India's rising disposable income coupled with rapid urbanisation is significantly transforming the country's consumption landscape. During the period Calendar Year 2014 to Calendar Year 2024, India has witnessed steady demographic expansion accompanied by a gradual increase in the level of urbanisation. The total population increased from 1.31 billion in Calendar Year 2014 to 1.45 billion in Calendar Year 2024 with a CAGR of 1%, indicating consistent growth over the decade. The rise has been incremental year-on-year, demonstrating a stable demographic trajectory rather than abrupt fluctuations. This sustained population base continues to provide structural support to labour markets, consumption demand, and overall economic activity.

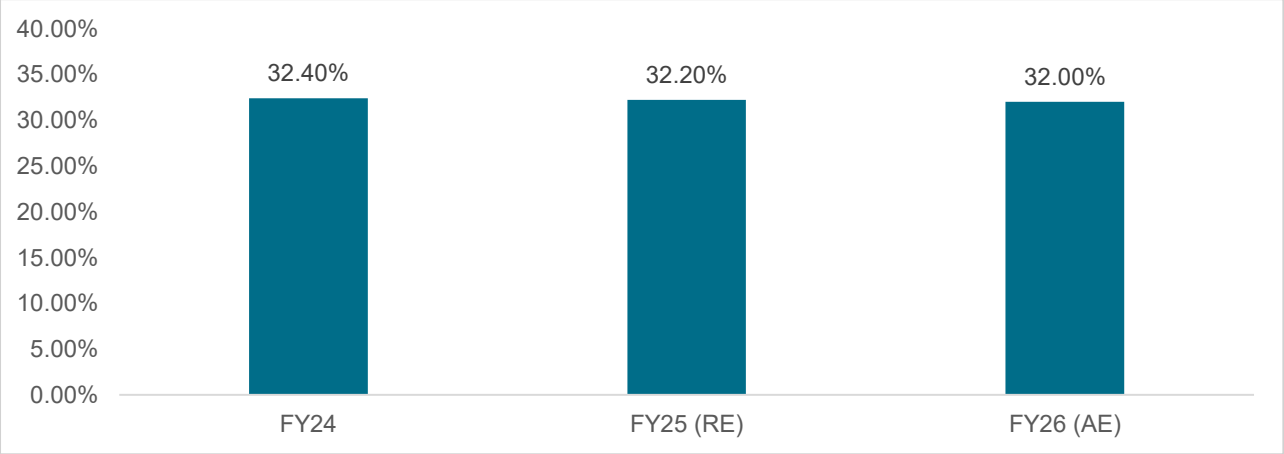
Parallel to overall population growth, the share of the population residing in urban areas has shown a continuous upward movement. Urbanisation increased from 423 million in Calendar Year 2014 to 513 million in Calendar Year 2024 with a CAGR of 2%, highlighting a gradual structural shift in settlement patterns. The steady annual rise in the urban population percentage reflects ongoing migration to cities, expansion of urban boundaries, and the development of emerging urban centres. This trend is not confined to metropolitan cities alone but is increasingly evident across Tier-2 and Tier-3 cities, which are gaining prominence as centres of economic activity.

Gross Fixed Capital Formation Trends as a % of GDP

Gross Fixed Capital Formation (GFCF) as a % of GDP is a key macroeconomic metric that shows how much of a country's economic output is being invested in new fixed assets rather than consumed. These assets include tangible items such as buildings, machinery, and infrastructure, as well as intangible assets like software and intellectual property. A higher GFCF ratio signals stronger investment in productive capacity, which is typically seen as a positive indicator for long-term growth.

India's Gross Fixed Capital Formation (GFCF) has demonstrated a consistent upward trend from Financial Year 2023 to Financial Year 2026, rising from approximately ₹84 trillion to approximately ₹103 trillion. This reflects sustained investment momentum driven by increased public capex and improving private sector participation. The strengthening GFCF trajectory indicates a continued shift towards investment-led growth, supporting infrastructure expansion, capacity creation, and long-term economic productivity.

Gross fixed capital formation trend as a percentage of GDP (2022-23 series, at constant prices)



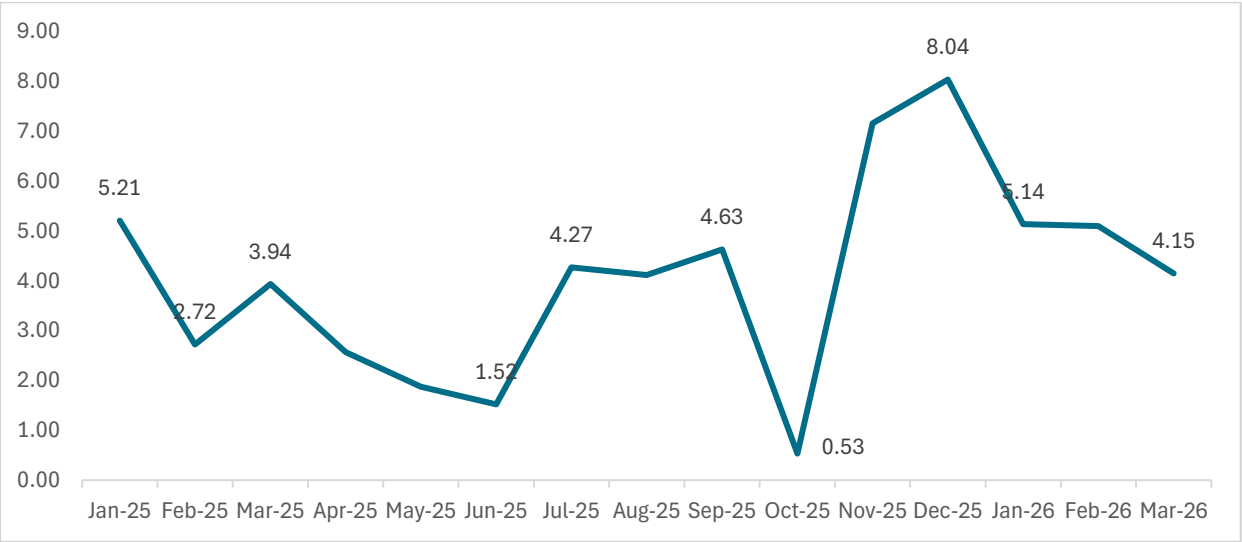
Note: RE: Revised Estimates; AE Advance Estimate
Source: MOSPI Press note of new series, Feb 2026, CRISIL Intelligence

Index of Industrial Production

The Index of Industrial Production (IIP) witnessed a modest decrease to 4.1% on-year in March 2026 from 5.1% in February 2026. While headline IIP growth remained broadly steady at 4.1% in Financial Year 2026 compared with the year-ago period, manufacturing growth strengthened to 5% from 4.1%. Double-digit growth in infrastructure and construction goods (9.8% vs 6.7%) led manufacturing IIP growth, followed by capital goods (8.2% vs 5.7%) and intermediate goods (5.6% vs 4.2%). The Index of Industrial Production (IIP) for Financial Year 2026 was 4.1%.

A combination of higher prices and tighter supply of critical inputs due to the ongoing conflict in West Asia has imposed downside risks to industrial output. With gas (natural and liquefied gas) availability under pressure, the government has tried to ration supplies to industries. However, those with heavy dependence on gas and derivatives as key inputs could see disruptions in their output. The surge in energy prices is another key challenge faced by manufacturers. Over the past three Financial Years, a favourable input cost environment and improving domestic demand allowed firms to expand their margins steadily by 18-19%. That trend is now reversing. Rising input costs are emerging as a key pressure point, and uneven pricing power across firms may limit their ability to fully pass through costs.

IIP trendline



Source: MoSPI, CRISIL Intelligence

Review of road infrastructure in India

Overview of infrastructure sector in India

Developing and modernising the infrastructure sector has been a priority area for the Government of India and has witnessed increasing public investments and budgetary support. Further, the government has undertaken several reforms and initiatives in the infrastructure sector, which has resulted in robust secular growth in most of the segments within the sector.

Infrastructure development remains a key focus area of the government's growth strategy, with a significant portion of capital expenditure directed towards transportation and logistics infrastructure. The budget reinforces the emphasis on improving multimodal connectivity, reducing logistics costs and supporting India's long-term manufacturing and trade ambitions through sustained investments in roads, railways, ports and inland waterways.

Infrastructure capex for Financial Year 2027(BE) has been budgeted approximately 17% higher than Financial Year 2026RE, with the incremental outlay concentrated in logistics, power, and affordable housing. With logistics costs estimated at approximately 8% of GDP by DPIIT, reducing this burden is central to the budget's transport focus, and accordingly 53% of total infrastructure capex has been directed toward roads, railways, waterways, and aviation, sectors also critical to achieving the government's target of raising manufacturing's share in GDP to 25% by 2035 from the current 16-17%.

The roads sector continues to receive strong policy support, with increased allocations towards highway development and expansion. Higher budgetary support for the National Highways Authority of India (NHAI) and road infrastructure programmes is expected to sustain project execution and capacity augmentation.

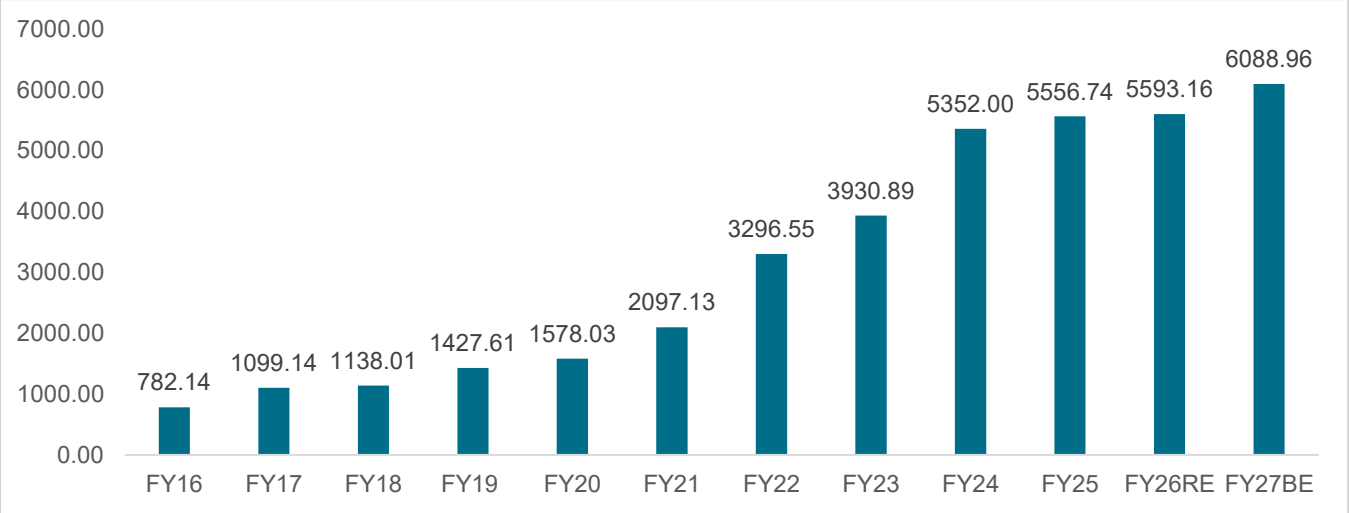
The overall railway allocation is up 10.5% over Financial Year 2026 RE, with new line developments, doubling, and gauge conversion allocations rising 20%, 30%, and 7% respectively, while NIF capital has grown 216%. A new DFC connecting Dankuni in the east and Surat in the west has been proposed to bridge the existing eastern and western freight corridors, improve bulk commodity movement of coal and finished steel, and reduce mixed-traffic congestion as DFC commissioning progresses. Seven new HSR corridors have been proposed to cut intercity travel times, with Mumbai-Ahmedabad currently under construction and the remaining, Mumbai-Pune, Pune-Hyderabad, Hyderabad-Bangalore, Hyderabad-Chennai, Chennai-Bangalore, Delhi-Varanasi, and Varanasi-Siliguri are at planning stage.

India's existing 111 national waterways are to be supplemented by 20 new ones, with NW-5 receiving priority, connecting mineral-rich districts like Talcher and Angul and industrial hubs like Kalinga Nagar to deep-water ports at Paradip and Dhamra to improve critical minerals logistics. A Coastal Cargo Promotion Scheme has been announced targeting an increase in the modal share of inland waterways and coastal shipping from 6% to 12% by 2047, significant given these modes offer substantially lower costs for bulk cargo relative to road transport. Complementing this, ship-repair hubs are planned at Varanasi and Patna to strengthen the country's maritime ecosystem in line with India's 2047 maritime ambitions, while a viability gap funding scheme for indigenous seaplane manufacturing has been introduced to improve waterway-linked tourism and remote area connectivity.

Budgetary outlay towards transport infrastructure and its-sub sectors

Public investment in the transport sector has seen a significant and sustained rise over the past few years, reflecting the government's continued focus on infrastructure-led growth. Budgetary allocations for key modes of transport, roads, railways, metro rail, ports, and airports have expanded sharply, underscoring efforts to strengthen connectivity and logistics efficiency across the country.

India Infrastructure Capital Expenditure – ₹ Billion



Note: RE: Revised Estimates, BE: Budget Estimates, the actual consumption in Financial Year 2026 and Financial Year 2027 may vary around these values, the values are GBS actuals
Source: Budget documents, CRISIL Intelligence

The roads and railways segments together account for the bulk of this allocation, highlighting their central role in driving economic growth and improving freight and passenger mobility.

Sector wise budgetary outlay of capex for transport infrastructure

Financial Year	Roads	Railways	Metro	Ports	Airports
Financial Year 2020	683.74	678.42	181.62	2.59	0.21
Financial Year 2021	891.95	1093.24	85.73	1.69	0.50
Financial Year 2022	1133.12	1172.71	232.62	6.14	0.62
Financial Year 2023	2059.86	1592.56	234.53	6.78	0.86
Financial Year 2024	2639.12	2425.79	229.88	11.49	7.55
Financial Year 2025	2853.44	2519.47	282.48	13.39	0.97
Financial Year 2026 RE	2720.51	2520.00	288.38	11.99	0.41
Financial Year 2027 BE	2941.67	2778.30	295.71	12.00	0.45

Note: RE: Revised Estimates, BE: Budget Estimates, the actual consumption in Financial Year 2026 and Financial Year 2027 may vary around these values
Note: Capex actuals from total allocated budget have been used
Source: Budget documents, CRISIL Intelligence

Key budgetary announcements

The Indian Road network is the second largest road network in the world. There has been 6.6 times increase in MORTH allocation on road infrastructure between the Financial Year 2016 to Financial Year 2027. In the Union Budget for Financial Year 2026-2027, the Ministry of Road Transport & Highways (MoRTH) has been allocated ₹3,099 billion, representing 7.9% increase over the revised estimate for Financial Year 2025-2026 (₹2,871 billion).

Key Allocations

National Highways Authority of India (NHAI): Receives ₹1,872.93 billion, accounting for 60.4% of MoRTH's total budget. This is 10% higher than the revised estimate for Financial Year 2025-2026.

Roads & Bridges: Allocated about ₹1,220 billion, which is about 5% more than the revised estimates for Financial Year 2025-2026. This includes funding for the development and maintenance of national highways, expressways, and related bridge works.

Revenue vs Capital Expenditure

- Revenue Expenditure is estimated at ₹157.08 billion for Financial Year 2026-2027, which is 4.1% higher than the revised estimate for Financial Year 2025-2026 (₹150.90 billion).
- Capital Expenditure is budgeted at ₹2,941.67 billion, which is 8.1% more than the Financial Year 2025-2026 revised estimate of ₹2,720.51 billion.

Use of Funds & Implications

- The increase in capital outlay suggests continued emphasis on physical infrastructure (construction, expansion, and maintenance) rather than just operational or administrative costs.
- Allocation to NHAI increased, indicating government's ongoing focus on national highways (new works, expressway expansion, etc.).
- The 5% increase in roads & bridges allocation suggests a push to bolster connectivity and structural works (bridges, bypasses, etc.).

Bharatmala Pariyojana (Road & Highway Development)

- Phase I targets approximately 34,800 km, with 26,425 km awarded and 21,783 km completed by November 2025.
- Total expenditure on Bharatmala stands at ₹8.54 trillion as of November 2025.
- This effort is repositioning India's road infrastructure by improving logistics efficiency and national connectivity.

Contribution of roads sector to India's GVA

The contribution of the road transport sector to India's Gross Value Added (GVA) has shown a relatively stable trend over the last decade, though with some fluctuations in recent years. From Financial Year 2023 to Financial Year 2025, the sector accounted for around 3.8%-5.0% of GVA at constant prices basis the new base line of 2022-23, reflecting its steady role in supporting economic activity.

In terms of absolute GVA contribution at constant prices, the sector has witnessed sustained growth. Road transport GVA increased from ₹60,471 billion in Financial Year 2023 to ₹65,933 billion in Financial Year 2025. The growth trajectory reflects expansion in road infrastructure and rising demand for both passenger and freight movement. Overall, the road transport sector

remains a critical enabler of economic activity in India, contributing steadily to national output while reflecting broader macroeconomic trends. Its consistent share of GVA underscores the importance of continued investments in road infrastructure to sustain growth and improve efficiency in passenger and freight transport.

GVA (at constant 2022-23 prices)	Financial Year 2023	Financial Year 2024	Financial Year 2025
Road transport share	-	5.02%	3.82%
Road Transport (Rs bn)	60,471	63,505	65,933

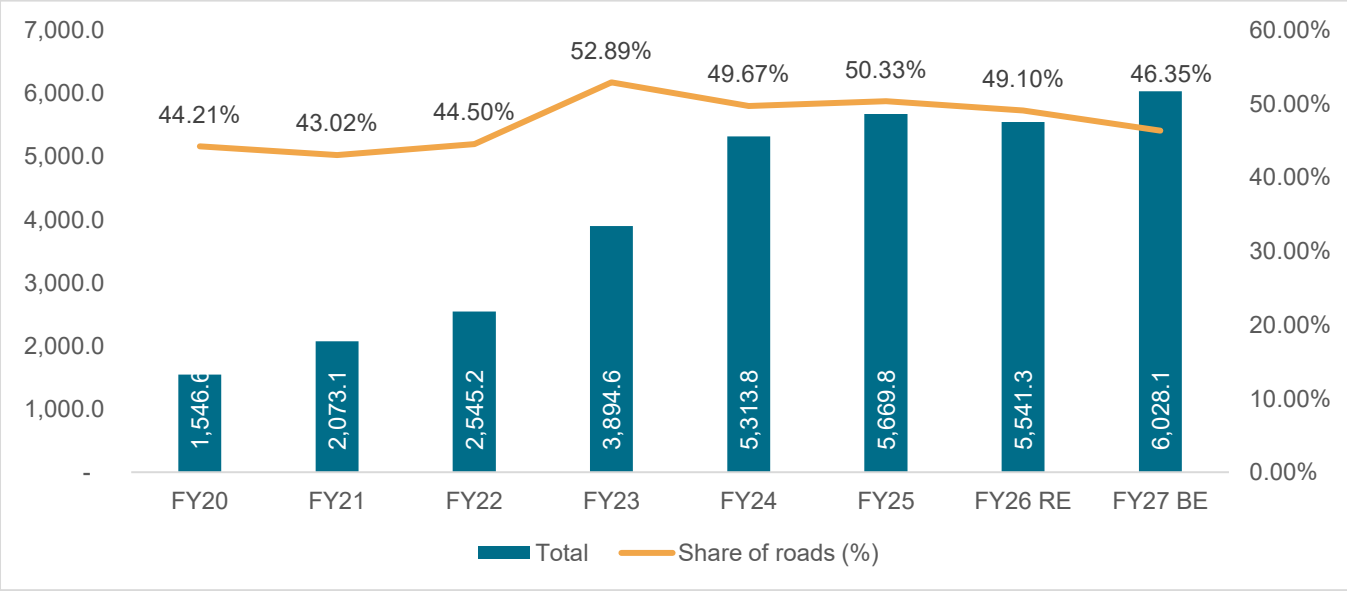
Source: MoSPI, National Accounts Statistics 2026, Crisil Intelligence

The scale of the road network underscores this importance. India has developed the second-largest road network in the world, spanning over 63 lakh km as of 2025. This network comprises national highways, state highways, district roads, and rural roads, each serving a distinct role in the country's connectivity hierarchy.

Share of roads in total infrastructure capital expenditure in India

The roads sector continues to dominate India's infrastructure investment landscape, receiving nearly half of the total infrastructure capital expenditure over Financial Year 2020-Financial Year 2027 (BE). Capital expenditure on roads rose from ₹1.5 trillion in Financial Year 2020 to ₹6.0 trillion in Financial Year 2027 (BE), supported by sustained government focus on expanding and upgrading the national road network. The sector's share of overall infrastructure capex remained robust, ranging between 43% and 53%, with the highest allocation recorded in Financial Year 2023. Despite a marginal moderation in its share in recent years, roads remain a key priority area for infrastructure development, given their critical role in enhancing connectivity, facilitating trade, and improving logistics efficiency across the country.

Share of roads in total infrastructure capital expenditure in India (in ₹ Billion)



Note: Total infrastructure values have been calculated basis capex of Roads, Railways, Ports, Aviation sectors
Note: Capex actuals from total allocated budget have been used
Source: Budget Documents, CRISIL Intelligence

The sustained focus on roads also aligns with broader economic objectives: reducing logistics costs, improving supply chain efficiency, and enabling regional equity by connecting underserved areas. With major initiatives such as Bharatmala Pariyojana, the GatiShakti Master Plan, and asset monetisation strategies, roads are expected to remain the backbone of India's infrastructure investment story, anchoring growth and competitiveness in the years ahead.

Road network in India

Road infrastructure forms the backbone of India's transport network and is one of the most critical enablers of economic activity. With its vast geographical expanse and diverse terrain, India relies heavily on roads for mobility, trade, and regional integration. Unlike several developed economies where railways or waterways play a larger role in freight movement, India's logistics ecosystem is road-dominant, with roads accounting for nearly 87% of passenger traffic and close to 60% of freight traffic. This makes the sector not only a facilitator of day-to-day mobility but also a central pillar in ensuring supply chain efficiency, rural connectivity, and market access.

The scale of the road network underscores this importance. India has developed the second-largest road network in the world, spanning over 63 lakh km as of 2026. This network comprises national highways, state highways, district roads, and rural roads, each serving a distinct role in the country's connectivity hierarchy. While national highways make up only about 2% of the overall length, they carry around 40% of road traffic, linking state capitals, major ports, and economic hubs. State highways extend coverage to key intra-state corridors, while rural and district roads, accounting for nearly 95% of the network, provide

essential last-mile connectivity to villages, agricultural mandis, production centres, and railway stations. Together, this layered network sustains both India's urban growth centres and its rural hinterland.

Road network in India

Road network	Length (km)	Percentage of total length	Percentage of total traffic	Connectivity to
National highways	146,572	approximately 2	40	Union capital, state capitals, major ports, foreign highways
State highways	178,749	approximately 3	60	Major centres within the states, national highways
Other roads	6,048,260	approximately 95		Major and other district roads, rural roads - production centres, markets, highways and railway stations
Total Network	**6,373,581**	**100**	**100**	

Source: MoRTH Annual Report 2025-26, PIB Dec 2025, Crisil Intelligence

Over the past decade, India has prioritised road development through major programmes such as Bharatmala, PMGSY and the National Infrastructure Pipeline, supported by strong budgetary allocations, digital tools like FASTag, and innovative financing models such as HAM and TOT. This push has accelerated construction, expanded access in remote areas and strengthened logistics efficiency. National highways have grown rapidly from about 91,287 km in 2014 to 146,572 km in 2025-26 with four-lane and above stretches rising sharply, improving connectivity and reducing travel time. The length of operational access-controlled High-Speed Corridors/Expressways increased from 93 km in 2014 to 3,052 km in 2025-26, registering a CAGR of about 37.3%. State highways have grown at a moderate pace, doubling their length since Financial Year 2016, and continue to link key economic centres with the national network. Rural and other roads, supported heavily by PMGSY, have also expanded steadily, enhancing rural accessibility and contributing to socio-economic development. Overall, India's road network has seen consistent expansion driven by policy focus, flagship programmes and improved execution capabilities.

Total length and break-up of national, state and rural roads (unit: '000 km)

Road network	National highways	State highways	Other roads
Financial Year 2016	101.01	176.17	5,326.12
Financial Year 2017	114.16	175.04	5,608.48
Financial Year 2018	126.35	186.91	5,902.54
Financial Year 2019	132.50	186.53	6,067.27
Financial Year 2020	133.00	194.90	6,165.66
Financial Year 2021	136.44	176.82	5,902.54
Financial Year 2022	141.00	171.04	6,059.81
Financial Year 2023	144.96	167.08	6,019.76
Financial Year 2024	146.15	179.54	6,019.72
Financial Year 2025	146.20	179.54	6,019.72
Financial Year 2026	146.57	178.75	6,048.26
CAGR Financial Year 2016-2026	**3.79%**	**0.15%**	**1.28%**
CAGR Financial Year 2023-2026	**0.37%**	**2.28%**	**0.16%**

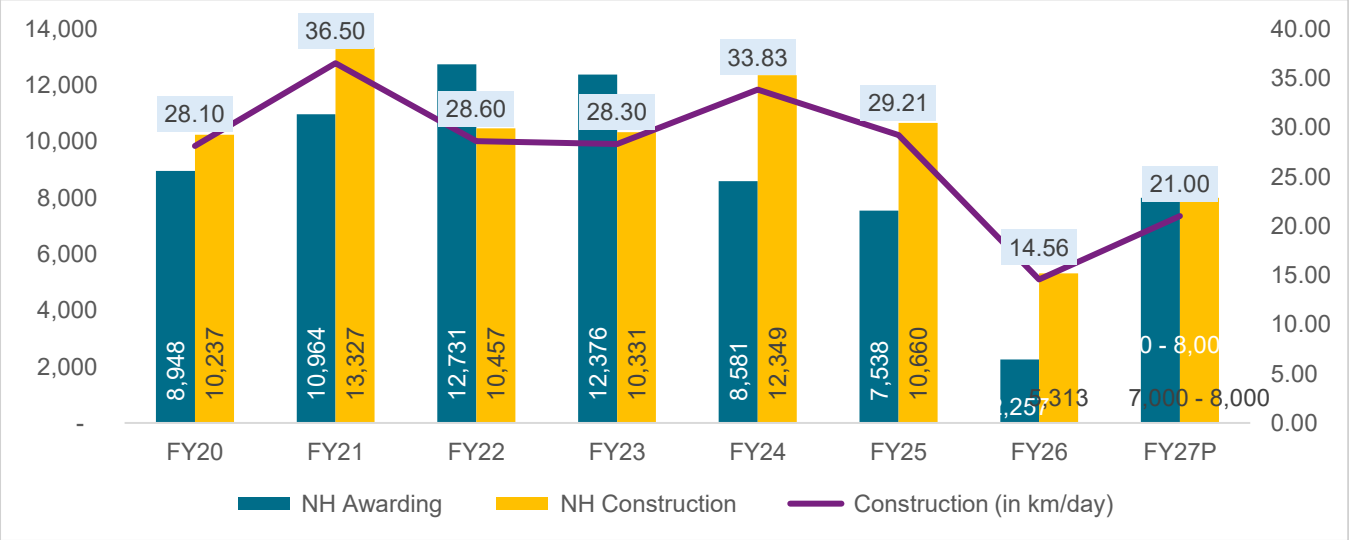
Source: MoRTH Annual Report 2025-26, 2024-25 and 2023-22, PIB December 2025, Crisil Intelligence

Overall, the last decade has seen a decisive policy thrust towards broadening and upgrading India's road network, with national highways leading the transformation, state highways providing critical state-level linkages, and rural roads ensuring last-mile connectivity. Together, these developments have laid the foundation for improved logistics competitiveness and balanced regional development, positioning roads as a cornerstone of India's infrastructure strategy. The expansion of India's road network over the past decade reflects the government's sustained emphasis on infrastructure-led growth.

Length of highways constructed in India

The awarding and construction of National Highways (NH) has witnessed significant momentum over the past seven years, reflecting strong government commitment and robust implementation capacity. These projections highlight the government's focus on sustaining annual construction at around 10,000 km per year, in line with medium-term policy targets.

Total length of National Highways constructed/ upgraded (km) by MoRTH



Note: P: Projected
Source: MoRTH, Crisil Intelligence

The awarding and construction trends highlight a strategic shift: while the earlier years focused on aggressive project announcements, recent years indicate a notable shift towards the development of wider highways instead of awarding new highways.

State-wise length of national highways in India

The length of India's national highways has experienced significant growth, increasing from 91,287 km in March 2014 to 146,572 km in December 2025. This expansion represents a compound annual growth rate (CAGR) of 4.4% over the eleven-year period backed by various government initiative like Bharatmala Pariyojna, National Highway Development Project, Central Road Infrastructure Fund (CRIF), National Monetization Policy and Viksit Bharat Vision 2047.

State-wise length of national highways in India (Km)

S. No.	State	Total NH length as on March 31, 2014	Total NH length as on Dec 31, 2025	S. No.	State	Total NH length as on March 31, 2014	Total NH length as on Dec 31, 2025
1	Andhra Pradesh	4,190	8,704	19	Manipur	1,452	1,840
2	Arunachal Pradesh	2,027	4,367	20	Meghalaya	1,171	1,156
3	Assam	3,634	4,077	21	Mizoram	1,222	1,499
4	Bihar	4,467	6,400	22	Nagaland	741	1,670
5	Chandigarh	24	15	23	Odisha	4,550	5,897
6	Chhattisgarh	3,031	3,620	24	Puducherry	53	64
7	Delhi	80	157	25	Punjab	1,699	4,264
8	Goa	269	299	26	Rajasthan	7,646	10,733
9	Gujarat	4,694	8,135	27	Sikkim	149	721
10	Haryana	2,050	3,332	28	Tamil Nadu	4,975	6,951
11	Himachal Pradesh	2,196	2,602	29	Telangana	2,400	4,926
12	Jammu and Kashmir	1,513	1,935	30	Tripura	509	889
13	Jharkhand	2,968	3,633	31	Uttar Pradesh	7,986	12,134
14	Karnataka	6,177	8,191	32	Uttarakhand	2,282	3,670
15	Kerala	1,700	1,858	33	West Bengal	2,908	3,910
16	Ladakh	806	806	34	Andaman & Nicobar Islands	300	331
17	Madhya Pradesh	5,116	9,263	35	Dadra & Nagar Haveli	31	37
18	Maharashtra	6,249	18,462	36	Daman & Diu	22	22
					TOTAL	**91,287**	**146,572**

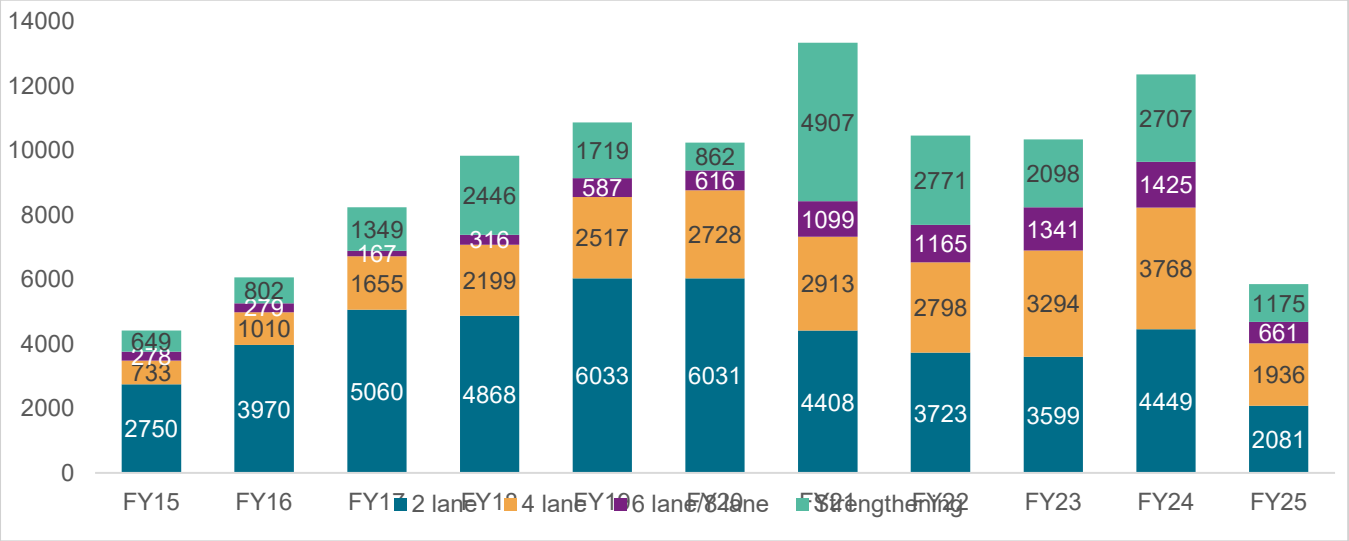
Source: MoRTH Annual Report 2026, PIB (July 25, 2024), Crisil Intelligence

Maharashtra has the largest proportion of national highways in India, comprising 13% of the total network, which spans 18,462 km. This represents a nearly threefold increase since March 2014. The distribution of national highways among other states includes Uttar Pradesh with 8%, Rajasthan with 7%, and Madhya Pradesh, Andhra Pradesh, Gujarat, and Karnataka each account for 6% of the total national highway network.

Several states have experienced significant growth in their national highway networks over the past decade. Sikkim, despite its small size, has seen its national highway network increase more than fourfold. Additionally, Andhra Pradesh, Arunachal Pradesh, Punjab, and Nagaland have all witnessed their national highway networks double in size over the same period.

The Northeastern region of India has undergone substantial development in terms of national highways, with the network expanding to account for 11% of the country's total. The past ten years have seen the addition of 5,314 km of national highways in the region, representing a 1.5-fold increase. With multiple projects in the pipeline, this growth reflects the government's commitment to improving connectivity and infrastructure in the Northeast.

Length of National Highway Lane increase (in km)



Note: Data of Financial Year 2025 is till 31st December 2024
Source: MoRTH Annual Report 2024-25, Crisil Intelligence

There has been a steady rise in overall lane addition, with major growth observed in Financial Year 2021 when total additions were 13,327 km. In the early years, the expansion was largely driven by 2-lane highways, which later shifted to 4 and 6-lane/ 8-lane roads. From Financial Year 2015 to Financial Year 2024 the share of 4-lane roads has increased by a CAGR of 20% and share of 6-lane/ 8-lane roads has increased by a CAGR of 28.5% from Financial Year 2018 to Financial Year 2024, reflecting a transition toward higher-capacity and better-quality road infrastructure. Strengthening of existing roads has emerged as a consistent component, pointing to a growing emphasis on maintenance and lifecycle improvement rather than only new construction. It is expected that this steady momentum with substantial contributions from 2-lane and 4-lane expansions alongside strengthening works is continued Financial Year 2025 onwards, demonstrating the government's focus on both expanding connectivity and enhancing the durability of the national highway network.

Qualitative overview of maintenance of roads in India

The Ministry of Road Transport and Highways (MoRTH) has significantly strengthened its focus on the maintenance and repair (M&R) of the National Highway (NH) network to ensure safety, durability, and traffic worthiness. Maintenance responsibility for stretches developed under Operation, Maintenance and Transfer (OMT), Toll Operate Transfer (TOT), and Infrastructure Investment Trust (InvIT) models lies with respective concessionaires till the end of the concession period, ensuring accountability and performance-based upkeep. For other NH stretches, MoRTH has institutionalized systematic maintenance through Performance-Based Maintenance Contracts (PBMC) and Short-Term Maintenance Contracts (STMC), thereby introducing structured monitoring and accountability. The Government's commitment to preserving and improving highway assets remains evident through sustained maintenance spending, with MoRTH incurring an average annual expenditure of approximately ₹7,400 crore on maintenance and repair (M&R) works over the last three years. As of December 2025, around 45,000 km of the National Highway network was being maintained through Performance-Based Maintenance Contracts (PBMC) and Short-Term Maintenance Contracts (STMC), while the remaining stretches were under development, defect liability, or concession arrangements. MoRTH has targeted full maintenance coverage of the National Highway network through accountable maintenance mechanisms, reinforcing its shift towards lifecycle-based asset management.

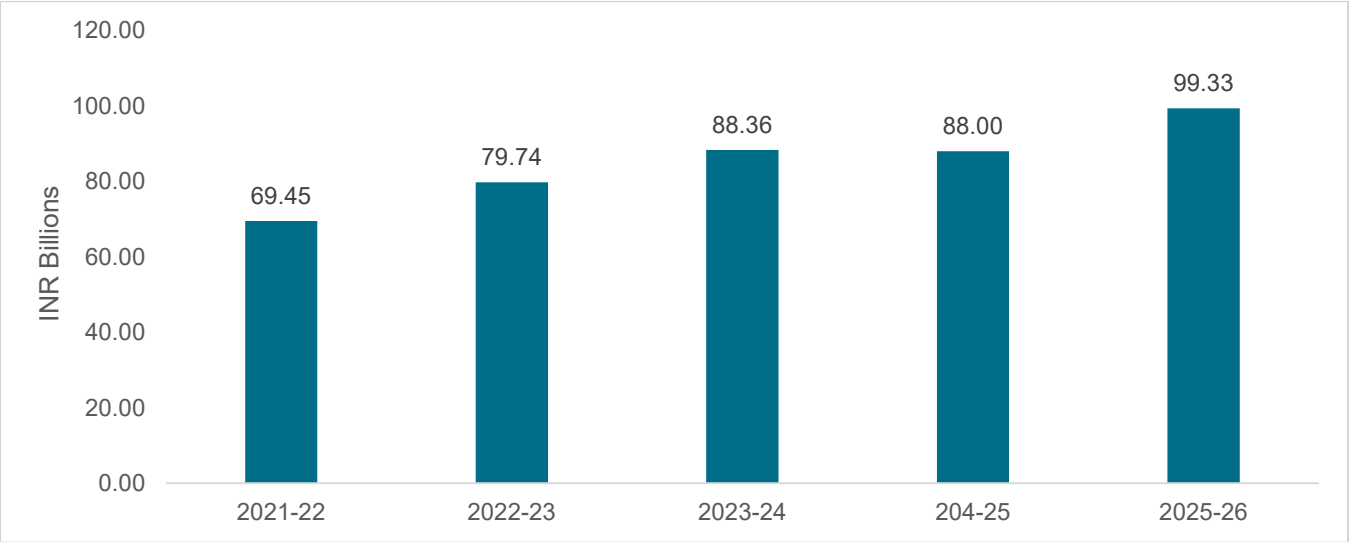
The improved maintenance regime under MoRTH emphasizes integration of technology-driven practices and data-backed decision-making to optimize performance and lifecycle management of highways. Digital monitoring tools, periodic condition assessment through remote sensing, and automated data collection systems are increasingly being deployed to ensure proactive maintenance interventions. Use of Performance-Based Maintenance Contracts fosters outcome-oriented approaches by linking contractor payments to measurable service levels, encouraging innovation and higher construction quality. Furthermore, under models such as TOT and InvIT, private concessionaires leverage advanced asset management technologies to maintain consistent quality and operational efficiency. This shift toward technology-enabled, accountable maintenance frameworks marks a transition from reactive to preventive asset management across India's national highway network.

Central Road Infrastructure Fund (CRIF)

The CRIF is funded from the cess collected on the sale of petrol and high-speed diesel (HSD). On every litre of petrol and HSD that is sold, a cess of ₹6 is collected (since Financial Year 2016; previously cess was ₹2). The fund provides assistance to states for the development and maintenance of state roads, rural roads, national highways, under- and over-bridges, and safety

works at unmanned railway crossings. About 11% of the cess collected on HSD and 30% on petrol is allocated towards maintenance of state roads. As of December 31, 2025, the Ministry had released ₹ 697.1 billion under the CRIF (State Roads) Scheme against corresponding accruals of ₹ 993.33 billion during Financial Year 2025-2026.

Allocation under CRIF (in ₹ Billion)



Source: MoRTH Annual Report 2025-26, Crisil Intelligence

Development of roads under CRIF scheme

2021-22 (Length in km, Cost in ₹ billion)			
State/UT	**No. of projects**	**Length (km)**	**Cost (₹ billion)**
Arunachal Pradesh	27	294	5.53
Chhattisgarh	15	316	8.46
Goa	6	75	0.81
Haryana	9	24	0.99
Himachal Pradesh	13	94	2.38
Madhya Pradesh	24	600	18.93
Maharashtra	276	1597	22.31
Meghalaya	15	127	2.57
Mizoram	1	10	0.47
Odisha	35	619	17.27
Punjab	5	24	2.72
Rajasthan	81	1607	20.46
Telangana	48	612	8.79
Uttarakhand	42	370	6.15
Ladakh	17	422	2.97
Puducherry	4	41	0.33
Total	**618**	**6832**	**121.14**
2022-23 (Length in km, Cost in ₹ billion)			
State/UT	**No. of projects**	**Length (km)**	**Cost (₹ billion)**
Andhra Pradesh	37	391	12.70
Arunachal Pradesh	3	0	0.33
Bihar	27	122	15.42
Chhattisgarh	6	0	3.15
Haryana	11	279	7.24
Himachal Pradesh	1	0	1.03
Jharkhand	17	216	11.28
Karnataka	22	0	7.85
Kerala	37	404	6.73
Madhya Pradesh	39	651	30.47
Maharashtra	171	943	29.78
Meghalaya	2	0	0
Odisha	6	0	3.61
Punjab	23	372	6.27
Rajasthan	14	0	6.74
Tamil Nadu	51	103	10.02
Telangana	5	0	4.33
Uttar Pradesh	17	80	10.95
Uttarakhand	6	1	1.94
West Bengal	14	346	9.97

Total	509	3908	179.81
2023-24 (Length in km, Cost in ₹ billion)			
State/UT	No. of projects	Length (km)	Cost (₹ Billion)
Andhra Pradesh	3	40	1.08
Arunachal Pradesh	25	88	3.16
Assam	7	76	4.25
Chhattisgarh	1	0	0.42
Goa	1	1	0.92
Gujarat	49	577	19.05
Himachal Pradesh	5	73	2.95
Karnataka	317	2056	21.7
Madhya Pradesh	11	586	6.98
Maharashtra	89	663	19
Manipur	8	58	1.53
Nagaland	8	39	1.03
Punjab	1	0	0.83
Rajasthan	112	2397	35.91
Sikkim	13	33	0.5
Telangana	37	498	9.77
Tripura	6	22	0.77
Uttarakhand	13	439	2.59
Delhi	1	3	0.09
Ladakh	37	469	13.52
Total	744	8118	146.05
2024-25 (Number of projects, Cost in ₹ Billion)			
State/UT	No. of projects		Cost (₹ Bn)
Arunachal Pradesh	55		20.60
Assam	18		13.51
Manipur	13		2.40
Meghalaya	24		3.59
Mizoram	4		2.36
Nagaland	8		2.72
Sikkim	24		1.10
Tripura	1		0.16
Total	147		46.44
2025-26 (Number of projects, Cost in ₹ billion)			
State/UT	No. of projects		Cost (₹ Bn)
Arunachal Pradesh	75		14.62
Assam	17		9.69
Manipur	15		3.38
Meghalaya	22		3.21
Mizoram	3		1.78
Nagaland	4		1.79
Sikkim	18		0.87
Tripura	3		0.66
Total	157		36.00

Source: MoRTH Annual Report Financial Year 2026, PIB (March 23, 2023, July 25, 2024), Crisil Intelligence
*Note: * Numbers are till December 2025*

Of the amount collected under CRIF for state roads, 10% is reserved for the development of roads under the following schemes:

Interstate connectivity (ISC)

Under this scheme, 100% funding (not a loan) is provided by the central government. ISC typically encompasses the development of

- Interstate roads
- Roads connecting national highways

Economic importance (EI)

Under this scheme, projects are funded to the extent of 50% by the central government. The state government contributes the rest of the project cost. This scheme is focussed on the development of:

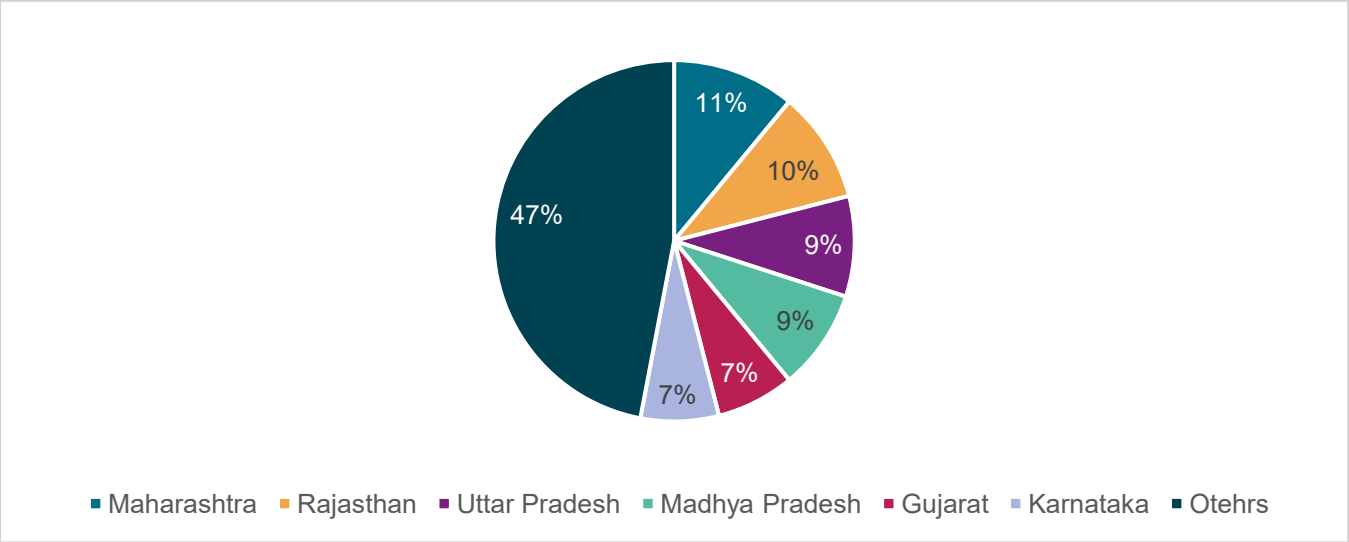
Roads facilitating connectivity to remote industrial and economic areas

Roads facilitating the development of remote residential areas, such as those connecting the hilly regions to plains

Funds allocated together under ISC and EI in Financial Year 2015, Financial Year 2016 and Financial Year 2017 stood at ₹2,390 million, ₹3,550 million and ₹4,150 million, respectively. In Financial Year 2018, approximately 19 projects amounting to ₹6,600 million were approved under ISC and EI. In Financial Year 2019, approximately 18 projects amounting to ₹4,740 million were approved.

During Financial Year 2023, a sum of ₹1,900 million had been allocated to various states. Also, as per MoRTH's letter dated February 9, 2024, ₹3,000 million had been allocated for Financial Year 2024.

State-wise allocation under ISC and EI schemes in 2024-25



Source: MoRTH, Crisil Intelligence

Key growth drivers and emerging trends for road sector

Policy pushes aimed at improving private participation in national highways

The following are the recent policy changes that the MoRTH and NHAI have undertaken to improve private participation in the sector and increase competition:

- Technical and financial bidder eligibility criteria tightened for HAM and EPC projects.
- Changes in the hybrid-annuity model (HAM) concession agreement aimed at protecting developers' returns and easing their cash flows during the construction period
- Changes in the Build-Operate-Toll (BOT) concession agreement to reinstate developer interest in the model
- Bidder eligibility norms for BOT (Toll) projects have been revised to facilitate participation by institutional investors such as AIFs, SWFs, pension funds and infrastructure funds, with technical qualification requirements permitted to be met through qualified technical partners, thereby broadening the investor base for highway PPP projects.

Apart from this, the government has taken various steps to support the growth in roads sector:

- **Proposed implementation of MLFF**
    - The Government of India has been exploring next generation tolling mechanisms to enhance efficiency and reduce congestion on National Highways. Earlier, a Global Navigation Satellite System (GNSS)-based tolling framework was proposed under initiatives such as the Global Navigation Satellite System-based tolling system; however, large-scale implementation challenges, including technological readiness, enforcement complexity, and user adoption concerns, limited its rollout. Subsequently, the focus has shifted towards the implementation of Multi-Lane Free Flow (MLFF) tolling, which builds upon the existing FASTag ecosystem.
    - The Government of India, through MoRTH/NHAI, has proposed the implementation of Multi-Lane Free Flow (MLFF) tolling, a barrier-less system that enables automatic toll collection using FASTag (RFID) and ANPR-based vehicle identification, eliminating the need for physical toll plazas and reducing travel time. From an infrastructure perspective, the removal of toll plazas under MLFF is expected to unlock latent capacity on highways, as bottlenecks associated with toll collection are eliminated. This effectively is expected to increase the throughput of existing road infrastructure without requiring substantial capacity augmentation, especially at the toll plaza locations. Additionally, improved traffic flow is likely to result in fuel savings, reduced emissions, and better user experience, aligning with broader policy objectives of efficiency and sustainability.

Annual Pass for National Highways: Key Features and Early Uptake

- The National Highways Authority of India (NHAI) has seen a strong initial response to its newly introduced Annual Pass, collecting nearly ₹1.5 billion upfront in the first four days through the issuance of 0.5 million passes. Tamil Nadu recorded the highest number of purchases, followed by Karnataka and Haryana. Correspondingly, the highest number of Annual Pass transactions at toll plazas were also observed in Tamil Nadu, Karnataka and Andhra Pradesh, indicating rapid early adoption in these states.

Key Features of the Annual Pass: The Annual Pass offers significant convenience for private highway users by enabling free passage through all toll plazas on national highways and expressways upon a one-time upfront payment of ₹3,000.

Key functionalities include:

- The pass provides 200 toll plaza crossings annually, where each passage counts as one trip; a round trip counts as two trips.
- It operates seamlessly on the user's existing FASTag, eliminating the need for any separate device or tag.
- The Annual Pass can be purchased exclusively through the Raimargvatra mobile app or the NHAI website and is activated within two hours of payment.
- On state highways or expressways managed by state bodies, the FASTag will continue to function in the regular manner, and normal user charges may apply.

Coverage and Accessibility: The pass is applicable across approximately 1,150 toll plazas on the National Highway and National Expressway network. It is currently available to all non-commercial vehicles with a valid FASTag. Through wider and simpler digital access, the Annual Pass aims to improve user convenience while enhancing upfront revenue visibility for NHAI. Based on the IHMCL database for 823 toll plazas, 22.5 million trips are made using annual pass in October 2025.

Rail limitations: last-mile connectivity and capacity constraints

- Last-mile connectivity gaps: Indian Railways provides extensive reach, but rail freight and passenger services frequently face first/last-mile limitations at ports, industrial terminals and urban nodes; this forces consignments onto road for door-to-door movement. Improving road feeders and terminal linkages is a stated priority.
- Capacity and expansion constraints: The existing rail network faces line-capacity and terminal handling constraints that limit its ability to absorb additional freight growth; where rail capacity or terminal capability is inadequate, the modal share shifts towards road. Government planning documents note the need for substantial upgrades to enable rail to take higher freight share.

Demographic & urbanisation drivers

- Population growth and rapid urbanisation: Continued urban expansion and higher urban population densities increase intra-city and inter-city passenger and goods movement, placing higher demand on highways and arterial roads. National road transport policy recognises urbanisation as a core factor affecting demand and planning.

User behaviour & policy: willingness to pay tolls; NH development

- Tolling & willingness-to-pay: The institutionalisation of user-fee/tolling regimes and electronic toll collection has supported the financing and faster rollout of national highways. Policy guidance from MoRTH and NHAI shows that tolling (and improved payment technology) enables more NH projects and a steadily improving highway network which in turn increases road capacity and encourages greater vehicle usage.
- National Highways expansion: NHAI's strategic focus on expanding national highways and expressways (and connecting them to economic centres) directly increases road traffic volumes as new, faster corridors attract long-haul and regional traffic.

Supply-side improvements: mechanisation, cost and execution time

- Mechanisation and faster delivery: Adoption of modern construction technologies and mechanisation in highway construction has reduced execution time and construction unit costs, enabling quicker project completion and faster capacity addition which supports faster growth of road traffic as new capacity becomes operational. NHAI annual reports highlight emphasis on efficient execution and mechanised construction methods. Strict measures are being taken for reduction of overloading of vehicles as FASTag discourage truck drivers from overloading vehicle.

Toll Revenue Collection

India's tolling ecosystem has witnessed significant growth over the past few years, driven by increased highway usage, expansion of the tolled road network, and widespread adoption of FASTag-based electronic toll collection. Toll revenue collected through FASTag reached approximately ₹0.75 lakh crore in Financial Year 2026, reflecting continued growth in toll monetization and user adoption.

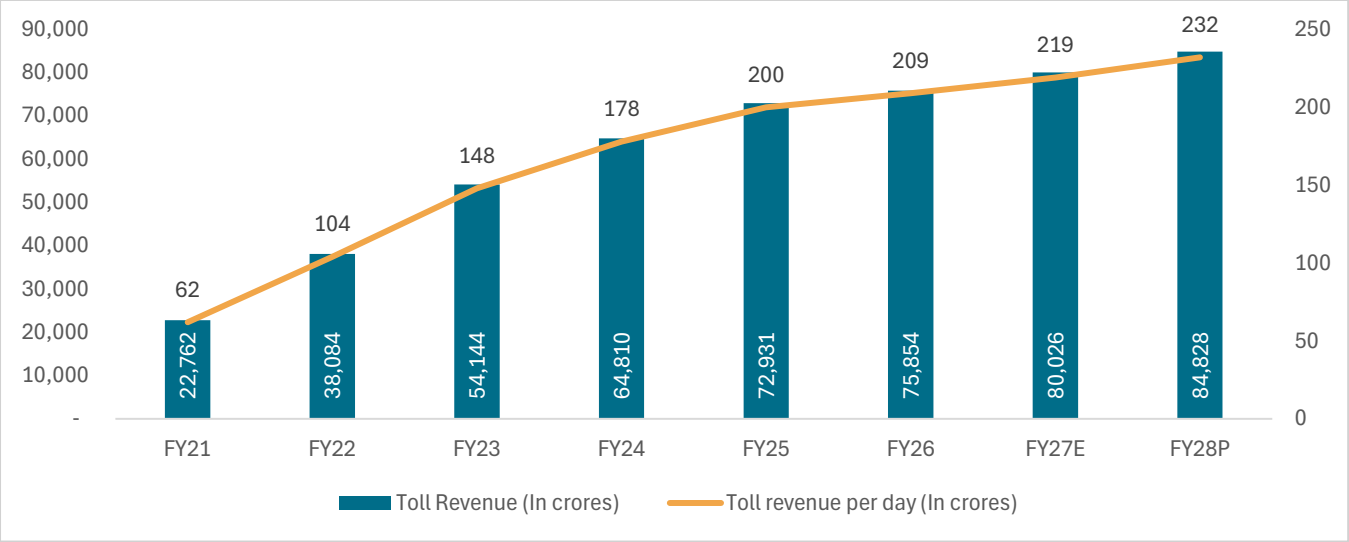
The number of vehicles crossing toll plazas has increased steadily, with vehicle count growing from 133 crore in Financial Year 2021 to 445 crore in Financial Year 2026, representing a strong growth trajectory over the period. Vehicle traffic is estimated to increase further to around 468 crore by Financial Year 2028, supported by rising economic activity, increasing vehicle ownership, and continued expansion of national highway infrastructure.

Toll collections have grown in tandem with traffic volumes. FASTag toll revenue increased from approximately ₹22,762 crore in Financial Year 2021 to ₹75,854 crore in Financial Year 2026 and is projected to exceed ₹84,000 crore by Financial Year 2028. While vehicle count grew by around 6% in Financial Year 2026 over Financial Year 2025, toll revenue increased by approximately 4% during the same period, indicating a relatively stable toll realization environment.

Commercial vehicles continue to be the primary contributors to toll revenue despite constituting a smaller share of total traffic. Commercial vehicles account for approximately 50–55% of toll plaza traffic, with Light Commercial Vehicles (LCVs) and two- and three-axle trucks contributing nearly 40% of commercial vehicle traffic. Passenger vehicles, including cars, vans, and jeeps, account for the remaining 45–50% of traffic volumes.

The implementation of FASTag has significantly improved toll collection efficiency by reducing waiting times, minimizing leakages, and enabling seamless electronic payments. The system supports multiple user categories, including single journeys, return journeys, local monthly passes for nearby residents, and exempted vehicles as mandated by government regulations.

Review and outlook for toll revenue



Source: Crisil Intelligence

Going forward, continued growth in highway traffic, expansion of the national highway network, and increasing digital penetration are expected to support sustained growth in toll collections, strengthening the revenue base for highway operators and road asset monetization programs such as Toll-Operate-Transfer (TOT) and Infrastructure Investment Trusts (InvITs).

Toll Rates

Toll rates on National Highways in India are governed by the National Highways Fee (Determination of Rates and Collection) Rules, 2008, notified by the Ministry of Road Transport and Highways (MoRTH). Under the prescribed framework, toll charges are determined based on vehicle category, project length, lane configuration, and other project-specific characteristics. Toll rates are revised annually (effective April 1) through a combination of a fixed 3% increase and the pass-through of 40% of the variation in the Wholesale Price Index (WPI), thereby providing a balance between inflation adjustment and affordability. This mechanism ensures predictable revenue growth for concessionaires, Infrastructure Investment Trusts (InvITs), and other investors in toll road assets.

In addition to base tolling, the framework incorporates strict provisions for overloaded vehicles, which are a key determinant of pavement deterioration. As per the 2026 amendment notified by MoRTH, vehicles exceeding permissible Gross Vehicle Weight (GVW) are subject to penal tolling based on the degree of overloading. Vehicles with up to 10% excess load are exempt, while those with 10-40% overload are charged 2x the base toll and those exceeding 40% are charged 4x, significantly disincentivizing non-compliance. The rules mandate that overloading be measured through certified weigh-in-motion systems at toll plazas, and no penalty can be imposed in the absence of such infrastructure. Additionally, toll collection is increasingly

digitized through FASTag, improving enforcement and transparency. Together, the base toll framework and overloading penalties ensure a balance between revenue realization, infrastructure protection, and efficient traffic management across India's highway network.

Indian freight traffic scenario

Freight movement remains the most significant economic driver of demand for high-quality roads in India. As the lifeblood of the economy, the transport of goods underpins manufacturing, agriculture, and services, with roadways continuing to dominate as the preferred mode of logistics. Modal share of road traffic has dropped to 63% as of Financial Year 2025 as compared to 67% in Financial Year 2020.

BTKM Growth Forecast

Mode	Financial Year 2025E	Financial Year 2026P	Financial Year 2027P	CAGR Financial Year 2025-30P
Road	6-8%	7-7.5%	6-8%	5-7%
Rail	4-6%	7-7.5%	6.5-8.5%	7-9%
Coastal	4-6%	3-5%	2-4%	3-5%

Source: Crisil Intelligence

Dominance of Road Transport

Roads, accounting for almost 64% modal share in freight movement, is expected to grow at a healthy pace in the short term. In Financial Year 2026, road freight movement is expected to growth by 7-7.5% driven by healthy demand for both bulk and non-bulk commodities. Road freight movement is expected to grow by 6-8% in Financial Year 2027 driven by demand from non-bulk commodities.

Modal Share

Mode	Modal Share
Road	65%
Rail	25%
Coastal	3%

Source: Crisil Intelligence

The relative moderation in road network expansion, the accelerating development of rail infrastructure and rail being more economical on a per tonne per km basis, is expected to gradually drive a modal shift in freight movement toward railways. While road transport has historically dominated India's freight mix due to its flexibility and last-mile connectivity, the pace of new highway additions is normalizing after a period of aggressive expansion. In contrast, sustained investments in rail capacity enhancement, dedicated freight corridors, improved terminal infrastructure, and higher axle-load capabilities are strengthening rail's competitiveness. As rail networks become more efficient, reliable, and cost-effective, particularly for bulk and long-haul cargo-shippers are likely to increasingly optimize logistics costs by shifting a portion of freight from road to rail, especially for high-volume, non-time-sensitive consignments.

Roads remain the preferred mode for non-bulk transportation

Roads generally account for a significant share in non-bulk commodity transportation such as:

- Rail does not cater to piecemeal freight transportation. Entire rakes are provided for transportation and not just single wagons (although the Indian Railways is looking into multi-point loading, it would still not attract small-sized cargo).
- Road transport has better quality service and is more reliable.
- Road transporters operate on a much smaller scale. Also, given the large number of road-transport operators, customers have better bargaining power. These transporters also add a personal touch to their service, which is important, as these commodities are typically expensive and fragile.
- Roads provide end-to-end connectivity and safer handling, which is an important factor while transporting low-volume, but high-value commodities.

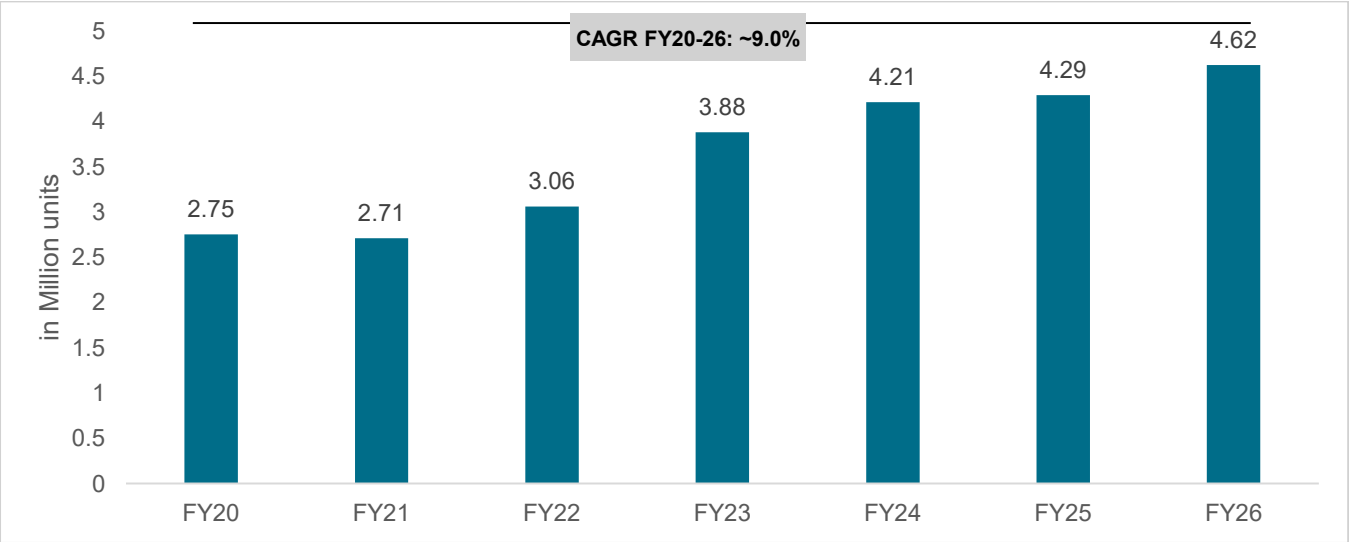
Growth of vehicular population

Domestic PV sales

India's PV industry sales (domestic sales + exports) logged a healthy CAGR of approximately 9.0% between Financial Years 2020 and 2026, driven by domestic sales, which account for more than 80% of the industry's sales volume.

The contribution of domestic sales to total sales increased to 84% in Financial Year 2026 from 81% in Financial Year 2020. The relatively slow growth in exports could be attributed to the moderate growth in the global automobile industry and the fact that major OEMs focused on catering to the fast-growing domestic market.

Review of domestic PV sales volume



Source: SIAM

In Financial Year 2023, the domestic PV industry grew 27% y-o-y, more than double the 13% y-o-y growth seen in Financial Year 2022. The order books of auto OEMs were further supported by several new launches in the growing SUV category, which saw higher traction. Facelifts of existing models and easing supply of semiconductors also helped. The overall wholesale volumes reached a historic high of 3.88 million units in the Financial Year.

Financial Year 2024 marked the third year of consecutive growth in the domestic PV industry by recording 8.36% growth. This growth was over a high base of Financial Year 2023. During the Financial Year, the order books of auto OEMs were supported by a plethora of launches in the growing utility vehicle (UV) category, which had witnessed high traction, along with multiple facelifts of existing models and easing semiconductor supplies that drove record sales in each quarter in Financial Year 2024. The overall wholesale volumes settled at approximately 4.21 million units in Financial Year 2024.

The growth momentum continued into Financial Year 2025, though the pace slowed somewhat. This was backed by continued traction in the SUV segment, intermittent launches and an increase in disposable incomes.

In Financial Year 2026, domestic sales increased 7.3% y-o-y and recorded 4.64 million units supported by series of structural policy reforms that have strengthened demand and significantly boosted consumer confidence. The industry witnessed strong growth in domestic sales from the second half of Financial Year 2026.

Segmental shifts within the domestic PV industry

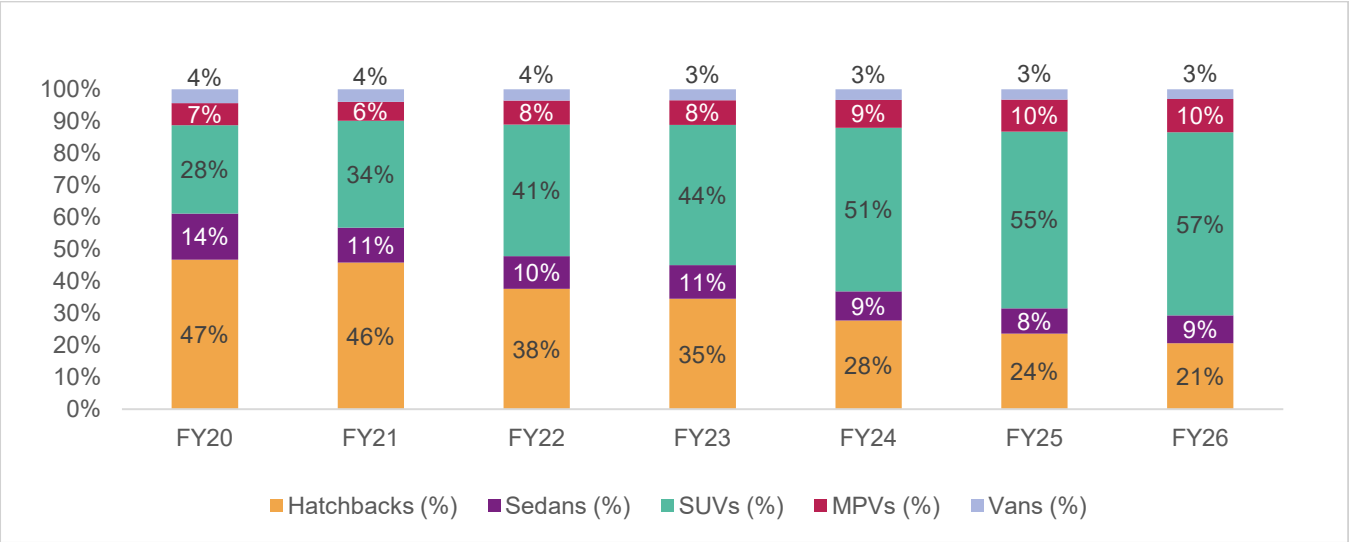
The PV industry can be broadly classified based on body types into hatchbacks, sedans, SUVs, multipurpose vehicles (MPVs) and vans. Indian PV buyers have traditionally been very cost-conscious, basing their decisions on the vehicle's mileage and initial purchase price. Consequently, hatchbacks have led PV sales over the years, primarily because their lower price and running costs make them affordable for the average Indian customer.

However, with a growing share of younger buyers in India, there is an increasing awareness and preference towards parameters other than price, such as exterior and interior design, driving experience, safety, advanced features, lighting and aesthetics, resulting in an inter-segmental shift towards SUVs.

OEMs have addressed this shift by showcasing enhanced vehicle safety in their recent launches. Several OEMs have also gradually introduced advanced features—including safety features and advanced lighting technologies such as LEDs, and made them available in both their top variants and mid-level ones. Furthermore, rising disposable incomes have given an impetus to growth in the SUV segment.

Customer buying behaviour is also changing. They are increasingly prioritising vehicle experience and technology over cost and are willing to pay a premium and are also ready to accept longer waiting times for the desired vehicle. More customers are now opting to buy mid- to top-level variants, driving the intra-segmental shift. This shift towards feature-loaded vehicles is also driving the premiumisation trend.

Segmental shift within the domestic PV industry



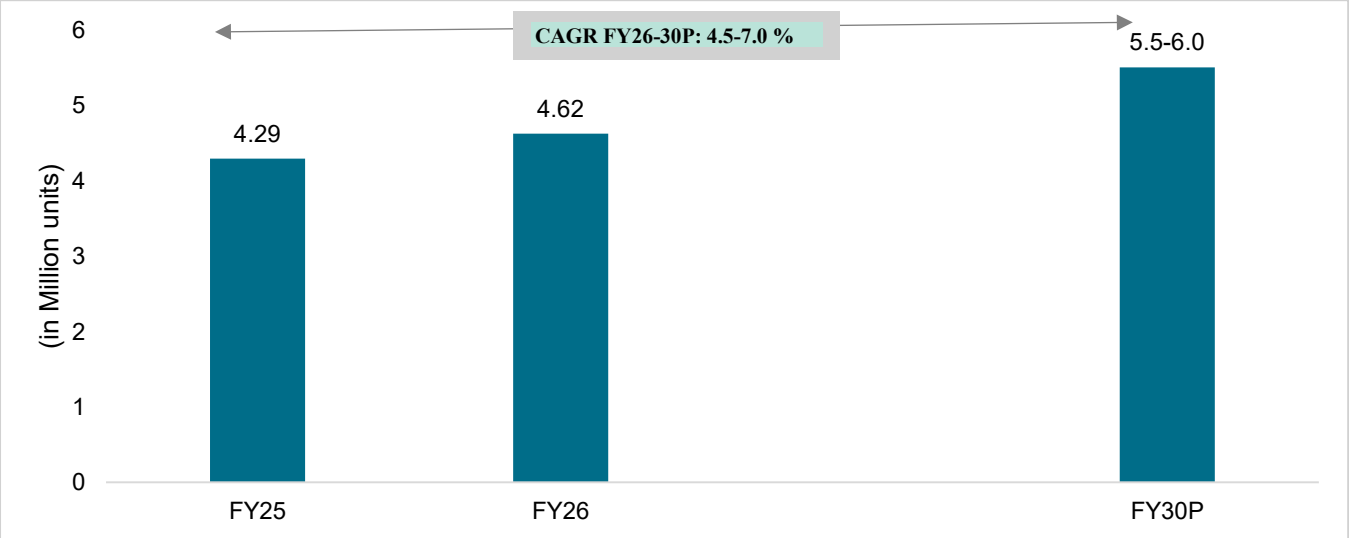
Note: Figures above bars are sales volumes
Source: SIAM

Outlook on the domestic passenger vehicle industry

We expect the Indian PV industry grow at a robust pace driven by a favourable macroeconomic scenario, with GDP projected to grow at 4.5-7% between Financial Years 2026 and 2030, outperforming other major geographies. The industry will also benefit from continued government support, favourable demographics and OEMs launching feature-rich and competitively priced vehicles.

Additionally, a favourable financing scenario, with expanding financing reach, high loan-to-value levels and expected interest rate cuts will also support demand. Changing market dynamics, including a younger consumer base, premiumisation, electrification and shorter replacement cycles, will drive growth, while the government's push for scrapping old vehicles and capacity expansion by major players like Maruti Suzuki, Hyundai and Tata Motors will shorten replacement cycles and support demand. Furthermore, the expansion of supporting infrastructure, such as EV charging stations and CNG pumps, will enhance customer choice and propel the industry forward.

Domestic PV industry outlook



Source: SIAM, Crisil Intelligence

Review of Indian domestic CV industry

The Indian commercial vehicle (CV) industry recorded steady growth during Financial Year 2020-Financial Year 2026, with sales increasing at a CAGR of approximately 7%. Sales declined from 717.60 thousand units in Financial Year 2020 to 568.60 thousand units in Financial Year 2021, primarily due to the disruptions caused by the COVID-19 pandemic, which adversely impacted economic activity, freight movement, and vehicle purchases.

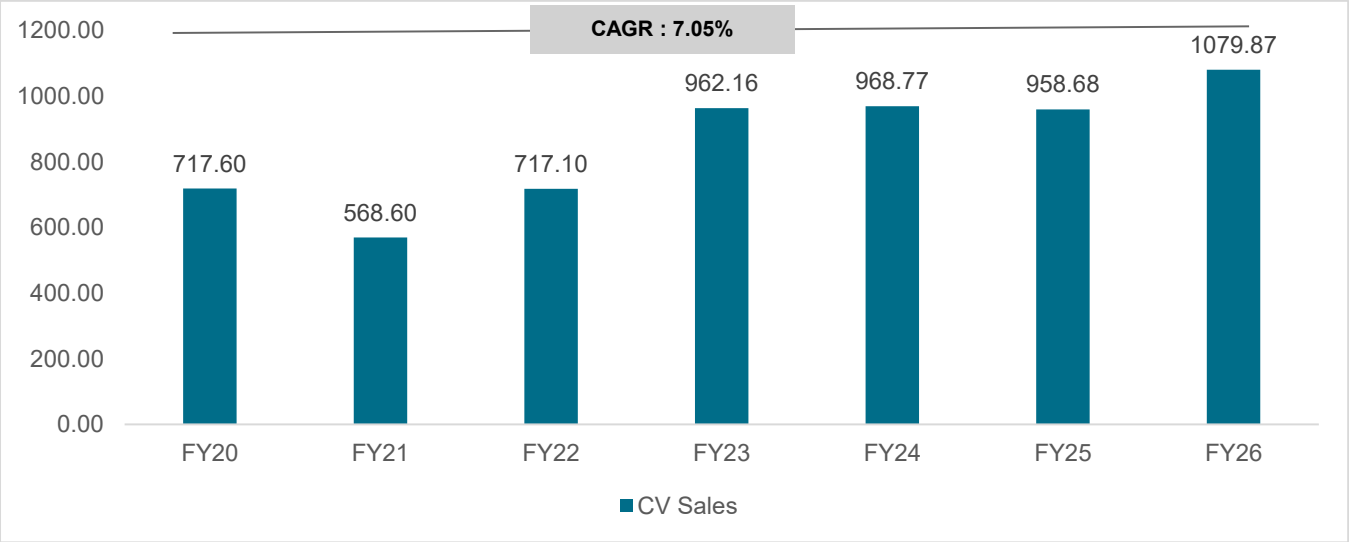
The sector witnessed a strong recovery thereafter, with sales rebounding to 717.10 thousand units in Financial Year 2022 and rising further to 962.16 thousand units in Financial Year 2023, supported by the revival in economic activity, higher freight

demand, increased infrastructure spending, and replacement demand. Growth momentum continued in Financial Year 2024, with sales reaching 968.8 thousand units.

While sales moderated marginally to 958.68 thousand units in Financial Year 2025 owing to a high base and softer demand in certain segments, the industry regained momentum in Financial Year 2026, with sales increasing to a record 1,079.87 thousand units. The growth was driven by robust infrastructure development, sustained logistics demand, fleet replacement requirements, and improving fleet utilization levels.

Overall, the CV industry demonstrated resilience and strong recovery over the period, supported by favourable macroeconomic conditions and continued investments in transportation and logistics infrastructure.

Overall CV sales trend



Source: SIAM, CRISIL Intelligence

Segmental Trends

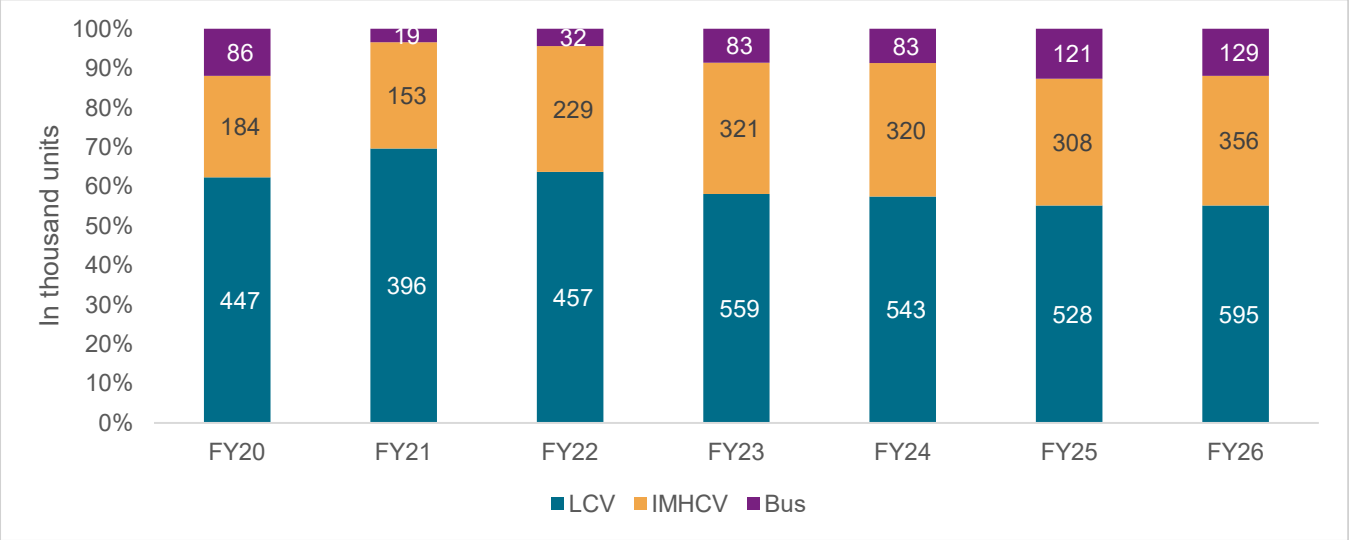
The market is split into three segments: LCV (<7.5 Tonnes) hereafter referred to as Light Commercial Vehicles, IMHCV (>7.5 Tonnes) hereafter referred to as Medium and Heavy Commercial Vehicles and Buses.

In Financial Year 2019, LCVs accounted for 48% of total CV sales, supported by strong demand for last-mile delivery and urban freight movement. However, as economic conditions deteriorated in Financial Year 2020 and Financial Year 2021, LCV penetration surged to 62% and 70%, respectively, as businesses prioritized smaller vehicles to maintain operational flexibility amid declining freight availability. The post-pandemic recovery in Financial Year 2022 and beyond saw LCV market share gradually normalize to 55% by Financial Year 2025. LCV sales declined by 2% in Financial Year 2025, due to a general slowdown in economic activity, reduction in construction activity, and subdued demand for last-mile delivery and e-commerce activity. Limited financing options also led to a decline among individual owner-operated vehicles. In Financial Year 2026, the demand of LCV stayed stable at 55%.

In Financial Year 2025, the overall bus segment recorded a growth of 15%. This growth was driven by a 6% increase in the LCV bus category and a significant 24% surge in the IMHCV bus category. The strong performance in Financial Year 2025 can be attributed to the sustained demand from schools, tourism, and STUs, as well as the replacement of older buses that were not replaced during the pandemic. The implementation of a scrappage policy and ongoing urbanization trends also played crucial roles in boosting bus sales during this period.

In the Financial Year 2026, total CV volumes reached 1,079 thousand units, reflecting a strong recovery growth momentum in the sector. This growth was primarily driven by LCV segment, which contributed to 55% of total volumes, supported by last-mile delivery demand and e-commerce expansion. The MHCV segment accounted for 33%, indicating steady infrastructure and industrial activity. Meanwhile, the bus segment contributed to 12%, showing improvement led by public transport replacement cycles and government spending. Overall, Financial Year 2026 highlights broad-based growth across segments, with LCVs continuing to dominate the market.

Segment-wise share in domestic sales



Source: SIAM, CRISIL Intelligence

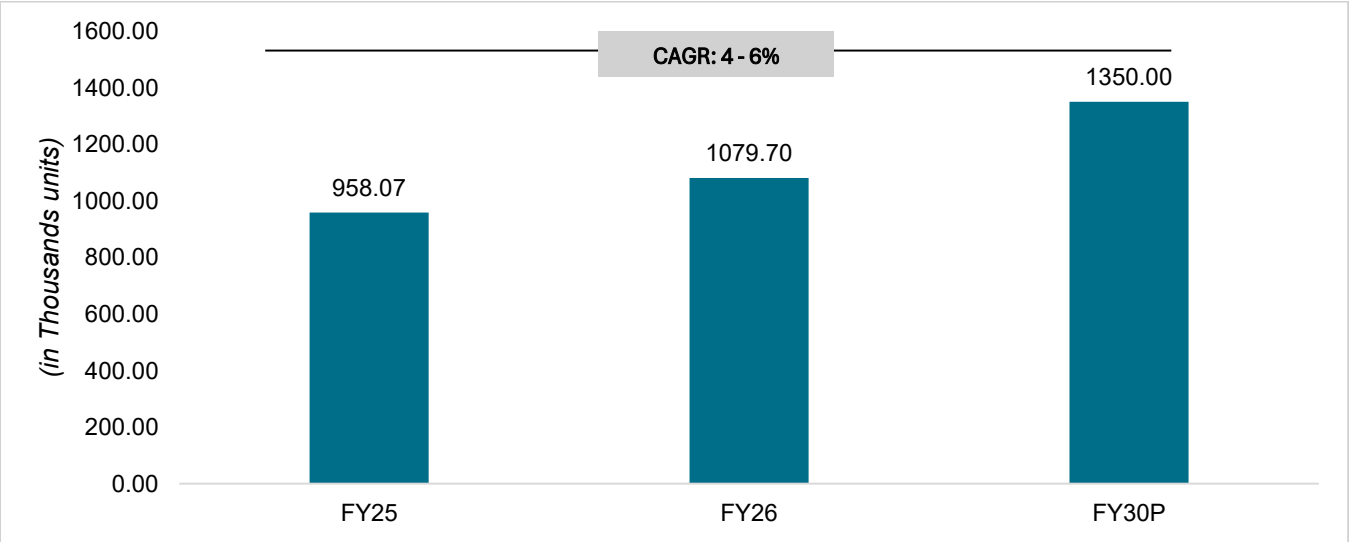
CAGR growth (segment wise)

CAGR	LCV	IMHCV	Buses
CAGR (Financial Year 2020-Financial Year 2022)	1.11%	11.56%	-39.00%
CAGR (Financial Year 2023-Financial Year 2026)	2.10%	3.51%	15.83%
CAGR (Financial Year 2020-Financial Year 2026)	4.88%	11.63%	6.99%

Source: SIAM, CRISIL Intelligence

Overall Commercial Vehicles

Overall Commercial vehicles sales outlook



Source: SIAM, CRISIL Intelligence

The projected outlook suggests a moderate yet structurally stable growth trajectory for the overall commercial vehicle (CV) industry, with volumes expected to expand at a 4-6% CAGR during Financial Year 2025-2030P. Industry volumes are estimated at approximately 1080 thousand units in Financial Year 2026, likely to increase to approximately 1,350 thousand units by Financial Year 2030P. This indicates a steady improvement in underlying demand conditions and reflects a medium-term uptrend rather than a sharp cyclical spike.

From a demand standpoint, the growth is expected to be supported by a combination of replacement-led buying (ageing fleet renewal), sustained infrastructure execution, construction and industrial activity, and continued expansion in organised logistics and freight movement. At the same time, the relatively measured CAGR range implies that industry growth is expected to remain broad-based and predictable, factoring in a higher base, gradual improvements in vehicle productivity, and selective modal shifts in long-haul corridors. Overall, the forecast indicates that the CV industry is likely to sustain a stable medium-term expansion, underpinned by structural freight and infrastructure drivers.

Challenges faced by the road sector

Given the share of roads in the overall transport of goods and passenger traffic, it is critical to develop the roads sector. Although the government has been continuously making efforts to give a fillip to the sector, several issues and challenges hamper the pace of development.

NHAI trying to reduce risks associated with BOT projects through changes in MCA

Land acquisition

Minimum 90% right of way before issue of appointed date as against 80% earlier, providing more comfort to lenders and developers.

Balance 10% to be granted within 180 days of appointed date, else it would be removed from the scope of work. Automatic de-scoping clause would enable the developer to receive PCOD/COD on the completed stretch and start tolling.

Termination clause if appointed date is not received within one year of concession signing date.

Traffic risk

Revenue assessment of project to be done every five years instead of 10 years (or once in a lifetime of a project) earlier. In case of traffic either exceeding or seeing a shortfall from the target traffic, the concession period would be adjusted accordingly, providing more comfort to lenders and developers.

Stuck projects

In case the project has not achieved COD one year post its scheduled completion date, the project will be mutually foreclosed, and the authority will pay the concessionaire an amount equal or lower of:

- 90% of the debt due less insurance cover and
- Value of work done

This will prevent dragging of projects that would lead to time and cost overruns, which was witnessed in the earlier BOT era.

The Ministry of Road Transport and Highways announced in July 2025, that it is set to introduce a revamped Model Concession Agreement (MCA) for Build-Operate-Transfer (BOT) toll road projects, aimed at reinvigorating private participation and improving project viability. The revised framework seeks to mitigate traffic risk for investors and enhance predictability in project execution. Key proposed reforms include removing the concept of “competing roads” that previously caused frequent disputes and introducing a traffic-linked buy-out mechanism. Under this model, compensation or concession extensions will be automatically triggered if traffic volumes fall below a defined threshold, while provisions will allow government buyouts in cases of significantly higher traffic to facilitate network expansion. These measures are designed to make BOT projects more bankable, ensure better quality outcomes, and minimize long-term contractual disputes.

Subdued private participation due to limited financial flexibility witnessing strong revival

The Public-Private Partnership (PPP) model, notably the BOT-toll and BOT-annuity models, catalyzed road sector growth between Financial Year 2008-Financial Year 2012, funding 60% of national highway completion. However, the aggressive bidding witnessed during the 'golden age' of PPP (2007 -2011) led to significant challenges in subsequent years, including subdued financing, lower-than-expected traffic, high gearing ratios, and delayed execution. These issues stressed developers' balance sheets, severely limiting the pool of bidders for BOT-toll projects. Consequently, the sector saw a rise in EPC (Engineering, Procurement, and Construction) contracts. While EPC facilitated construction, it resulted in poor road quality and maintenance as the contractor had no long-term stake after handover. Private participation is now witnessing a strong revival, driven by the introduction of the Hybrid Annuity Model (HAM) in 2016 and subsequent favorable amendments to the concession agreements for the HAM and BOT models in 2020. These changes address historical financial and flexibility constraints.

Delays in project execution and resultant cost overruns

Delays in project execution have posed a major hurdle in the development of the roads sector. Delays lead to significant cost overruns, which lower returns for developers as well as adversely affect their debt-servicing ability. Reasons for delays like Issues in land acquisition, environmental clearances, forest clearances, railway clearances, shifting of utilities, religious structures and encroachments

It is observed that the duration of delay and cost escalation are on the higher side for projects involving interstate road construction owing to the involvement of different state agencies. NHAI is working towards fast-tracking the resolution of these issues and has established conciliation committees, which target at settling arbitration disputes within 18-20 months (Arbitration Act - amendment in 2019). Union Road Transport and Highways minister Shri Nitin Gadkari said that as of March 2025, 489

road projects were scheduled for completion but are still pending due to delays in land acquisition, forest/wildlife clearances and railway approvals.

MoRTH Amendments to BOT (Toll) MCA to reduce financial challenges

One of the key challenges previously faced by NHAI in attracting private participation under the BOT (Toll) model was the limited financial support framework construction and equity assistance was capped at just 10% of the total project cost. This low support level often strained concessionaire cash flows and heightened financial risks, leading to muted private sector interest. To address this, the Ministry of Road Transport and Highways introduced significant amendments to the Model Concession Agreement (MCA) in March 2024, enhancing the combined construction and equity support to up to 40% of the total project cost. The revised structure allows disbursement in ten equal instalments linked to construction milestones, easing liquidity pressures and improving project bankability. This reform substantially reduces financial risk and is expected to reinvigorate private investment in BOT projects.

Budgetary support and financial trends

The Union Budget Financial Year 2026-2027 allocated ₹3.10 trillion to the Ministry of Road Transport and Highways (MoRTH), marking an 8% increase over the revised estimates for Financial Year 2025-2026. The enhanced allocation reflects the Government's continued focus on strengthening road infrastructure, improving connectivity, and supporting economic growth through efficient transport networks.

Of the total allocation, ₹1.87 trillion (approximately 60%) has been earmarked for the National Highways Authority of India (NHAI), representing a 10% increase over Financial Year 2025-2026 revised estimates. The increased budgetary support is expected to facilitate the continued development of national highways and expressways, while supporting ongoing infrastructure programmes and asset monetisation initiatives.

Further, ₹1.22 trillion has been allocated towards roads and bridges, accounting for nearly 39% of the Ministry's budget and representing a 5% increase over the previous year's revised estimates. The allocation will support highway expansion, lane augmentation, expressway development, and connectivity enhancement projects across the country. Additionally, budgetary support for road transport and safety has been increased to ₹0.004 trillion (₹400 crore).

The sustained rise in capital expenditure highlights the Government's commitment to expanding and modernising India's road infrastructure network, with continued emphasis on improving logistics efficiency, regional connectivity, and long-term economic competitiveness.

HAM awarding: Rising competition, declining returns

While competitive intensity in HAM bidding has escalated sharply over the years, the actual volume of HAM awards has witnessed a contraction. From a peak of approximately 3,494 km awarded in Financial Year 2022 and approximately 3,351 km in Financial Year 2023, HAM awards declined to just 654 km in Financial Year 2024, and further to 264 km and 272 km in Financial Year 2025 and Financial Year 2026 respectively.

This notable rise in bidder participation alongside shrinking award volumes reflects a structural challenge in the HAM ecosystem. The average number of bidders has surged from 4-8 in Financial Year 2019-2020 to 12-20 in Financial Year 2026, yet the quantum of projects being awarded has fallen sharply. Compounding this, bid premiums (Difference in average L1 bid cost over initial estimated value) have moved from a healthy 15-20% in Financial Year 2019-2020 to a drop of (-15-30)% in Financial Year 2026, suggesting that the increased competition may no longer be driving efficient price discovery but rather aggressive undercutting. The sharp drop-in award activity in Financial Year 2025 and Financial Year 2026 raises concerns around project pipeline health and execution readiness. This combination of fewer awards, thinner or negative bid premiums, warrants close monitoring of both developer financial sustainability and the overall pace of HAM-based highway development going forward.

In February 2026, MoRTH introduced draft of Contractor and Concessionaire Rating Framework, applicable across all EPC and HAM projects on National Highways.

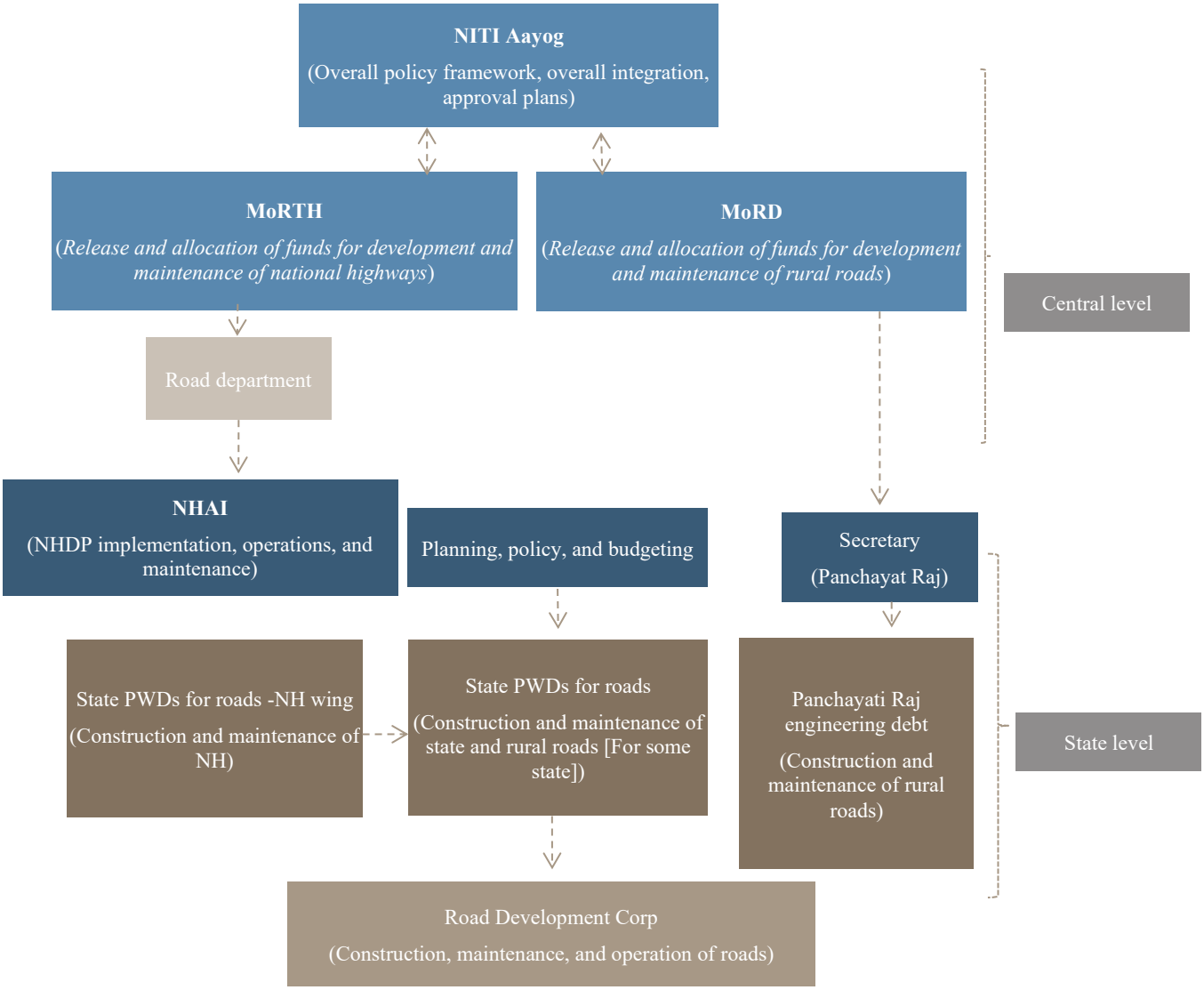
The framework evaluates contractors across seven parameters, with quality assigned the highest weightage at 40 marks and a further penalty of up to -30 marks for poor quality outcomes such as structural failures, pavement defects, and RE wall collapses. Timely completion carries 30 marks, followed by maintenance (10 marks), overall performance and user rating (10 marks), safety (5 marks), dispute resolution (3 marks), and sub-contracting (2 marks). The rating framework marks a meaningful policy intervention at a critical juncture for the HAM sector. For well-capitalised developers with strong execution track records, the framework offers a tangible competitive advantage, both in terms of lower bidding costs and preferential access to large-ticket projects. The trajectory of HAM sector health will therefore be determined not just by award volumes or bid aggression, but by the quality of execution that the regulatory framework is now actively incentivising.

Institutional framework for roads

In January 2015, the government replaced the Planning Commission with the National Institution for Transforming India (NITI) Aayog – a multi-tiered structure, providing strategic and technical advice to the central and state governments. At the central

government level, several line ministries handle transport planning, coordination and policy-setting, and NITI Aayog coordinates the entire effort.

Roads sector - Institutional arrangement at the central and state levels



Source: CRISIL Intelligence

At the central level, NITI Aayog, in consultation with the MoRTH and Ministry of Rural Development (MoRD), is responsible for the overall policy, programme development, and resource planning of rural roads. The MoRTH's duties relate to drawing up policies on road transport and development and the maintenance of national highways.

The National Highways Authority of India (NHAI) is responsible for the implementation, operation and maintenance of national highways. It was constituted and operationalised in February 1995 and was given the status of an autonomous corporate body under the control of the road transport ministry. However, the central government has powers to divest the NHAI of its responsibilities.

At the state level, the overall policy, programme development and resource planning are carried out by the state planning cell in consultation with the centre (NITI Aayog) and state ministry of roads.

The National Highways and Infrastructure Development Corporation (NHIDCL) was incorporated in July 2014. The NHIDCL is a fully-owned company of the MoRTH. Its mandate is to design, build, operate and maintain national highways and roads in the north-eastern region and other parts of the country that share international boundaries with neighbouring countries.

At the state level, state public works departments (PWDs) and road development corporations are responsible for implementing, operating, and maintaining state highways, major district roads and rural roads in some states.

The MoRD is responsible for policy development, as well as monitoring and coordination of rural roads. Apart from state PWDs, the Panchayati Raj ministry also constructs and maintains rural roads. Allocation for the Pradhan Mantri Gram Sadak Yojana (PMGSY), which is focused on rural roads, is provided by the MoRD.

The ministries allocate and release funds for the development of roads to the respective implementing agencies.

Policy framework for road sector

Key policy measures to boost private participation

To encourage and facilitate private sector investment and participation in the roads sector, the central government, via its respective authorities, has undertaken certain policy measures and provided certain Financial Year incentives within the sector. The most significant policy reforms in recent times are discussed below.

1. Amendments to the EPC model concession agreement (MCA)

The key changes are as follows:

Right of way: Deadline reduced from 240 days to 180 days for approval/ clearances for areas under forest or sanctuary

If the appointed date is not received within 90 days of signing the agreement, the contract may be terminated, the authority will pay contractor damages = 1% of the contract price to the contractor for each day of delay

If the project is not completed within 90 days of the scheduled completion date, the contractor would be ineligible to bid for future projects till it is completed

Lower compensation and longer tenure for the contractor's maintenance obligations. Defect liability period increased from 4 years to 10 years

Higher interest on mobilisation advances paid to the authority; earlier recovery of mobilisation advance by the authority; release of retention money against bank guarantees discontinued

Impact

The authority's obligations increased to enable quicker land acquisition

Developer's working capital needs increased, also responsible for timely project completion

2. Introduction of the hybrid annuity model (HAM) in 2016

The broad outline of the new model of operation is as follows:

Of the total project cost, 40% is to be funded by the government, and balance 60% is given during operations

The project cost will be linked to inflation

Construction support is to be disbursed in five equal instalments of 8% each, and the timing of each such payment will be linked to the percentage of project cost spent by the concessionaire

Traffic risk will be borne by the government, with developers receiving fixed annuities

Annuities will be linked to bank rate plus 3%

80% of land to be provided prior to the appointed date

Impact of the model

The introduction of HAM significantly improved the bankability of highway projects by reducing developers' upfront capital requirements and eliminating traffic risk. The model revived private participation in the roads sector, improved financial closure of projects, and attracted institutional investors owing to predictable annuity-based cash flows. While the requirement for substantial land availability prior to project commencement reduced execution risks, issues related to land acquisition, utility shifting and approvals continue to affect certain projects.

3. Exit policy

On August 26, 2015, the Cabinet Committee on Economic Affairs (CCEA) amended its earlier approval dated May 13, 2015, to allow 100% equity divestment after two years of completion for all BOT projects, irrespective of the year of award. The earlier policy allowed such divestments only for projects awarded prior to September 30, 2009. While the earlier policy allowed the funds obtained through such divestments to be used only for the completion of the concessionaire/promoter's other pending BOT road projects, the new policy allows the proceeds to be used to complete any highway project, any power sector project, or also to retire debt in any other infrastructure project. The exit policy has been changed to six months for HAM projects during construction period and remains as two years for BOT projects as per the latest MCA changes in 2020.

Impact

This move will help close stake sale transactions announced in the last one year and help free up developers capital, which can be used to repay debt or invest in new projects.

NHAI fund infusion

On May 13, 2015, the CCEA permitted the NHAI to infuse funds in projects stuck in advanced stages of completion. Below are the broad contours of the policy announced:

Government to look at one-time fund infusion for installed projects where 50% work has already been done

The NHAI to have the first charge on toll revenue

Impact

This policy will improve developers' cash flows through toll collections and also their debt servicing ability. However, as the NHAI will have the first charge on receivables, lenders are hesitant to allow such a fund infusion. Hence, this policy may not have a significant impact in the near future.

4. Premium rescheduling

In March 2014, premium rescheduling was announced for projects with delays or lower-than-expected traffic. This helped players manage cash flow mismatches, especially at a time when loan tenures were significantly lower than the project life, resulting in cash flow issues. It also helped specifically in the case of aggressively bid projects where premium payments amounted to a very large portion of the total cost. Decision allowing rescheduling of premium payments, i.e. monthly payments due, to be made by developers to NHAI with an escalation of 5% per annum over the concession period.

5. Substitution

In January 2014, the CCEA approved the proposal to facilitate the substitution of concessioners in ongoing and completed national highway projects. As per the proposal, existing concessioners are permitted to divest their equity in totality in on-going or completed projects. However, subsequent to the substitution, the leading substituting entity will be required to maintain at least 51% equity holding in the project SPV. The decision to permit substitution will be taken by lenders in consent with the NHAI.

6. De-linking of forest and environmental clearances

In March 2013, the Supreme Court approved the de-linking of forest and environmental clearances. This de-linking is valid only for road widening projects. In a notification in 2011, the Ministry of Environment and Forests had asked for forest clearances before seeking environmental approval. This led to many road projects being stalled in the first stage itself. This judgement in 2013 allows companies to start road widening work with just environmental clearances, without having to wait for forest clearances. However, forest clearances will be necessary for stretches that fall in forested areas.

7. Relaxation on green nod norms for road widening projects up to 100 km

In June 2013, the environment ministry cleared a proposal allowing for the expansion of highways up to 100 km without environmental clearances. Earlier, approval from the environment ministry was not required for road expansion up to 30 km. The relaxation will also be applicable on existing highways, which require additional 40 m of land for widening. This limit was earlier 20 m.

8. Payment of 75% of arbitration claims

In August 2016, the ministry introduced a policy with regard to the payment of 75% of arbitration claims to the concessionaires. According to the policy, if an arbitration claim has been awarded in favour of a private concessionaire in a lower court/tribunal and the government agency has appealed against it in a higher court/tribunal, then the private player can receive 75% of the claimed amount. It will have to provide the authorities a bank guarantee of an equivalent amount to the government agency.

As per PIB’s publication dated 14th, October 2023, Union Minister for Road Transport and Highways, Shri Nitin Gadkari, held a High-Level meeting with the National Highway Builders Federation to resolve their issues. It was agreed that implementation of Vivad Se Vishwas II Scheme be taken in a campaign mode with a target to settle all eligible claims. NHBF was requested to ensure that all contractors file their claims by 25th October 2023.

The Vivad se Vishwas Il (Contractual Disputes) Scheme of Department of Expenditure, Ministry of Finance, Government of India contains detailed procedure / modalities to arrive at the settlement amount that shall be offered to the contractors and where the claim amount is ₹5 billion or less, procuring entities will have to accept the claim, if

the claim is in compliance with the guidelines. In case the claim is more than ₹5 billion, then the decision of not accepting the request for settlement from the contractor should be done after recording the reasons with the approval of the competent authority. The claims are to be submitted by 31.10.2023 through GeM portal.

The extant guideline is applicable to disputes of all such cases where the award has been passed by the court/tribunal is for monetary value only and the award of the Arbitration is issued up to 31.01.2023 or Court Award is passed up to 30.04.2023.

Secretary for Ministry of Road Transport & Highways, Shri Anurag Jain said that Vivad se Vishwas Il Scheme has been formulated to clear backlog of old litigation cases. He said the scheme will help in freeing up locked working capital and stimulate fresh investments.

As per PIB's publication dated 08th February 2024 regarding updates of Vivaad se vishwash II scheme, by February 5, 2024, 120 applications have been received, with 56 applications accepted and settlement offers extended, and 43 offers accepted by contractors. However, 7 applications have been rejected. The scheme's deadline for application submission is March 31, 2024, with extended cut-off dates provided for certain cases.

Impact

This policy will help private players facing financial problems and having substantial claims pending with the NHAI. It is expected to help kick-start stalled projects on account of fund infusion by developer and provide some relief to lenders because of loan repayment.

9. Eligibility Norms for HAM and EPC Projects to Improve Construction Quality

Ministry of Road Transport and Highways (MoRTH) and the National Highways Authority of India (NHAI) have implemented comprehensive reforms to the eligibility criteria for Hybrid Annuity Model (HAM) and Engineering, Procurement and Construction (EPC) highway projects. These stringent norms, introduced through multiple policy circulars in 2025, are specifically designed to enhance construction quality, reduce project delays, and ensure better accountability in highway development.

Enhanced Financial Qualification Requirements

HAM Project Financial Norms

The financial thresholds for HAM projects have been significantly strengthened to ensure only well-capitalized contractors participate in bidding:

- Minimum Financial Capacity: Increased from 15% to 20% of the estimated project cost
- Net Worth Requirement for Consortium Members: Raised from 7.5% to 10% of the estimated project cost
- Available Net Worth Calculation: Now deducted after accounting for 20% of the balance value of existing public-private partnership projects

EPC Project Financial Norms

Similar enhancements have been implemented for EPC projects:

- Minimum Net Worth: Increased from 5% to 10% of the estimated project cost
- Average Annual Turnover: Raised from 15% to 20% of the estimated project cost

Technical Qualification and Experience Requirements

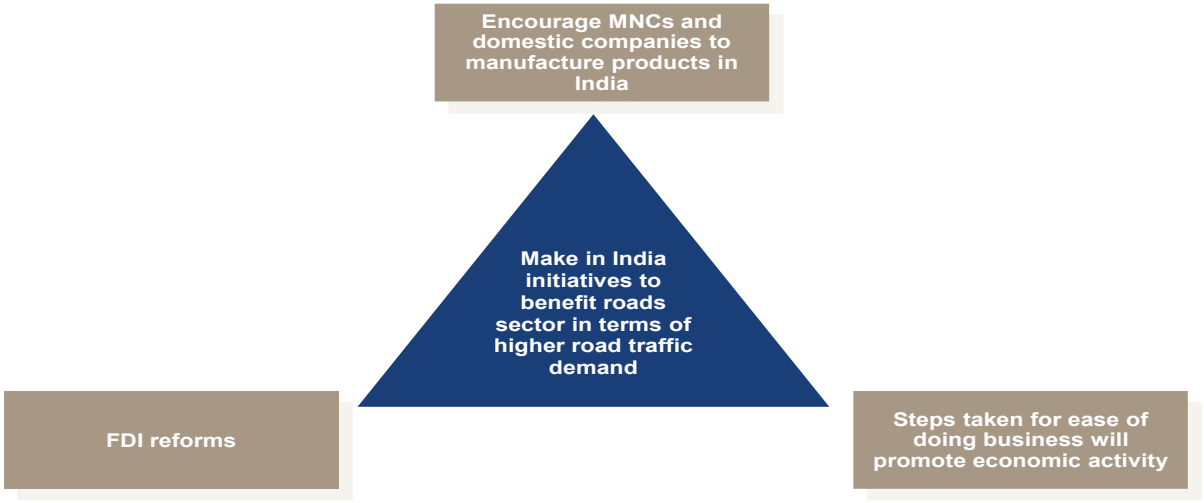
- NHAI has introduced stringent definitions for "Similar Work" experience to prevent misrepresentation:
- HAM Projects: Contractors must demonstrate completion of either: One project equivalent to 35% of the estimated project cost (increased from 20%) or Two projects equivalent to 25% each of the estimated project cost
- Definition Clarification: "Similar Work" now refers exclusively to completed highway projects that include all major components comparable to those required for the project being bid

Impact of the 'Make in India' initiative on the roads sector

The 'Make in India' campaign, launched in September 2014, covers 25 major sectors, including roads and highways. The initiatives under the campaign, such as encouraging multinational companies (MNCs) to manufacture products in

India, taking steps to improve the ease of doing business, as well as FDI reforms, are expected to benefit the roads sector in terms of increase in traffic movement.

Impact of 'Make in India' on the roads sector



Source: CRISIL Intelligence

Encourage MNCs and domestic companies to manufacture products in India

MNCs and domestic companies setting up manufacturing plants in India will facilitate increase in passenger as well as freight traffic on roads. Following the announcement of the 'Make in India' campaign, the government received several proposals from MNCs interested in manufacturing electronics in India. For instance, Xiaomi, a Chinese mobile phone maker, partnered with Foxconn in August 2015 to manufacture smartphones in a factory in Andhra Pradesh. A few weeks later, Lenovo, a Chinese computer and mobile phone maker, announced its plans to manufacture smartphones in India at its Chennai plant.

Steps to improve ease of doing business will promote economic activity

The measures undertaken for ease of doing business will promote economic activity and, thereby, boost road traffic demand. Some of these key measures are:

Applications for environment and forest clearances are to be submitted online through the Ministry of Environment and Forests and Climate Change portals

Application forms for industrial licence (IL) and industrial entrepreneur memorandum (IEM) have been simplified

Applications for IL and IEM are to be submitted online

The eBiz portal has integrated 20 services and will function as a single-window portal to obtain clearances from various governments and government agencies

The Ministry of Labour and Employment has launched a unified portal to register units for Labour Identification Number (LIN), report inspections, submit returns, and for grievance redressal

Overview of government initiatives

New tolling policy (2011)

Toll act

The central government is authorised to levy a fee (toll) under Section 7 of the National Highways Act, 1956, for public-funded projects and under Section 8-A of the said Act for private investment projects. The government can levy fees on all sections of national highways (irrespective of four or two lanes), tunnels, bypasses, and bridges with specific cost criteria.

Fee structure

Toll charges are based on rates notified by the government. The fee for use of a section of national highways with four or more lanes for the base year Financial Year 2008 shall be the product of the length of such a section multiplied by the rates specified hereunder.

Toll rates for four-lane national highways

Vehicle category	Rs/ km
Car, jeep, van, light motor vehicle	0.65
Light commercial vehicle	1.05
Bus or truck	2.20
3-axle commercial vehicle	2.40
Heavy construction machinery, multi-axle vehicles (MAV) with 4-6 axles	3.45
Oversized vehicles with 7 axles or more	4.20

Source: PIB, CRISIL Intelligence

The rates, which will be revised every year, will be an aggregate of the following rules effective April 1, 2016:

- Increase of 3% without compounding (on base rates of Financial Year 2008)
- Compared with the previous year, 40% of the increase in wholesale price index (WPI)

In previous years, the toll rates were fully linked to the WPI, which led to numerous case where WPI would become negative. The current method of toll rates has been beneficial for private players.

- Other features of the new tolling policy include the following:
- Uniform rates for public- and private-funded projects
- Fee for a permanent bridge, bypass, or tunnel costing ₹0.10 billion or more and that of NH length will be calculated separately

In 2013, 2014, 2015, 2019, 2020, and 2022 some amendments were made to the National Highway Fee (determination of rates and collection) Rules 2008, as follows:

- In the case of a four-lane highway being upgraded to a six-lane one, the increase in rate shall be limited to 75% of the fee specified, revised as per the applicable rules calculated on and from the date of commencement of upgrade-related work to the date of completion of the project, according to the agreement entered into with the concessionaire without any annual revision
- In certain cases, fee collection is started when the project is 75% complete, but the fee is applicable only to 75% of the operational length
- No user fee shall be levied on the delayed period between the date of completion as per the agreement entered into with the concessionaire and the date of actual completion of the project. For the purposes of this rule, any provisional completion shall not be treated as completion of the project.
- The tolls rates are calculated on the basis of the road length, excluding bypass (costing more than 100 million) and structures (more than 60 metre). The road length fee is payable at 100% of the applicable rate for four lanes and at 60% for two lanes with paved shoulders
- Bypass (costing more than 100 million) length fee is payable at 150% of the applicable rate for four lanes and at 90% for two lanes with paved shoulders
- Structure (costing more than 100 million) length fee is payable at 100% of the applicable rate for four lanes and at 60% for two lanes with paved shoulders
- Commercial vehicles registered within the district are tolled at 50% discount, and local non-commercial vehicles are issued a monthly pass for a certain amount
- The rate of fee for use of an expressway shall be 1.25 times the rate specified in the applicable rule
- The rate of fee for private investment projects shall be as specified under the applicable rule or as the concessionaire may determine by issuing a public notice to users
- The following method is used to calculate the rate of fee for highways/expressways with standalone structures and structures forming part of linear highways/expressways:

Length of the structure* (L) X Factor "10" = Length in metres

** Structure of 60 metres of length or less*

- To calculate fee for a linear highway/expressway, structures will be considered a part of the normal length of highways/expressways

- In the December 2013 amendments, the NHAI empowered the concessionaire to collect 10 times the applicable fee from overloaded vehicles. The December 2015 amendments allowed the concessionaire to stop vehicles plying on National Highways unless they cleared their dues. Any vehicle loaded in excess of its maximum permissible gross vehicle weight (GVW) is not permitted to use the National Highway or cross the toll plaza until the excess load is removed or a fee of 10 times the applicable amount is paid. Moreover, the concessionaire can detain the vehicle until all dues are cleared

- The May 2018 amendment stated that if a vehicle user with a valid, functional FASTag or any such device with sufficient balance in the linked account crossing a fee plaza installed with Electronic Toll Collection infrastructure is not able to pay the user fee through FASTag or any such device because of malfunctioning of Electronic Toll Collection infrastructure, the vehicle user shall be permitted to pass the fee plaza without payment of any user fee

- In the National Highways Fee (Determination of Rates and Collection) Rules, 2008, in rule 11, in clause (e), the word "disability" should be replaced with "DIVYANGJAN"

- The fee payable towards discounts shall be paid through pre-paid instruments, smart card or through FASTag or on-board unit (transponder) or any other such device

- The executing authority or the concessionaire, as the case may be, provide for multiple journeys to cross a toll plaza within the specified period at the rates specified

- The words "may opt for such pass" shall be omitted

- "A person who owns a mechanical vehicle", the words, "with valid functional FASTag," shall be inserted

- "A person who owns a commercial vehicle (excluding vehicle plying under National Permit)", the words "with valid functional FASTag," shall be inserted.

- User of the vehicle not fitted with "FASTag" or vehicle without valid, functional "FASTag" entering "FASTag lane" of the Fee plazas shall pay a fee equivalent to two times of the fee applicable to that category of vehicles

- Closed user fee collection system means a system under which the fee is levied based on the actual distance travelled by a mechanical vehicle, on a national highway or expressway

- The executing authority or the concessionaire may establish fee plaza on the national highway or expressway on which the closed user fee collection system has been installed

- Provided further that no such concession shall be provided for commuting on a national highway or expressway on which fees is levied based on the closed user fee collection system.

Overloading of vehicles

FASTag can discourage truck overloading on Indian highways by tying each vehicle's electronic toll identity to automated weight screening and enforcement at toll plazas, which increases the certainty and immediacy of penalties for violations. When weigh-in-motion sensors and number-plate cameras are integrated with the FASTag ecosystem, overloaded vehicles can be detected in traffic flow, linked to the responsible owner through the tag, and subjected to actions such as diversion to static scales, higher user fees, issuance of e-notices, and progressive suspension or blacklisting of the tag in cases of repeated non-compliance. This creates a predictable data trail time, place, vehicle identity, and measured weight making adjudication and follow-up more efficient while raising the direct costs and delays associated with illegal overloading, thereby reducing the financial incentive to exceed axle and gross weight limits. Current policy directions around barrier-less tolling and electronic enforcement further support this model by enabling remote issuance of notices and linkage with VAHAN records, while procurement documents from IHMCL explicitly provide for ETC systems that incorporate WIM and static weighbridges, indicating a standardized pathway to scale weight enforcement across high-load corridors. As cash lanes narrow and compliance rules tighten, the risk of double fees for non-compliance and the possibility of tag suspension make persistent overloading operationally costly for fleet operators, encouraging better load management and compliance with statutory limits.

Reduction In WPI linking factor

WPI linking factor used in national highway toll indexation has been reduced by NHAI via a policy circular dated September 13, 2025, which lowers the factor from roughly 1.641 to 1.561; this effectively cuts the converted WPI used in fee computation and reduces base toll rates. The matter is sub-judice with the hearing being listed for October 17, 2025. In the interim, the Delhi High Court has directed that no coercive or precipitative action be taken by NHAI against concessionaires on the basis of the policy circular.

- NHAI's circular revises the WPI linking factor applied when converting WPI between base years for toll fee indexation, moving from about 1.64 to about 1.56 with effect from September 13, 2025.

- Public disclosures by listed InvITs confirm receipt of the circular, the exact factor change, and that asset managers are assessing applicability and reserving legal rights.

- Industry and rating analyses indicate the revision will permanently lower base tolls on public-funded and BOT (Toll) projects unless relief is granted.

Financial incentives for road developers

- Under section 80 IA of the Income Tax Act 1961 (as superseded by the Income-tax Act, 2025), profits and gains derived by an undertaking are subject to 100% deduction for 10 consecutive assessment years out of 20, beginning from the year in which the undertaking begins to operate the business, provided such profits and gains are derived from the business of: 1) developing, 2) operating and maintaining, or 3) developing, operating, and maintaining a road, including tolls and bridges, a highway project including housing or other activities being an integral part of the highway project. These criteria shall not apply to any enterprise that starts development or operations and maintenance of the infrastructure facility on or after April 1, 2017, as that enterprise shall be eligible for 100% deduction of capital expenditure under section 35AD

- Import duty has been completely exempted for public-funded needs on certain identified high-quality construction plants and equipment

- Import of bitumen is now permitted under the Open General Licence

- External commercial borrowings are permitted up to 35% of the project cost

Financing framework

The financing framework for the roads sector in India is broadly categorized into two main classifications: public funding and private funding. Public funding encompasses budgetary support provided by the government, including funds such as the Central Road and Infrastructure Fund (CRIF). On the other hand, private funding involves investment from private entities through mechanisms like Public Private Partnership (PPP) and Asset Monetisation, allowing for collaborative financing and development of road infrastructure projects.

Public Financing

Public financing remains the backbone of India's road infrastructure development, especially in areas where private investment is unviable. Road infrastructure plays a central role in enhancing connectivity, reducing logistics costs, and promoting regional equity. Given the scale of the network from expressways and national highways to state roads and rural connectivity government spending through the central, state, and local levels continues to be the largest source of funding for construction, upgradation, maintenance, and safety measures.

The Union Budget is the primary channel for public financing of roads. Each year, large allocations are made to the Ministry of Road Transport and Highways (MoRTH), the National Highways Authority of India (NHAI), and related agencies for flagship programmes such as Bharatmala Pariyojana, Expressway Development and the Special Accelerated Road Development Programme for the Northeast. In the 2026-27 Union Budget, for instance, the roads and highways sector received an allocation of about ₹ 3.09 trillion, representing roughly a 7.92% increase over the previous year. Alongside budgetary allocations, a system of dedicated non-lapsable funds also channels revenue to the sector. The Central Road and Infrastructure Fund (CRIF), financed by cess on petrol and diesel, is used to fund national and state highways, while the Permanent Bridge Fee Fund and the National Highways Fund provide financing for bridges, maintenance, and other critical works.

State governments are also key players in public financing for roads. They allocate capital and maintenance expenditure for state highways, district roads, and local roads through their own budgets, sometimes using state-level road funds. In many cases, states receive grants or cost-sharing support from the Centre. Flagship schemes such as the Pradhan Mantri Gram Sadak Yojana (PMGSY) for rural connectivity and the State Support Programme for Road Safety are financed largely through central grants, often with a defined share to be contributed by states. In addition, government borrowings from domestic and multilateral sources such as the World Bank or Asian Development Bank continue to fund road improvement and safety programmes, with repayment liability borne by the public sector.

This public financing model has allowed India to undertake large-scale programmes such as Bharatmala, PMGSY, and bridge modernisation that would otherwise have struggled to attract private capital. It ensures socially desirable but commercially unviable projects particularly in rural, remote, and low-traffic regions are built and maintained. By leveraging the government's ability to borrow at lower cost, it provides relatively stable funding for long-gestation projects and allows integration of safety, environmental, and social safeguards into project planning.

Public-private partnerships (PPPs)

PPP is an arrangement between a government/ statutory entity/ government-owned entity and a private sector entity for the provision of public assets and/or public services through investments made and/or management undertaken by the private sector entity for a specified period of time. In this arrangement, allocation of risk between the private sector and the public entity is defined well. The private entity receives performance-linked payments that conform with (or are benchmarked to) specified and pre-determined performance standards, measurable by the public entity or its representative.

For broad-based and sustainable growth, the government recognises the need to engage with the private sector through a PPP framework to achieve the following objectives:

- Harness private sector efficiencies in asset creation, maintenance and service delivery.
- Focus on a life-cycle approach for project development, involving asset creation and maintenance over its life cycle.
- Create opportunities to bring in innovation and technological improvements.
- Enable affordable and improved services to users in a responsible and sustainable manner

While the preferred form of the PPP model is one in which ownership of the underlying asset remains with the private entity during the contract period, and the project is subsequently transferred back to the public entity on contract termination, the final decision on the form of PPP is taken using the value-for-money analysis.

The types of construction contracts based on price risk are as follows:

Fixed-price contracts: These contracts state the fixed fee or payment (per unit output or whole project) the contractor receives on completion of a contract. The contractor bears the risk of a rise in cost during the construction period. Certain pass-through of higher cost may be allowed in some projects.

Cost-plus contracts: These are contracts in which the contractor is entitled to receive a fixed surplus over the project cost borne. The surplus given to the contractor can be in the form of a fixed percentage over cost or a pre-decided fee over cost. Therefore, any increase in cost of the project, during the construction phase, is passed on to the client.

The types of contracts based on scope of execution are as follows:

Item rate contract

These are fixed-price contracts, where the concerned authority provides the detailed design and the estimated quantity of materials. A project is divided into several sub-activities, for which the item-wise quantity of input material to be used is specified in a document called bill of quantities. Bids are invited for the price of each construction activity based on the items specified. As the aggregate of bid amounts form the total project cost, the lowest bidder wins the project. The bill of quantity document may state the quantity of items such as cement, girders, electric boards, wires, etc, to be used, against which the bids are invited.

Lump-sum turnkey (LSTK) contract

LSTK is a fixed-price contract in which the contractor fixes a lump-sum fee based on the specific project requirements. The client states the project specifications with respect to designs, drawings, technical stipulations, quality of raw material, etc, based on which the contractor provides bids, stating a lump-sum fee for execution.

Design and build contract

In this type of a contract, the authority does a conceptual study of the project to be awarded and specifies the technical output details based on which the specifications of the project are decided. The developer has to undertake the detail designing and execution of these projects. EPC and BOT are design and build models.

A few operational models:

I. BOT-toll/-annuity/-hybrid annuity model (HAM)
II. EPC
III. Toll collection
IV. Operate, maintain and transfer (OMT)
V. Toll, operate and transfer (TOT)

Electronic toll collection (ETC) is a strategic focus area for regulatory and administrative bodies involved in the process of toll collection. It presents several advantages such as limiting toll leakages, reducing the waiting time for vehicles, and improving overall traffic flow at toll plazas. In the future, this may result in significant changes in toll collection operating procedures, followed in all the PPP models.

Types of PPP models

Type of project	Description	Development risk	Financing risk	Traffic risk and accrual of toll fee collection	Net cash outflow for the government	Revenue for private party	Concession period	Award criteria
BOT-Toll	Private party builds the road, undertakes O&M and collects toll	Concessionaire	Concessionaire	Concessionaire	Yes (in the form of grant/equity support)	Toll	20-30 years for the NHAI** and other authorities	Highest revenue sharing bid/highest premium/ lowest equity support
BOT-Annuity	Private party builds the road, undertakes O&M* and collects annuity from the granting authority	Concessionaire	Concessionaire	Authority	Yes, net payment to be made is the difference between the toll collection and the annuity payable	Annuity payment	15-20 years for the NHAI and other authorities	Lowest annuity
BOT-HAM	Private party builds the road, undertakes O&M. Gets 40% of payment during construction and 60% as annuity along with interest	Concessionaire	Concessionaire	Authority	40% during construction and 60% as semi-annual annuity along with interest, net of toll collected	Construction grant plus annuity payments, interest on annuities, inflation-indexed O&M payments	Around 15 years of operations plus additional construction period	Lowest project cost plus O&M cost
EPC	Private party builds the road, based on the cost incurred by the government	Concessionaire	Authority	Authority	Yes	Contract amount	Not required	Lowest contract price requested
TOT	Private party pays an upfront bid concession fee (summation of NPV of free cash flow based on concessionaire estimates) to the authority, undertakes O&M plus certain capex and collects the toll during concession period	Authority (in case upgradation of lanes is taken up during the concession period)	Concessionaire	Concessionaire	No	Toll	15, 20, 30 years	Highest upfront payment
Tolling (OMT)	Private party pays the estimated toll upfront to the authority and collects it during the concession period	No development by tolling contractor	Concessionaire	Concessionaire	No	Toll	One year for NHAI projects	Highest revenue-sharing bid

Note: Development risk refers to construction risk in developing a road project
**Operations and maintenance*
*** National Highways Authority of India*
Source: Crisil Intelligence, NHAI

BOT

BOT contracts are typically PPP agreements wherein a government agency provides a private player the rights to build, operate and maintain a facility on public land for a fixed period, after which the assets are transferred back to the public authority.

Funding for the project is arranged by the concessionaire through a mix of equity and debt from banks and other financial institutions. Under the basic BOT mode, the concessionaire charges a fee to the users of the project/facility and may either transfer the entire user fee collected or part of the collected fee to the authority or may retain the entire amount as revenue. BOT contracts are, therefore, classified into the following types:

Annuity-based contract: Under this contract, the concessionaire is responsible for the construction and maintenance of the project during the concession period. Variability in user fee gives rise to revenue risk, which is borne by the authority. However, the concessionaire generates revenue through fixed annuity payments received from the authority over the concession period. Since this annuity payment is a cost to the authority, the contract is awarded to the lowest bidder. Tolls charged under these contracts are generally regulated by a policy or a public agency.

Toll-based: Under this model, too, the concessionaire is responsible for the construction and maintenance of the project, after which the project's ownership is transferred to the public authority. However, the toll collected is retained by the concessionaire and not transferred to the authority. Therefore, the concessionaire bears the revenue risk during the concession period. As in BOT annuity-based projects, toll charged under these contracts is generally regulated by a policy or a public agency.

HAM: This is a mix of EPC and BOT (annuity) models. In this model, the project cost is shared between the authority and the concessionaire in a 40:60 ratio. This model aims to lower the financial burden on the concessionaire during the project implementation phase. Compared with EPC projects, the shift to HAM will also ease cash flow pressure on the NHAI. It will lower project risk for developers because the NHAI will bear the risk of traffic volume, and the developer earns through fixed annuity payments. It will also help developers participate in more projects given that equity contribution per project will now be lower. This model will also encourage banks to lend to road projects because of the NHAI's involvement. HAM was approved by the Cabinet Committee on Economic Affairs on January 27, 2016.

Viability gap funding (VGF)

Viability Gap Funding (VGF) refers to a grant, either upfront or deferred provided by the government to support infrastructure projects that are economically justified but fall short of financial viability. Introduced in 2004, the VGF scheme was aimed at promoting Public-Private Partnership (PPP) projects, particularly in sectors where projected revenues were insufficient to fully recover project costs.

Under this mechanism, projects with relatively lower traffic potential or revenue visibility were provided financial support to enhance their bankability. Typically, project awards were based on competitive bidding, with developers quoting the lowest grant requirement.

However, over time, increased bidding aggression and challenges in traffic estimation led to a decline in VGF-supported projects. The number of such projects reduced significantly from a peak in Financial Year 2010 to minimal or no awards by Financial Year 2016-Financial Year 2017. Consequently, project awarding by the National Highways Authority of India also witnessed a slowdown during this period, with a gradual shift towards alternative models such as EPC.

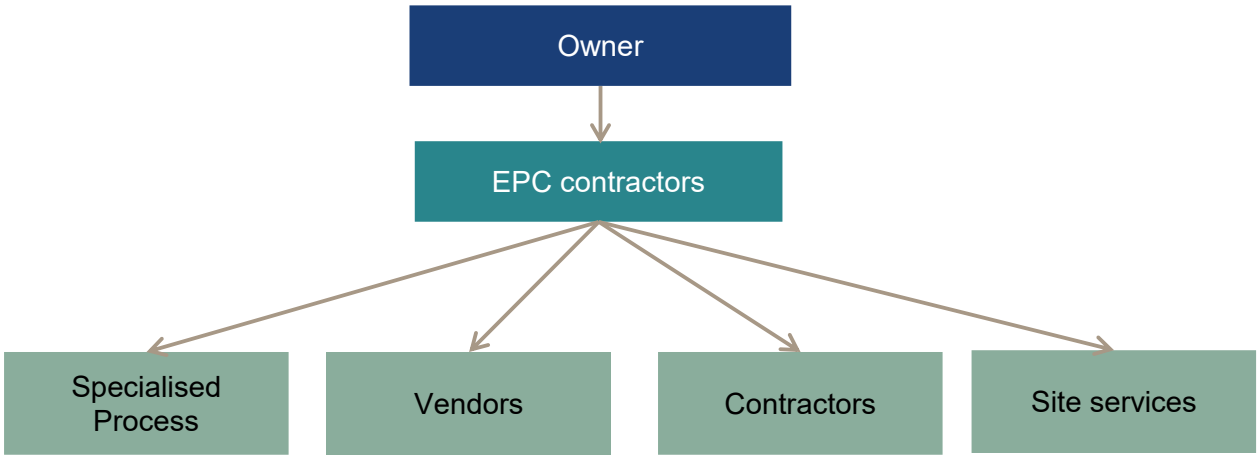
The scheme was subsequently revamped in 2020 with a total outlay of ₹8,100 crore up to Financial Year 2024-2025, primarily aimed at enhancing PPP participation and promoting private investment in social infrastructure sectors such as healthcare, education, wastewater, solid waste management, and water supply. Overall, 67 projects with total project cost of Rs.45,802 crores have received 'final approval' under the VGF Scheme

In parallel, elements of VGF-like support have been incorporated within hybrid models such as HAM, wherein the government provides a portion of the project cost during the construction phase, thereby improving project viability and reducing developer risk.

EPC

EPC contracts are fixed price, wherein the client provides conceptual information about the project. Technical parameters, based on the desired output, are specified in the contract. The contractor undertakes the responsibility of designing the project either through an in-house design team or by appointing consultants. Unlike item rate and LSTK contracts, the contractor is allowed to innovate on the project design. Based on these designs, the contractor draws up cost estimates and accordingly bids for the project.

EPC contracts



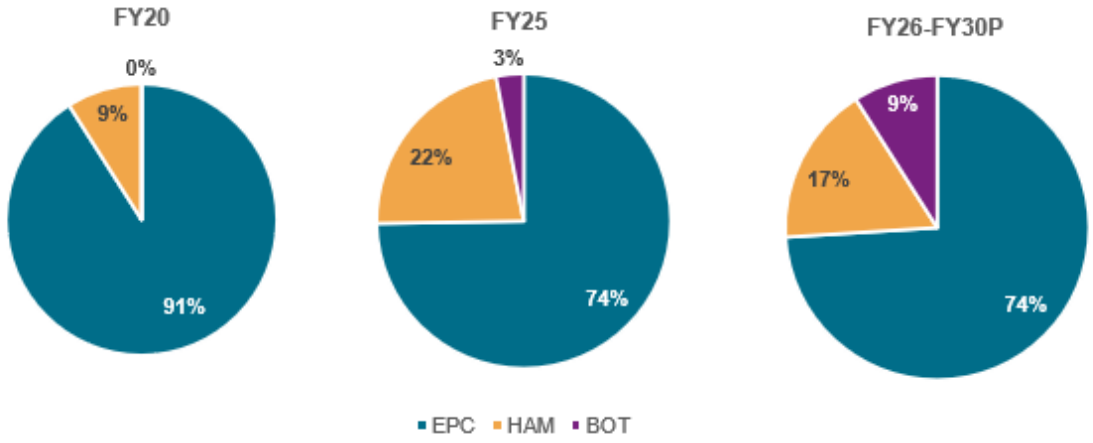
Source: CRISIL Intelligence

Trends in bidding by private sector participants

Private sector participation in India's road sector has evolved with distinct trends across BOT (Toll), HAM, EPC, and TOT models, reflecting shifts in risk appetite, competition, and qualification norms.

Between Financial Year 2019 and Financial Year 2025, the EPC model dominated, accounting for over 70% of the total projects open for private participation due to its efficiency and low-risk structure. The HAM model contributed around 20%, supported by its balanced risk-sharing framework between the government and concessionaires. Meanwhile, the BOT (Toll) model has seen a modest revival, rising to about 3% in Financial Year 2025, driven by the 2024 amendments to the Model Concession Agreement that improved its viability for investors.

Share of HAM, BOT & EPC



Source: Ministry of Road Transport and Highways (MoRTH), CRISIL Intelligence

NHAI's bidding process

The NHAI introduced the operate-maintain-transfer (OMT) model for roads in India and has awarded the maximum number of OMT projects. The bidding process specified by the NHAI for awarding OMT projects is as follows:

NHAI awards OMT projects under a two-stage process: **qualification stage** and **bid stage**

10. **Qualification stage**

- The NHAI solicits applicants' qualifications through the request for qualification (RFQ) document, for a prefixed number of OMT projects and road length, to ease the process at the bid stage
- The aim of the qualification stage is to evaluate the technical and financial capability of the applicants and decide their eligibility for various categories of OMT projects based on estimated project cost. The cost is specified by the NHAI for all OMT projects and includes all costs expected to be incurred during the project such as cost of major/minor maintenance works, construction of toll plazas, manpower cost, and incident management costs

- At the time of applying for qualification, the applicant is expected to indicate the estimated project cost for which he wishes to be qualified, which should be more than Rs 200 million

- At the end of the qualification stage, the NHAI gives out a list of qualified applicants along with specific estimated project costs, which qualifies them for participation in the bidding stage. The qualification is typically valid for 12 months

- To be eligible for qualification and shortlisting, an applicant is expected to fulfil certain minimum technical and financial criteria:

Technical capacity - The applicant should have an experience of five financial years, prior to the date of application, of paying or receiving payments for construction or paying for development or collection and appropriation of revenue of PPP projects in the highways* or core sectors* (with capital cost of more than ₹ 50 million).

Financial capacity - In the financial year preceding immediately, the applicant is required to have minimum net worth of the following amounts:

- For an estimated project cost between ₹ 20 billion and ₹ 30 billion: ₹ 5 billion plus 50% of the amount by which the estimated project cost value exceeds ₹ 20 billion

- For an estimated project cost value of more than ₹ 30 billion: ₹ 10 billion plus 100% of the amount by which the estimated project cost value exceeds ₹ 30 billion

In the case of a consortium, the combined technical and financial capacity of the members is evaluated.

- The concessionaire is required to engage an experienced O&M contractor or hire qualified and trained personnel to undertake operation and maintenance activities

- No separate applications are needed for qualification for OMT projects, which are part of the RFQ

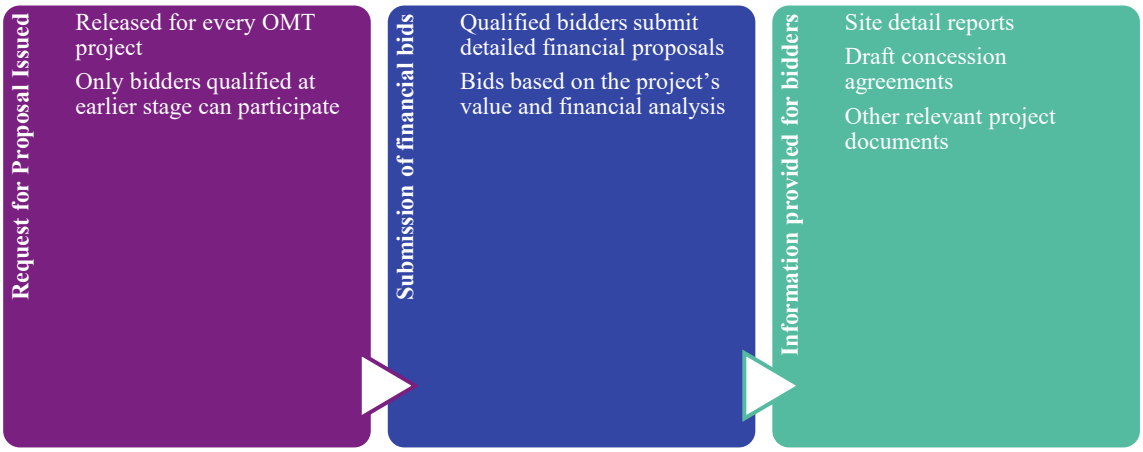
- A pre-application conference is also convened by the NHAI, wherein applicants can seek clarifications as well as make suggestions for consideration by the authority

* *As per the RFQ recently published by the NHAI, the highways sector includes highways, expressways, bridges, tunnels and airfields; core sectors include power, telecom, ports, airports, railways, metro rail, industrial parks/estates, logistic parks, pipelines, irrigation, water supply, sewerage, and real estate development.*

11. Bidding stage

- Unlike the qualification stage, where qualification is evaluated for multiple OMT projects at one go through an RFQ, bidding is carried out separately for each OMT project

Project Flow



Source: CRISIL Intelligence

- RFP is floated for every OMT project, after which the bidders (applicants qualified at the qualification stage) will be asked to submit financial bids for the projects after detailed analysis of the project's value

- Site detail report as well as concession agreements are also given out in this stage for perusal by qualified bidders

- The project is awarded to the bidder who quotes the maximum first year concession fee to be paid to the NHAI or the lowest O&M support required (in case toll revenue from the project is lower than operational

expenditures). Till date, all awarded projects have resulted in significant concession fees being paid by concessionaires to the NHAI.

Technology used to help tolling industry

1. **ETC**

   It is a system that enables road users to pay highway tolls electronically without stopping at the plazas. The applicable toll amount is deducted from a prepaid account that is linked to the FASTag. The dedicated ETC lanes are colour-coded for immediate recognition. This helps avoid fuel wastage, loss resulting from drivers who avoid payment, and booth attendants taking their cut. It also reduces time delays because of toll payment, thus reducing the resistance for toll payments. In November 2019, MoRTH directed the NHAI that all toll lanes on national highways must have ETC. In December, the ministry relaxed the rule temporarily to have 75% of the lanes to have ETC. However, in February 2021, the ministry mandated compulsory use of FASTag and announced penalty of double payment in case the toll was paid in cash.

2. **Weigh-in-motion (WIM)**

   It is a system integrated with toll operations to ensure users are liable for overloaded vehicles and to provide accurate data for charging users by their vehicle weight and type. WIM's main purpose is to prevent road damage as these get easily damaged when overload vehicles pass over it. The Indian Road Congress has limits prescribed to each axle to which each vehicle can be loaded. Hence, WIM is an axle-weight calculator installed on the road near toll plazas, which weighs the vehicles in motion and hastens the weighing process.

3. **Static weigh bridge (SWB)**

   This, too, is a weighing system integrated with toll operations to ensure users are liable for overloaded vehicles and to provide accurate data for charging users by their vehicle weight and type. It differs from WIM as it is used to weigh static vehicles.

4. **Automatic vehicle counter-cum-classifier system (AVCC)**

   It is a system that consists of sensor devices installed in a lane to record the physical characteristics of vehicles to determine their configuration for the purpose of charging the user appropriately.

Operate, Maintain and Transfer (OMT)

The OMT concept was introduced to assure road users of adequate quality and safety. An OMT project entails a contract for the right to collect toll and a contract for the operation and maintenance of the stretch.

Scope of work for OMT contracts under Model Concession Agreement (MCA) includes the following:

O&M of the stretch/ section of highway

Tolling of the section

Construction of project facilities such as toll plazas, street lighting, medical aid posts, traffic aid posts, and bus shelters

Any major maintenance work (necessary in long-term contracts, not mandatory in short-term contracts)

This model provides consistent revenue (in terms of concession fee by private parties) to the NHAI as well as just-in-time (JIT) maintenance of the project. It includes performance-based, periodic and routine maintenance (minor repairs, cleaning of carriageways, shoulders, cross drainage structures, etc); as well as road property and incident management. In this type of arrangement, toll collection rights are given to the private operator, which form the sole source of revenue.

Road development agencies are looking to generate revenue by awarding OMT contracts. Such revenue is planned to be used to upgrade other roads, and/or for maintenance of roads with low-volume traffic. OMT projects provide an opportunity for firms from the private sector who are not willing to take up construction risk and cannot bring in large investments but can take traffic risk.

From a developer's perspective, OMT projects offer an opportunity to synergise existing projects by taking up OMT contracts on the same corridor. From an investor's perspective, such projects are equivalent to design, build, finance, operate and transfer (DBFOT) toll-based concessions in terms of traffic risk, but without the construction risk. Investments in such projects would carry benefits similar to investments in DBFOT (toll) projects during the operation period. However, OMT projects have financial liabilities, principally towards road development agencies, unlike capital-intensive DBFOT (toll) projects, where financial liabilities of the project are borne by the road development agencies as well as by lenders. On the other hand, the ticket size of OMT projects, which is about 1/10th the size of a DBFOT (toll) project, is smaller, so a pool of such projects is required to attract larger investors. The creation of such a pool of projects has other advantages such as the hedging of traffic risk. The

medium concession period in OMT projects (5-10 years) is another factor that might attract private equity funds to such schemes.

Bidding process of state authorities

Like the NHAI, many Indian states such as Bihar, Madhya Pradesh, Andhra Pradesh and Telangana follow a two-stage bidding process (qualification stage followed by bidding stage). In the first stage, the authorities qualify applicants through an RFQ process, based on their technical and financial strength. However, unlike the NHAI, which undertakes qualification of a number of OMT projects in one single process (through an RFQ stage), qualification for every single OMT project of the Madhya Pradesh Road Development Corporation (MPRDC) and the Bihar State Road Development Corporation (BSRDC) is typically carried out separately. In the second stage (the bidding stage), which mirrors the NHAI process, bids are invited from qualified applicants and the project is awarded to the bidder which quotes the maximum concession fee or minimum O&M support from the authority. The Karnataka Road Development Corporation, on the other hand, follows a single-stage bidding process wherein qualification and evaluation of financial bids are undertaken.

TOT

The Toll-Operate-Transfer (TOT) model is a public-private partnership (PPP) framework introduced by the National Highways Authority of India (NHAI) to monetise operational highway assets and enhance private sector participation in the roads sector. Under this model, the concessionaire makes an upfront lump-sum payment to the authority in exchange for the right to operate, maintain, and collect toll revenues from the asset over a defined concession period.

The responsibility for operations and maintenance (O&M), including any required improvements, lies with the concessionaire as per concession agreement terms. In the Indian context, specific provisions may be modified by NHAI to align with project requirements. The implementation of FASTag has further strengthened the model by improving toll collection efficiency, reducing leakages, and enhancing revenue visibility thereby increasing its attractiveness to investors.

Evolution and Market Development

- The TOT programme has evolved from an initial pilot monetisation tool into a well-established capital recycling mechanism.
- The model was launched in 2018 with the successful award of Bundle 1 (676 km), which attracted strong investor interest and established early market confidence
- Subsequent bundles witnessed mixed responses, with certain rounds (e.g., Bundles 2 and 4) facing challenges due to aggressive reserve pricing and subdued bidder participation
- Despite disruptions during the pandemic, monetisation continued with awards such as Bundle 3 to Cube Highways and Bundles 5 and 6 to domestic developers

Acceleration and Recent Momentum (Financial Year 2024-Financial Year 2026)

The TOT model has gained significant traction in recent years, contributing meaningfully to asset monetisation targets.

- In Financial Year 2023-2024, multiple bundles (10-14) were awarded, enabling achievement of approximately ₹100 billion monetisation target.
- During Financial Year 2024, NHAI awarded four TOT bundles, achieving approximately ₹159.7 billion monetisation with a 100% success rate.

Recent key transactions include:

- Bundle 16 (NH-44, Telangana) awarded for approximately ₹66.6 billion
- Lucknow-Ayodhya-Gorakhpur corridor (NH-27, approximately 366 km) awarded for approximately ₹92.7 billion
- Bundle 18 (Odisha) awarded in early 2026 for approximately ₹30.9 billion

Asset Monetisation Models

Asset monetisation has emerged as a central financing strategy for India's infrastructure development, particularly in the highways sector. It refers to the structured process of unlocking the economic value of operational public assets by transferring their rights to private entities for a defined period in return for upfront or periodic consideration. This approach enables the creation of a cycle, completed assets are monetised to generate fresh capital, which is then reinvested in new infrastructure, thereby expanding the overall asset base without exerting additional fiscal pressure.

The National Highways Authority of India (NHAI), under the guidance of the National Monetisation Pipeline (NMP) prepared by NITI Aayog, has institutionalised asset monetisation as a long-term strategy. The objective is to tap into private sector capital and operational efficiencies while recycling funds into greenfield projects and capacity augmentation.

Objective of Asset Monetisation in Roads

The monetisation of road assets serves three interlinked purposes. First, it facilitates unlocking of value embedded in completed highways, allowing their conversion into a sustainable source of funding for future projects. Second, it enables the attraction of alternate sources of capital, complementing traditional channels such as budgetary allocations and toll revenues, and broadening participation to include global pension funds, sovereign wealth funds, and private equity investors. Third, it promotes efficiency improvements in asset management, as private operators bring advanced technologies, better maintenance standards, and innovative project management practices.

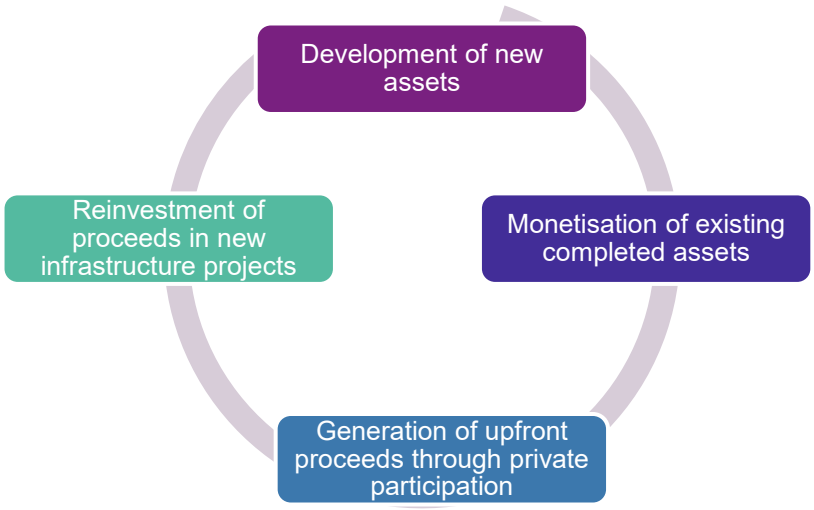
Strategic Approach of NHAI

NHAI's asset monetisation strategy is designed to maximise value realisation from operational highways while ensuring transparency and risk mitigation. Its medium-term plan rests on three pillars:

- Streamlined Processes: Simplification and standardisation of procedures to ensure that monetisation transactions are conducted efficiently and within defined timelines.
- Transparency: Strengthening disclosure and oversight mechanisms to attract a wider pool of credible investors.
- Risk Mitigation: Identification of risks related to traffic volatility, financing, and regulatory uncertainties, and adoption of measures to address them.

The strategy is dynamic in nature, with periodic revisions to reflect evolving market conditions, policy priorities, and investor appetite. The current framework particularly emphasises the use of Toll -Operate -Transfer (TOT) and Infrastructure Investment Trusts (InvITs) as the primary vehicles for monetisation, supported by supplementary mechanisms such as Operate -Maintain -Transfer (OMT) concessions and securitisation of toll receivables.

The Asset Monetisation Cycle



Source: Asset Monetisation NHAI Report,Crisil Intelligence

This cycle not only ensures capital recycling but also embeds efficiency gains from private participation, thereby sustaining sectoral growth in the long term.

The National Highways Authority of India (NHAI) undertakes asset monetisation through three primary mechanisms: Toll-Operate-Transfer (TOT), Infrastructure Investment Trusts (InvITs), and Securitisation of Toll Revenues (project-based financing through Special Purpose Vehicles). Both TOT and InvITs involve the transfer of operational assets with established cash flows, thereby insulating investors from pre-construction and construction-related risks. However, concessionaires under these models remain responsible for operations and maintenance (O&M) obligations and are exposed to revenue risk linked to traffic performance.

Across these three mechanisms, the allocation of risks varies significantly across different stages of the project lifecycle including pre-construction, construction, financing, operations and maintenance, and revenue generation. The table below sets out the specific distinctions in risk-sharing under each monetisation model.

Risk Profile of Asset Monetization Modes

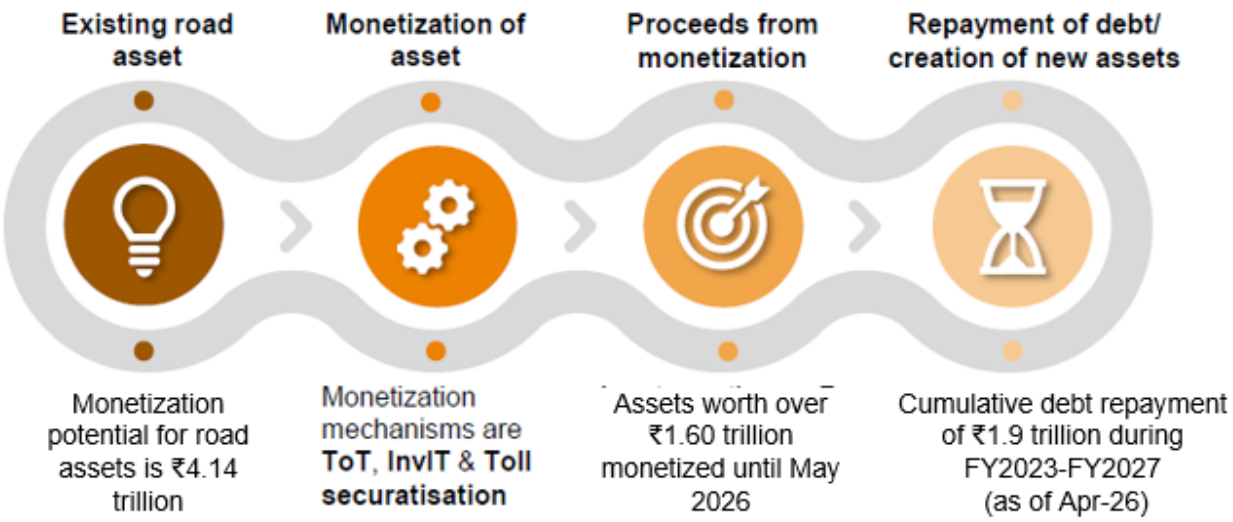
Mechanism	Pre-Construction Risk	Construction Risk	Financing Risk	O&M Risk	Revenue Risk
Toll-Operate Transfer (ToT)	Authority (Cost of land acquisition and pre-construction is undertaken by the Authority)	Authority (construction completed prior to monetisation)	Concessionaire	ToT Concessionaire (post DLP / concession period of EPC/HAM/ BOT Annuity concession)	Concessionaire
Infrastructure Investment Trust (InvIT)		Authority (construction completed prior to monetisation)/ Concessionaire/SPV (residual construction risk, if any)		InvIT SPV (post DLP / concession period of EPC/HAM/ BOT Annuity concession)	Concessionaire

Source: Asset Monetisation NHAI Report, Crisil Intelligence

Asset monetisation has emerged as a key strategy for the National Highways Authority of India (NHAI) to unlock value from operational road assets and generate capital for future infrastructure development. Under this approach, revenue-generating highway assets are monetised through mechanisms such as Toll-Operate-Transfer (ToT), Infrastructure Investment Trusts (InvITs), and toll securitisation, while ownership of the assets remains with the government. The proceeds are utilised for debt reduction and funding new road projects, thereby creating a self-sustaining investment cycle.

Road assets with a monetisation potential of approximately ₹4.14 trillion have been identified under the asset monetisation programme. As of May 2026, assets worth over ₹1.60 trillion have been monetised through various instruments, reflecting strong investor interest in operational highway assets. The monetisation proceeds have supported NHAI's financial position, enabling cumulative debt repayment of around ₹1.9 trillion during Financial Year 2023-Financial Year 2027 (as of April 2026), while also facilitating the development of new transportation infrastructure.

Asset monetization aids new asset creation and repayment of debt



Source: Crisil Intelligence

Toll Operate and Transfer (TOT) Model

The Toll -Operate -Transfer (TOT) model was introduced by the National Highways Authority of India (NHAI) in 2016 as part of its asset monetisation programme. Unlike traditional PPP frameworks that focus on greenfield construction, TOT is designed specifically for the monetisation of brownfield highway assets that are already operational and generating toll revenues.

Under this model, NHAI bundles completed highway stretches and auctions them to private concessionaires for a fixed concession period, typically ranging between 20 to 30 years. The winning bidder pays an upfront lump sum amount to NHAI in exchange for the right to collect tolls and operate the stretches during the concession period. The capital thus mobilised is recycled into the development of new highway projects, reducing NHAI's dependence on budgetary support and borrowings.

Key Features of TOT

- **Revenue Model:** Investors earn returns from toll collections on pre-constructed stretches, while bearing the risk of traffic performance and operational costs.

- **Risk Allocation**: Since assets are already operational, construction risk is eliminated. The concessionaire assumes traffic and O&M (operations & maintenance) risks, while regulatory risks remain under government oversight.
- **Investor Base**: The model has attracted not only domestic developers but also global institutional investors such as pension funds, sovereign wealth funds, and infrastructure investment funds, owing to its predictable cash flow profile.
- **Capital Recycling**: NHAI uses upfront proceeds from TOT to fund greenfield projects under flagship programmes like Bharatmala Pariyojana.

InvIT Model

In an InvIT transaction, infrastructure asset owners transfer operational projects into Special Purpose Vehicles (SPVs), which are then placed under the trust. The trust issues units to investors, raising funds that are subsequently deployed towards the development and management of infrastructure assets. Investors receive returns in the form of periodic distributions generated by the underlying assets.

As of Feb 2026, there are 29 InvITs registered with SEBI, of which 17 are road InvITs. The number of road InvITs increased more than threefold in the last six Financial Years.

Key Advantages of the InvIT Model

- **Unlocking capital:** Provides NHAI with upfront resources by monetising operational projects.
- **Investor diversification**: Attracts long-term domestic and global investors seeking stable yields.
- **Operational efficiency:** Professional management enhances maintenance standards and project delivery.
- **Risk sharing:** Transfers traffic and operational risks to investors, while freeing NHAI to focus on new infrastructure creation.

Key differences between ToT and InvIT

Metric	ToT	InvIT
Nature of Projects	Completed projects with significant tolling history and adequate remaining design life to serve traffic	
Bidder / Investor Profile	Road infrastructure developers, operators and infrastructure value chain players	Institutional and financial investors such as pension funds, sovereign wealth funds, insurance companies, mutual funds and retail investors
Nature of Mechanism	PPP-based asset monetization model involving transfer of tolling rights for operational assets	SEBI-regulated investment vehicle that owns operational infrastructure assets through HoldCos/SPVs and distributes cash flows to unit holders
Nature of Agreement with NHAI	Concession agreement between bidder/consortium and NHAI	Concession agreements remain at the SPV level, while the InvIT holds ownership/control in the underlying SPVs/HoldCos
Revenue Model	Toll collections generated through operation of the asset	Cash flows generated by underlying assets are upstreamed from SPVs/HoldCos after operating, maintenance, financing and statutory expenses. Distributions to unit holders may comprise interest, dividend, repayment of debt and other permitted distributions under SEBI regulations.
Monetization after how many years of concession	At the time of award of concession	Typically, after achieving at least one year of operations post-COD and establishing a stable operating track record
Key Benefit	Provides upfront revenue to the government while transferring toll collection rights to the concessionaire	Provides access to long-term institutional capital while enabling monetization of operational assets and stable cash flow generation
Capital Recycling Benefit	Not applicable	Enables sponsors to unlock equity from mature operational assets and redeploy capital into under-construction, expansion or new infrastructure projects
Exit Options	Typically after completion of the lock-in period prescribed under the concession agreement	Listed units can be traded on stock exchanges, providing investors with liquidity and exit opportunities subject to applicable regulations
Liquidity	Relatively lower liquidity due to direct ownership of concession rights	Higher liquidity as listed InvIT units can be traded on stock exchanges. Sponsor holdings remain subject to minimum holding and lock-in requirements prescribed by SEBI
Control in Operation	High control over toll operations, maintenance and asset management	Professionally managed through the Investment Manager (IM) and Project Manager (PM) framework, with oversight by the Trustee in accordance with SEBI regulations

Source: Asset Monetisation NHAI Report, Crisil Intelligence

While TOT dominated the initial years, InvITs have gained prominence since Financial Year 2022, providing a stable platform for institutional investment. Project-Based Financing Consistently contributed a substantial share, complementing direct monetisation tools. The sharp rise in investment mobilisation reflects greater private sector appetite for operational highway assets and growing investor confidence in NHAI-led monetisation programmes.

The road sector has emerged as a frontrunner in asset monetisation. As of February 2026, MoRTH has raised ₹1,600 billion as through various modes of asset monetisation, demonstrating the sector's potential to generate revenue through innovative financing models. The funds were raised as follows:

- **Toll-operate-transfer (TOT) mode:** The ministry raised ₹613.52 billion through the TOT mode, which involves the transfer of toll collection rights to a private operator for a specified period.
- **InvIT listings of NHAI:** ₹ 498.58 billion was raised through the listing of Infrastructure Investment Trusts (InvITs) of the NHAI, which allows investments in a portfolio of infrastructure assets.
- **Project-based financing of Delhi-Mumbai Expressway:** ₹501.25 billion has been raised through project-based financing for the Delhi-Mumbai Expressway, which is one of the most ambitious infrastructure projects in the country.

The success of asset monetisation in the road sector can be attributed to the government's efforts to create a favourable environment for private sector investment and participation. The use of innovative financing models such as TOT and InvITs has helped unlock the value of existing infrastructure assets and attract new investors to the sector.

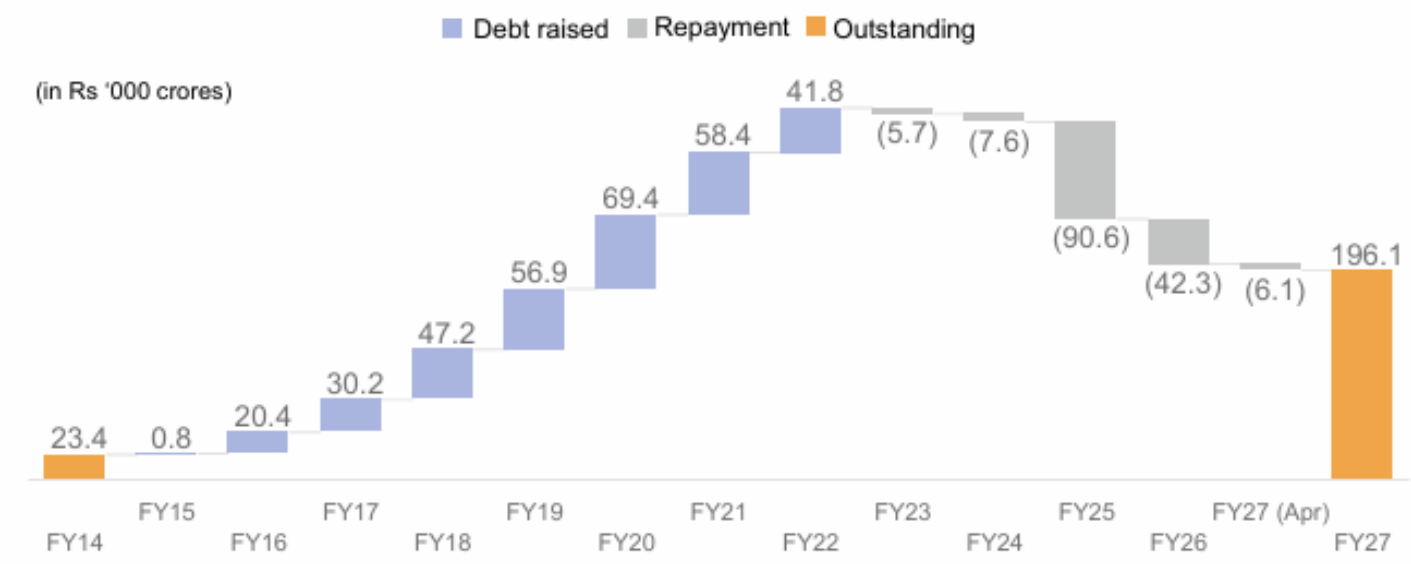
NHAI's Debt Position

A striking trend is the increase in NHAI's outstanding debt over the last decade. From just ₹234 billion in Financial Year 2014, debt levels have surged to reach approximately ₹3.48 trillion in Financial Year 2022 and then reduced to ₹2.44 trillion in Financial Year 2026 and further to ₹1.96 trillion in start of Financial Year 2027 with the help of asset monetization pipeline (TOT and InvITs). This steep rise highlights NHAI's growing reliance on borrowings to fund highway expansion, particularly in periods when budgetary support has stabilised. This underscores the need for more innovative funding mechanisms to support the development of highway infrastructure. NHAI made a cumulative debt repayment of approximately ₹72,200 crores during Financial Years 2023 to 2025 by monetizing road assets.

Implications

- Stable but plateauing GBS implies that while government funding remains substantial, additional growth will need to come from private and institutional investors.
- Elevated debt levels necessitate stronger monetisation efforts to recycle capital and reduce repayment pressures on NHAI.

NHAI debt



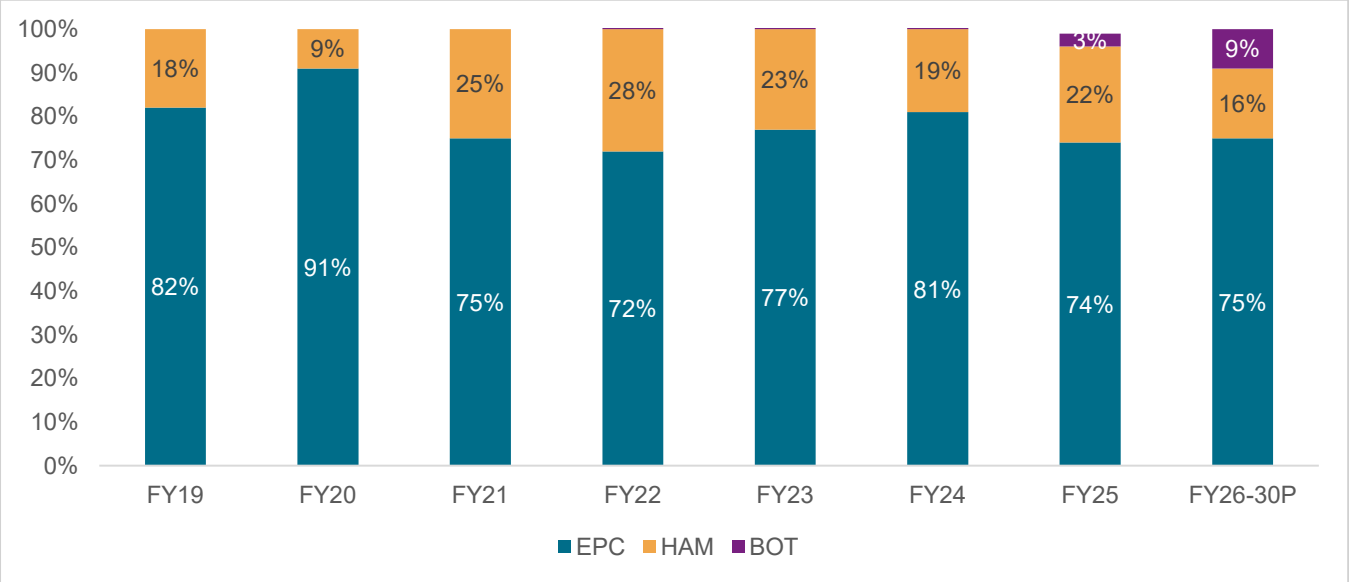
Source: NHAI, Crisil Intelligence

Trends in PPP Models for project awarding

Private sector participation in India's road sector has evolved significantly, with distinct trends emerging across the key contract models - BOT (Toll), HAM, EPC and TOT. Each model has seen a change in risk appetite, competition, and qualification requirements as both the market and policy environment mature.

The project awarding mix in the national highways sector has remained predominantly EPC-led, accounting for 72–91% of awards during Financial Year 2019-Financial Year 2025. While HAM emerged as the preferred PPP-based model over the past decade, its share is expected to moderate over the medium term. BOT projects, which accounted for a negligible share of awards during Financial Year 2019-Financial Year 2024, are projected to gain traction and increase to around 9% of total awards during Financial Year 2026-Financial Year 2030. The anticipated increase in BOT participation is supported by amendments to the Model Concession Agreement (MCA), improved risk allocation mechanisms, and a strong pipeline of traffic-mature highway projects, which are expected to enhance private sector participation in the roads sector.

BOT share to improve over the coming years



Source: Ministry of Road Transport and Highways (MoRTH), CRISIL Intelligence

Change in the Model Concession Agreement (MCA)

BOT - Toll (Build Operate Transfer - Toll)

The government has introduced significant amendments to the MCA for BOT projects, aiming to address the concerns of large corporates, creating a lucrative investment environment for them in the road and highway sector.

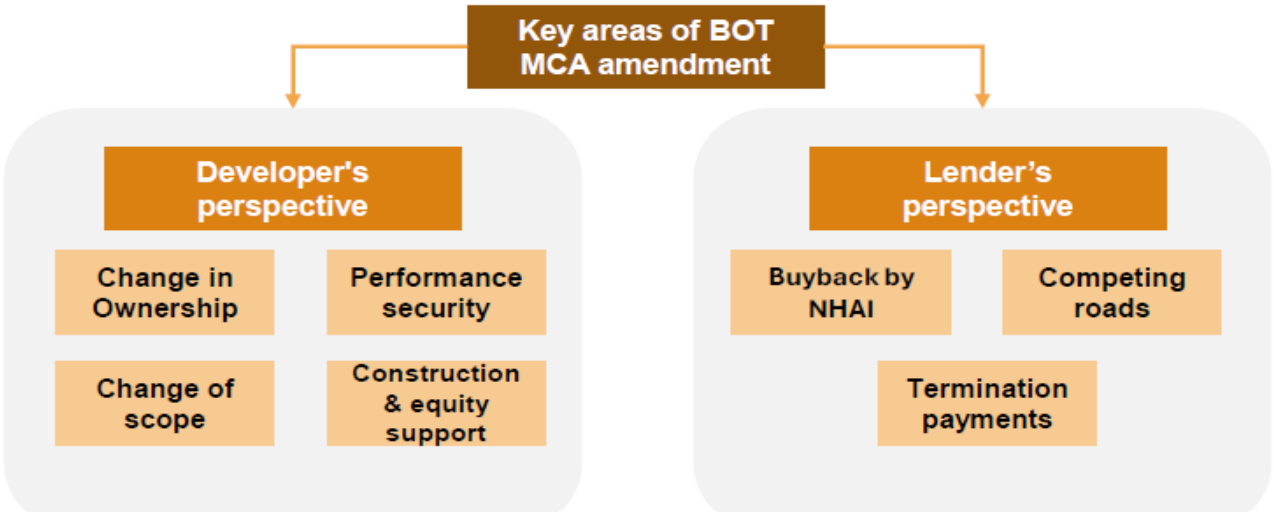
Key amendments include:

Key Change	Old clause	New Clause	Impact
Change in Ownership	Each consortium member (whose credentials were used for bidding) had to hold 26% equity in the SPV during construction and 1 year after Punch List completion.	Each such member must:(a) Hold 26% equity, with a minimum of 5% of Total Project Cost, and(b) The 1-year lock-in excludes delays in Punch List completion caused by NHAI or govt. authorities.	More practical lock-in requirements; enables smoother exits and reduces developer burden from NHAI-related delays.
Performance security	Only bank guarantee accepted as performance security; Amount = 5% of Total Project Cost + estimated 12 months' toll revenue.	Multiple forms allowed: insurance surety bond, demand draft, banker's cheque, or e-bank guarantee from approved banks; Amount reduced to 3% of Estimated Project Cost (as per RFP).	Eases financial burden on developers; enhances flexibility in providing security; lowers entry cost and improves participation.
Change of scope	NHAI could initiate only additional work as change of scope; Concessionaire needed to submit preliminary documents with implementation options.	NHAI can now also modify existing scope; Concessionaire must submit a detailed proposal with:(i) Quantity, rate, cost breakdown;(ii) Proposed design changes;(iii) Timeline revisions.	Brings clarity and structure to scope changes; reduces ambiguity and potential disputes; supports better project planning and control.
Construction and equity support	Only equity support was available; Capped at 10% of Total Project Cost.	Introduced construction support disbursed in 10 equal instalments during construction, linked to physical progress; Both equity and construction support together capped at 40% of Total Project Cost;	Improves liquidity during construction phase; reduces developer funding pressure; ensures better project execution and risk-sharing
Buyback by NHAI	If traffic exceeded design capacity in any financial year, it was treated	NHAI can now buy back the project if average daily traffic reaches design	Provides clear exit option in high-traffic scenarios; ensures

Key Change	Old clause	New Clause	Impact
	as an Indirect Political Event; Termination required specific payment as per MCA provisions.	capacity in 2 out of 3 years; Compensation = Higher of• 80% × (avg. monthly fee × 75% of remaining period)• After deducting major maintenance cost	fair compensation and reduces uncertainty for concessionaires
Competing roads	NHAI/government could not build a Competing Road within 10 years of Appointed Date, unless traffic exceeded 90% of design capacity; If breached, NHAI had to compensate the concessionaire.	In case of breach, NHAI must now also extend the concession period; Compensation + extension together are considered a full remedy.	Stronger protection for traffic and revenue; ensures more balanced risk-sharing between NHAI and developers.
Termination payments	No termination payment for concessionaire default before Project Completion Date; NHAI's liability capped at 100% of Total Project Cost.	No payment if physical progress < 40% before COD; If progress > 40%, payment includes Debt Due and costs beyond 40% of Total Project Cost; NHAI's liability limit increased to 115% of Total Project Cost.	Clarifies payment conditions based on project progress; improves financial protection for developers in partial default cases.

Source: BOT- Toll MCA document 2024, Crisil Intelligence

MCA amendments in BOT to address concerns of developers and lenders in past



Source: Crisil Intelligence

HAM (Hybrid Annuity Model)

The Hybrid Annuity Model (HAM) combines elements of Engineering, Procurement, and Construction (EPC) and annuity-based approaches, aiming to balance financial responsibility between the government and the concessionaire. Under this model, the concessionaire's financial burden during the construction phase is reduced, while assured revenues are ensured during the operational phase through fixed annuity payments, interest on the diminishing balance of project cost, and inflation-linked O&M payments. The concessionaire undertakes both construction and maintenance responsibilities, while revenue risks arising from fluctuations in user fees are borne by the authority. Variability in user fee gives rise to revenue risk, which is borne by the authority. However, the concessionaire generates revenue through fixed annuity payments received from the authority over the concession period.

The Hybrid Annuity Model (HAM) has undergone significant changes, as outlined in the HAM MCA 2022. Key changes include the change in timing of premium payment, redefinition of project milestones, and interest on annuity payments linked to the average one-year MCLR of the top five scheduled commercial banks +1.25%. Additionally, lenders will receive the first charge on all receivables, and there will be deemed termination of projects prior to the appointed date. The model also includes maintenance obligations and toll fee notifications. These changes aim to improve private participation and project awards in the road sector.

MCA amendments in HAM model

MCA Amendments	Old Clause	Revised Clause	Impact
Annuity Payments	Interest on annuity payment linked to RBI determined Bank Rate +3%	Interest on annuity payment linked to average of one-year MCLR of top five Scheduled Commercial Banks + 1.25%.	Differential between cost of borrowing and interest on annuity is reduced, preventing

MCA Amendments	Old Clause	Revised Clause	Impact
			erosion of developers' returns due to RBI repo rate changes.
Milestone Payments	5 instalments, each equal to 8% of the Bid Project Cost.	10 instalments, each equal to 4% of the Bid Project Cost.	Quicker payments help developers' liquidity.
Change in ownership	Original sponsor/concessionaire shall hold at least 26% of equity during construction period and 2 years thereafter.	Original sponsor/concessionaire shall hold at least 26% of equity during construction period and *6 months thereafter*.	Quicker stake sell-off would ease developers' balance sheets, enabling room for new projects.
Financial Closure	No clarity on amount for Financial Closure.	FC to be undertaken for an amount not lower than either: 1. Total Project Cost (60% of BPC), or 2. 10% less than (Estimated Project Cost minus 40% of Bid Project Cost).	Would likely prevent termination of projects due to inadequate financing.
Dispute resolution board	In case of a dispute, either party may call upon the Independent Engineer to mediate.	Failing mediation by the IE, either party may require such dispute to be referred to the *Dispute Resolution Board (DRB)*.	Quicker dispute-resolution mechanism to prevent stuck projects.
Others	Interest on mobilization advance linked to bank rate. Termination payments based on previous milestone payments.	Interest on mobilization advance linked to MCLR. Termination payments based on new milestone payments.	N/A

Source: Crisil Intelligence

The HAM model is expected to have a positive impact on the road sector, as it eliminates traffic risk and provides stable cash flows to developers. This, in turn, will ensure timely debt servicing for bankers. The model shifts the traffic risk from the concessionaires to the NHAI, with developers receiving fixed annuities based on predetermined schedules. This will make debt servicing easier, especially during the initial years of the concession period. The elimination of traffic risk is a significant positive, given the past experiences of road developers where actual base traffic and traffic growth were significantly lower than estimated.

This model also mitigates cost overrun risks by linking construction and maintenance costs to inflation and ensuring the timely availability of land. In the past, cost overruns had a significant impact on project returns, with a 10% increase in cost lowering project returns by approximately 100 basis points. To address this issue, the government has linked construction, operation, and maintenance costs to inflation. Additionally, projects are now awarded only after 80% of the land required is in possession of the awarding agency, reducing delays in land acquisition.

The HAM model has several benefits, including lower equity contribution requirements, which will increase private players' ability to bid for projects. With the government incurring 40% of the project cost, the HAM calls for lower equity contribution from developers (approximately 15%, compared with approximately 25% for BOT-toll projects). This is beneficial, given the current weak financial position of road developers. The model also reduces developers' interest rate risk, as interest rate payments are linked to the average one-year MCLR of the top five scheduled commercial banks +1.25%. This significantly lowers the risk for the developer in terms of interest rate volatility.

It is expected to attract private players due to its low-risk nature and lower capital requirements. The model is also expected to boost private investments in national highways over the next five years. Despite initial delays in land acquisition and caution shown by lenders, the HAM has seen increased participation in awarding, with a total of 6,306 km awarded in Financial Year 2022, of which approximately 3,468 km was under the HAM. The share of private investment is expected to increase, driven by the changes to the HAM bid eligibility and MCA changes. The HAM roads awarding in Financial Year 2024 and Financial Year 2025 was 654 km and 264 km respectively.

TOT (Toll Operate Transfer)

Key amendments in TOT MCA, 2024 are as follows:

Key Change	Past Clause	Change	Impact
Inclusion of Expressways	The earlier MCA applied only to *National Highways* entrusted to NHAI.	The revised MCA now explicitly includes *Expressways* along with National Highways.	Broadens the TOT framework to cover higher-speed corridors, expanding asset monetization opportunities.
Refined Capacity Augmentation Criteria	Capacity augmentation was triggered when traffic exceeded the	Now, augmentation is assessed for *homogeneous/tollable sections* using	Introduces more accurate, data-driven triggers and aligns

Key Change	Past Clause	Change	Impact
	"Target Traffic" for three consecutive years.	updated IRC standards and ETC-based traffic data.	augmentation with modern traffic monitoring systems.
Detailed DPR Preparation Process	DPR preparation guidelines were generic and not linked to digital or section-specific data.	The new MCA mandates DPRs based on *ETC data* and *IRC norms* for individual tollable sections.	Ensures technical consistency and transparent cost estimation for expansion works.
Concessionaire's Right to Match EPC Bid	The concessionaire had a general right to match the first-ranked EPC bid for augmentation works.	The clause is now refined with clear eligibility criteria, technical capability, and transparent bid evaluation steps.	Enhances fairness and competitive parity while safeguarding the concessionaire's first right of refusal.
Maintenance & Support Obligations During Augmentation	Concessionaire's role during EPC works was vaguely defined, leading to operational overlaps.	The amendment specifies obligations for *maintenance, diversions, and coordination* during construction.	Clearly divides operational responsibilities, ensuring uninterrupted road safety and user convenience.
Defect Liability and Repair Responsibilities	EPC contractor's defect liability period and repair procedures were outlined but lacked clarity on enforcement.	The revision strengthens the defect liability duration (approx. 4 years) and authority's power to recover costs for delayed repairs.	Improves accountability for post-construction quality and timely rectification of defects.
Compensation for Toll Reduction During Augmentation	There was no specific provision for financial relief if toll rates were reduced during augmentation.	The revised MCA introduces *quarterly compensation* for concessionaires facing revenue loss from temporary toll reductions.	Provides financial stability and investor confidence during major maintenance or expansion activities.
Adjustment for Change in Tollable Length	The MCA lacked a clear mechanism for adjusting revenues when the tollable stretch changed.	A new formula determines gain or loss sharing between Authority and Concessionaire based on *Equivalent Tollable Length*.	Establishes transparent and equitable financial treatment for changes in highway length.
New Definition: "Equivalent Tollable Length	No such term existed; toll revenue was tied to physical road length alone.	The new definition, added in *Schedule M*, accounts for partial sections or multi-lane variations to calculate tollable units.	Creates a standardized measure for revenue assessment and compensation adjustments.
Deletion of Return Pass/Discounted Ticket Clause	Concessionaires were required to offer *return passes* (150% of one-way rate) and multi-trip discounts.	The entire clause has been deleted, removing mandatory fare concessions.	Simplifies toll management and increases revenue efficiency for operators.
Toll Collection and Anti-Evasion Clarification	Earlier wording allowed ambiguity around distance-based tolling and placement of anti-evasion booths.	Reaffirms a *10 km limit* between plazas and clarifies the right to set up booths for toll evasion prevention.	Strengthens toll compliance mechanisms and reduces leakages in revenue collection.
Traffic Measurement Modernization	Traffic reconciliation relied mainly on manual sampling and periodic audits	Introduces electronic systems and *ETC counters* for continuous, data-backed traffic verification.	Enhances transparency, accuracy, and trust in reported toll traffic data.
Local Content Requirement	No clause existed mandating the use of domestic materials or compliance with procurement rules.	New clause (5.8) requires adherence to *DPIIT/GFR guidelines* for local content ("Make in India").	Promotes domestic industry participation and aligns TOT projects with national procurement policies.

Source: TOT MCA document, MoRTH, Crisil Intelligence

Key government intiatives

Bharatmala Pariyojana

Bharatmala Pariyojana (BMP), an umbrella project of the central government since 2015, aims to improve efficiency in the roads sector. It is expected to supersede the NHDP and envisage the construction of 65,000 km of highways under the national corridor (north-south, east-west, and golden quadrilateral), economic corridor, inter-corridor roads categories, and feeder roads. As of Dec 2024, 5,058 km of total length is constructed of 6,758 km awarded under NHDP. As per the ministry's announcements in 2017, Bharatmala, along with the other schemes being undertaken, was estimated to have required a total outlay of ₹6,900,000 million.

The Bharatmala Pariyojana is a highway development initiative structured across four phases. Phase I (2017–2028) targets approximately 34,800 km of corridors, including 24,800 km of new alignments and 10,000 km of upgraded existing routes,

designed to enhance connectivity across over 550 districts. As of early 2025, Bharatmala Pariyojana Phase-I have 26,425 km awarded and 19,826 km constructed, with greenfield high-speed corridors seeing 6,669 km awarded and 4,610 km completed by February 2025. Awarding under Bharatmala has begun from Financial Year 2018 and will likely stretch until Financial Year 2028 for Phase 1, involving development of approximately 9,000 km of economic corridors, approximately 6,000 km of inter-corridor and feeder roads, approximately 5,000 km of national corridors efficiency improvements, approximately 2,000 km of border and international connectivity roads, approximately 2,000 km of coastal and port connectivity roads, and approximately 800 km of expressways. The total estimated investment for Phase I stands at roughly ₹6.92 trillion (US $83 billion). Across all phases, Bharatmala aims to develop about 83,677 km of highways, ultimately expanding the National Highway network to cover nearly 80% of India's districts.

Components of BMP Phase -I

Category	Description	Total length (km)	Upgrade proposed in Phase I (km)
National corridor efficiency improvement	Lane expansion and de-congestion of the national corridor	13,100	5,000
Economic corridor development	Connecting economically important production and consumption centres	26,200	9,000
Inter-corridor and feeder route development	Inter-connection between economic corridors; first- and last-mile connectivity	15,500	6,000
Border and international roads	Connectivity to border areas, boosting trade with neighbouring countries	5,300	2,000
Coastal and port connectivity roads	Connectivity to coastal areas to enable port-led economic development	4,100	2,000
Expressways	Greenfield expressways	1,900	800
Total		66,100	24,800

Source: NHAI, CRISIL Intelligence

State-wise summary of BMP

State	Total project length (km)	Awarded project length (km)	Length completed (km)	State	Total project length (km)	Awarded project length (km)	Length completed (km)
Andhra Pradesh	2,525	1,936	641	Maharashtra	3,029	2,174	1,628
Assam	433	431	312	Manipur	635	635	332
Bihar	1,572	1,152	571	Meghalaya	170	170	81
Chhattisgarh	571	471	134	Mizoram	593	593	363
Delhi	203	203	158	Nagaland	208	208	131
Goa	26	26	26	Odisha	1,586	967	785
Gujarat	1,577	1,194	742	Punjab	1,764	1,553	424
Haryana	1,058	1,058	776	Rajasthan	2,503	2,360	2,152
Himachal Pradesh	167	167	105	Tamil Nadu	2,414	1,476	1,011
Jammu & Kashmir	433	251	88	Telangana	1,719	1,026	492
Jharkhand	1,000	801	367	Tripura	94	94	66
Karnataka	2,059	1,603	855	Uttar Pradesh	3,127	2,496	1,612
Kerala	1,126	708	172	Uttarakhand	273	264	112
Madhya Pradesh	3,063	2,017	1,137	West Bengal	874	385	277

Source: MoRTH PIB, CRISIL Intelligence

PM Gati Shakti - National Master Plan for Multi-modal Connectivity

Gati Shakti Scheme or National Master Plan for multi-modal connectivity plan, was unveiled in October 2021, with an objective of curtailing the logistics cost for the country, by coordinating the infrastructure creation activity different government entities. Major characteristics of the scheme are

- Digital platform for coordination across 16 ministries, including roadways and railways
- 'Gati Shakti' platform will subsume the infrastructure projects announced under National Infrastructure Pipeline (valued at ₹111 trillion)
- Existing infrastructure schemes across ministries, such as Bharatmala (Roads), Sagarmala (Ports), UDAN (Air), Inland Waterways, Dry ports etc. will be incorporated in the platform
- The platform will also provide spatial data and implementation status for different projects
- Eleven industrial corridors and two defence corridors are also planned in the scheme, covering clusters for textile, pharmaceutical, fishing, electronics, agriculture etc.

Key targets set for different heads under the scheme and status as of 2025

Sectors	Ministry Involved	Target by Financial Year 2025	Previous Level (Financial Year 2020/Financial Year 2021)	Actual by Financial Year 2025
Ports	Ministry of Ports, Shipping & Waterways	Increase capacity to 1,759 million tonnes	1,282 million tonnes (Financial Year 2020)	2921 million tonnes
National Waterways	Ministry of Ports, Shipping & Waterways	Ramp up cargo movement to 95 million tonnes	74 million tonnes (Financial Year 2020)	145.5 million tonnes
Railways	Ministry of Railways	Freight movement target: 1,600 million tonnes	1,210 million tonnes (Financial Year 2020)	1610 million tonnes
Multimodal Logistics Parks (MMLPs)	Ministry of Railways	Develop 100 multimodal cargo terminals	-	112
Gas Pipelines	Ministry of Petroleum and Natural Gas	Double pipeline length to 34,500 km	17,000 km (Financial Year 2020)	25429 km operational and 10459 km under sonstruction
Renewable Energy	Ministry of New and Renewable Energy	Add 150 GW incremental renewable capacity	89.63 GW	217.62 GW
Power Transmission	Ministry of Power	Expand transmission capacity to approximately 452,000 circuit km	-	491871 circuit km

Source: Crisil Intelligence

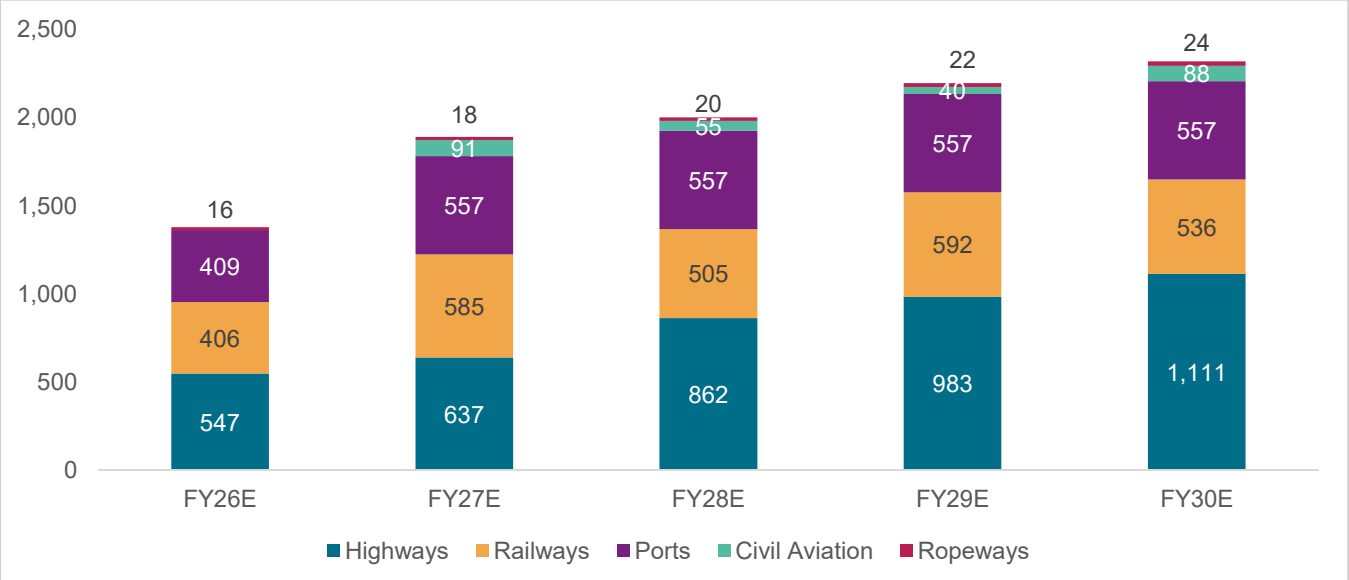
National Monetization Pipeline (NMP)

NMP was announced in August 2021 on the principle of 'asset creation through monetisation' i.e., tapping private sector investment for new infrastructure creation. It aims to unlock value from existing government-owned infrastructure assets through monetization models such as PPPs, InvITs and concessions. Unlike privatisation, which involves selling ownership, the NMP allows private investors to operate and generate revenue from public assets for a fixed period, after which the assets are returned to the government.

The NMP framework employs a range of models, including Public-Private Partnerships (PPP), Infrastructure Investment Trusts (InvITs), and Toll-Operate-Transfer (TOT) concessions. These structures are designed to offer investors predictable and stable returns, while ensuring that ownership of the underlying assets remains with the public sector. This balance between private efficiency and public accountability underpins the NMP's design.

In line with this objective, National Monetisation Pipeline (NMP) 2.0 for the period Financial Year 2025-2026 to Financial Year 2029-2030 has been launched. The programme provides a medium-term roadmap for monetisation of revenue-generating infrastructure assets across key sectors, including transportation, energy, mining, and telecommunications. The framework focuses on the transfer of revenue rights for a defined concession period, while ownership of the underlying assets remains with the public authority.

Sector wise split of asset monetisation in transport infrastructure (in ₹ Billion)



Note - E: Estimates
Source: NMP2.0 document NITI Aayog, Crisil Intelligence

National Monetisation Pipeline Phase 2

National Monetization Pipeline Phase 2 has been announced with a monetisation of assets worth ₹16.72 trillion in pipeline spread across span of 5 years from Financial Year 2026 to Financial Year 2030. Highways sector accounts for a significant share of 24.8% (₹4.14 trillion) of these assets. Under the National Monetisation Pipeline (NMP) 2.0 framework of NITI Aayog, four distinct asset classes have been identified in the highways sector to streamline monetisation.

Sector wise split of National Monetization Pipeline Phase 2

Sectors	Total Monetization value (in ₹ Billion)	% share
Highways	4,140	24.76%
Power	2,765	16.53%
Ports	2,637	15.77%
Railways	2,623	15.68%
Coal	2,160	12.92%
Mines	1,000	5.98%
Urban Infrastructure	520	3.11%
Civil Aviation	275	1.64%
MMLPs	180	1.08%
Petroleum and Natural Gas	163	0.97%
Ropeways	100	0.60%
Warehousing and Storage	100	0.60%
Telecom	48	0.29%
Tourism	12	0.07%
Total	**16,723**	**100.00%**

Source: NMP2.0 document NITI Aayog, Crisil Intelligence

Progress from NMP 1.0 to NMP 2.0

The National Monetisation Pipeline (NMP) has evolved from a transaction-led asset monetisation program under NMP 1.0 (Financial Year 2022-Financial Year 2025) to a more institutionalised, platform-based strategy under NMP 2.0 (Financial Year 2026-Financial Year 2030), reflecting a maturing approach towards infrastructure financing in India.

Parameters	NMP 1.0	NMP 2.0
Overall NMP Target	₹ 6 lakh crore	₹ 16.72 lakh crore
Target % achieved	89%	In progress
Timeline	4 years	5 years
Share of Roads & highways in Target	₹ 1.6 lakh crore (26.6% of total target)	₹ 4.42 lakh crore (26.4% of total target)
Roads & Highways target achievement	approximately 1.1 lakh crore (approximately 69% of total target)	-

Source: Crisil Intelligence

Under NMP 1.0, the government adopted a structured, asset-led approach to monetise brownfield infrastructure assets with stable operating histories and predictable revenue streams. Highways emerged as one of the leading sectors in terms of monetisation, supported by strong investor appetite for de-risked assets. Over the implementation period, NMP 1.0 achieved approximately 89% of its monetisation target (approximately ₹5.3 lakh crore), indicating robust market response despite challenges such as investor concentration risks, transaction complexity, and the need for deeper secondary market liquidity.

Building on this momentum, NMP 2.0 represents a significant scale-up in both ambition and scope. Launched in 2026, the program envisages a total monetisation potential of approximately ₹16.7 lakh crore across 12 infrastructure sectors, with a core monetisation target of approximately ₹10 lakh crore to be realised through public sector-led transactions and structured partnerships with private capital. The roads sector continues to play a central role, with highways alone contributing a substantial share (approximately ₹4.1 lakh crore), reaffirming their position as the anchor asset class within the monetisation framework.

Importantly, NMP 2.0 reflects a shift in policy orientation from viewing monetisation as a one-time financing tool to embedding it as a continuous capital recycling strategy. The focus has moved towards portfolio aggregation, standardised concession frameworks, and greater integration with domestic capital markets, enabling improved scalability and efficiency. Additionally, the evolution underscores the growing importance of InvITs as a platform-based mechanism, facilitating broader investor participation, including long-term institutional capital.

The roads and highways sector saw approximately 70% target achievement in the NMP 1.0, with ₹ approximately 1.1 lakh crore achievement, additionally, as of November 2025, MoRTH has monetised total ₹ 1.52 Lakh crore of assets with approximately ₹ 30,000 monetisation estimated in Financial Year 2026, indicating positive momentum. With the share of roads and highways remaining similar in NMP 2.0, the achievement rate is expected to further improve driven by a detailed strategic approach and past learnings.

Sagarmala Programme

The Sagarmala Programme is a flagship initiative of the Government of India aimed at driving port-led economic growth by modernizing and optimizing the use of India's extensive coastal and maritime resources. Launched in 2015, the programme seeks to leverage the country's 7,500 km coastline, 14,500 km of navigable waterways, and strategic position along major global trade routes to enhance logistics efficiency, reduce costs, and improve international competitiveness. Under this initiative, the government has identified over 800 projects spanning port modernization, connectivity enhancement, coastal community development, and port-linked industrialization, with a total estimated investment of around ₹3.59 trillion

The programme encompasses several key components. The Port Modernization and New Port Development segment focuses on upgrading existing ports to handle larger vessels and constructing new facilities at strategic locations such as Vadhavan, Enayam, and Paradip Outer Harbour, with an investment of approximately ₹1.6 trillion (₹1,600 billion). The Port Connectivity Enhancement initiative aims to improve last-mile rail, road, and inland waterway connections to major ports through projects such as dedicated freight corridors, expressways, and multi-modal logistics parks, with an allocation of around ₹1.2 trillion. The Port-Linked Industrialization component involves the development of 14 Coastal Economic Zones (CEZs) and associated industrial clusters to boost manufacturing near ports, backed by an investment of ₹550 billion, while the Coastal Community Development initiative focuses on skill training, fisheries, tourism, and livelihood generation for coastal populations, supported by ₹240 billion.

As of 2025, the Sagarmala Programme has made significant progress, with over 250 projects completed and more than 400 projects under implementation. India's total port capacity has increased from 1,560 million tonnes per annum (MTPA) in 2015 to over 2,600 MTPA by 2024, while the average turnaround time at major ports has improved from 82 hours to under 48 hours, reflecting substantial efficiency gains. So far, projects worth more than ₹1.3 trillion have been executed, with the remaining initiatives advancing through planning and execution stages.

As of 2026, the Sagarmala Programme has continued to strengthen India's maritime infrastructure and logistics ecosystem. The programme encompasses around 845 projects with an estimated investment of ₹6.06 lakh crore, of which 315 projects worth approximately ₹1.57 lakh crore have been completed. The initiative has supported capacity augmentation, port modernization, multimodal connectivity, and coastal economic development, contributing to improved operational efficiency across the maritime sector. Reflecting these gains, India's major ports handled a record 915 million tonnes of cargo in Financial Year 2025-2026, underscoring the programme's role in enhancing trade competitiveness, reducing logistics bottlenecks, and supporting long-term economic growth.

Strategically, Sagarmala is expected to reduce logistics costs by 10–15%, expand India's port capacity to over 3,500 MTPA by 2030, and create approximately 10 million direct and indirect jobs. By working in synergy with complementary infrastructure programmes such as Bharatmala Pariyojana and PM Gati Shakti, Sagarmala plays a pivotal role in strengthening India's multimodal transport network and supporting the country's long-term trade and economic growth objectives. Government has outlined investments of approximately ₹6.8 trillion in port infrastructure by 2035.

UDAN

The UDAN (Ude Desh ka Aam Nagrik) scheme, launched on 21st October 2016, is a flagship initiative of the Ministry of Civil Aviation (MoCA) designed to enhance regional air connectivity and make air travel affordable for the common citizen. The first UDAN flight commenced on 27th April 2017, connecting Shimla and Delhi, marking the beginning of India's journey toward inclusive aviation growth.

Conceived under the National Civil Aviation Policy (NCAP) 2016, UDAN operates with a 10-year vision to connect Tier-2 and Tier-3 cities through a market-driven yet financially supported model. The scheme provides incentives to airlines through Viability Gap Funding (VGF), ensures fare caps for affordability, and promotes collaborative participation among the Central and State Governments, Airports Authority of India (AAI), and private operators. This approach has significantly transformed India's regional connectivity landscape by extending air services to previously underserved and unserved regions.

Evolution of the UDAN Scheme

- UDAN 1.0 (2017): Marked the launch of the first flight (Shimla–Delhi). Five airline operators were awarded 128 routes connecting 70 airports, including 36 new airports.
- UDAN 2.0 (2018): Expanded the scheme to include 73 additional underserved and unserved airports. For the first time, helipads were integrated into the network.
- UDAN 3.0 (2019): Introduced tourism routes in collaboration with the Ministry of Tourism and incorporated seaplane operations to connect water aerodromes, especially in the North-East Region.
- UDAN 4.0 (2020): Focused on hilly regions, North-Eastern States, and island territories, emphasizing helicopter and seaplane services.
- UDAN 5.0–5.5 (2023–2025): Aims to achieve greater network coverage, including water aerodrome and helicopter routes, introduce Krishi UDAN for agricultural cargo, and enhance last-mile air connectivity.

As of 2025, the UDAN scheme has operationalized 635 routes, connecting 90 airports (including 2 water aerodromes and 15 heliports) across India. More than 149 million passengers have benefited from affordable regional air services under UDAN. India's regional airport network has grown significantly, from 74 airports in Financial Year 202014 to 159 airports in Financial Year 2024, more than doubling within a decade. The government has allocated ₹84 billion as VGF support and an additional ₹45 billion for infrastructure development to enhance connectivity in underserved and remote areas.

Through these initiatives, UDAN has played a crucial role in improving regional tourism, healthcare access, trade, and economic growth in Tier-2 and Tier-3 cities, effectively catalyzing balanced and inclusive development in India's aviation sector.

Viksit Bharat 2047

The Viksit Bharat 2047 initiative envisions world-class infrastructure as a core driver of India's transition into a fully developed economy, with a strong emphasis on enabling globally competitive industry. The strategy focuses on building an integrated, multimodal transport network through flagship programmes like Gati Shakti, Bharatmala, Sagarmala, dedicated freight corridors, and major port and airport expansions to reduce logistics costs and improve supply-chain efficiency. Industrial infrastructure is being scaled through new and upgraded industrial corridors, smart manufacturing zones, plug-and-play industrial parks, and modern logistics hubs, aimed at boosting productivity, attracting global investment, and supporting Make in India 2.0. The initiative also prioritises energy transition, expanding renewable capacity, green hydrogen ecosystems, and modern grid infrastructure to ensure reliable, low-carbon power for industry. Digital public infrastructure, including 5G, AI, IoT, and semiconductor manufacturing—is being positioned to strengthen high-tech industries. Overall, Viksit Bharat 2047 seeks to create an advanced, sustainable, and resilient industrial ecosystem that supports high-value manufacturing, job creation, and globally competitive economic growth.

Investments in Indian Roads

Tentative List for Asset Monetisation in Financial Year 2026-2027

In May 2026, NHAI has published the tentative list of road assets for asset monetisation through TOT/InvIT mode.

S. No.	Stretch details	Toll plazas on stretch	Length	Lane conf
1	Delhi/Haryana Border to Rohtak of NH-9 from KM 29.7 to KM 87 in the State of Haryana	Rohad	52.0	6
2	Hissar to Dabwali Section of NH-9 from KM 170 to KM 227 in the State of Haryana	Landhari	57.0	4
3	UP/Haryana Border to Yamunanagar to Saha to Barwala to Panchkula Section of NH-344 Pkg I - KM 70.83 to KM 119.022 Pkg II - KM 119.022 to KM 176.4, in the State of Haryana	(i) Milk Majra (ii) Jaloli	105.5	4
4	Hazaribagh - Barhi - Koderma section of NH-20 i) KM 0 to KM 41.279 ii) KM 0 to km 27.5 in the State of Jharkhand	Hazaribagh Km 30.400 (Nagwa) Madangundi at Km 12.300	68.8	4
5	Ranchi to Rargaon of NH-43 from KM 140 to KM 217.3 in the State of Jharkhand	Edalhatu	77.3	4
6	Ranchi to Mahulia Pkg I - (Chowka to Saharbeda) of NH-43&18 from KM 217.3 to KM 233.35, Pkg II - (Saharbeda to Mahulia) of NH-18 from KM 233.35 to KM 277.568, in the State of Jharkhand	(i) Pata (ii) Putru	60.3	4
7	Bellary to Byrapura to Hiriyur section of NH-150A from i) Km 266.820 to KM 308.550 ii) Km 308.550 to km 358.500 iii) Km 358.500 to km 414.205 in the State of Karnataka	(i) Jajirakallu (ii) Hirehalli (iii) Balenahalli	147.4	4
8	Hubli - Hospet Section of NH-63 from KM 128.850 to KM 272.571 in the State of Karnataka	i) Nalavadi ii) Halligudi	143.2	4
9	Deoli to Kota of NH-52 from KM 167.624 to KM 250.434 in the State of Rajasthan	Kishorepura	82.8	4
10	Kota to Baran section of NH-27, Pkg I - KM 1080.263 to KM 1122.943	(i) Similiya (ii) Fatehpur	104.1	4

S. No.	Stretch details	Toll plazas on stretch	Length	Lane conf
	Pkg II - KM 1122.943 to KM 1184.322, in the State of Rajasthan			
11	(a) Trichy to Thuvarankurichi Madurai of NH-38 Pkg I - KM 0 to KM 60.95 Pkg II - KM 60.95 to KM 124.84, in the State of Tamil Nadu (b) Madurai-Chettikulam-Natham-Thuvarankurichi of NH-785 from KM 0 to KM 61.115 in the State of Tamil Nadu	(i) Boothakudi (ii) Chittampatti Pudur at Km 21.020	124.8 61.1	4 4
12	Yadgiri-Warangal section of NH-163 Pkg I - KM 54 to KM 122.9 Pkg II - KM 122.9 to KM 153.103, in the State of Telangana	(i) Komalla (ii) Komatipalli	99.1	4
13	Aligarh to Kanpur section of NH-34 Pkg I - KM 149.9 to KM 195.733 Pkg II - KM 195.733 to KM 240.897 Pkg III - KM 302.108 to KM 373.085 Pkg IV - KM 373.085 to KM 433.728, in the State of Uttar Pradesh	(i) Kiratpur (ii) Aaspur (iii) Tarwa Deva (iv) Basheerpur (v) Newada Kanthi	283.8	4
14	Varanasi to Birnon of NH-29 from KM 12.01 to KM 84.16 in the State of Uttar Pradesh	Kaithi	72.2	4
15	Aunta - Simaria - Khagaria section of NH-31 from KM 202.79 to KM 266.282 in the State of Bihar	Shahpur at Design Km 232.600	63.5	4
16	Aurangabad to Karodi of NH-52 from KM 290.2 to KM 320.64 in the State of Maharashtra	Karodi	30.4	4
17	Wardha to Buthibora section of NH 361 from km 465.5 to km 524.69 in the State of Maharashtra	Haladgaon	59.2	4

Source: NHAI, Crisil Intelligence

Mode-wise Projects proposed to be Awarded by NHAI

Projects Pipeline under BOT

The government is set to introduce additional changes to the BOT concession agreement for greenfield highways, aiming to reduce disputes and boost private sector investment in the sector. The proposed reforms are a follow-up to the amendments made in Financial Year 2025, which were designed to make the BOT model more lucrative to large corporates.

One of the key amendments is to mandate that all pre-construction activities be completed before issuing the Letter of Award. The move is expected to reduce the risk of potential delays and disputes during the construction phase and provide a more stable environment for private sector investors.

The government has also announced plans to create a long-term project pipeline of 53 highway projects worth ₹ 2.1 lakh crore under the BOT model. The pipeline is expected to provide a steady stream of investment opportunities for private sector players and help boost economic growth.

Project	State	Project cost (₹ billion)	Length (Km)
Karmala – Tembhurni	Maharashtra	983	60.0
Sangli – Kolhapur	Maharashtra	749	33.8
Kasarwadi (Nashik Phata) – Rajgurunagar	Maharashtra	5,954	30.0
Ahmednagar–Solapur section (Pkg 1)	Maharashtra	2,289	62.0
Ahmednagar–Solapur section (Pkg 2)	Maharashtra	2,026	65.5
Ahmednagar–Solapur section (Pkg 3)	Maharashtra	2,193	70.5
Ahmednagar–Solapur section (Pkg 4)	Maharashtra	1,574	56.1
Pune – Shirur	Maharashtra	6,170	56.0
Talegaon – Chakan – Shikrapur	Maharashtra	4,202	54.0
Chennai – Tirupati & Tirupati bypass	Tamil Nadu	2,500	83.0
Armoor – Mancherial	Telangana	3,175	131.3
Aligarh–Palwal–Tappal (NH334D)	Uttar Pradesh	1,479	72.4
Chenani – Nashri Tunnel	Jammu & Kashmir	1,880	9.0
Total		**35,174**	**794**

Source: NHAI, Crisil Intelligence

The following table presents the project pipeline over the last five years under HAM concession model.

Projects Pipeline under HAM

	Financial Year 2022	Financial Year 2023	Financial Year 2024	Financial Year 2025
Length awarded(km)	8,781	10,989	11,537	11,269
Cost (₹ Billion)	3,296	4,691	4,455	4,365

Source: MoRTH, Crisil Intelligence

Project Pipeline under DBFOT in Financial Year 2027

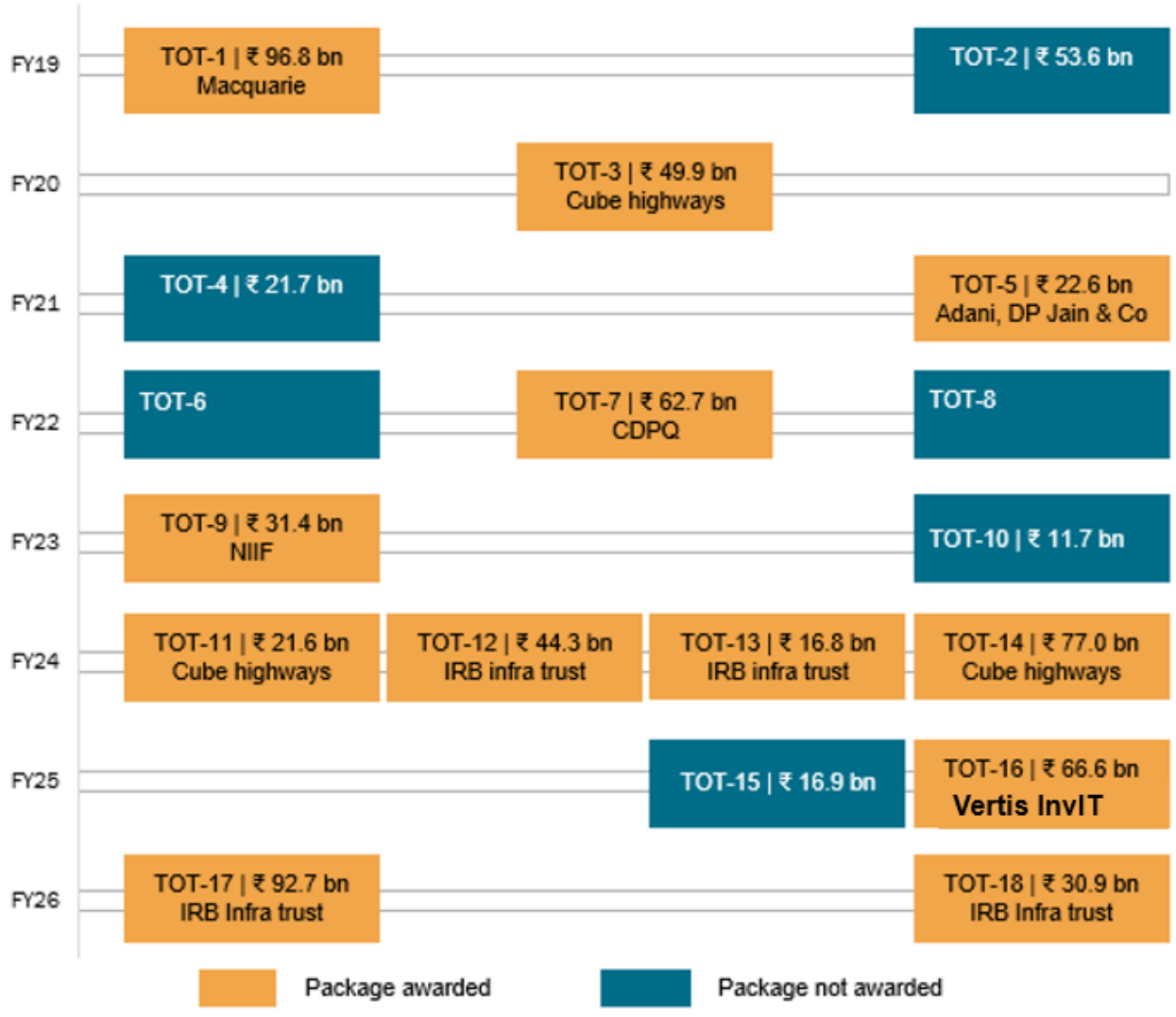
Project Name	# of bidders	Project cost (Rs crore)	Bid	Project length (Km)	Concession period (years)	Highway lanes
Pune – Shirur	3	6170	19%	53	29	6

Source: Industry, Crisil Intelligence

Investments under Toll-Operate-Transfer (TOT) model

The Toll-Operate-Transfer (TOT) model, introduced by NHAI, has evolved into a key instrument for asset monetisation and private sector participation in the road sector. Since its inception in 2016, the model has successfully attracted institutional investors and infrastructure funds, reflecting growing confidence in India's long-term toll revenue potential. Over successive rounds, multiple TOT bundles have been awarded, mobilising substantial private capital through players such as Macquarie, Cube Highways, Adani, IRB Infrastructure, and NIIF. Under this framework, concessionaires pay an upfront one-time concession fee to NHAI in exchange for the right to operate, maintain, and collect toll revenues from a pre-constructed highway stretch over a concession period ranging typically between 15 to 30 years.

TOT bundle



Source: Crisil Intelligence

Upcoming TOT bundles:

TOT Bundle	Location	Length (in km)	Last Bid date
TOT 19	Trichy - Thanjavur section of NH-83 and Madurai - Tuticorin section of NH-38	184.5	April-2026
TOT 20	Muzaffarpur-Darbhanga-Asanpur section of NH-27 in Bihar	145.6	May-2026
TOT 21	Asanpur-Forbesganj-Purnea section (NH-27 Bihar)	139.3	May-2026
TOT 22	Purnea-Dalkhola-Raiganj stretch of NH-27 spanning Bihar and West Bengal	90.6	May-2026

Source: Industry, Crisil Intelligence

While some bundles were withdrawn or cancelled due to valuation mismatches, the pipeline remains strong with ongoing bids and proposals across key corridors in Uttar Pradesh, Odisha, Tamil Nadu, and Bihar. The model continues to demonstrate investor appetite for operational highway assets, supported by improved toll collection systems such as FASTag and predictable revenue flows. Overall, TOT has emerged as a vital mechanism within NHAI's asset monetisation strategy, ensuring steady inflows while deepening private sector engagement in national highway management.

Key transactions in road sector

Over the past three years, India's roads and highways sector has witnessed sustained and large-scale transaction activity, reflecting strong investor confidence in operational road assets. Across Financial Year 2023-Financial Year 2025 period, transactions exceeding approximately ₹350-400 billion, driven by platform-level acquisitions, InvIT buyouts, NHAI asset monetisation, and consolidation by large global investors. This underscores the size, depth, and maturity of India's road monetisation ecosystem. Combined with the upcoming Bharatmala pipeline, it demonstrates that the roads sector presents one of the largest investment opportunities in India's infrastructure landscape. Continued capital recycling, InvIT expansions, and global investor participation will keep transaction activity robust in the foreseeable future.

Recent key asset sales and private equity transactions

Date	Target	Buyer	Seller	Deal value (₹ million)	% sought
Jun-2026	Ceigall Malout Abohar Sadhuwali Highways Pvt. Ltd. (CMASH)	Neo Infra Income Opportunities Fund	Ceigall India Ltd. / Ceigall Infra Projects Pvt. Ltd.	1,770	100%
Apr-2026	Safeway concessions (TOT-1 Package)	VINCI Highways	Macquarie	1,50,000	100%
Apr-2026	Road assets from its sponsor group entities, CH-V and CH-II	Cube InvIT	Cube	-	100%
Mar-2026	Five HAM Road assets (2 Khammam-Devarapalle sections and 3 Raipur-Visakhapatnam sections)	Neo Infra Income Opportunities Fund	H.G. Infra Engineering Limited	35,840	100%
Jan-2026	Four SPVs - KNR Palani Infra Private Limited, KNR Ramagiri Infra Private Limited, KNR Guruvayur Infra Private Limited and KNR Ramanattukara Infra Private Limited	Indus Infra Trust	KNR Constructions	15.43	100%
Sep-2025	TOT-5A	Adani Road Transport Limited	DP Jain	13,420	100%
Sep-2025	Five BOT toll road SPVs of Ashoka Concessions: Bhandara, Durg, Belgaum-Dharwad, Dhankuni -Kharagpur	Maple Infrastructure Trust	Ashoka Concessions Ltd	45,000	100%
July-2025	3 road assets	IRB InvIT	IRB InvIT Fund	84,360	100%
June-2025	Quazigund Expressway and Athang Jammu Udhamour Highway	Cube Highways InvIT	NIIF	4,185	100%
Mar-2025	Two operational NHAI HAM road SPVs on Delhi-Amritsar-Katra corridor	Neo Infrastructure Income	CDS Infra Projects Ltd.	15,000	100%
Jan-2025	11 HAM road projects	EAAA Alternatives	Ashoka Buidcon Ltd	23,240	NA
Dec-2024	Five operational road projects	Shrem InvIT	APCO	38,668	100%
Apr-2024	Entire equity stake in L&T IDPL	EAAA/Sekura	L&T	60,000	100%

Date	Target	Buyer	Seller	Deal value (₹ million)	% sought
Mar-2024	IRB Infrastructure Trust 24% stake	Cintra InvIT Investment	GIC affiliates	65,900	24%
Feb-2024	4 HAM Assets	Actis	Patel Infrastructure Ltd	15,000	100%
Jan-2024	Portfolio of 11 HAM & 1 BOT (UPSHA)	Vertis Infrastructure Trust	PNC Infrastructure	90,057	100%
Sep-2023	Four road SPVs	KKR	Macquarie	30,000	NA
May-2023	Four HAM projects	Vertis Infrastructure Trust	HG Infra Engineering Ltd.	13,940	100%
Apr-2023	Kundapur-Surathkal section (90.1 km road project in Karnataka, comprising 74.8 km Kundapur-Surathkal section and 15.3 km Mangaluru-Kerala border section	Vertis Infrastructure Trust	Navayuga Udupi Tollways	9,240	NA
Apr-2023	Baharampore-Farakka Highways Ltd	Cube Highways and Infrastructure Pte Ltd	HCC Group	13,230	NA
Mar-2023	Aurang Tollway (section of NH 6 between Aurang in Chhattisgarh and Odisha border)	Macquarie Group	BSCPL	16,000	NA
Feb-2023	5 completed HAM assets (Welspun Delhi Meerut Expressway Pvt Ltd, Welspun Road Infra Pvt Ltd, MBL (CGRG) Road Ltd, MBL (GSY) Road Ltd, Chikhali Tarsod Highways Pvt Ltd) and one operating BOT toll asset (Welspun Infrafacility Pvt Ltd)	Actis and Welspun Enterprises	5 completed HAM assets (Welspun Delhi Meerut Expressway Pvt Ltd, Welspun Road Infra Pvt Ltd, MBL (CGRG) Road Ltd, MBL (GSY) Road Ltd, Chikhali Tarsod Highways Pvt Ltd), and Welspun Infrafacility Pvt Ltd	NA	NA
Nov-2022	Eastern Peripheral Expressway	Maple Infrastructure Trust	NHAI	62,670	NA
Oct-2022	InvIT (across 7 states: Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, Uttar Pradesh, Telangana)	CPPIB and Ontario Teachers' Pension Plan Board	National Highways Infra Trust	NA	NA
Sep-2022	Andhra Pradesh and Gujarat assets (Tada Nellore)	Adani Group	Macquarie Group	31,100	NA
Aug-2022	SP Jammu-Udhampur Highway Ltd	NIIF	Shapoorji Pallonji Group	22,800	100%
Jul-2022	Navayuga Quazigund Expressway Pvt. Ltd	NIIF	Navayuga Quazigund Expressway Pvt Ltd	30,350	NA
Jun-2022	Six operating highway toll projects	Actis' Long Life Infrastructure Fund	Welspun Enterprises Ltd	60,000	100%
Jun-2022	Five operational road projects	IndInfravit Trust, an InvIT led by Canada Pension Plan Investment Board	Brookfield	93,750	100%
Jun-2022	A toll road SPV	Maple Infrastructure trust	SJEPL	NA	100%
April-2022	KKR & Co's road platform in India	Ontario Teachers	Ontario Teachers' Pension Plan Board committed an investment to boost alternative investment company KKR & Co's road platform in India.	Committed ₹13.33 billion ($175 million)	-
Jul-2021	Highway Concessions One, formerly known as One highway concession	KKR Asian Fund III LP	Global Infrastructure Partners	-	39%
Jan-2021	Shree Jagannath Expressways Pvt. Ltd	Indian Highway Concessions Trust	Bharat Road Network	7,300	74%

Date	Target	Buyer	Seller	Deal value (₹ million)	% sought
Jun-2021	Navayuga Road Projects Pvt. Ltd. - two road projects	Sekura Roads Ltd	Navayuga Road Projects Pvt Ltd	-	100%
Feb-2021	Sadbhav Infrastructure Projects Ltd	Allianz Global Investors joined by AMP Capital	-	To raise ₹7 billion ($96 million) through NCDs	-
Jan-2021	Chennai Elevated Tollway Ltd	JC Flowers Asset Reconstruction Company	-	Acquire over half of the debt of a stressed road developer at a discount of over 80%	-

Source: Industry, CRISIL Intelligence

Overview of National Highways and Infrastructure Development Corporation Limited (NHIDCL)

The National Highways and Infrastructure Development Corporation Limited (NHIDCL) was established under the MoRTH, on July 18, 2014. It aims to boost construction of national highways and infrastructure in the North Eastern Region and strategic border areas. NHIDCL facilitates economic development in these regions by integrating them more robustly with the mainstream, providing economic benefits to the local population.

NHIDCL has also ventured into other infrastructure projects such as multi-level car parking, logistic parks, and bus ports. NHIDCL's projects are enhancing accessibility to remote areas, constructing safer roads, tunnels, and bridges, particularly in challenging terrains like Jammu and Kashmir, Uttarakhand, North-East, West Bengal, and Andaman & Nicobar Islands.

NHIDCL portfolio for road development across India

The National Highways & Infrastructure Development Corporation Limited continues to play a pivotal role in expanding road infrastructure in geographically challenging and strategically important regions of the country, particularly in the North-Eastern states, Himalayan regions, and island territories. As of 30 April 2026, NHIDCL has completed 204 road projects covering a cumulative length of 3,939 km with a total project cost (TPC) of approximately ₹67,040 crore. In addition, 158 projects spanning 3,105 km and involving an investment of nearly ₹88,908 crore are currently under implementation.

The project portfolio is concentrated in states such as Assam, Arunachal Pradesh, Mizoram, Nagaland, and Manipur, reflecting the government's continued focus on improving connectivity in remote and border areas. Assam accounts for the highest number of completed and ongoing projects, while significant investments are also being undertaken across Jammu & Kashmir, Ladakh, Uttarakhand, and the North-Eastern region. The strong pipeline of ongoing projects highlights NHIDCL's continued emphasis on enhancing regional connectivity, reducing travel time, strengthening border infrastructure, and supporting economic development in underserved regions of the country.

NHIDCL Road projects as of April 2026

State/UT	Completed Projects - Nos.	Completed Projects - Length (Km)	Completed Projects - TPC (Cr.)	Ongoing Projects - Nos.	Ongoing Projects - Length (Km)	Ongoing Projects - TPC (Cr.)
Arunachal Pradesh	33	662	8,006	10	354	6,930
Assam	35	643	15,633	37	662	31,021
Manipur	23	404	6,565	25	625	8,752
Meghalaya	7	180	1,877	10	213	5,342
Mizoram	20	560	10,515	12	248	8,867
Nagaland	21	440	7,168	16	295	5,190
Sikkim	6	61	1,320	7	108	2,563
Tripura	17	412	4,764	11	228	4,568
Andaman & Nicobar	6	143	671	4	90	1,191
Jammu & Kashmir (RO-Jammu)	9	119	3,089	6	67	2,477
Jammu & Kashmir (RO-Srinagar)	4	91	3,394	1	31	6,809
Ladakh	6	99	1,293	4	102	1,398
Uttarakhand	10	100	1,444	4	10	2,110
West Bengal	3	17	535	11	73	1,689
Total Civil Road Works	200	3,931	66,275	158	3,105	88,908
Assam (MMLP)	4	8	765			
Grand Total (overall)	204	3,939	67,040	158	3,105	88,908

Source: NHIDCL, Crisil Intelligence

Overview of Cable Stayed Bridges

Cable-stayed bridges are a type of bridge where the deck is supported by cables attached to vertical towers known as pylons. Unlike suspension bridges, where cables are primarily horizontal, cable-stayed bridges have cables that connect directly from

the deck to the pylons, allowing for greater stability and a more compact design. This makes these bridges suitable for areas with limited space or challenging terrains.

Some Notable Cable-Stayed Bridges

- Bandra-Worli Sea Link (Mumbai): A prominent example featuring stylish pylons and efficient design, showcasing advancements in Indian bridge engineering.
- Chenab Bridge: Currently under construction, this bridge is set to be one of the tallest and longest cable-stayed bridges in the world, connecting important regions in Kashmir.
- New Yamuna Bridge (Allahabad): An impressive cable-stayed structure aimed at enhancing connectivity in urban areas.
- Hyderabad's Durgam Cheruvu Cable Bridge: A key bridge connecting important transit routes, highlighting modern architectural trends in India.

Overview of Elevated Roads

Elevated roads, often designed as flyovers or overpasses, are roadways that are built above ground level to allow for the uninterrupted flow of traffic. They play a crucial role in urban planning and traffic management by reducing congestion at critical junctions, maintaining traffic speeds, and providing a smoother transit experience for commuters. One notable example is the 114 km elevated road corridor announced for Bengaluru, aimed at mitigating traffic woes in the city as part of the Swachha Bengaluru initiative. This project emphasizes the growing trend of integrating elevated roads into urban development plans to alleviate congestion and improve air quality.

Some Notable Elevated Road Projects

- Mumbai-Pune Expressway: Recognized as India's first access-controlled expressway, it includes elevated sections to facilitate high-speed travel between these two major urban centres.
- Yamuna Expressway: A prominent example of an elevated road that connects Greater Noida to Agra, showcasing the effectiveness of elevated systems in facilitating long-distance travel.

Sustainability in the Indian roads sector

Sustainability has increasingly become a central pillar of India’s road infrastructure strategy, with agencies such as the National Highways Authority of India (NHAI) integrating environmental, social and governance (ESG) principles into planning and execution. Recent initiatives include the adoption of greener construction practices, large-scale plantation drives along national corridors, use of recycled materials such as plastic-modified bitumen, and enhanced climate-resilient design standards to address flooding, heat stress and slope instability. NHAI’s Sustainability Report further highlights efforts to incorporate social inclusion, improved road safety engineering, and continuous environmental monitoring across the highway network.

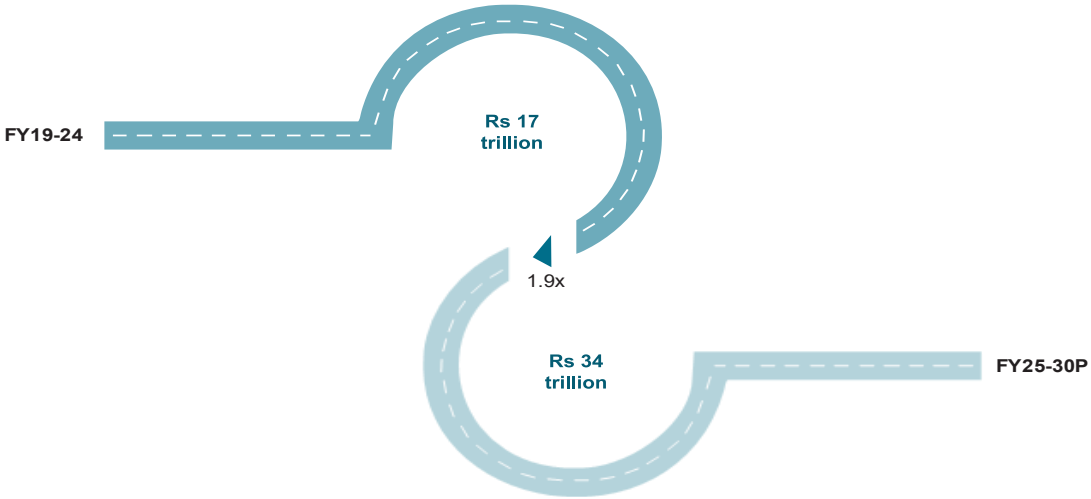
Technological advancement is playing a growing role in strengthening sustainability outcomes. Highway developers and operators are increasingly adopting digital tools such as automated pavement-condition assessments, drones for construction monitoring, geospatial analytics, and AI-based systems for pothole detection and lifecycle maintenance planning. These technologies help reduce material consumption, optimise maintenance cycles, lower emissions, and extend the asset life of national highways. At the same time, greater emphasis on electric-vehicle charging infrastructure and intelligent transport systems (ITS) is supporting future-ready, low-carbon mobility along major economic corridors.

Outlook of Road Sector

India’s economic expansion and the government’s long-term Viksit Bharat 2047 vision have placed infrastructure at the centre of policy planning. Total infrastructure investments are expected to nearly double from ₹47.8 trillion during Financial Year 2019-24 to approximately ₹93 trillion in Financial Year 2025-30, reflecting sustained public spending and growing private sector participation. Transport infrastructure alone is projected to attract ₹42-45 trillion over Financial Year 2025-30, underscoring its pivotal role in supporting the movement of goods, people, and services across sectors.

India’s road sector is poised to maintain strong momentum, underpinned by its central role in facilitating both freight and passenger mobility. Accounting for over 60% of total freight and nearly 85% of passenger traffic, roads form the backbone of India’s transport ecosystem. The sector is expected to attract the largest share of transport investments, approximately ₹33-35 trillion between Financial Year 2025-30. This growth is supported by continued policy impetus through flagship programmes such as the Bharatmala Pariyojana, National Infrastructure Pipeline (NIP), National Monetisation Pipeline (NMP), and PM Gati Shakti, which collectively aim to build a modern, integrated, and efficient road network.

Capex in roads sector (₹ billion)



Source: Crisil Intelligence

Growth Drivers and Demand Outlook

Investment and Policy Landscape

Capital expenditure in the road sector is projected to increase from around ₹17 trillion during Financial Year 2019-24 to about ₹33-35 trillion in the medium-term span of 5 years, nearly 1.9 times higher. This surge will be driven by a combination of public and private investments, supported by government policy thrust on network expansion, asset monetisation, and multimodal integration.

The share of private investments is anticipated to increase from 11% between Financial Year 2019-24 to 16-18% between Financial Year 2029-30, with government increasingly shifting its focus to asset monetization models which provide stable, long-term, annuity-like returns and lower risk for private investors. Financing diversification is being achieved through models such as Hybrid Annuity Model (HAM), Build-Operate-Transfer (BOT), Toll-Operate-Transfer (TOT), and Infrastructure Investment Trusts (InvITs). The success of these models has strengthened investor confidence and attracted long-term institutional and global capital.

Capacity Augmentation and Network Expansion

The next phase of highway development will focus on capacity augmentation, expressway expansion, and corridor-based planning. MoRTH aims to upgrade 25,000-30,000 km of two-lane highways into four lanes (with estimated investment of ₹8-10 trillion) and convert about 16,000 km of four-lane highways into six lanes. The upcoming Financial Year 2026-30 build programme will prioritise systematic widening of high-traffic corridors and development of new greenfield expressways and access-controlled highways.

Guided by Vision 2047 and the Viksit Bharat roadmap, India targets the development of 50,000 km of high-speed corridors by Financial Year 2037, scaling up to 200,000-230,000 km by Financial Year 2047. These initiatives are expected to enhance logistical efficiency, reduce transit times, and lower logistics costs, aligning with the government's broader target of achieving single-digit logistics costs as a percentage of GDP.

Technological Advancements and Innovation

Technology adoption is emerging as a key enabler in improving construction efficiency and network management. MoRTH is encouraging the use of advanced materials and construction techniques to reduce costs and enhance pavement quality. Research initiatives are underway on the use of bio-bitumen from agricultural waste and performance-based bituminous mixes. Additionally, digital tolling, contactless payment systems, and intelligent transport management solutions are being rolled out to improve traffic flow and reduce congestion.

Multimodal Integration and Logistics Efficiency

To strengthen last-mile connectivity and multimodal freight integration, 73 Multi-Modal Logistics Parks (MMLPs) are planned under the PM Gati Shakti initiative. These will serve as nodal hubs connecting road, rail, and air cargo networks, improving modal balance and supply chain competitiveness. The corridor-based development of MMLPs, along with expressway spines and grade-separated bypasses, is expected to enhance logistics efficiency during Financial Year 2026-30.

The road sector's medium-term outlook remains robust, supported by sustained policy push, strong investment appetite, and increasing technological sophistication. Continued government focus on improving network quality, safety, and digital integration will be critical in achieving the objectives of Vision 2047.

Raw Materials for Road Construction

Overview of Bitumen Derivatives Market in India

In the second quarter of Financial Year 2025, bitumen consumption declined by 7% on-year following general and state elections scheduled during the Financial Year leading to muted off-take of road implementation, this is post witnessing an exponential growth of 40% and 27% on-quarter during the third and fourth quarters of Financial Year 2024 as the road construction was increased pre- election season, respectively.

Road construction and Infrastructure to drive construction industry

The construction industry in India is expected to grow steadily at an annual rate of 6-8% between Financial Years 2026 and 2030. This growth will be mainly driven by increased spending on infrastructure projects such as roads and railways, supported by both central and state government investments.

In Financial Year 2025, construction capital expenditure rose by 4% compared to the previous year, reaching ₹12.8 lakh crore. This increase aligns with the government's emphasis on infrastructure development, as seen in the rising budget allocations aimed at achieving the goals outlined in the National Infrastructure Pipeline (NIP).

Previously, the construction sector faced challenges like policy delays in infrastructure and low industrial investments. Residential construction also declined due to weak demand, affordability issues, and a sluggish economy. However, recent government initiatives have revitalized construction activity, especially in infrastructure.

Some key initiatives introduced by the government:

- PMAY-U 2.0 launched with mission of "Housing for all" with effect from Sep 2024. Proposals for construction of 3.52 lakhs approved under PMAY-U 2.0 as of March 2025.
- Swachh Bharat Abhiyan and Smart Cities Mission: These programs focus on improving sanitation and developing urban areas into sustainable, citizen-friendly cities.
- Atal Mission for Rejuvenation and Urban Transformation (AMRUT): This initiative enhances urban living by providing basic services like water supply and sewerage, improving infrastructure for better quality of life.
- Pradhan Mantri Krishi Sinchai Yojana (PMKSY): By consolidating major irrigation schemes, this program aims to extend irrigation coverage and improve water use efficiency in agriculture.
- Hybrid Annuity Model (HAM) in Road Construction: This public-private partnership model reduces financial risk for private players, encouraging investment in road infrastructure.
- Gati Shakti Plan and National Infrastructure Pipeline (NIP): These programs accelerate infrastructure development, enhance connectivity, and promote urbanization, forming the foundation for economic prosperity.
- Credit Guarantee Scheme Expansion: The scheme now offers up to ₹10 crore for mid-sized contractors and ₹5 crore for micro and small enterprises, providing easier access to credit with lower interest rates and reduced collateral requirements.
- Interest-Free Loans for Urban Infrastructure: The government allocated ₹1.5 lakh crore in 50-year interest-free loans to states for capital expenditure, aiming to boost urban infrastructure and indirectly benefit the manufacturing sector by improving logistics and connectivity.

Bitumen demand to log higher growth in the long run

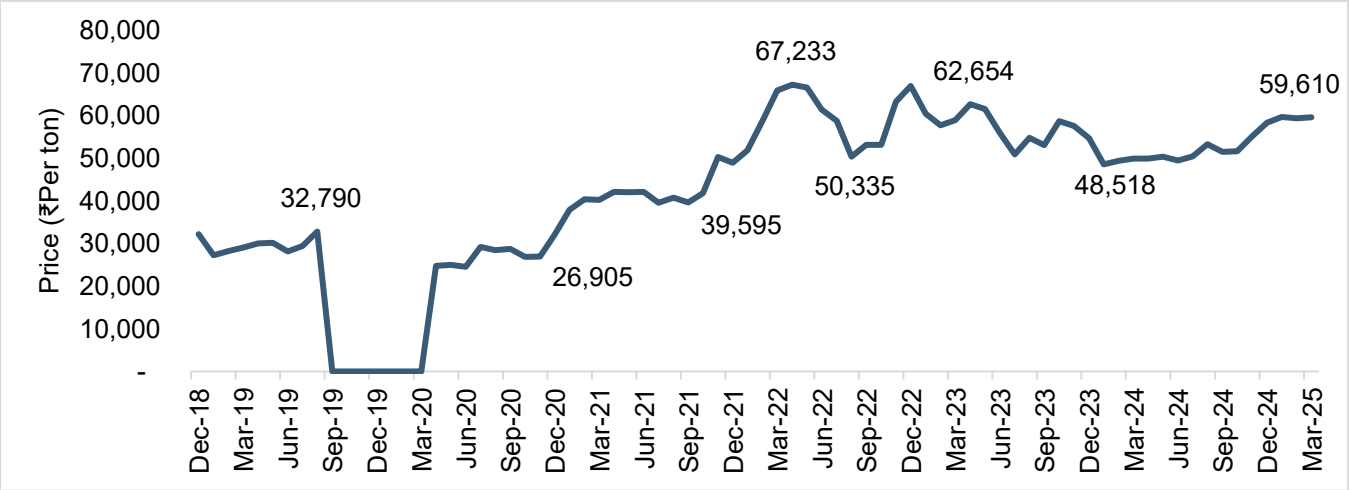
The expansion of transportation networks and the need for well-constructed roads fuel the demand for bitumen as a key component. Urbanization and population growth contribute to the increasing requirement for road infrastructure, while government policies and emphasis on sustainable and durable roads further drive the need for quality bitumen fuel. Economic growth and industrial activities also impact demand through increased road freight and transportation of goods.

Price of Bitumen in India

- Prices remained relatively stable between Dec 2018 and Mar 2020, ranging from approximately ₹28,000 to ₹33,000 per ton.
- A sharp decline occurred around Jun 2020, with prices hitting a low of ₹26,905, likely due to reduced demand and economic slowdown during the COVID-19 pandemic.
- Post-2020, prices began a steady upward climb, peaking sharply at ₹67,232 in Jun 2021, driven by economic recovery and global crude price surge.

- By Mar 2025, prices again rose to ₹59,610, indicating a potential long-term upward trend.
- As of February 2026 circular, the VGF30 bulk bitumen price stood at approximately ₹48,342 per metric-tonne.

Prices of Bitumen in India



Source: IOC, CRISIL Intelligence

Other Raw Materials

The share of the infrastructure segment in cement demand has been on the rise over the past few years because of a surge in the central government's capex towards infra sectors. In fact, the share has jumped from 19-21% in Financial Year 2017 to 29-31% in Financial Year 2025. Over the period, the share of housing declined from 64-66% to 55-57% whereas share of industrial and commercial segments remained almost same. Going forward, we expect the infrastructure segment's share to rise further because of the continued rise in central and state government's focus on roads, railways, metros, airports and irrigation. The segment's share is expected to increase to 31-33% in Financial Year 2030.

The government's focus on developing dedicated rail corridors for the energy, mineral and cement sectors, higher budget allocation for metro, UDAN scheme for airports, expansion of metro rail and Namo Bharat to more cities, ongoing NHAI road projects should continue to support infrastructure demand in Financial Year 2026.

The reduction in the GST rate on the key construction material is expected to decrease its prices, thereby stimulating the construction sector. The price fall, in turn, will lead to lower construction costs for urban and rural individual housing buildings (IHBs), enabling homeowners to allocate savings towards larger or modified living spaces. Given that raw materials account for 50-60% of total construction costs, a 7-8% decline in cement prices is anticipated to result in a marginal 100 bps reduction in the overall cost.

CRISIL Intelligence expects cement demand growth in Financial Year 2027 around 6-7% after a moderation in Financial Year 2026 which is estimated to have grown by 6%.

Steel

Infrastructure sector has contributed to a significant portion of steel demand, primarily driven by the roads segment, followed by railways, irrigation, and urban infrastructure. In the Union Budget 2026-27, the Central Government increased the capital expenditure for the Ministry of Road Transport and Highways (MoRTH) and the railways. The budget allocation for the roads sector increased by approximately 8% in Financial Year 2027BE compared to Financial Year 2026RE. Specifically, the National Highways Authority of India (NHAI) received a approximately 10% boost in allocation, while the railways ministry witnessed a approximately 11% rise in its budgeted capital outlay for Financial Year 2027BE over Financial Year 2026RE.

The budget also announced the construction of a dedicated freight corridor connecting Dankuni in the east to Surat in the west, alongside proposals for seven new high-speed rail corridors. Additionally, the government introduced the National Monetisation Pipeline 2.0, aimed at supporting medium-term growth across various sectors, including highways, ropeways, multimodal parks, railways, ports, and urban infrastructure. These initiatives are anticipated to drive growth of 6-8% in Financial Year 2027, and medium-term growth of 8-10% over the next five years. Furthermore, infrastructure capex is expected to increase by 1.4-1.6 times over Financial Year 2027-31P, which is expected to further aid demand. The recent escalation of the West Asian conflict, starting from late February, has created a supply crunch situation in the oil and gas market, leading to concerns about potential supply-side disruptions. This has had a ripple effect on the prices of major building commodities, which have been rising steadily since then. The extent of the conflict remains a concern, and if the situation persists, it may lead to further market uncertainties and potential disruptions to global supply chains. The budgeted infra capex spent will majorly depend on the extent of the current situation.

In contrast to flat steel, long steel prices are expected to decline in Financial Year 2027, due to intense competition and a widening price gap between primary and re-rolled TMT prices. Notably, primary TMT prices dropped 0.5% between April'25-February 26, while the delta between primary and re-rolled prices (majorly produced by secondary players) remained high at around Rs 8,322 per tonne. Given that long steel is largely dependent on the domestic market and dominated by secondary players who rely on thermal coal for production, it is likely that primary TMT prices will decline further in Financial Year 2027, narrowing the price gap with re-rolled TMT prices. Sponge iron production uses higher quality thermal coal, which is imported majorly from South Africa and lower seaborne coal prices have also played a role in weak domestic price. Ongoing tensions in the middle east are causing the rise in energy and freight costs impacting the landed thermal coal costs. The extent of the tensions remains monitorable.

Review and Outlook of State Roads

State roads, which comprise highways, major district roads and rural roads, play a crucial role in India's economic development, particularly in mid-sized towns and rural areas. These roads, which account for over 20% of the overall road network, handle approximately 40% of road traffic, facilitating the movement of raw materials and products to and from the hinterland. The importance of state roads cannot be overstated, as they aid industrial development and contribute significantly to economic growth.

State governments have continued to increase capital expenditure on roads and bridges over the past decade; however, the share of roads and bridges within overall state capital outlay has moderated in recent years. Capital outlay on roads and bridges increased from approximately ₹90,000 crore in Financial Year 2017 to ₹201,000 crore in Financial Year 2026, and is budgeted to rise further to ₹235,000 crore in Financial Year 2027BE and ₹242,000 crore by Financial Year 2028P.

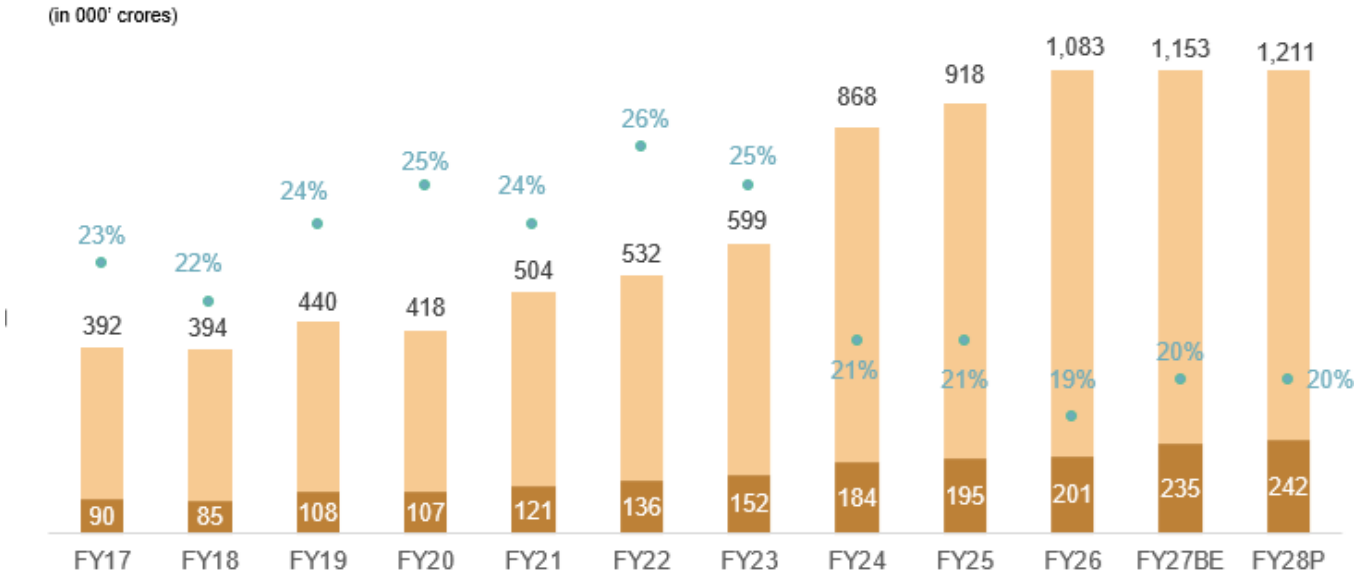
Despite the increase in absolute spending, the proportion of total state capital expenditure allocated towards roads and bridges has declined from a peak of 26% in Financial Year 2022 to around 19–20% during Financial Year 2026-Financial Year 2028. During the same period, overall state capital outlay expanded significantly from ₹532,000 crore in Financial Year 2022 to ₹1,083,000 crore in Financial Year 2026 and is projected to reach ₹1,211,000 crore by Financial Year 2028. This indicates that while investments in road infrastructure continue to grow, other sectors are attracting a larger share of incremental capital spending.

The moderation in the share of road and bridge expenditure reflects the increasing diversification of state capital budgets towards sectors such as urban infrastructure, water supply, energy, transport, and social infrastructure. Consequently, growth in road sector allocations has been relatively slower than the expansion in aggregate state capital expenditure.

Nevertheless, roads and bridges continue to remain one of the largest components of state infrastructure spending, accounting for approximately one-fifth of total state capital outlay. The sustained increase in absolute allocations highlights the continued importance of road infrastructure development in supporting economic growth, improving connectivity, and enhancing logistics efficiency across states.

Going forward, capital expenditure on roads and bridges is expected to maintain a steady growth trajectory, albeit with a relatively stable share of around 20% of total state capital outlay, indicating a more balanced distribution of state infrastructure investments across sectors.

Share of states capital outlay on roads and bridges have been moderating



Source: State budget documents, Crisil Intelligence

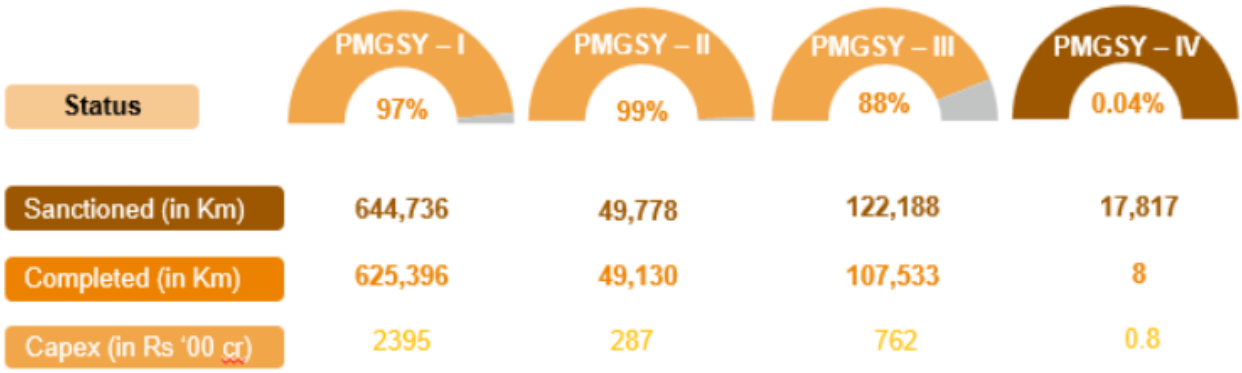
Rural Roads

Rural road construction, expenditure in Financial Year 2027 anticipated to remain at similar levels as previous Financial Years

The Pradhan Mantri Gram Sadak Yojana (PMGSY), a flagship programme of the Indian government, aims at connecting rural areas by constructing roads. As of now, a total of 8,34,519 km of road length has been sanctioned under various ongoing interventions/ verticals of PMGSY. Of this, 7,82,247 km road has already been completed and upgraded.

Expenditure under the Pradhan Mantri Gram Sadak Yojana (PMGSY) has been declining steadily since Financial Year 2022, when it peaked at approximately Rs 23,800 crores, and further decreased to Rs 11,400 crores in Financial Year 2026 as the scheme's targets approached near completion. With the anticipated commencement of work under PMGSY Phase IV in Financial Year 2027, expenditure is expected to remain at similar levels as previous Financial Years, reaching an estimated Rs 15,000-16,000 crores.

PMGSY snapshot of Financial Year 2027



Source: Pradhan Mantri Gram Sadak Yojana, Union Budget 2026-27, Crisil Intelligence

Overview of Infrastructure Investment Trusts (InvITs) for roads in India

Overview of InvITs currently listed in India

Infrastructure Investment Trusts (InvITs) have emerged as a significant instrument in India's infrastructure financing ecosystem, facilitating capital recycling and balance sheet deleveraging for infrastructure developers. InvITs allow sponsors, primarily infrastructure developers or financial investors, to monetize operational assets by pooling them into a trust structure and offering units to institutional and retail investors. The proceeds thus generated help free up capital for the development of new projects while providing investors with long-term, yield-generating infrastructure exposure.

Evolution of regulations

InvITs in India operate within the regulatory framework established by the SEBI in 2014. The regulations have evolved significantly over the past decade, driven by market growth, practical learnings, and demand for enhanced governance and investor protection.

Early regulations (2014-2017)

The SEBI introduced InvITs formally in September 2014. The SEBI (Infrastructure Investment Trusts) Regulations, 2014, formed the basic framework for registration, structure and operation. Early amendments to the framework focused on practicalities, IPO and listing provisions, private placements, sponsor requirements, and enabling foreign and institutional investment. Tax incentives and exchange control relaxations soon followed, paving the way for the registration and listing of InvITs in 2016 and 2017.

Market deepening and structural flexibility (2018-2020)

In 2018, the SEBI refined IPO/ private placement processes of InvITs, introduced provisions to facilitate strategic investor participation and streamlined investment portfolio and leverage norms. The leverage limit was raised from 49% to 70%, subject to strict credit rating conditions and demonstrated distribution track, significantly augmenting borrowings for acquisition and expansion. Further, the amendments enabled rights issues and conversions between listed and unlisted InvITs, and broadened lending access for InvITs. Corporate governance prescriptions, especially for those with large outstanding debt securities, were progressively applied. They were mostly borrowed from the governance norms for listed companies.

Prescriptive governance and innovation (2021-2023)

With growing retail and institutional participation, the SEBI laid down more stringent governance rules, including Board composition standards, committee structures, induction of independent directors and stewardship responsibilities. Disclosure requirements, audit protocols and stewardship codes were formalised for greater transparency.

Notably, in 2022, the framework for unlisted InvITs was discontinued, triggering listings of the existing ones and narrowing the regulatory focus to publicly listed structures. Also, timelines for listing and conversion of InvITs from one structure to another were aligned and reduced, and rules for follow-on offerings were further clarified.

Recent reforms (2024-2026)

More recent amendments focused on sponsor lock-in flexibility, streamlining of conversion procedures from private to public InvITs, reduction of lock-ins, and simplified disclosure norms to facilitate smoother transitions and encourage broader market participation. These changes also reinforce director nomination protocols and trustee roles, and set out distinct rules for issuance and management of subordinate units to further institutionalise governance in the market. In December 2025, SEBI further required that if an InvIT's total borrowings and deferred payments exceed 49%, it must conduct quarterly asset valuations (for June, September, and December quarters) and submit these reports to the stock exchange along with quarterly financial results.

Since their introduction in 2014, almost every year SEBI has either issued a circular or notification refining InvIT regulations to tighten standards of investor safeguards, disclosures, leverage, conversion, or governance.

In its Board meeting held on March 23, 2026, SEBI approved a set of amendments to the SEBI (Infrastructure Investment Trusts) Regulations, 2014, aimed at easing operational frictions for InvITs. These included permitting InvITs to continue holding investments in SPVs even after completion or termination of the concession agreement (subject to an obligation to exit such investment or acquire a new infrastructure project in the SPV within the specified timeline and making appropriate annual report disclosures); expanding permissible avenues for temporary deployment of funds by allowing investment in certain liquid mutual fund schemes with lower credit risk value thresholds; allowing privately listed InvITs to invest up to 10% of the value of their assets in under-construction (greenfield) infrastructure projects; and broadening end-use flexibility for fresh borrowings by InvITs with leverage exceeding 49% (and up to 70%) to include capital expenditure, major maintenance expenses for road projects and refinance of existing debt (subject to the stated conditions).

Investment by Sovereign Wealth Funds (SWF) and Pension funds

Tax benefits are available to sovereign wealth funds, foreign pension funds, and domestic investors in InvITs through specific exemptions and pass-through rules, while InvIT platforms also offer structural advantages over a normal holding company. Income in the nature of dividend, interest, and long-term capital gains from investments in specified infrastructure (including InvIT units/SPVs) is exempt for notified SWFs and pension funds under Section 10(23FE), subject to conditions on control, non-commercial participation, debt-free investment, and government notification. The exemption window for eligible investments has been extended by five years, allowing claims until March 31, 2030, to attract long-term foreign capital into infrastructure.

Key conditions include that the fund must be wholly owned and controlled by a foreign government, be notified by the Central Government, not borrow to invest, and not participate in day-to-day operations of the investee other than protective rights. Income types covered typically include dividend, interest, and long-term capital gains from equity or debt of SPVs and InvIT units in specified infrastructure, if all notification conditions are met.

DIIs and other investors

InvIT distributions are taxed by component: interest is taxable and subject to withholding under Section 194LBA; dividend is taxable if the SPV has opted for Section 115BAA but can be exempt in unitholder hands if the SPV has not opted for 115BAA; capital repayment reduces cost base and may not be taxed on receipt. Recent clarifications on “other income” distributions taxability limit slab-rate taxation to “specified sums” under Section 56(2)(xii), effectively deferring tax until cumulative other-income distributions exceed the unit’s original issue price.

Road InvITs to deleverage balance sheets and enable capital recycling

Infrastructure investment trusts (InvITs) will help free up capital of players by divesting stake in operational assets and help recycle this capital to deleverage balance sheets for creating new assets.

Details of Road InvITs currently registered in India

InvIT Name	Sponsor Name	Date of Listing	Asset Details
Athaang Infrastructure Trust	National Investment and Infrastructure Fund (NIIF)	Yet to be listed	-
Citius Transnet Investment Trust	Epic Transnet Infrastructure Private Limited	29-Apr-26	3 Annuity, 7 Toll assets
Raajmarg Infra Investment Trust (RIIT)	National Highways Authority of India	24-Mar-26	5 Toll assets
Anantam Highways Trust	Alpha Alternatives Fund Advisors LLP	16-Oct-25	7 HAM assets

InvIT Name	Sponsor Name	Date of Listing	Asset Details
Roadstar Infra Investment Trust	Roadstar Infra Private Limited (RIPL)	11-Mar-25	2 Annuity, 4 Toll assets
Capital Infra Trust (formerly National Infrastructure Trust)	Gawar Construction Ltd	17-Jan-25	12 HAM assets
Nxt - Infra Trust	Actis Highway Infra Limited	2-Jul-24	5 HAM, 1 Toll assets
Indus Infra Trust (formerly Bharat Highways InvIT)	Aadharshila Infratech private Limited	12-Mar-24	13 HAM assets
Maple Infrastructure Trust	Maple Highways Pte. Ltd.	21-Jun-23	7 Toll assets
Cube Highways Trust	Cube Highways and Infrastructure Pte. Ltd. ("CH-I") and Cube Highways and Infrastructure III Pte. Ltd. ("CH-III")	19-Apr-23	3 Annuity, 6 HAM, 18 Toll assets
Vertis Infrastructure Trust (formerly Highways Infrastructure Trust)	Galaxy Investments II Pte. Limited	25-Aug-22	2 Annuity, 15 HAM, 12 Toll assets
IRB Infrastructure Trust	IRB Infrastructure Developers Limited	8-Apr-22	15 Toll assets
National Highways Infra Trust	National Highways Authority of India	10-Nov-21	28 Toll assets
Shrem InvIT	Shrem Infra Invest Private Limited	22-Sep-21	6 Annuity, 19 HAM Assets, 2 Toll, and 10 Toll-plus-Annuity assets
Oriental Infra Trust	Oriental Structural Engineers Private Limited ("OSEPL") and Oriental Tollways Private Limited ("OTPL")	27-Jun-19	1 annuity, 1 HAM, 5 Toll assets
Interise Trust (formerly Indinfravit Trust)	Interise Investment Managers Ltd (IIML) (self sponsored)	9-May-18	2 Annuity, 14 Toll assets
IRB InvIT Fund	IRB Infrastructure Developers Limited	18-May-17	2 HAM, 8 Toll assets

Source: Credit Rating Rationale, Offer Document, Valuation Reports, CRISIL Intelligence
InvIT Portfolio data updated as of 31st March 2026.

As of 2026, several InvITs have been registered and listed in India across diverse sponsor categories. Sponsors broadly fall under two classifications, Infrastructure Developers and Financial Sponsors.

- Infrastructure Developers typically comprise companies engaged in asset creation, construction, and project management, with core strengths in infrastructure execution.

- Financial Sponsors, on the other hand, include private equity funds, pension funds, or infrastructure-focused asset managers that specialize in acquiring and managing quality assets over time.

This growing portfolio reflects the increasing adoption of the InvIT model as a preferred mechanism for infrastructure monetization in India. The continued support from government policies, coupled with rising investor appetite for stable yield instruments, is expected to further accelerate the InvIT market's expansion across road, transmission, renewable energy, and logistics sectors in the coming years.

Benchmarking Analysis for Road InvITs

This section benchmarks road InvITs across the portfolio dimensions like enterprise value, operating scale (lane-km), asset mix, and returns. In this section, Cube Highways has been kept at the top of the table and the remaining road InvITs have been sorted basis their enterprise valuation (EV).

Road InvIT Portfolio Benchmarking: Comparison across scale, diversification, and residual life

InvIT Name	EV[1] (₹ Crore)	Scale[2] (Lane Kms)	EV Weighted Residual Life in years[3]	Unique States[4] (toll assets)	Diversification Score[5] (lower the better)
Cube Highways Trust	35,937.30	8,754	16.51	11	30
IRB Infrastructure Trust	70,044.00	10,674	22.52	9	35
National Highways Infra Trust[3]	56,988.00	11,967	19.82	12	-
Vertis Infrastructure Trust (formerly Highways Infrastructure Trust)	26,351.50	8,427	13.31	8	36
Interise Trust (formerly Indinfravit Trust)	19,594.11	7,366	14.65	6	39
IRB InvIT Fund	18,255.00	4,445	16.36	7	38
Maple Infrastructure Trust	14,421.37	3,328	14.74	7	57
Oriental InfraTrust	12,200.30	3,452	10.47	4	48
Shrem Invit	11,554.20	11,742	10.98	1	25
Citius TransNet Investment Trust	10,359.20	3,579	11.96	6	41
Raajmarg Infra Investment Trust[3]	9,665.57	1,528	9.64	4	-
Indus Infra Trust (formerly Bharat Highways InvIT)	8,917.80	3,710	11.66	No toll assets	30
Roadstar Infra Investment Trust	7,027.00	2,837	11.32	5	52
Capital Infra Trust	6,223.60	2,714	11.81	No toll assets	34

InvIT Name	EV[1] (₹ Crore)	Scale[2] (Lane Kms)	EV Weighted Residual Life in years[3]	Unique States[4] (toll assets)	Diversification Score[5] (lower the better)
(formerly National Infrastructure Trust)					
Nxt-Infra Trust	5,572.40	2,087	10.43	2	64
Anantam Highways Trust	4,382.90	1,091	12.84	No toll assets	38

1. *The enterprise value (EV) represents the AUM for InvIT, which is considered as the sum of enterprise value (EV) for each SPV, not adjusted for cash and cash equivalents, as disclosed in the respective InvITs' annual report and valuation report. The EV is as of March 31, 2026.*
2. *The lane kms represented are sum of the individual asset lane km and are derived from the valuation report and annual report of respective InvITs.*
3. *The parameter represents EV weighted residual life in years. The residual concession period refers to the balance duration of the concession agreement for an asset from the cut-off date (March 31, 2026). Please note that for calculation of residual concession period, we have used the concession end date with extension. The residual concession periods of the InvITs were weighted using their EV as of cutoff date specified in note 1 to arrive at the EV weighted residual life.*
   For Raajmarg Infra Investment Trust, asset-wise EV values were unavailable in the valuation report; therefore, simple average residual life of the assets has been used
   For National Highways Infra Trust, NWPPL has a combined enterprise value for Round 1 and Round 2, while each round has a different residual life. Therefore, residual life has been calculated using simple average.
4. *This parameter represents the count of unique states in which toll assets of InvIT is present. The analysis is done only for toll assets, since toll revenues are directly linked to traffic volumes, which, in turn, correlate with regional economic activity and freight movement. Since Indus Infra and Capital Infra Trust have no toll assets, hence the count of unique states is not shown.*
5. *The diversification score is represented by Herfindahl-Hirschman Index (HHI) value, that measures the overall concentration of the portfolio. The HHI takes into account both the number of assets and their relative EV weights. A lower HHI score indicates a more diversified portfolio and less concentration risk.*
   Please note that the asset-level Enterprise Value (EV) split is not available for NHIT and Raajmarg. Therefore, the diversification score has not been presented for these InvITs.

Please note that the reported metrics may differ from InvITs' disclosures, due to variations in methodology and calculation procedures.
Source: Valuation Reports, Annual Reports, and Financial Results March 2026 of respective InvITs, CRISIL Intelligence

Road InvIT Asset Portfolio composition in terms of asset type and concessioning authority

InvIT Name	Total No. of Assets[1]	Asset Split by Asset Type				Asset Split by Concessionaire Authority		
		Annuity	HAM	Toll	Toll + Annuity	MoRTH	NHAI	State
Cube Highways Trust	27	3	6	18	0	0	26	1
IRB Infrastructure Trust	15	0	0	15	0	0	12	3
National Highways Infra Trust	28	0	0	28	0	0	28	0
Vertis Infrastructure Trust (formerly Highways Infrastructure Trust)	29	2	15	12	0	1	24	4
Interise Trust (formerly Indinfravit Trust)	16	2	0	14	0	0	16	0
IRB InvIT Fund	10	0	2	8	0	0	10	0
Maple Infrastructure Trust	7	0	0	7	0	0	7	0
Oriental InfraTrust	7	1	1	5	0	0	7	0
Shrem Invit	37	6	19	2	10	1	19	17
Citius TransNet Investment Trust	10	3	0	7	0	2	5	3
Raajmarg Infra Investment Trust	5	0	0	5	0	0	5	0
Indus Infra Trust (formerly Bharat Highways InvIT)	13	0	13	0	0	0	13	0
Roadstar Infra Investment Trust	6	2	0	4	0	0	4	2
Capital Infra Trust (formerly National Infrastructure Trust)	12	0	12	0	0	0	12	0
Nxt-Infra Trust	6	0	5	1	0	0	5	1
Anantam Highways Trust	7	0	7	0	0	0	7	0

1. *Total assets represented in the table are as of March 31, 2026. Subsequent columns present the split of these assets by asset type and by concessioning authority.*

Source: Valuation Reports and Annual Reports of respective InvITs

Percentage Split of Enterprise Value (EV) and Revenue by Asset Type (Annuity, HAM, Toll, Toll+Annuity) for Road InvITs

InvIT Name	EV Mix by Asset Type[1] (EV as on 31st March 2026)				Revenue Mix by Asset Type[2] (Revenue as on 31st March 2025)			
	Annuity	HAM	Toll	Toll + Annuity	Annuity	HAM	Toll	Toll + Annuity
Cube Highways Trust	9%	6%	85%	-	3%	15%	82%	-
IRB Infrastructure Trust	-	-	100%	-	-	-	100%	-
National Highways Infra Trust	-	-	100%	-	-	-	100%	-
Vertis Infrastructure Trust (formerly Highways Infrastructure Trust)	-	29%	71%	-	5%	10%	85%	-
Interise Trust (formerly Indinfravit Trust)	1%	-	99%	-	3%	-	97%	-
IRB InvIT Fund	-	13%	87%	-	-	15%	85%	-
Maple Infrastructure Trust	-	-	100%	-	-	-	100%	-

InvIT Name	EV Mix by Asset Type[1] (EV as on 31st March 2026)				Revenue Mix by Asset Type[2] (Revenue as on 31st March 2025)			
	Annuity	HAM	Toll	Toll + Annuity	Annuity	HAM	Toll	Toll + Annuity
Oriental InfraTrust	17%	3%	80%	-	19%	-	81%	-
Shrem Invit	2%	79%	16%	3%	4%	83%	7%	6%
Citius TransNet Investment Trust[2]	10%	-	90%	-	-	-	-	-
Raajmarg Infra Investment Trust[2]	-	-	100%	-	-	-	-	-
Indus Infra Trust (formerly Bharat Highways InvIT)	-	100%	-	-	-	100%	-	-
Roadstar Infra Investment Trust	1%	-	99%	-	7%	-	93%	-
Capital Infra Trust (formerly National Infrastructure Trust)	-	100%	-	-	-	100%	-	-
Nxt-Infra Trust	-	39%	61%	-	-	67%	33%	-
Anantam Highways Trust[2]	-	100%	-	-	-	-	-	-

1. *The enterprise value (EV) considered is the sum of enterprise value (EV) for each SPV, not adjusted for cash and cash equivalents, as disclosed in the respective InvITs' annual report and valuation report. The EV value considered is as of March 31, 2026.*
2. *Revenue figures for InvITs have been considered as of March 31, 2025. The revenue split has been derived based on asset-level revenue disclosed in the respective annual reports. However, Citius InvIT, Raajmarg InvIT, and Anantam InvIT were listed after March 2025; therefore, their annual reports for the year ended March 31, 2025 are not available. Accordingly, revenue figures for these InvITs have not been presented.*

Source: Annual Reports and Valuation Reports, Financial Statements, CRISIL Intelligence

Percentage Split of Enterprise Value (EV) and Revenue by Concessionaire Authority (MoRTH, NHAI and State) for Road InvITs

InvIT Name	EV Mix by Concessionaire Authority[1] (EV as on March 31, 2026)			Revenue Mix by Concessionaire Authority[2] (Revenue as on March 31, 2025)		
	MoRTH	NHAI	State	MoRTH	NHAI	State
Cube Highways Trust	-	92%	8%	-	99%	1%
IRB Infrastructure Trust	-	55%	45%	-	69%	31%
National Highways Infra Trust	-	100%	-	-	100%	-
Vertis Infrastructure Trust (formerly Highways Infrastructure Trust)	2%	82%	16%	4%	73%	23%
Interise Trust (formerly Indinfravit Trust)	-	100%	-	-	100%	-
IRB InvIT Fund	-	100%	-	-	100%	-
Maple Infrastructure Trust	-	100%	-	-	100%	-
Oriental InfraTrust	-	100%	-	-	100%	-
Shrem Invit	2%	92%	6%	3%	87%	10%
Citius TransNet Investment Trust[2]	5%	48%	46%	-	-	-
Raajmarg Infra Investment Trust[2]	-	100%	-	-	-	-
Indus Infra Trust (formerly Bharat Highways InvIT)	-	100%	-	-	100%	-
Roadstar Infra Investment Trust	-	86%	14%	-	90%	10%
Capital Infra Trust (formerly National Infrastructure Trust)	-	100%	-	-	100%	-
Nxt-Infra Trust	-	91%	9%	-	78%	22%
Anantam Highways Trust[2]	-	100%	-	-	-	-

1. *The enterprise value (EV) considered is the sum of enterprise value (EV) for each SPV, not adjusted for cash and cash equivalents, as disclosed in the respective InvITs' annual report and valuation report. The EV value considered is as of March 31, 2026.*
2. *Revenue figures for InvITs have been considered as of March 31, 2025. The revenue split has been derived based on asset-level revenue disclosed in the respective annual reports. However, Citius InvIT, Raajmarg InvIT, and Anantam InvIT were listed after March 2025; therefore, their annual reports for the year ended March 31, 2025 are not available. Accordingly, revenue figures for these InvITs have not been presented.*

Source: Annual Reports and Valuation Reports, Financial Statements, CRISIL Intelligence

Road InvIT Returns and Latest NAV Profile

InvIT Name	Listing date	Total XIRR Return since listing[1]	Distribution XIRR[2]	Capital Appreciation[3]	NAV per unit[4]
Cube Highways Trust	19-Apr-23	24%	11%	13%	145.77
IRB Infrastructure Trust	3-Apr-23	18%	1%	17%	319.73
National Highways Infra Trust	10-Nov-21	16%	7%	9%	150.47
Vertis Infrastructure Trust (formerly Highways Infrastructure Trust)	25-Aug-22	18%	16%	2%	106.80
Interise Trust (formerly Indinfravit Trust)	9-May-18	10%	9%	2%	117.50
IRB InvIT Fund	18-May-17	5%	9%	-4%	81.26
Maple Infrastructure Trust	21-Jun-23	18%	2%	16%	152.80
Oriental InfraTrust	27-Jun-19	11%	10%	1%	111.24
Shrem Invit	22-Sep-21	15%	17%	-2%	88.12

InvIT Name	Listing date	Total XIRR Return since listing[1]	Distribution XIRR[2]	Capital Appreciation[3]	NAV per unit[4]
Indus Infra Trust (formerly Bharat Highways InvIT)	12-Mar-24	24%	12%	12%	116.81
Roadstar Infra Investment Trust	11-Mar-25	1%	9%	-8%	92.09
Capital Infra Trust (formerly National Infrastructure Trust)	17-Jan-25	3%	35%	-31%	74.72
Nxt-Infra Trust	2-Jul-24	17%	19%	-2%	97.13

Note: The returns are calculated for InvITs which have completed at least one year since listing as on March 31, 2026.

1. Returns are calculated as on March 31, 2026. For calculating the Total Return, listing date and listing price of InvIT are considered as the initial value, all distributions as per record date for interim cash flows, and NAV as on 31st March 2026 has been considered as terminal value in case of privately listed InvITs.

In the case of public listed InvITs,the all values remain the same. Only the March 31, 2026 traded price has been considered for the terminal value.

2. For calculating the distribution XIRR, terminal value as on March 31, 2026 is kept same as the initial listing price, while the other values remain the same.

3. The difference between the Total XIRR return since listing and the distribution XIRR is attributed to the capital appreciation.

4. The NAV values are as of March 31, 2026.

Please note that the reported metrics may differ from InvITs' disclosures, due to variations in methodology and calculation procedures.

Source: Annual Report, Financial Statements, Official website of InvITs, Stock exchange, CRISIL Intelligence

Road InvIT Net Debt Ratios and Latest Ratings Snapshot: Net Debt/EBITDA, Net Borrowings Ratio, Latest Credit Rating

InvIT Name	Net Debt/EBITDA[1] (no of times)	Net Borrowings Ratio[2] (percentage)	Date of Latest Credit Rating	Latest Credit Rating
Cube Highways Trust	5.58	46.82%	20-Mar-2026	Crisil AAA
IRB Infrastructure Trust	5.52	44.67%	25-May-2026	Crisil AAA
National Highways Infra Trust	7.04	42.89%	29-Apr-2026	IND AAA
Vertis Infrastructure Trust (formerly Highways Infrastructure Trust)	3.45	36.78%	21-May-2026	Crisil AAA
Interise Trust (formerly Indinfravit Trust)	3.53	41.89%	28-May-2026	ICRA AAA
IRB InvIT Fund	6.19	43.14%	17-Apr-2026	IND AAA
Maple Infrastructure Trust	6.33	43.20%	26-Feb-2026	ICRA AAA
Oriental InfraTrust	2.85	46.01%	29-Apr-2026	IND AAA
Shrem Invit	4.36	55.92%	27-Mar-2026	IND AAA
Citius TransNet Investment Trust[3]	-	-	17-Apr-2026	Provisional IND AAA
Raajmarg Infra Investment Trust	1,469.53	38.04%	22-May-2026	IND AAA
Indus Infra Trust (formerly Bharat Highways InvIT)	6.95	43.46%	26-May-2026	IND AAA
Roadstar Infra Investment Trust	2.99	36.00%	25-Mar-2026	ACUITE AA
Capital Infra Trust (formerly National Infrastructure Trust)	6.33	40.86%	13-Apr-2026	Crisil AAA
Nxt-Infra Trust	5.61	49.85%	27-Nov-2025	Crisil AAA
Anantam Highways Trust	6.10	42.44%	29-May-2026	Provisional IND AAA/ IND AAA Provisional ICRA AAA/ ICRA AAA

1: The Net Debt numbers are as of March 31, 2026. Net debt is calculated as (Borrowings + Deferred Payments) minus (cash and cash equivalents), using the net borrowings' ratio disclosed in the Financial Year 2026 consolidated financial statements. EBITDA has been computed as Profit before taxes + Depreciation + Amortisation + Impairment + Finance cost, based on the Financial Year 2026 Consolidated Financial Statements.

2: The net borrowings ratio is taken from the respective InvITs "Statement of Net Borrowings Ratio" as required by SEBI Master Circular no SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025. The net borrowings ratio is as of March 31, 2026.

3. For Citius InvIT, the net borrowings ratio was not disclosed in its consolidated financial statements, hence net debt could not be calculated.

Please note that the reported metrics may differ from InvITs' disclosures, due to variations in methodology and calculation procedures.

Source: Consolidated Financial Statements, Outcome of Board Meetings, CRISIL Intelligence

Road InvIT EV Growth

InvIT Name	EV Date as per Offer Document[1]	EV[2] (₹ Crore as per offer document date)	EV[3] (₹ Crore as of March 2026)	Absolute Change in EV (in percentage)
Cube Highways Trust	31-Oct-22	26,912.00	35,937.30	34%
IRB Infrastructure Trust	31-Mar-23	28,733.90	70,044.00	144%
National Highways Infra Trust	30-Mar-21	7,362.40	56,988.00	674%
Vertis Infrastructure Trust (formerly Highways Infrastructure Trust)	31-Mar-22	5,202.20	26,351.50	407%
Interise Trust (formerly Indinfravit Trust)	31-Dec-17	5,303.07	19,594.11	269%
IRB InvIT Fund	31-Mar-17	7,050.77	18,255.00	159%
Maple Infrastructure Trust	31-Dec-21	2,263.29	14,421.37	537%
Oriental InfraTrust	31-Dec-18	11,638.00	12,200.30	5%

InvIT Name	EV Date as per Offer Document[1]	EV[2] (₹ Crore as per offer document date)	EV[3] (₹ Crore as of March 2026)	Absolute Change in EV (in percentage)
Shrem Invit	31-Mar-21	6,488.90	11,554.20	78%
Indus Infra Trust (formerly Bharat Highways InvIT)	30-Sep-23	5,727.30	8,917.80	56%
Roadstar Infra Investment Trust	30-Sep-24	7,178.93	7,027.00	-2%
Capital Infra Trust (formerly National Infrastructure Trust)	30-Sep-24	4,514.30	6,223.60	38%
Nxt-Infra Trust	31-Dec-23	6,467.00	5,572.40	-14%

Note: This table includes only those InvITs that have completed at least one year since listing as on March 31, 2026.

1. *The Enterprise Value (EV) date is as per offer documents available on the SEBI website. For IRB Infrastructure Trust, the EV for March 31, 2023 is considered from the March 2023 valuation report.*
2. *The EV numbers considered is the sum of enterprise value (EV) for each SPV, not adjusted for cash and cash equivalents, as disclosed in the respective InvITs' disclosures. The EV considered here is as per date mentioned in the "EV Date as per offer document" column.*
3. *The EV numbers considered is the sum of enterprise value (EV) for each SPV, not adjusted for cash and cash equivalents, as disclosed in the respective InvITs' disclosures. The EV considered here is as of March 31, 2026.*
4. *This number represents the percentage change of EV from Offer document date till March 31, 2026.*

Source: SEBI Disclosures, Annual Report, Valuation Report

Road InvIT NAV Growth

InvIT Name	NAV Date as per Offer Document[1]	NAV per unit[2] (as per offer document)	NAV per unit[3] (as on March 31, 2026)	NAV CAGR[4]
Cube Highways Trust	30-Sep-2023	115.51	145.77	10%
IRB Infrastructure Trust	31-Mar-2023	207.83	319.73	15%
National Highways Infra Trust	31-Mar-2021	101.00	150.47	8%
Vertis Infrastructure Trust (formerly Highways Infrastructure Trust)	31-Mar-2022	94.67	106.80	3%
Interise Trust (formerly Indinfravit Trust)	31-Dec-2017	69.63	117.50	7%
IRB InvIT Fund	30-Sep-2017	124.63	81.26	-5%
Maple Infrastructure Trust	31-Dec-2021	37.53	152.80	39%
Oriental InfraTrust	31-Dec-2018	49.61	111.24	12%
Shrem Invit	31-Mar-2021	100.00	88.12	-3%
Indus Infra Trust (formerly Bharat Highways InvIT)	31-Mar-2024	114.12	116.81	1%
Roadstar Infra Investment Trust	30-Sep-2024	96.55	92.09	-3%
Capital Infra Trust (formerly National Infrastructure Trust)	30-Sep-2024	91.77	74.72	-13%
Nxt-Infra Trust	26-Jun-2024	128.95	97.13	-15%

Note: This table includes only those InvITs that have completed at least one year since listing as on March 31, 2026

1. *The Net Asset Value (NAV) per unit date is as per the offer documents available on the SEBI website. The NAV per unit disclosure is taken from the Dilution section in Offer Document. For IRB Infrastructure Trust and Indus Infra the NAV for the mentioned date has been taken from the respective annual reports. For IRB InvIT, the NAV is taken from September 30, 2017, report disclosure on the InvIT website. For cube highways, the NAV is taken from half yearly report as on September 30, 2023.*
2. *The NAV is as per the mentioned offer document dates as detailed in previous note. The NAV per unit fair value for Cube highways is taken as Ordinary units + reclassified units as disclosed in the half yearly report.*
3. *The NAV values are as on March 31, 2026.*
4. *The NAV Growth is calculated as the CAGR from the offer document date till March 31, 2026.*

Source: SEBI Disclosures, Annual Report, Half yearly Report, Valuation Report

Threats and Challenges

The following section frames out some of the threats and challenges in the industry.

Market and Economic Challenges

- **Economic Slowdowns:** A slowdown in the broader economy can lead to a reduction in government spending on infrastructure projects, fewer new tenders being floated, and a general tightening of credit, all of which adversely impact the civil construction sector.

- **Commodity Price Volatility:** The civil construction sector is highly dependent on key raw materials like steel, cement, bitumen, and aggregates. Fluctuations in the prices of these commodities can significantly impact a company's project costs and profitability.

- **Intense Competition and Bid Price Pressure:** The Indian Road construction sector is highly competitive, with many domestic and international players vying for projects. This leads to aggressive bidding and can compress profit margins. Companies might be forced to bid for projects at lower-than-ideal margins just to secure a healthy order book and maintain market share.

- **Funding and Liquidity Issues:**
    - Delayed Fund Disbursement: In case of any delays in payment from government agencies and state road development corporations, it can strain a company's working capital and cash flow. This often leads to increased borrowing and higher interest costs.
    - Capital-Intensive Nature: Road projects require significant initial capital for equipment, manpower, and materials. Companies must have access to adequate funding, both from banks and from their own cash flows, to sustain operations.

Operational and Execution Challenges

- **Land Acquisition Delays:** This remains one of the most significant and persistent challenges. The process of acquiring land for new road alignments is often slow, complex, and can be mired in legal disputes and community resistance. Delays in land acquisition directly affect project timelines, leading to cost overruns and financial penalties.
- **Regulatory and Environmental Hurdles:** Obtaining various statutory clearances, including environmental, forest, and wildlife approvals, can be a time-consuming and bureaucratic process. This can cause significant project delays.
- **Inconsistent Policies:** Changes in government policies, tax regimes (e.g., GST), and regulatory frameworks can create uncertainty and impact project economics.
- **Shortage of Skilled Labor and Manpower Management:** The road construction sector heavily relies on a large workforce, including skilled engineers, technicians, and migrant laborers. Challenges include a shortage of skilled personnel, high labor turnover, and managing a dispersed workforce across multiple project sites.
- **Project Management and Execution Risks:**
    - Lack of Timely Approvals: Projects often get delayed due to slow approval processes for design changes, material specifications, or other on-site issues.
    - Sub-Contractor and Supply Chain Risks: Over-reliance on sub-contractors can introduce risks related to quality control, project timelines, and contractual disputes. Disruptions in the supply chain for key materials can also lead to delays.
- **Diversion Risks from Competing Infrastructure:** Newly developed expressways may offer superior design standards, higher speeds, and reduced travel time, making them more competitive for both passenger and freight traffic. Diversion risks are particularly relevant for stretches where alternative routes offer a meaningful time-cost advantage, or where competing infrastructure overlaps with existing toll corridors. This could lead to traffic redistribution and moderation in toll revenue growth, especially for projects reliant on long-haul commercial traffic. However, the extent of impact is expected to be corridor-specific, with commuter-heavy and last-mile connectivity routes likely to remain relatively resilient. Overall, while network expansion enhances system efficiency at a macro level, it may introduce localized competitive pressures for certain toll assets.

Technology and Innovation Threats

- **Technology Disruption and Digital Transformation:** The roads and infrastructure sector is undergoing a rapid shift towards advanced technologies, including automation, robotics, drone-based monitoring, and data-driven project management. Increasing adoption of smart road solutions, IoT-enabled sensors, and digital platforms is enhancing operational efficiency, safety, and real-time decision-making. At the same time, growing emphasis on sustainability and green construction practices is reshaping project requirements, with regulatory and client expectations favouring environmentally responsible approaches. Companies that are unable to adapt to this evolving technological and sustainability landscape risk losing competitiveness and facing constraints in project participation.
- **Climate Risks:** The roads sector is exposed to climate-related risks, which could have both direct and indirect implications on highway performance. Extreme weather events such as cyclones, floods, and excessive rainfall can disrupt traffic flows, damage road infrastructure, and increase maintenance requirements, thereby impacting operational efficiency and lifecycle costs. While these risks are gradual and evolving in nature, they introduce a layer of uncertainty in long-term traffic projections and revenue assumptions, necessitating adaptive policy frameworks and resilient infrastructure planning.

Some of the information in this section, including information with respect to our plans, strengths, and strategies, contains forward-looking statements that involve risks and uncertainties. You should read the section entitled "Forward Looking Statements" on page 30 for a discussion on the risks and uncertainties related to those statements and also the sections entitled "Risk Factors", "Summary Audited Consolidated Financial Information of the Trust" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" on pages 80, 47, and 356, respectively, for a discussion of certain factors that may affect our business, financial condition or results of operations. Our actual results may differ materially from those expressed in or implied by these forward-looking statements.

Unless otherwise stated, references in this section to "we", "our" or "us" are to the Cube Highways Trust, together with the Portfolio Assets. The Trust acquired 51% of the shareholding in Borgaon Watambare Highways Private Limited, Mangalwedha Solapur Highways Private Limited, Mangloor Highways Private Limited, Srirangam Infra Private Limited (formerly known as KNR Srirangam Infra Private Limited), Shankarampet Projects Private Limited (formerly known as KNR Shankarampet Projects Private Limited) and Tirumala Highways Private Limited (formerly known as KNR Tirumala Infra Private Limited) (collectively, the "HAM SPVs") on June 4, 2024, and acquired the remaining 49% shareholding in the HAM SPVs on December 3, 2024. Further, the Trust acquired 100% of the shareholding in N.A.M. Expressway Private Limited ("NAMEPL") on February 12, 2025. Thereafter, the Trust acquired 100% of the shareholding in Quazigund Expressway Private Limited ("QEPL") and Jammu Udhampur Highway Private Limited ("JUHPL" and together with QEPL, the "NIIF SPVs") on June 12, 2025. Accordingly, the HAM SPVs, NAMEPL and the NIIF SPVs have been accounted for as subsidiaries in our Audited Consolidated Financial Statements with effect from June 4, 2024, February 12, 2025 and June 12, 2025, respectively. Disclosures in relation to our Portfolio Assets across this Final Offer Document include data in relation to Western UP Tollway Private Limited for the Financial Years 2026, 2025 and 2024. However, the concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. Although WUPTPL contributed to our consolidated revenue from operations during the last three Financial Years, we do not expect such contribution to continue going forward. The Investment Manager shall fulfil its obligations in respect of WUPTPL in accordance with the InvIT Regulations and applicable circulars issued by the SEBI.

Unless otherwise stated, the financial information included herein is based on our Audited Consolidated Financial Statements included in this Final Offer Document. We have included certain non-Ind AS financial measures and other performance indicators relating to our financial and operational performance in this Final Offer Document, each of which is a supplemental measure of our performance and liquidity and not required by, or presented in accordance with, Ind AS or IFRS. Furthermore, such measures and indicators are not defined under Ind AS, IFRS, or other accounting standards and therefore should not be viewed as substitutes for performance, liquidity, or profitability measures under those standards. In addition, such measures and indicators are not standardised, and a direct comparison between companies may not be possible. Other companies may calculate these measures and indicators differently from us, limiting their usefulness as a comparative measure. Although such measures and indicators are not performance measures calculated in accordance with applicable accounting standards, our management believes they are useful to investors in evaluating our operating performance. Investors are accordingly cautioned against placing undue reliance on such information in making an investment decision and must evaluate such information in the context of the Audited Consolidated Financial Statements.

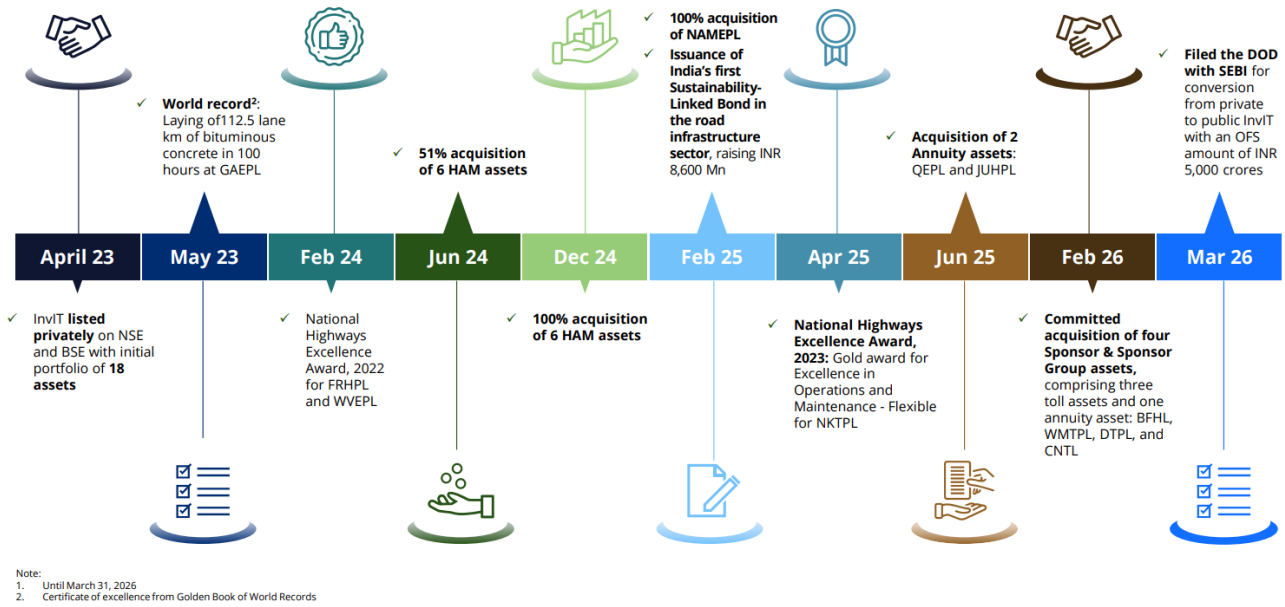
Industry, macro-economic and market data, and all industry-related statements in this section have been extracted or derived from the report titled "Assessment of the Indian Road Sector" prepared and released by the Industry Expert, which has been commissioned and paid for by the Investment Manager on behalf of the Trust (the "Industry Report"). Investors must rely on their independent examination of the Trust, and should not place undue reliance on, or base their investment decision solely on, this information. Also, please see the section entitled "Risk Factors – We have relied on data derived from third-party reports, which are based on certain estimates and assumptions and are subject to the limitations set out therein" on page 106 for details of risks in relation to commissioned reports.

Overview

We are an Indian infrastructure investment trust sponsored by Cube Highways and Infrastructure V Pte. Ltd. and established with the objective of acquiring and operating road and other infrastructure assets in India. We are registered with SEBI under the InvIT Regulations, and our units have been listed on the Stock Exchanges since April 19, 2023.

As of March 31, 2026, through our Portfolio Assets, we operate 27 road assets aggregating to 8,754 lane kilometers and 2,005 kilometers in distance across 12 states and one union territory in India. As of such date, our Portfolio Assets had a weighted average residual concession period of 18.0 years (weighted on the basis of pre-major maintenance EBITDA ("**pre-MM EBITDA**")) and operating history of 9.2 years, and we maintained Enterprise Value/AUM aggregating to ₹368,417.57 million, exhibiting an AUM CAGR of 19.47% since March 31, 2024. This growth has corresponded with a 45.77% increase in our NAV per Unit from listing in April 2023 through March 31, 2026, at a CAGR of 13.62%. We operate our assets under different types of concessions, with a balanced mix of toll and annuity income. As of March 31, 2026, among our Portfolio Assets, our Toll AUM to Annuity AUM ratio was 85:15. We currently operate 26 road assets, upon the conclusion of the concession period of the WUPTPL Project. For further information, see "*—Recent Developments*" on page 269.

Set out below is a brief timeline of our progress since listing until March 31, 2026:



Note:
1. Until March 31, 2026
2. Certificate of excellence from Golden Book of World Records

We are currently sponsored by Cube Highways and Infrastructure V Pte. Ltd. ("**CH-V**", or our "**Sponsor**") but were initially sponsored by Cube Highways and Infrastructure Pte. Ltd. and Cube Highways and Infrastructure III Pte. Ltd.. Our Sponsor invests in road and highway projects, as well as other select infrastructure sectors in India, focusing on acquiring mature, cash-generating highway assets, stabilizing and derisking them, and operating them while focusing on delivery of returns to our investors. Additionally, CH-V is an active growth vehicle of the Cube Group, with a strong track record of acquiring, operating, and integrating complex and diverse road assets across India. Our Sponsor and Sponsor Group together hold a portfolio of seven operational road assets spanning 2,169.8 lane kilometers, as of March 31, 2026. Our Sponsor and Sponsor Group are a part of the Cube Group, which is an institutionally-owned road infrastructure platform backed by a diversified investor base, including I Squared Capital (through ISQ Fund III Asia Infrastructure Holdings Pte. Ltd), Platinum Rock B 2014 RSC Limited (as trustee of the Platinum Stone A 2014 Trust, a wholly owned subsidiary of the Abu Dhabi Investment Authority) ("**Platinum Rock**"), Varese IRR LP ("**BCI**") and Mubadala Investment Company PJSC ("**MIC**") (through Seventy Second Investment Company LLC). We have raised ₹134,406.97 million in unit capital (excluding issue expenses of ₹10.94 million) since our settlement, and our Unitholders include several marquee investors, including BCI (through its affiliates) and MIC (through wholly owned subsidiaries) and a variety of domestic mutual funds and insurance companies, among others.

Prudent Debt Management

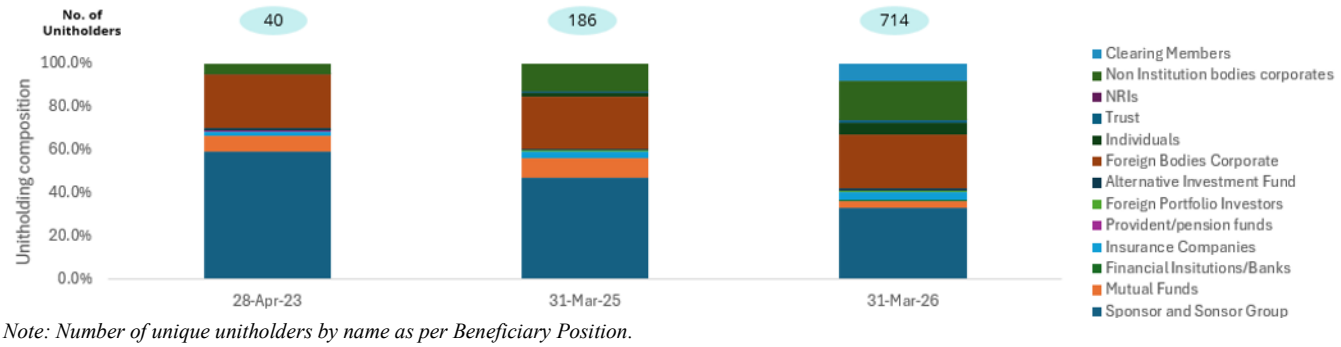
Our debt facilities have been rated (i) AAA/Stable by India Ratings & Research Private Limited on February 10, 2026 for term loan and bank guarantee; (ii) AAA/Stable by India Ratings & Research Private Limited on August 14, 2025 for non-convertible debentures and A1+ for commercial paper; (iii) AAA/Stable by ICRA on September 1, 2025 for term loan and bank guarantee; (iv) AAA/Stable by ICRA on September 1, 2025 for, non-convertible debentures; (v) AAA/Stable by CRISIL Ratings Limited on March 20, 2026 and February 10, 2026 for long term rating; and (vi) A1+ by CRISIL Ratings Limited on April 30, 2026, for short term rating. The table below sets out our key financing and borrowing information, as of March 31, 2026:

Particulars	As of March 31, 2026
Net borrowing ratio (%)	46.82%
Borrowings (₹ *in million*)*	177,557.72
Additional debt headroom (as a % of AUM)	23.18%
Weighted average cost of borrowings (%)	7.53%
Fixed-rate borrowings (%)	25.23%

* *Borrowings are on an undiscounted basis and include accrued interest on borrowings.*

Unitholder Base

Since our listing as a private InvIT in April 2023, our Unitholder base has expanded significantly, from 40 Unitholders as of April 28, 2023, to over 700 Unitholders as of March 31, 2026, reflecting increased investor participation from non-institutional investors alongside traditional institutional categories, including corporates, mutual funds, financial institutions and insurance companies. The chart below shows the growth of our Unitholder base from our listing till March 31, 2026:

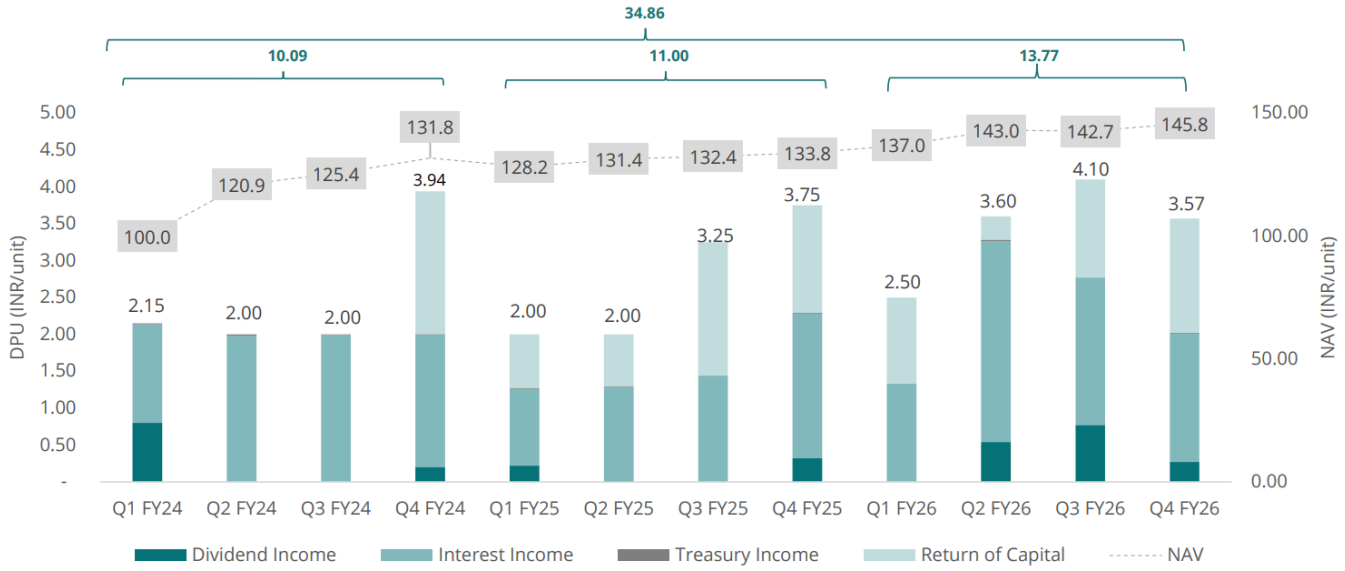


Note: Number of unique unitholders by name as per Beneficiary Position.

Further, as of June 30, 2026, our Unitholder base stood at 1,025 Unitholders.

Consistent Distributions

We have had a consistent track record of quarterly distributions since our listing. Each financial year, we have distributed, at least quarterly, a minimum of 90% of the net distributable cash flows of the Trust available for distribution to our Unitholders, as required under the InvIT Regulations. Our consolidated net distributable cash flows during the Financial Year 2026 aggregated to ₹16,256.52 million. Our cumulative distributions since listing have totalled ₹46,206.35 million (representing a cumulative distribution per unit ("**DPU**") of ₹34.86), as of March 31, 2026. The chart below provides a breakdown of our cumulative distributions per unit since listing until the Financial Year 2026:



Since listing until March 31, 2026, we have delivered an average annual DPU yield of 9.8% (computed as the average of DPU yield for the Financial Years 2024, 2025 and 2026, with DPU yield being computed as DPU divided by the average traded price of the Units on the BSE), with a total XIRR of 23.63%, according to the Industry Report. For further details, please see the section entitled "*Distribution*" on page 352.

Sustainability

We have also integrated a comprehensive environmental, social and governance ("**ESG**") framework into our business and financing strategy. Our sustainability priorities are embedded across our asset operations. In February 2025, we issued India's first sustainability-linked bond in the road infrastructure sector, with coupon performance linked to defined ESG targets for greenhouse gas emission intensity, circularity in materials and gender diversity. We have adopted sustainable construction and maintenance practices, including the use of reclaimed asphalt pavement, polymer-modified bitumen and other low-carbon materials, together with rainwater harvesting, afforestation initiatives such as the Miyawaki plantation method, energy efficient procurement, efficient lighting solutions, solar panel installations, HVAC replacements, electric vehicle adoptions and are further exploring alternative fuels.

Financial Information

The table below sets out certain of our financial information for the Financial Years indicated:

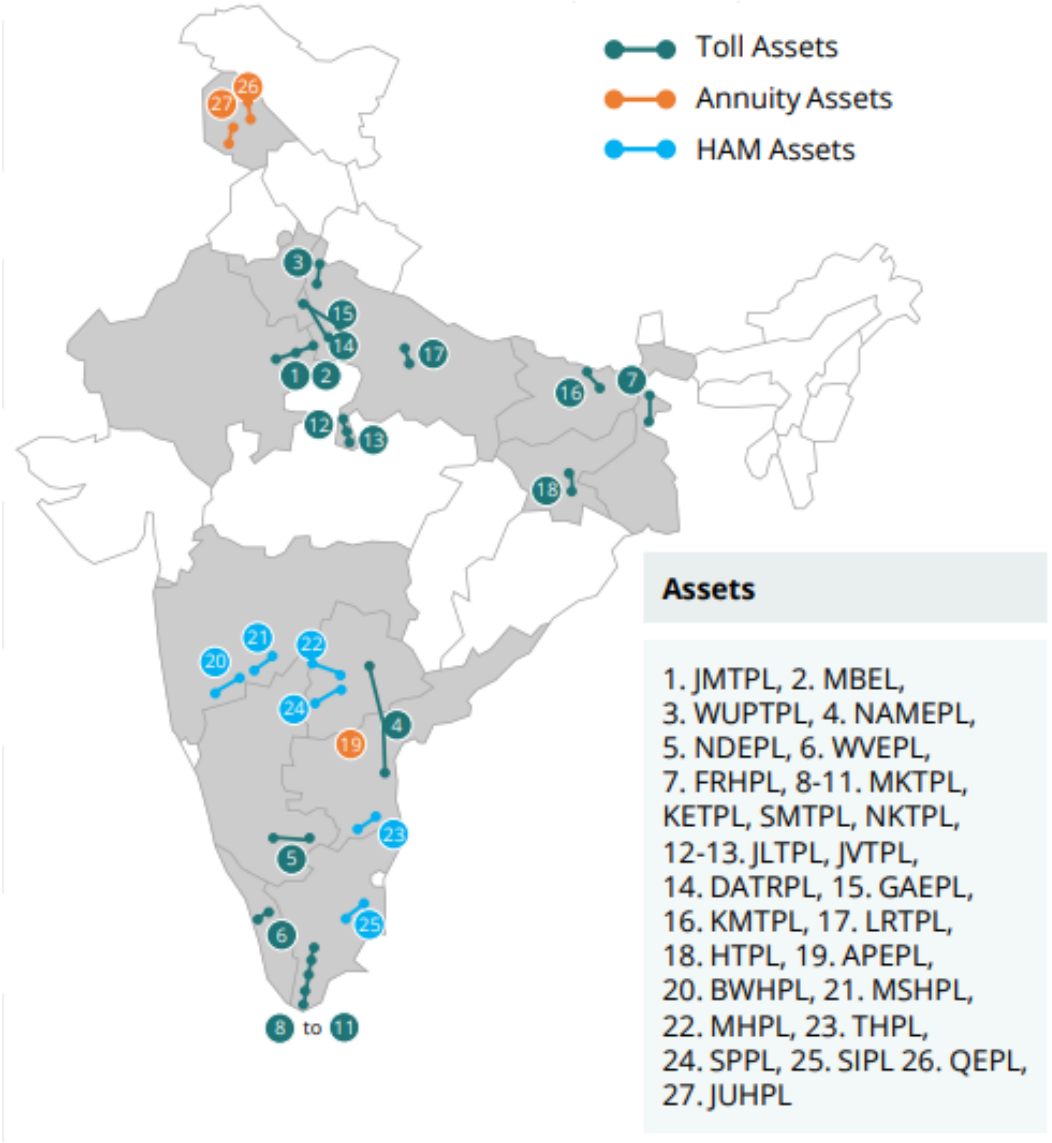
Particulars	For the Financial Year		
	2026	2025	2024
Enterprise Value/AUM *(₹ in million)*	368,417.57	322,657.15	258,106.00
Revenue from operations *(₹ in million)*	42,388.85	33,071.44	29,161.37
Total income *(₹ in million)*	43,590.26	34,531.52	30,741.05

Particulars	For the Financial Year		
	2026	2025	2024
EBITDA *(₹ in million)*	32,345.44	23,797.00	13,688.56
Adjusted EBITDA* *(₹ in million)*	30,924.44	23,797.00	19,560.43
Net distributable cash flows *(₹ in million)*	16,256.52	10,823.81	10,761.77
Net Asset Value per Unit *(₹)*^	145.77	132.86	126.64
DPU *(₹)*	13.77	11.00	10.09
Net Debt to AUM ratio *(%)*	46.82%	44.65%	33.65%
Share of Fixed rate borrowings *(%)*	25.23%	21.19%	11.16%

* *Adjusted EBITDA is computed as follows: Profit/(loss) before tax plus the sum of impairment charge/(reversal) of intangible assets, depreciation and amortisation expense and finance costs.*

^ *Net Asset Value per Unit considers only ordinary units and estimated reclassification of subordinate units to ordinary units for the Financial Years 2025 and 2024.*

The map below sets forth the location of our Portfolio Assets as of March 31, 2026:



Note: The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI.

Our Existing Portfolio

Our Portfolio Assets have a weighted average residual concession life (weighted on the basis of pre-major maintenance EBITDA ("**pre-MM EBITDA**")) of 18.0 years as of March 31, 2026 and a weighted average operating history (weighted on the basis of pre-MM EBITDA, assuming commencement of operations ("**COD**")/provisional commencement of operations ("**PCOD**") as the beginning date) of 9.2 years as of March 31, 2026. The Enterprise Value/AUM, as of March 31, 2026, was ₹287.20 billion for the 18 assets acquired at the time of our listing, ₹49.73 billion for the six HAM assets and a BOT asset acquired between June 2024 and February 2025, and ₹31.49 billion for the two BOT annuity assets acquired during June 2025. The aggregate Enterprise Value/AUM of our Portfolio Assets as of March 31, 2026 was ₹368,417.57 million.

The table below sets forth an overview of the Portfolio Assets as of March 31, 2026:

Project SPV	Type of concession	Concessioning authority	Project length and number of lanes	State/Union Territory	Residual Concession Life (in years, as of March 31, 2026)[3]	Revenue from operations for the Financial Year 2026	Enterprise Value/AUM as of March 31, 2026
Andhra Pradesh Expressway Private Limited ("**APEPL**")[2]	BOT (Annuity)	NHAI	74.6 kms 4 lanes	Telangana and Andhra Pradesh	0.50 years	₹386.29 million	₹815.59 million
DA Toll Road Private Limited ("**DATRPL**")	BOT	NHAI	179.5 kms 6 lanes	Uttar Pradesh, Haryana and Delhi	17.87 years	₹6,579.04 million	₹77,786.20 million
Farakka – Raiganj Highways Private Limited ("**FRHPL**")[1]	DBFOT	NHAI	100.1 kms 4 lanes	West Bengal	15.09 years	₹2,716.24 million	₹26,470.79 million
Ghaziabad Aligarh Expressway Private Limited ("**GAEPL**")	BOT	NHAI	126.3 kms 6 lanes	Uttar Pradesh	13.22 years	₹4,521.90 million	₹38,838.97 million
Hazaribagh Tollway Private Limited ("**HTPL**")	TOT	NHAI	73.5 kms 4 lanes	Jharkhand	24.55 years	₹1,504.47 million	₹20,155.92 million
Jaipur Mahua Tollway Private Limited ("**JMTPL**")	BOT	NHAI	109.1 kms 4 lanes	Rajasthan	5.19 years	₹2,428.28 million	₹7,340.97 million
Jhansi – Lalitpur Tollway Private Limited ("**JLTPL**")	TOT	NHAI	49.7 kms 4 lanes	Uttar Pradesh	19.55 years	₹1,089.33 million	₹12,951.00 million
Jhansi – Vigakhet Tollway Private Limited ("**JVTPL**")	TOT	NHAI	49.3 kms 4 lanes	Uttar Pradesh	19.55 years	₹758.47 million	₹8,014.12 million
Kanyakumari – Etturavattam Tollway Private Limited ("**KETPL**")	TOT	NHAI	64.2 kms 4 lanes	Tamil Nadu	24.55 years	₹876.37 million	₹10,784.58 million
Kotwa – Muzaffarpur Tollway Private Limited ("**KMTPL**")	TOT	NHAI	80.0 kms 4 lanes	Bihar	19.55 years	₹1,248.92 million	₹13,991.52 million
Lucknow – Raebareli Tollway Private Limited ("**LRTPL**")	TOT	NHAI	70.0 kms 4 lanes	Uttar Pradesh	24.55 years	₹709.12 million	₹8,546.26 million
Madurai – Kanyakumari Tollway Private Limited ("**MKTPL**")	TOT	NHAI	52.3 kms 4 lanes	Tamil Nadu	19.55 years	₹1,735.76 million	₹16,608.25 million
Mahua Bharatpur Expressways Limited ("**MBEL**")	BOT	NHAI	57.3 kms 4 lanes	Rajasthan	5.15 years	₹1,218.08 million	₹4,118.85 million
Nanguneri – Kanyakumari Tollway Private Limited ("**NKTPL**")	TOT	NHAI	63.5 kms 4 lanes	Tamil Nadu	24.55 years	₹943.61 million	₹14,254.81 million
Nelamangala Devihalli Expressway Private Limited ("**NDEPL**")	BOT	NHAI	80.3 kms 4 lanes	Karnataka	6.83 years	₹1,241.59 million	₹4,667.25 million
Salaipudhur – Madurai Tollway Private Limited ("**SMTPL**")	TOT	NHAI	63.5 kms 4 lanes	Tamil Nadu	24.55 years	₹943.32 million	₹11,778.47 million
Walayar Vadakkencherry Expressways Private Limited ("**WVEPL**")	DBFOT (Toll)	NHAI	53.5 kms 4 lanes	Kerala	11.50 years	₹1,163.09 million	₹9,100.82 million
Western UP Tollway Private Limited ("**WUPTPL**")[4]	BOT	NHAI	78.1 kms 4 lanes	Uttar Pradesh	0.24 years	₹1,812.03 million	₹977.25 million

Project SPV	Type of concession	Concessioning authority	Project length and number of lanes	State/Union Territory	Residual Concession Life (in years, as of March 31, 2026)[3]	Revenue from operations for the Financial Year 2026	Enterprise Value/AUM as of March 31, 2026
Borgaon Watambare Highways Private Limited ("**BWHPL**") [2]	HAM (Annuity)	NHAI	52.0 kms 4 lanes	Maharashtra	10.48 years	₹522.99 million	₹3,216.01 million
Mangalwedha Solapur Highways Private Limited ("**MSHPL**") [2]	HAM (Annuity)	NHAI	55.9 kms 4 lanes	Maharashtra	10.70 years	₹561.83 million	₹3,733.22 million
Mangloor Highways Private Limited ("**MHPL**") [2]	HAM (Annuity)	NHAI	49.0 kms 4 lanes	Telangana	10.71 years	₹350.34 million	₹2,746.61 million
Tirumala Highways Private Limited ("**THPL**") [2]	HAM (Annuity)	NHAI	61.1 kms 6 lanes	Andhra Pradesh	10.11 years	₹512.29 million	₹4,700.95 million
Srirangam Infra Private Limited ("**SIPL**") [2]	HAM (Annuity)	NHAI	38.7 kms 4 lanes	Tamil Nadu	10.16 years	₹604.60 million	₹3,465.57 million
Shankarampet Projects Private Limited ("**SPPL**") [2]	HAM (Annuity)	NHAI	46.8 kms 4 lanes	Telangana	10.51 years	₹577.31 million	₹4,196.88 million
N.A.M. Expressway Private Limited ("**NAMEPL**")	DBFOT (Toll)	Government of Andhra Pradesh and Telangana	212.9 kms 4 lanes	Andhra Pradesh and Telangana	13.66 years	₹3,467.42 million	₹27,665.92 million
Quazigund Expressway Private Limited ("**QEPL**") [2]	DBFOT (Annuity)	NHAI	16.0 kms 4 lanes	Jammu and Kashmir	5.18 years	₹1,849.35 million	₹19,251.23 million
Jammu Udhampur Highway Private Limited ("**JUHPL**") [2]	BOT (Annuity)	NHAI	48.0 kms 4 lanes	Jammu and Kashmir	5.31 years	₹2,066.86 million	₹12,239.56 million

(1) FRHPL toll fee revenue includes 100% share of overloading revenue. However, only 25% of the overloading revenue is credited to the FRHPL account, and the remaining 75% is credited to the erstwhile owner of FRHPL.

(2) APEPL, BWHPL, MSHPL, MHPL, THPL, SIPL, SPPL, QEPL and JUHPL are annuity assets and accordingly, revenue from operations corresponds to annuity income.

(3) Residual Concession Life represents actual residual life for each asset, after accounting for any extensions granted by or which may be granted by the relevant concessioning authority. Our concession agreements allow changes to the assets' concession periods based on actual traffic/revenue relative to target benchmarks, with specific multipliers for adjustments. Our estimations for residual concession life are based on our contracts and independent traffic studies.

(4) The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. Although WUPTPL contributed to our consolidated revenue from operations during the last three Financial Years, we do not expect such contribution to continue going forward.

Committed Assets and Right of First Offer Assets

Cube Highways and Infrastructure II Pte. Ltd. ("**CH-II**") and CH-V, members of the Cube Group, hold 100% of the equity shares of each of Baharampore-Farakka Highways Limited, Devanahalli Tollway Private Limited and Chenani - Nashri Tunnelway Limited, and at least 95% of the equity shares of Western MP Infrastructure & Toll Roads Private Limited, wherein Express Way Developers Limited, a third party, currently holds 5% of the equity shares (collectively, the "**Committed Assets**"). After the completion of the Offer, the Trust, acting through the Investment Manager and Trustee, intends to acquire from CH-II and CH-V, and CH-II and CH-V shall transfer to the Trust, in exchange for Units, the aforementioned equity shareholding of each of the Committed Assets held by both CH-II and CH-V (including at least 95% of the equity shares of WMTPL), together with their nominees. Any potential acquisition of equity shares of the Committed Assets (including at least 95% of the equity shares of WMTPL) is subject to satisfaction of certain conditions precedent specified under the Share Purchase Agreements and the receipt of Unitholders' approval for the specific transaction mechanism, which may be by way of a preferential issue of Units. For further details, please see "*Related Party Transactions - Share Purchase Agreements*" on page 383.

In addition, the Trust (acting through the Investment Manager) has the ability to acquire new projects through (i) a right of first offer ("**ROFO**") with our Sponsor in accordance with the right of first offer agreement dated March 17, 2026, ("**ROFO Agreement**" and such assets, the "**ROFO Assets**"); and (ii) through other acquisitions in terms of the Investment Policy.

For further details, please see the sections entitled "*Corporate Governance*" and "*Related Party Transactions*" on pages 171 and 376, respectively. The aggregate revenue from operations for the ROFO Assets was ₹8,805.92 million for the Financial Year 2025.

The table below sets forth an overview of the Committed Assets:

SPV	Type of concession	Concessioning authority	Project length and number of lanes	State/Union Territory	Residual Concession Life (in years, as of March 31, 2026) [(1)]	Revenue from operations for the Financial Year 2025[(5)]	AUM as of March 31, 2026[(3)]
Baharampore-Farakka Highways Limited ("**BFHL**")	DBFOT	NHAI	100.6 kms 4 lanes	West Bengal	14.84 years[(4)]	₹2,086.94 million	₹20,192.81 million
Western MP Infrastructure & Toll Roads Private Limited ("**WMTPL**")	BOT	Madhya Pradesh Road Development Corporation	124.2 kms 4 lanes	Madhya Pradesh	12.07 years	₹2,361.35 million	₹15,721.65 million
Devanahalli Tollway Private Limited ("**DTPL**")	DBFOT	NHAI	22.1 kms 6 lanes	Karnataka	5.80 years	₹3,237.77 million	₹14,764.77 million
Chenani-Nashri Tunnelway Limited ("**CNTL**")	DBFOT (Annuity)	NHAI	10.8 kms [(2)] 2 lanes	Jammu and Kashmir	5.94 years	₹3,389.02 million	₹22,246.10 million

(1) Residual Concession Life represents actual residual life for each asset, after accounting for any extensions granted by or which may be granted by the relevant concessioning authority. Our concession agreements allow changes to the assets' concession periods based on actual traffic/revenue relative to target benchmarks, with specific multipliers for adjustments. Our estimations for residual concession life are based on our contracts and independent traffic studies.

(2) As per the annuity letter dated February 2025, it includes ~1.9 kms of additional approach roads.

(3) As per the valuation report dated May 22, 2026.

(4) Please note that the extension for the concession period is yet to be approved by the NHAI.

(5) The financial information for these entities, being private limited companies not subject to the timelines prescribed for release of audited financials which are applicable to listed companies, pertains to their last available audited financial year, being Financial Year 2025.

The table below sets forth an overview of the ROFO Assets:

Particulars	Kokhraj Handia Expressway Private Limited ("KHEPL")	Malayagiri Highways Private Limited ("MHPL2")	Delhi Hapur Meerut Expressway Private Limited ("DHMEPL")
Equity Shareholders	CH –V	CH –V	CH –V
Project Connecting	Kokhraj to Handia	Binjabahal to Teliebani	NCR to Meerut and Hapur
Granting Authority	NHAI	NHAI	NHAI
State	Uttar Pradesh	Odisha	Delhi, Uttar Pradesh
Highway	NH19	NH49	NE3 and NH9
Project Length (Km)	84.5 km	71.6 km	82.0 km
No. of toll plazas	6	1	9
Lane configuration	4 lane	4 lane	6 lane
Toll Plazas ("TP")	Closed Tolling: TP1: Kokhraj toll plaza TP2: Shingverpur TP3: Nawabganj TP4: Soraon TP5: Sahson TP6: Handia toll plaza	TP 1: Bideibadkudar	Closed Tolling: TP1: Sarai Kale Khan TP2: Indirapuram TP3: Dundahera TP4: Dasna TP5: Rasoolpur Sikrod TP6: Bhojpur TP7: Zainuddinpur (under construction) TP8: Kashi Toll Plaza (main line) TP9: Chhajarsi Toll Plaza (main line) (NH09)
Concession Period	20 Years	20 Years	20 Years
Residual Concession Life (as of March 31, 2026) [(1)]	18.00 Years	18.00 Years	18.00 Years
Toll/Annuity	Toll	Toll	Toll
Revenue from operations for the Financial Year 2025[(2)]	₹2,542.44 million	₹999.15 million	₹5,264.33 million
Appointed Date	April 1, 2024	April 1, 2024	April 1, 2024
Concession End Date	March 31, 2044	March 31, 2044	March 31, 2044
Current Status	100% operational	100% operational	100% operational

(1) Residual Concession Life represents actual residual life for each asset, after accounting for any extensions granted by or which may be granted by the relevant concessioning authority. Our concession agreements allow changes to the assets' concession periods based on actual traffic/revenue relative to target benchmarks, with specific multipliers for adjustments. Our estimations for residual concession life are based on our contracts and independent traffic studies.

(2) The financial information for these entities, being private limited companies not subject to the timelines prescribed for release of audited financials which are applicable to listed companies, pertains to their last available audited financial year, being Financial Year 2025.

Recent Developments

Subsequent to March 31, 2026, the concession period of the WUPTPL Project concluded on June 23, 2026, and the asset was accordingly transferred/handed over to the NHAI in accordance with the terms of its concession agreement. Upon completion of the concession period and successful handover to NHAI, the Trust and WUPTPL are in the process of fulfilling their requirements in accordance with applicable law and the concession agreement, respectively, and managing outstanding dues and liabilities, to the extent there are any. For details in relation to certain relevant outstanding litigation in relation to WUPTPL, please see the section entitled "*Legal and Other Information*" beginning on page 405.

As of June 30, 2026, through our Portfolio Assets, we operate 26 road assets aggregating to 8,441.55 lane kilometers and 1,926.92 kilometers in distance across 12 states and one union territory in India. As of such date, our Portfolio Assets had a weighted average residual concession period of 17.8 years (weighted on the basis of pre-MM EBITDA) and operating history of 9.4 years. As of March 31, 2026, of our Enterprise Value/AUM aggregating to ₹368,417.57 million across 27 Project SPVs, WUPTPL's Enterprise Value/AUM was ₹977.25 million or 0.27%.

Parties to the Trust

The Investment Manager is responsible for managing the Trust and its Portfolio Assets, as well as undertaking investment decisions relating to us and our assets. The cumulative experience of the directors and employees of the Investment Manager in fund management, advisory services, or infrastructure development exceeds 30 years as of March 31, 2026. The Investment Manager is responsible for defining our strategic direction, including with respect to future acquisitions, divestments, or asset enhancements. For further details, please see the section entitled "*Parties to the Trust – The Investment Manager – Cube Highways Fund Advisors Private Limited*" on page 146.

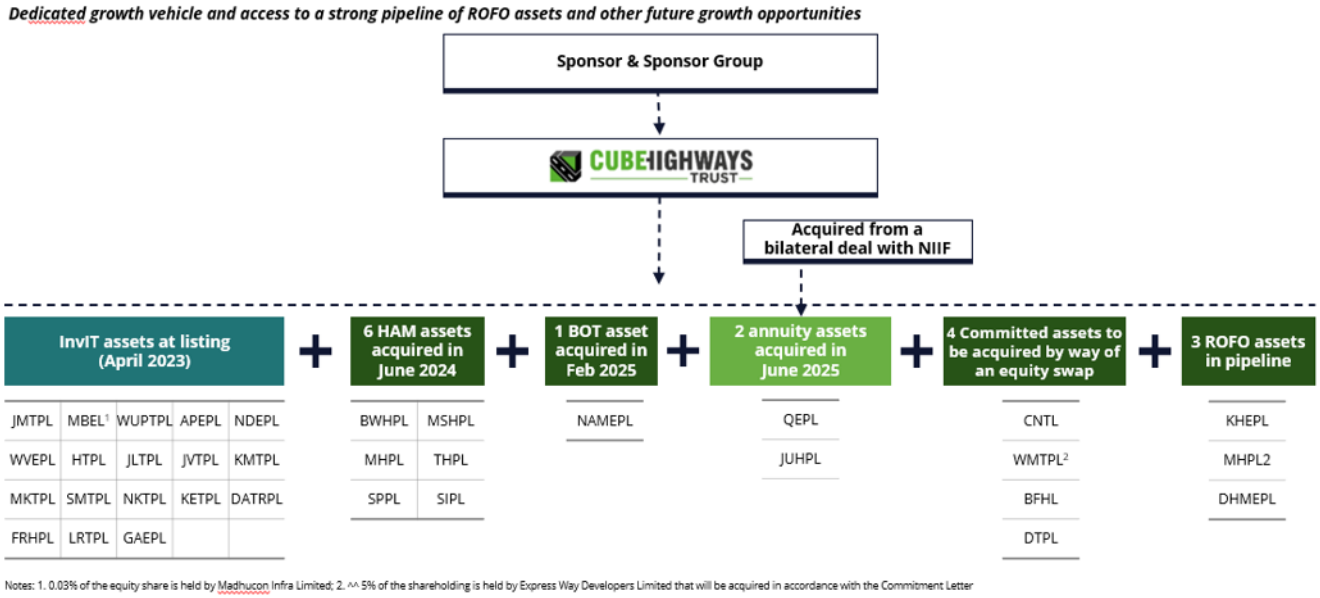
The Trustee, Axis Trustee Services Limited, is a trusteeship company registered with SEBI as a debenture trustee under the Securities and Exchange Board of India (Debenture Trustees) Regulations, 1993, as amended. On behalf of our Unitholders, the Trustee is responsible for (a) ensuring that our business objectives and investment policies comply with the provisions of the InvIT Regulations and other applicable law, and (b) monitoring the activities of the Investment Manager (in terms of the Investment Management Agreement) and the Project Manager (in terms of the Project Implementation and Management Agreement). For further details, please see the section entitled "*Parties to the Trust – The Trustee – Axis Trustee Services Limited*" on page 135.

The Project Manager, Cube Highways Asset & Project Advisory Private Limited, undertakes operations and management of the Portfolio Assets, including advising the Trustee on such matters, ensuring compliance with the respective concession agreements and project documents, making arrangements for appropriate maintenance, overseeing the progress of development, status of approvals and other aspects of the projects of the Portfolio Assets. The Project Manager has been appointed pursuant to the Project Implementation and Management Agreement dated June 26, 2026. For further details, please see the section entitled "*Parties to the Trust – The Project Manager – Cube Highways Asset & Project Advisory Private Limited* " on page 159.

Strengths

The Investment Manager believes the following to be the key strengths of the Trust:

Dedicated growth vehicle and access to a strong pipeline of Committed Assets, ROFO Assets and other future growth opportunities



We have a differentiated growth structure comprising the Trust and our Sponsor-level growth platform, comprising CH-V and other affiliates of the Cube Group (together, the "**GrowthCo vehicle**"). We believe this framework has offered a robust growth proposition, in which assets are acquired by Sponsor Group entities and stabilised and de-risked prior to potential transfer to the Trust. This integrated Sponsor-level GrowthCo vehicle may facilitate direct dropdowns from the Cube Group to the Trust. Since listing in April 2023, we have demonstrated a consistent record of expansion, adding nine assets over two years and increasing our Enterprise Value/AUM to ₹368,417.57 million as of March 31, 2026.

After the completion of the Offer, the Trust, acting through the Investment Manager and Trustee, intends to acquire from CH-II and CH-V, and CH-II and CH-V shall transfer to the Trust, in exchange for Units, the equity shareholding of each of the Committed Assets held by both CH-II and CH-V (including at least 95% of the equity shares of WMTPL), together with their nominees. Any potential acquisition of equity shares of the Committed Assets (including at least 95% of the equity shares of WMTPL) is subject to satisfaction of certain conditions precedent specified under the Share Purchase Agreements and the receipt of Unitholders' approval for the specific transaction mechanism, which may be by way of a preferential issue of Units.

We also benefit from our ROFO Agreement with our Sponsor, under which three identified assets are currently available for potential acquisition, subject to the conditions set forth in the ROFO Agreement. Beyond the identified ROFO pool, the GrowthCo vehicle continuously evaluates and acquires suitable assets using the Cube Group's sector expertise, financial capacity, and established relationships with developers, lenders, and government stakeholders. Further, we believe that the potential addition of four Committed Assets can further reduce leverage, enhance yield and strengthen diversification across geographies, concession structures, and revenue profiles. These benefits include improvements in average distribution yield, enhancements in NAV, and an expansion of available debt capacity, all while contributing to the Trust's revenue from operations. These assets have been under the Growth Co-vehicle's stewardship and have undergone operational stabilisation measures, including optimising tolling processes, enhancing maintenance and safety practices, and aligning reporting and governance standards, to support smoother integration into the Trust. Also see "*—Overview – ROFO Assets*" on page 267.

We believe that the above arrangements enhance our ability to pursue disciplined growth through stable, cash-generating assets, thereby supporting long-term stability of distributions and sustained portfolio growth.

Large and diversified portfolio of highway assets

We have a large, geographically diversified portfolio of toll road and annuity assets, comprising 26 road assets across 12 states and one union territory in India. The Portfolio Assets have an aggregate of 8,754.03 lane kilometers (covering 2,005.04 kilometers in distance), as of March 31, 2026. Upon the expiry of the WUPTPL Project's concession period on June 23, 2026, our remaining Portfolio Assets have an aggregate of 8,441.55 lane kilometers and 1,926.92 kilometers in distance as of June 30, 2026.

According to the Traffic Reports, several of our assets lie on nationally significant highway corridors, including sections of the North–South Corridor (NH-44) and key stretches that form part of the Delhi–Agra–Jaipur Golden Triangle, while others are located on important east–west and regional freight routes. The Traffic Consultant noted that these corridors carry a mix of long-distance freight, including construction materials, petroleum products, agricultural produce, and manufactured goods, alongside substantial passenger movement driven by commuting, inter-city travel and tourism. Across individual assets, the Traffic Reports highlight the presence of industrial clusters, agricultural belts and major urban centres, which together support sustained traffic volumes and long-term corridor relevance. We believe that this diversity limits concentration risk and aligns our revenues with multiple segments of the real economy. For example, roads serving industrial regions such as Sikandrabad and Aligarh carry significant volumes of construction materials, manufactured goods and metals, while other corridors (including long-distance routes such as Farakka–Raiganj and the southern NH-44 stretches) carry a mix of passenger traffic, tourism movements and long-haul freight. The resulting portfolio traffic mix, with approximately 72% passenger and 28% commercial vehicles (based on tollable vehicle count for the period between April 2025 and March 2026), provides a stable base that responds positively to both consumption and investment-led growth.

Case Study: Portfolio Diversification Provides Stability in Toll Revenues

Our Portfolio of 26 road assets, spread across 12 Indian states and one union territory, demonstrate that diversification across geography, corridor type, asset type, and traffic composition reduces revenue volatility. For instance, during the Financial Year 2025, although a few assets located in southern and northern India experienced temporary traffic moderation due to disruptions from maintenance works, removal of temporary traffic and regional monsoon, the portfolio as a whole (including the WUPTPL Project, whose concession period expired on June 23, 2026) recorded a year-on-year 8.1% growth in traffic and 10.6% growth in revenue from toll operations during the same period. This resilience was driven by the offsetting performance of assets located in high-growth corridors in northern and eastern India, such as the Delhi–Agra, Ghaziabad–Aligarh, and Madurai–Kanyakumari stretches.

Our concession arrangements provide a stable contractual framework with provisions that support long-term cash flow visibility, including annual WPI-linked adjustments to toll rates for toll projects and potential extensions of concession periods in certain projects upon meeting prescribed target traffic thresholds. Each Portfolio Asset has entered into a long-term concession agreement with the NHAI or state concessioning authority with tenors ranging between 20 and 30 years. As of March 31, 2026, the Portfolio Assets had a weighted-average residual concession life (weighted by pre-MM EBITDA) of approximately 18.0 years.

Our assets are operated under various types of concessions, with a balanced mix of toll- and annuity-revenue-generating assets. Details of our revenue from toll assets and annuity assets during the financial years indicated are set out below:

Particulars	For the Financial Year		
	2026	2025	2024
Revenue from operations (*₹ in million*)	42,388.85	33,071.44	29,161.37
Revenue from toll assets (*₹ in million*)	34,125.40	28,275.30	24,715.17
Revenue from toll assets, as a percentage of revenue from operations *(%)*	80.51%	85.50%	84.75%
Revenue from annuity assets (*₹ in million*) ^	7,357.09	4,135.70	400.32
Revenue from annuity assets, as a percentage of revenue from operations *(%)*	17.36%	12.51%	1.37%
EBITDA *(₹ in million)*	32,345.44	23,797.00	13,688.56
Adjusted EBITDA (*₹ in million*) **	30,924.44	23,797.00	19,560.43
Adjusted EBITDA attributable to toll assets (*₹ in million*)	25,939.14	21,646.75	19,565.91
Adjusted EBITDA attributable to toll assets, as a percentage of consolidated Adjusted EBITDA *(%)** ^	83.88%	90.97%	100.03%
Adjusted EBITDA attributable to annuity assets (*₹ in million*)	5,671.62	2,618.00	266.34
Adjusted EBITDA attributable to annuity assets, as a percentage of consolidated Adjusted EBITDA *(%)** ^	18.34%	11.00%	1.36%

* *The cumulative percentage of Adjusted EBITDA attributable to our toll and annuity assets exceeds 100.00% of our consolidated Adjusted EBITDA, as Trust-level expenses are not considered in the calculation of Adjusted EBITDA attributable to individual assets.*

** *Adjusted EBITDA is computed as follows: Profit/(loss) before tax plus the sum of impairment charge/(reversal) of intangible assets, depreciation and amortisation expense and finance costs.*

^ *Represents Operation & Maintenance Income and Renewal and overlay income and Finance Income on annuity assets.*

As set out below, our assets have demonstrated resilient traffic growth, with a weighted average historical traffic CAGR of approximately 6.3% across toll projects, reflecting the strength of the corridors in which our assets operate. Further, traffic across toll assets is expected to grow approximately 4.7% between the Financial Years 2026-2052, according to the Traffic Reports.

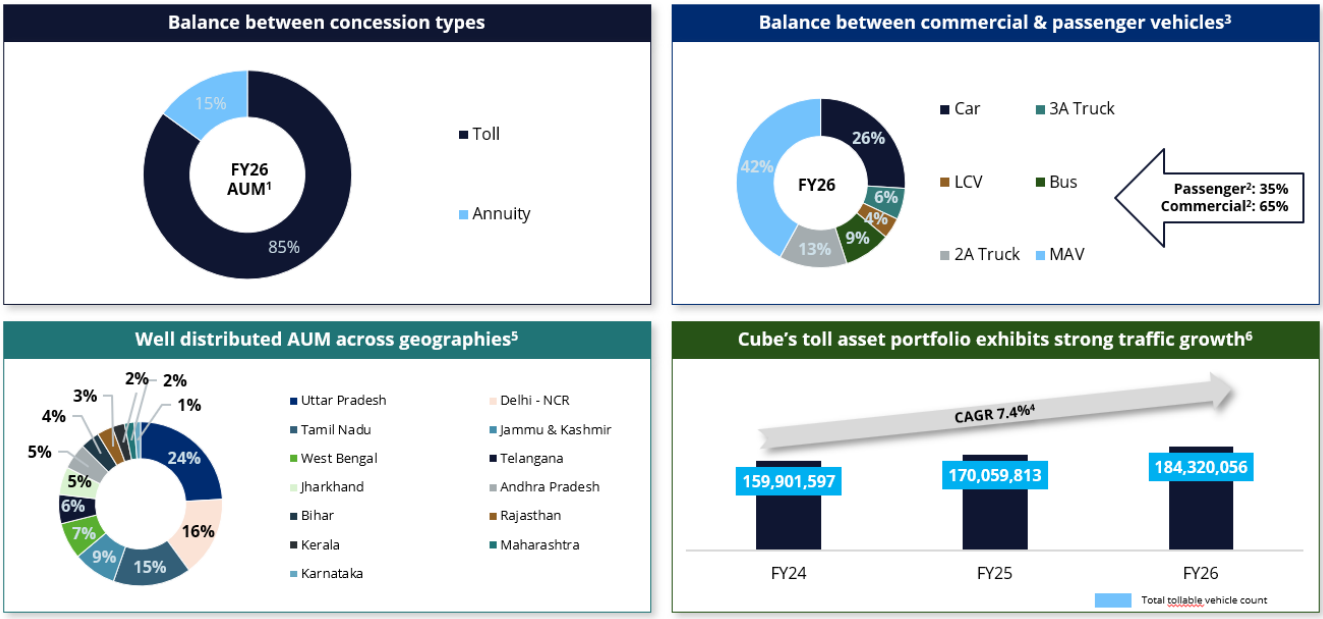
Project SPV		Average traffic volumes (in PCUs)				
	Year of COD[1]	Financial Year 2026	Financial Year 2025 (n)	Financial Year 2024	Period *(in years)*	CAGR *(%)*
JMTPL	18,698	35,332	37,992	35,285	14	4.7%
MBEL	18,261	32,420	31,221	29,144	14	4.2%
WUPTPL[(3)]	30,856	40,841	38,919	39,682	14	2.0%
GAEPL	21,130	39,493	32,211	27,976	10	6.5%
NDEPL	15,363	32,699	30,031	28,755	13	6.0%
FRHPL	20,029	33,576	32,490	31,680	9	5.9%
WVEPL	17,874	40,813	38,956	39,149	10	8.6%
DATRPL	21,610	58,446	55,855	53,663	13	8.0%
JLTPL	16,814	22,132	21,020	19,439	5	5.6%
JVTPL	15,844	20,691	19,582	18,143	5	5.5%
LRTPL	22,844	19,115	19,124	17,605	5	(3.5%)
KMTPL	23,852	24,717	23,649	22,839	5	0.7%
HTPL	21,973	32,378	28,933	24,349	5	8.1%
MKTPL	28,281	40,235	35,035	33,179	5	7.3%
KETPL	16,615	22,496	20,509	19,098	5	6.2%
SMTPL	14,207	20,012	17,964	16,639	5	7.1%
NKTPL	16,535	22,536	19,470	18,913	5	6.4%
NAMEPL	13,571	24,851	22,354	21,068	10	6.2%
Portfolio CAGR (%)[(2)]						**6.3%**

Notes:

1. *COD is the Commercial Operation Date, i.e., Financial Year 2012 for JMTPL, MBEL, WUPTPL; Financial Year 2013 for NDEPL, DATRPL; Financial Year 2016 for GAEPL, WVEPL; Financial Year 2017 for FRHPL; Financial Year 2021 for JLTPL, JVTPL, LRTPL, KMTPL, HTPL, MKTPL, KETPL, SMTPL, NKTPL, NAMEPL.*
2. *Portfolio CAGR is calculated as a weighted average of individual SPV AUMs, as of March 31, 2026.*
3. *The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. Although WUPTPL contributed to our consolidated revenue from operations during the last three Financial Years, we do not expect such contribution to continue going forward*

As of March 31, 2026, our Portfolio Assets recorded a weighted average annual daily tollable traffic of 37,269 PCUs, based on AUM-weighted and toll-length-adjusted calculations. Traffic composition was led by cars (66%), followed by multi-axle vehicles (14%), 2-axle trucks (7%), buses (6%), LCVs (5%), and 3-axle trucks (2%). For the period from April 1, 2025 to March 31, 2026, our Portfolio Assets registered a traffic growth of 8.1%, with electronic toll collection penetration at 96.00%.

Further, the charts below provide an overview of the traffic characteristics of the Portfolio Assets as of March 31, 2026, by concession model, vehicle type and state:



Note:
1. Includes 9 Build, Operate, Transfer ("BOT") and Design, Build, Finance, Operate and Transfer ("DBFOT") assets, 9 Toll, Operation, Maintenance and Transfer ("TOT") assets, 6 HAM assets and 3 annuity assets (APEPL, QEPL and JUHPL)
2. Based on revenue ; Passenger vehicles include Car/Jeep/Van and Bus
3. MAV = Multi-Axle Vehicle, 2A Truck = 2 Axle Truck, 3A Truck = 3 Axle Truck, LCV = Light Commercial Vehicle, OSV = Over-Sized Vehicle
4. CAGR is calculated on total vehicle count for the period FY2024-FY2026
5. AUM as of March 31, 2026; NAMEPL & APEPL split equally between Telangana & Andhra Pradesh; GAEPL & DATRPL split equally between Delhi-NCR and Uttar Pradesh
6. Total tollable vehicle count of 18 toll assets in FY24, FY25 and FY26

Differentiated and proven M&A capabilities

We are an active acquirer of road assets in India, with a proven ability to identify, evaluate and integrate projects across diverse concession models. Since our listing on the Stock Exchanges in April 2023, we have expanded our portfolio from 18 to 27 assets through acquisitions, increasing our Enterprise Value/AUM from ₹236,807.96 million as of June 30, 2023 (being the first quarter of our listing on the Stock Exchanges) to ₹368,417.57 million as of March 31, 2026. These include the acquisition of six hybrid annuity model projects (acquired from members of the Sponsor Group), which contribute to a balanced mix of government-back annuity income and traffic linked toll revenue, a BOT toll asset (i.e., NAMEPL, also acquired from our Sponsor) which is strategically located on the North-South freight corridor with stable revenues, and two annuity assets in Jammu & Kashmir (acquired from the National Investment and Infrastructure Fund ("**NIIF**")), which has diversified our revenue mix into annuity based assets and expanded our platform beyond Sponsor-led acquisitions.

Cube Highways and Infrastructure II Pte. Ltd. ("CH-II") and CH-V, members of the Cube Group, hold 100% of the equity shares of each of Baharampore-Farakka Highways Limited, Devanahalli Tollway Private Limited and Chenani - Nashri Tunnelway Limited, and at least 95% of the equity shares of Western MP Infrastructure & Toll Roads Private Limited, wherein Express Way Developers Limited, a third party, currently holds 5% of the equity shares (collectively, the "**Committed Assets**"). After the completion of the Offer, the Trust, acting through the Investment Manager and Trustee, intends to acquire from CH-II and CH-V, and CH-II and CH-V shall transfer to the Trust, in exchange for Units, the aforementioned equity shareholding of each of the Committed Assets held by both CH-II and CH-V (including at least 95% of the equity shares of WMTPL), together with their nominees. Any potential acquisition of equity shares of the Committed Assets (including at least 95% of the equity shares of WMTPL) is subject to satisfaction of certain conditions precedent specified under the Share Purchase Agreements and the receipt of Unitholders' approval for the specific transaction mechanism, which may be by way of a preferential issue of Units. For further details, please see the section entitled "*Related Party Transactions - Share Purchase Agreements*" on page 383.

Our investment decisions are guided by a rigorous evaluation framework that considers expected internal rates of return, corridor and traffic growth potential, concession life, capital efficiency, and portfolio synergies. Each prospective acquisition is also subject to diligence covering technical, legal, financial and ESG parameters.

Our Investment Manager has a dedicated M&A and project finance team with specialised deal-making capabilities and a broad network of relationships, enabling it to execute transactions bilaterally. Our Sponsor, as part of the Cube Group, has also established an active M&A platform in India's roads sector, with a demonstrated record of acquiring and managing high-quality toll and annuity assets. The Cube Group has successfully executed several marquee transactions, including large TOT bundle acquisitions from the NHAI and bilateral acquisitions from leading developers, resulting in a diversified road portfolio in India. Further, our Sponsor (along with its affiliates) has in-house experience in key areas of asset appraisal, evaluation and selection and due diligence, including traffic forecasting and technical assessment, legal diligence, financial diligence and ESG assessment, which enables it to make informed early assessments of opportunities.

Case Study: Yield Accretion through Debt-Led Acquisitions

In February 2025, we signed definitive agreements with the NIIF to acquire two annuity-based road projects, Quazigund Expressway Private Limited and Jammu Udhampur Highway Private Limited, both located in Jammu and Kashmir. The transaction, valued at an enterprise value

of approximately ₹33.46 billion, was completed in June 2025. These projects have a residual concession life of about 5 years as of March 31, 2026, and generate fixed semi-annual annuities from NHAI, providing steady cash flows unlinked to traffic performance.

We believe that this acquisition demonstrated our ability to execute large, accretive transactions within a disciplined leverage framework. The acquired assets were operational and cash-generating at the time of acquisition, allowing for immediate contribution to distributable cash flows. The transaction diversified our portfolio into northern India and further balanced our revenue mix between toll and annuity streams, improving both yield and resilience against macroeconomic and traffic-cycle variations.

Strong portfolio construction capabilities

Our portfolio construction philosophy has been centred on acquiring assets with established operating histories, proven performance and long residual concession life. The average operating history of our Portfolio Assets is 9.2 years, and the residual concession life is 18.0 years as of March 31, 2026 (weighted by pre-MM EBITDA). Our Portfolio reflects a balance between toll, annuity, and HAM assets, a strong commercial vehicle mix, and exposure to resilient and passenger corridors, all of which contribute to stable cash flows. Many of our assets are located contiguously, enabling us to capture economies of scale, particularly in maintenance and procurement. We believe that this geographic clustering allows our Project Manager to deploy shared resources efficiently, streamline logistics, and maintain consistent service standards across adjoining corridors.

We believe that we follow a meticulous and disciplined approach to acquisitions. Each potential investment undergoes comprehensive screening and due diligence, including financial, traffic, technical, legal, and environmental assessments. We believe that our disciplined bidding strategy prioritises quality over quantity and aligns with our long-term return objectives, rather than being driven solely by expansion for scale, and that this prudence has enabled us to construct our asset portfolio with a clear focus on maximizing long-term returns while ensuring risk-adjusted diversification across geographies, asset types, and traffic profiles. We also incorporate data-driven valuation models, engineering assessments, lifecycle cost forecasts and operational risk analysis into our acquisition framework, ensuring a high level of underwriting discipline and long-term portfolio resilience. Our strategy emphasizes acquiring operating assets with predictable traffic behaviour, demonstrated revenue track records, and favourable risk-return profiles.

Our portfolio construction philosophy is anchored in a disciplined, traffic-led approach that prioritizes resilience, network stability, and long-term value creation. We focus on assets with strong, stable traffic fundamentals—particularly those insulated from network changes, benefiting from high captive shares, and located in geographies with limited alternative routes. We believe that we apply a structured corridor selection framework that evaluates historical traffic patterns, industrial and agricultural activity, logistics linkages, competing route risk, regional economic growth, and long-term structural demand drivers. As per the framework, our historical traffic growth has been 7.4% CAGR in absolute vehicle count, and 7.2% CAGR in PCU terms, during the Financial Years 2024-2026. Our approach combines proprietary traffic models with detailed corridor-level analytics to assess elasticity, commodity flows, seasonal variations, network behaviour, and the impact of planned infrastructure.

Our strategy emphasizes exposure to major growth corridors, especially the country's North–South traffic corridor, which has seen rising economic activity and infrastructure expansion. At the same time, we consciously avoid assets vulnerable to local disruptions, counterparty risks, or construction-related challenges, ensuring that our portfolio remains robust through economic cycles.

We have successfully acquired and completed assets requiring limited balance works, such as DATRPL and GAEPL. Furthermore, certain assets within our portfolio, such as Farakka–Raiganj Highways Private Limited, Walayar Vadakkencherry Expressways Private Limited and Madurai–Kanyakumari Tollway Private Limited, are situated in regions where natural or geographic barriers limit the development of competing routes. This enhances their long-term exclusivity and traffic stability. We have benefitted from the continued expansion of infrastructure projects across central India, which has shifted north–south freight and passenger flows eastwards *(Source: Traffic Reports)*, resulting in higher through-traffic volumes across our Portfolio.

Together, we believe that our disciplined acquisition philosophy, deep technical and commercial capabilities, and data-driven corridor strategy have resulted in a portfolio constructed for resilience, diversification, and sustainable yield growth.

Advanced asset management and maintenance expertise

We follow a lifecycle-based approach to asset management, combining advanced engineering practices, data-driven monitoring and centralized procurement. Our approach emphasizes preventive and predictive maintenance, using advanced modelling and analytics to anticipate distress and plan timely interventions that reduce lifecycle costs. Over successive maintenance cycles, our major maintenance costs have remained stable or declined, reflecting the effectiveness of our data-driven planning and execution framework.

Our procurement is centrally managed, enabling us to benefit from economies of scale by negotiating optimal commercial terms with our vendors. We also have a dedicated team for bitumen procurement, given its importance to our overall maintenance strategy. Our procurement strategy is calibrated through a strategic mix of bundling, long-term master service agreements, and vendor partnerships, ensuring both cost efficiency and assured quality. We also have the experience and capability to use advanced construction materials, resulting in higher resilience and durability of our road assets. For example, we use materials

such as polymer-modified bitumen ("**PMB**") and highly modified asphalt ("**HiMA**"), thereby providing high-riding quality to the users, which can reinforce toll-paying behaviour.

Our in-house systems (such as Road-Aid and HiRate) provide real-time visibility on asset conditions, while predictive maintenance tools allow us to optimise interventions and reduce lifecycle costs. We have in-house software development capabilities, having developed proprietary applications such as Road-Aid, BuildAid, HiRate, and AI-powered inventory mapping systems, as well as pavement distress identification and compliance monitoring systems.

We use advanced testing methodologies, such as falling weight deflectometers (which measure pavement deflection and structural strength) and network survey vehicles (with integrated laser profilometers to measure pavement roughness and texture), for data-driven analysis and proactive maintenance. These tests provide extremely accurate micro-level data, which we analyse to understand the structural and functional condition of each pavement segment. Based on such data, we can devise a major maintenance strategy that addresses immediate stress points and life-cycle load patterns. Our maintenance strategy relies on targeted, segment-specific interventions based on structural assessments, traffic loading patterns and pavement condition analysis. Several of our assets have demonstrated the effectiveness of this approach in reducing lifecycle costs, minimising disruption and prolonging pavement life. Also see "*—Technology*" on page 310.

We have an in-house research and development ("**R&D**") centre with experienced researchers and engineering professionals that conducts materials research, develops innovation pilots, and collaborates with industry and authorities. Our R&D function is also supported by MINDS (Mentoring Innovation and New Developments in Science), our in-house innovation framework launched in 2023 to identify, mentor and deploy new technologies and process improvements. Further, we have an R&D connect portal designed for the submission and review of proposals.

In addition, our Investment Manager and Project Manager have entered into an expert services agreement with Cube Highways Technologies Private Limited ("**Cube Tech**"). Under the expert services agreement, Cube Tech provides technical, traffic, safety, and operational advisory support to each Portfolio Asset, including engineering oversight, major maintenance planning, TMS/ATMS operations, and periodic structural assessments. These services are delivered under a defined governance framework in which Cube Tech works under the Investment Manager's directions, ensures compliance with applicable laws and concession requirements, and maintains a dedicated team to support portfolio-wide performance.

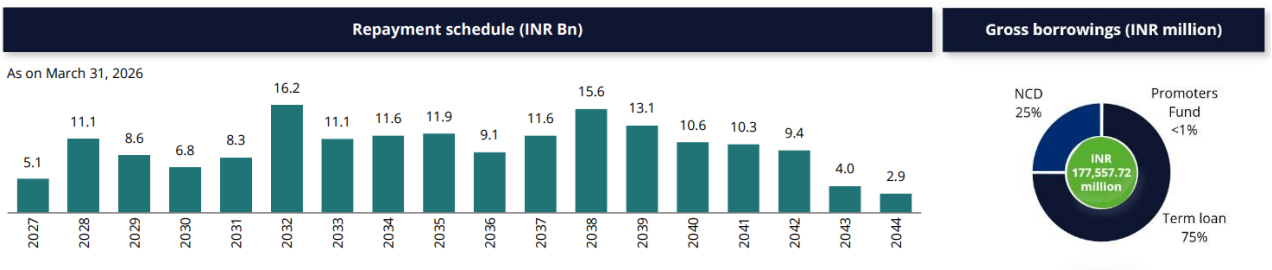
Our Project Manager has a dedicated team of maintenance professionals overseeing more than 8,000 lane kilometers of highway maintenance.

The Project Manager also benefits from the Sponsor's approach of employing a tactical mix of in-house and outsourcing maintenance operations based on the strategic importance of the function. Thus, while the Project Manager maintains control over key functions of strategy, design and procurement, it may outsource routine maintenance, cleaning and horticulture to third-party vendors.

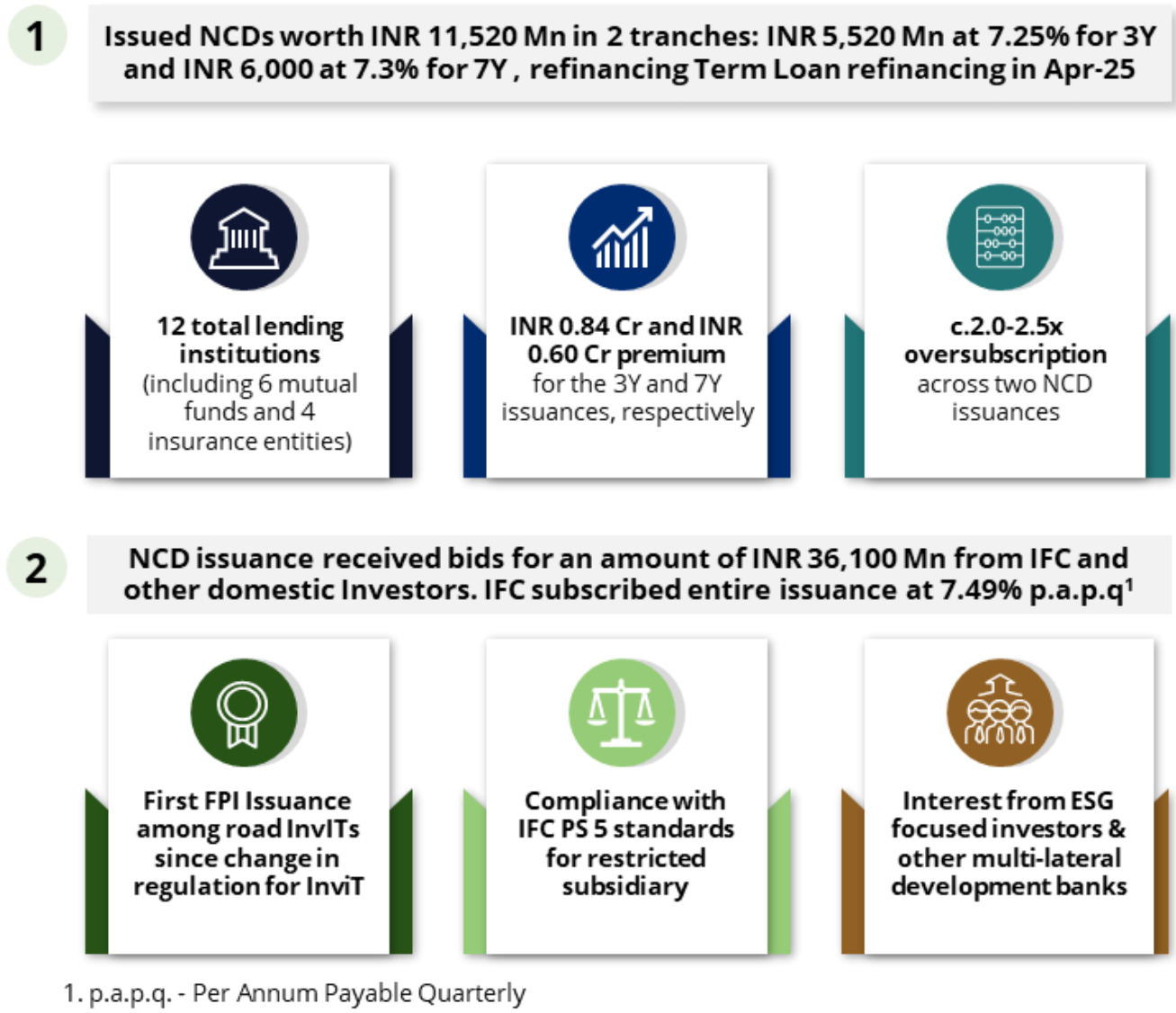
Strong corporate finance capabilities

We believe we have strong corporate finance capabilities, developed and reinforced over time through a deep understanding of the regulatory and commercial framework governing highway construction and operations in India. We maintain relationships with a range of lenders, and the subscribers to our listed debt instruments include mutual funds, insurance companies, and pension funds. We also engage with and maintain lending relationships with leading infrastructure-focused financial institutions, non-banking financial companies, and domestic and international development finance institutions. We believe that these strategic relationships enhance our access to long-term capital on competitive terms, enabling us to pursue innovative financing solutions and maintain a resilient capital structure.

Leveraging our understanding of the road infrastructure sector in India and our lending relationships, in February 2025, we issued India's first sustainability-linked bond ("**SLB**") in the road sector, which was anchored by IFC with an investment of approximately ₹8,600 million. This was a pioneering transaction, the first SLB issued by a road InvIT in India, and it showcases our ability to access innovative sources of capital while diversifying our capital base. Further, in April 2025, we successfully placed a seven-year listed non-convertible debenture issuance, which was oversubscribed and priced at a premium. Set out below are details of our borrowings and repayment schedule, each as of March 31, 2026:



Gross Borrowings include interest accrued but not due on borrowings of ₹174.79 million and erstwhile promoters borrowings of ₹166.91 million. The above metrics have been presented in accordance with Indian GAAP and not Ind AS.



Our debt facilities have been rated (i) AAA/Stable by India Ratings & Research Private Limited on February 10, 2026 for term loan and bank guarantee; (ii) AAA/Stable by India Ratings & Research Private Limited on August 14, 2025 for non-convertible debentures and A1+ for commercial paper; (iii) AAA/Stable by ICRA on September 1, 2025 for term loan and bank guarantee; (iv) AAA/Stable by ICRA on September 1, 2025 for, non-convertible debentures; (v) AAA/Stable by CRISIL Ratings Limited on March 20, 2026 and February 10, 2026 for long term rating; and (vi) A1+ by CRISIL Ratings Limited on April 30, 2026, for short term rating. As of March 31, 2026, 25.23% of our consolidated borrowings were at fixed rates, compared to 21.19% as of March 31, 2025 and 11.16% as of March 31, 2024. Our financing strategy remains focused on achieving an optimal balance between fixed- and floating-rate exposures to maintain resilience across rate cycles.

We actively manage our capital structure to maintain a conservative leverage profile, with a net borrowing ratio of 46.82% as of March 31, 2026, which provides debt headroom. Our refinancing initiatives have also consistently reduced the weighted average cost of debt, from 8.23% as of June 30, 2023 (the first quarter of our listing) to 7.53% as of March 31, 2026.

Experienced leadership and institutional backing

Our Investment Manager and Project Manager are led by an experienced management team with an established track record in the Indian infrastructure sector. The Investment Manager is led by Vinay C. Sekar, Chief Executive Officer, who has over 16 years of experience in infrastructure financing and advisory services, and Pankaj Vasani, Chief Financial Officer. Our Project Manager is led by Bovin Kumar, the director of the Project Manager (Chief Executive Officer), who has over 25 years of experience in the roads sector, and Dr. C.S. Bhagavan Raju, Chief Operating Officer, who has over 32 years of experience in the roads sector. Each of our senior management team members brings significant technical, operational, compliance, and sectoral experience across road infrastructure development, asset management, and execution.

As a result, the Investment Manager's and Project Manager's teams have deep knowledge and experience in managing road projects in the infrastructure sector. The Investment Manager and Project Manager have also invested in a team of qualified professionals with diverse academic backgrounds and work experience.

In addition, the Board of Directors of the Investment Manager include professionals such as Upendra Kumar Sinha, former Chairman of the Securities and Exchange Board of India; Surinder Chawla, senior banking and finance expert; Jayesh

Ramniklal Desai, an experienced chartered accountant and corporate advisor; and Fereshte Dhunjishaw Sethna, a distinguished legal professional. The Board also includes Sponsor nominees from the Trust's institutional investors: Sandeep Lakhanpal, Helly Bharat Ajmera, and Raviraj Vipul Acharya. This experienced Board provides oversight and strategic guidance, strengthening our governance framework.

Our Sponsor is part of the Cube Group, one of India's largest road infrastructure platforms with a proven track record of developing, acquiring and managing more than 30 highway assets across the country. We believe we benefit from the Cube Group's technical, financial and operational experience, established M&A capabilities and demonstrated success in large-scale acquisitions such as NHAI TOT bundles, providing a strong foundation for sustainable portfolio growth.

Attractive sector fundamentals with a favourable policy environment

According to the Industry Report, the transport infrastructure budget in India has expanded significantly between the Financial Year 2020 and the Financial Year 2026, with the budgetary outlay for roads increasing from ₹684 billion in the Financial Year 2020 to approximately ₹2.9 trillion in the Financial Year 2027. Roads have historically accounted for the largest share of India's infrastructure investments, ranging from 43–53% between the Financial Year 2020 and the Financial Year 2025.

Under Bharatmala Pariyojana Phase I, 26,425 km have been awarded and 21,783 km completed by November 2025, with a total expenditure of ₹8.54 trillion as of November 2025, including 6,669 km of greenfield corridors awarded and 4,610 km completed by February 2025. The Industry Report further highlights the sector's centrality, noting that roads carry approximately 87% of passenger traffic and close to 60% of freight traffic in the country.

According to the Industry Report, the long-term policy roadmap is guided by Vision 2047, formulated by MoRTH in alignment with the Viksit Bharat aspirations. The plan envisages developing 50,000 km of high-speed corridors by Financial Year 2037, expanding to 200,000–230,000 km by Financial Year 2047, thereby creating a seamless, efficient national road network. This is expected to significantly reduce logistics costs, improve competitiveness, and support India's transition into a developed economy. Further, total infrastructure investments are expected to nearly double from ₹47.8 trillion during Financial Year 2019-24 to ~₹93 trillion in Financial Year 2025-30. For further details on the market opportunity for the road infrastructure industry in India, please see the section entitled "*Industry Overview*" on page 188.

Investment, Risk and Capital Management Strategies

Our principal business strategies, which are proposed to be implemented by the Investment Manager, are set out below:

Active asset management to drive growth and yield

The Investment Manager employs an active asset management strategy across the existing assets to drive portfolio growth and yield. In particular, the Investment Manager seeks to maintain or improve our net distributable cash flows by, among other initiatives, minimizing revenue leakage, optimising costs, capital structuring, refinancing, formulating and adopting policies and procedures, and structuring investments to address regulatory considerations. The Project Manager assists the Investment Manager by carrying out the operations, management and maintenance of the projects in accordance with the relevant concession agreement and the Project Implementation and Management Agreement and by procuring, operating and maintaining the relevant project's toll management systems, improving the effectiveness of routine and major maintenance activities and instituting controls on administrative expenditures and overheads.

Our active management initiatives include strengthening in-house operations and maintenance capabilities, enhancing mechanization to reduce manual dependency, and deploying advanced equipment to improve efficiency and consistency of outcomes. We are progressively supported by digital inventory controls to improve procurement efficiency and reduce downtime across sites. Commodity price volatility is mitigated through strategic long-term contracts and supplier diversification. We believe that our ongoing technology adoption (spanning predictive maintenance tools, IoT-enabled monitoring systems and automated toll management processes) will support cost optimization, transparency and reliability across the portfolio.

Calibrated expansion of the portfolio

The Investment Manager also intends to opportunistically expand the Trust's portfolio by acquiring ROFO Assets from the Sponsor (and its affiliates) and selected third-party assets. The Investment Manager believes it can leverage our Sponsor's network of relationships, extensive knowledge, experience, and expertise in the roads sector in India to implement its acquisition strategy, acquiring operational road projects and projects that may require last-mile construction. The Investment Manager may evaluate opportunities to expand the portfolio without compromising on the operation and management of the Portfolio Assets while providing attractive cash flows and yield and opportunities for future income and capital appreciation for our Unitholders.

In the medium term, the Trust expects to benefit from a strong pipeline of M&A opportunities, supported by the Government's sustained use of the hybrid annuity model as a key procurement mechanism and NHAI's ongoing monetization of completed highway assets through successive TOT rounds, according to the Industry Report. The Trust also benefits from the ROFO Agreement pursuant to which it holds a ROFO over three assets currently held by the Sponsor.

Case Study: Leveraging our Growth Co-vehicle, M&A strengths, active asset management approach and corporate finance capabilities for sustainable growth over the last two years

Since listing in April 2023, we have demonstrated a consistent record of expansion, adding nine assets within two years and increasing our Enterprise Value/AUM to ₹368.42 billion as of March 31, 2026. Crucially, we were able to utilize our existing debt headroom to fund these acquisitions, as set out below:

Asset	Net Debt to AUM ratio (pre-acquisition*) (%)	Net Debt to AUM ratio (post-acquisition) (%)
HAM SPVs (1)	33.65%	38.00%
NAMEPL	39.80%	44.65%
NIIF SPVs (2)	44.65%	49.62%

* *The pre- and post-acquisition ratios above correspond to the quarter-end numbers prior to and following the relevant acquisition.*

(1) HAM SPVs include BWHPL, MSHPL, MHPL, SIPL, SPPL and THPL.

(2) NIIF SPVs include QEPL and JUHPL.

As part of its long-term growth strategy, the Investment Manager intends to actively pursue opportunities in other infrastructure and infrastructure-adjacent sectors beyond roads, targeting assets with predictable long-term cash flows, established operating track records, and resilient demand fundamentals. The Investment Manager will build and incorporate the requisite project execution and operational capabilities to support entry into such sectors, prioritising those that align with the operating and asset management expertise of the Sponsor and the Investment Manager, so that new investments can be effectively integrated and optimised within the Trust's existing operational framework. Any such investment would be assessed against the Trust's core objectives of sustainable distributions and long-term value appreciation for Unitholders, and would remain subject to applicable regulatory requirements and approvals.

This strategy is expected to diversify the Trust's sectoral concentration, open up additional avenues of growth, strengthen portfolio resilience, and reduce dependence on any single sector, thereby supporting the Trust's ability to generate stable, risk-adjusted returns over time.

Implementing prudent capital management policies

The Investment Manager has instituted and implemented a capital management strategy that it believes is consistent with its objective of maximizing distributions to our Unitholders. To achieve these objectives, the Investment Manager aims to ensure optimal capital structures for the Trust and the Portfolio Assets, thereby maximising cash distributions to Unitholders while retaining adequate flexibility to acquire assets in the future.

We have demonstrated an ability to access diverse sources of capital, including term loans, listed NCDs, other bonds, short-term instruments such as commercial paper, and innovative instruments, such as India’s first sustainability-linked bond in the road sector. As of March 31, 2026, our total consolidated borrowings (undiscounted) were less than 49% of the total value of the Trust’s consolidated assets, in compliance with the InvIT Regulations. As a result, our consolidated balance sheet provides flexibility to incur additional debt, if required, to support the Investment Manager’s strategy of acquiring additional assets.

Embedding sustainability and ESG practices in our business model

ESG principles are embedded across our financing, asset management, and operational decision-making processes. Our approach is guided by our Environmental and Social Due Diligence Policy. This framework ensures that our investments, operations, and stakeholder engagements contribute to responsible growth. By engaging suppliers, subcontractors, road users, employees, communities, and government authorities through comprehensive due diligence, open communication, and regular consultations, we strive to ensure adequate stakeholder involvement in our business practices.

Our financing and capital allocation decisions reflect our commitment to sustainable development. In February 2025, we issued India’s first sustainability-linked bond in the roads sector, anchoring our financing to measurable ESG performance indicators. At the asset level, we have integrated sustainable construction and maintenance technologies that reduce emissions and extend lifecycle performance. We have successfully implemented CCPR and HiMA to reuse materials and improve pavement durability. We are also focused on scaling the adoption of recycled and locally sourced materials, solar energy generation, and water conservation systems at our project sites, while continuing afforestation initiatives, including Miyawaki plantations, to offset emissions and enhance biodiversity. We are also implementing procurement standards for energy-efficient electrical equipment, deploying high-performance lighting solutions, and launching additional solarisation projects across additional SPVs. Initiatives to upgrade HVAC systems and expand our fleet of electric vehicles reflect our effort to reduce emissions and improve asset lifecycle performance. We are also exploring the use of alternative fuels in our business, such as natural gas DG sets.

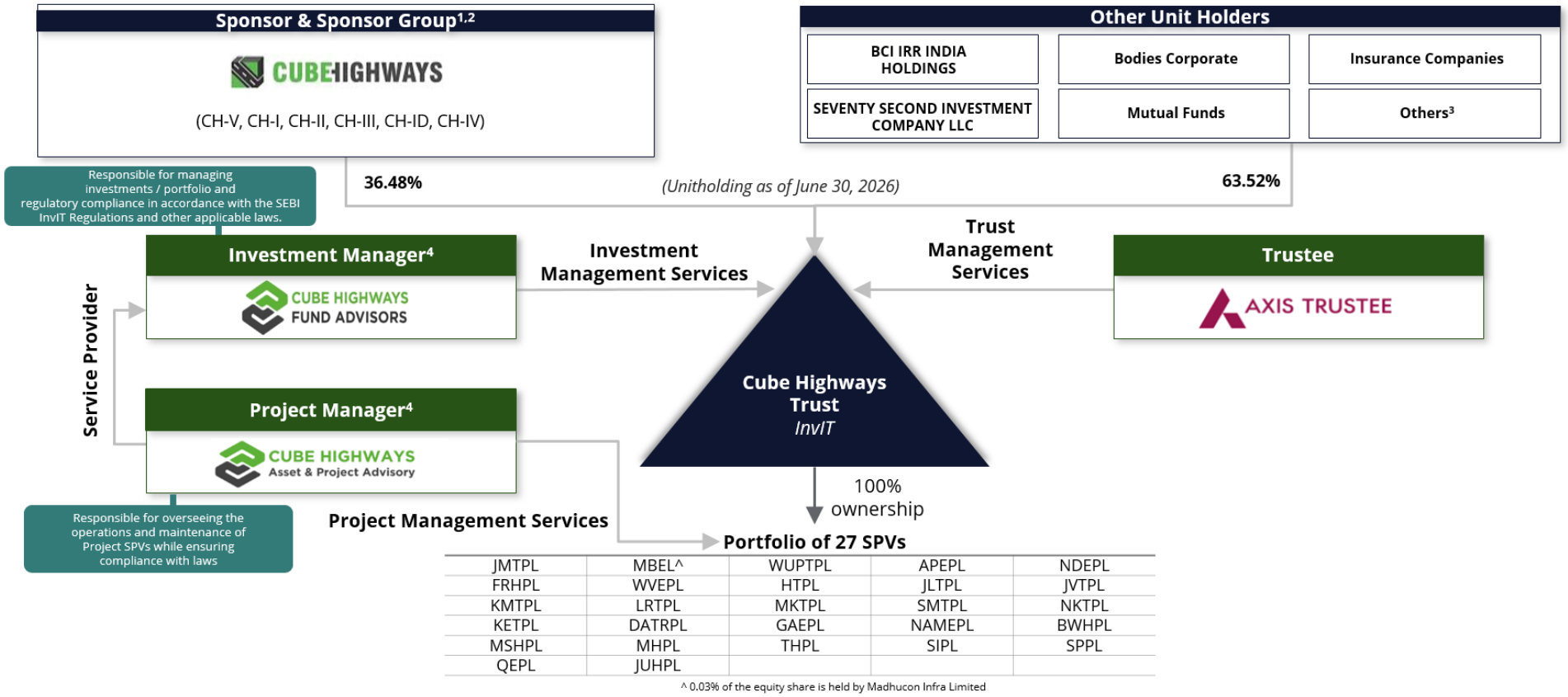
Our social priorities remain centred on safety, inclusivity, and local development. We have introduced route patrols to improve highway safety, and are focused on achieving high safe man-hours. We intend to further enhance these systems through predictive analytics and data-led interventions. We will also continue to strengthen local employment and livelihood programs, with a focus on training, upskilling, and expanding gender participation across our workforce and project contractors.

We endeavour to uphold our standards of governance by continuously enhancing our compliance, risk management, and disclosure systems. ESG oversight remains integrated at the Board and management levels, ensuring that strategic decisions are transparent, ethical, and aligned with stakeholder expectations.

Structure of the Cube Highways Trust

The Cube Highways Trust was settled on December 7, 2021, in accordance with the provisions of the Indian Trusts Act, 1882, and the Trust is registered with SEBI as an InvIT pursuant to the InvIT Regulations. The original trust deed has been amended and restated, most recently pursuant to the Amended and Restated Trust Deed dated March 11, 2024. The Trust's principal investment objectives are to carry on the activities of, and to make investments as an infrastructure investment trust, as permissible in terms of the InvIT Regulations and in accordance with the InvIT Documents, to the extent applicable. For more details on the investment objectives of the Trust, see "*Overview of the Trust – Investment Objectives"* on page 35.

Set out below is a chart of the Cube Highways Trust's current structure and Project SPV holding pattern:



Note:

1. Cube Highways and Infrastructure V Pte. Ltd. (CH-V), Cube Highways and Infrastructure Pte. Ltd. (CH-I), Cube Highways and Infrastructure II Pte. Ltd. (CH-II), Cube Highways and Infrastructure III Pte. Ltd.(CH-III), Cube Highways and Infrastructure I-D Pte. Ltd. (CH-I-D) and Cube Mobility Investments Pte Ltd. (CH-IV)
2. CH-V is the Sponsor of the Trust, and all other entities are members of the Sponsor Group under the SEBI InvIT Regulations
3. Includes Individuals, Trusts, Alternate Investment Fund, Foreign Portfolio Investor, Financial Institutions / Banks, Non-resident Indians
4. IM & PM are associates of the Sponsor. Cube Highways Asset & Project Advisory Private Limited has been appointed as the Project Manager of the Trust with effect from June 26, 2026, replacing the Erstwhile Project Manager whose engagement continued up to June 25, 2026

Note: The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI.

Summary of our Toll Roads

The details of our build-operate-transfer ("**BOT**") and design-build-finance-operate-transfer ("**DBFOT**") Roads, as of March 31, 2026, are as follows:

Particulars	JMTPL	MBEL	WUPTPL[3]	NDEPL	GAEPL	WVEPL	DATRPL	FRHPL	NAMEPL
Project stretch	Jaipur-Mahua	Mahua-Bharatpur	Meerut to Muzaffarnagar	Nelamangla-Devihalli	Ghaziabad-Aligarh	Walayar-Vadakkenchery	Delhi-Agra	Farakka- Rajganj	Narketpalli-Addanki-Medarmetla
Geographic location (state)	Rajasthan	Rajasthan	Uttar Pradesh	Karnataka	Uttar Pradesh	Kerala	Uttar Pradesh and Haryana	West Bengal	Andhra Pradesh and Telangana
Number of lanes	4	4	4	4	6	4	6	4	4
National/State Highway Number (New | Old)	NH21 | NH11	NH21 | NH11	NH334 | NH58	NH75 | NH48	NH91 | NH34	NH544 | NH47	NH19 | NH2	NH12 | NH34	SH2
Project length (km)	109.1	57.3	78.1	80.3	126.3	53.5	179.5	100.1	212.9
Number of toll plazas	2	2	1	2	2	1	3	2	3
Toll plazas	Rajadhok and Sikandra	Amoli and Ludhawai	Siwaya	Doddakarenhalli and Karbylu	Luharli and Somna	Pampampallam	Gadpuri, Karman and Mahuvan	Lakshmipur and Gazole	Madgulapally, Tummala Cheruvu and Elchuru
Appointed date	March 20, 2006	April 10, 2006	March 7, 2006	January 5, 2008	February 25, 2011	May 18, 2013	October 16, 2012	February 3, 2011	January 18, 2011
Final Commercial operations date (COD)[1]	March 9, 2015	September 13, 2009	June 2, 2016	May 11, 2024	April 23, 2022, for 4/6 laning of Ghaziabad-Aligarh Section of NH-34 (NH-91) from km.23.600 to km. 149.900 November 28, 2025, for 4/6 laning of Ghaziabad-Aligarh Section of NH-34 (NH-91) from km.23.600 to km. 149.900	October 31, 2015	Provisional COD received on May 20, 2022 Final COD is not yet received	March 25, 2022	Provisional COD received in tranches on March 6, 2014, September 27, 2024, March 3, 2025, and April 17, 2025 Final COD is not yet received
Tolling history (as of March 31, 2026) (in years)	16.51	16.90	14.44	13.76	10.77	10.41	13.45	9.45	12.05
End of concession[2]	June 9, 2031	May 26, 2031	June 23, 2026	January 29, 2033	June 20, 2039	October 01, 2037	February 12, 2044	May 03, 2041	November 27, 2039
Residual Concession Life (as of March 31, 2026) (in years)	5.19	5.15	0.23	6.83	13.22	11.51	17.87	15.09	13.66
O&M Handover Date	Not applicable								

(1) As per the provisions of the concession agreement, the commercial operations date (COD) of the project highway shall be the date on which the independent consultant has issued the final completion certificate or the provisional certificate certifying completion of the project highway as per the relevant terms of the concession agreement. The project highway shall enter into commercial service on COD, upon which the concessionaire shall be entitled to demand and collect fees in accordance with the relevant provisions of the concession agreement.

(2) The concession period is specified under the concession agreements entered into by the respective SPVs with the grantors (the NHAI or the relevant state authorities). However, the concession period may vary depending upon the achievement of conditions relating to target traffic or target revenue generated at the target date specified in the concession agreement. For the purposes of estimation of variation in the concession period at each reporting period, the Trust evaluates the contractual entitlement to variations in concession period on a case-to-case basis, taking into account the provisions of the concession agreement of the respective SPVs, the facts and circumstances giving rise to such variations and the status of the approvals for such variation. Estimating variation in the concession period under Appendix C of Ind AS 115 requires a careful analysis of the specific service concession arrangement. For estimation of the concession period, we consider future traffic estimates with the help of an independent expert, assessment of outcomes with respect to disputes/arbitration with the relevant grantor for the SPVs, claims for variation in concession period on account of Target Traffic, among others, based on the legal advice received, discount rates, revenue growth rate and inflation and other economic factors, as considered relevant. Based on the above, we have considered variation in concession period for certain SPVs for the purpose of estimating amortization of Intangible Assets- Toll Road Carriageway, estimating fair value of net assets of SPVs and also for determination of recoverable amounts for Intangible Assets- Toll Road Carriageway of SPVs.

(3) The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. Although WUPTPL contributed to our consolidated revenue from operations during the last three Financial Years, we do not expect such contribution to continue going forward.

The details of our toll-operate-transfer ("**TOT**") Roads, as of March 31, 2026, are as follows:

Particulars	MKTPL	KETPL	SMTPL	NKTPL	JLTPL	JVTPL	KMTPL	LRTPL	HTPL
Project stretch	Madurai-Kanyakumari	Madurai-Kanyakumari	Madurai-Kanyakumari	Madurai-Kanyakumari	Jhansi-Lalitpur	Jhansi-Lalitpur	Kotwa-Muzaffarpur	Lucknow-Raebareli	Hazirabagh-Ranchi
Geographic location (state)	Tamil Nadu	Tamil Nadu	Tamil Nadu	Tamil Nadu	Uttar Pradesh	Uttar Pradesh	Bihar	Uttar Pradesh	Jharkhand
Number of lanes	4	4	4	4	4	4	4	4	4
National Highway Number (New | Old)	NH44 | NH7	NH44 | NH7	NH44 | NH7	NH44 | NH7	NH44 | NH26	NH44 | NH26	NH27 | NH28	NH30 | NH24-B	NH33 | NH20
Project length (km)	52.3	64.2	63.5	63.5	49.7	49.3	80.0	70.0	73.8
Tollable length[(1)]	68.8	69.3	84.6	75.6	81.7	60	85.7	77.8	86
Number of toll plazas	1	1	1	1	1	1	1	1	1
Toll plazas	Kappalur	Etturvattam	Salaipudhur	Nanguneri	Babina	Vighakhet	Parsoni Khem	Dakhina Sekhpur	Pundag
Appointed date / commercial operations date (COD)	October 20, 2020	October 20, 2020	October 20, 2020	October 20, 2020	October 20, 2020	October 20, 2020	October 20, 2020	October 20, 2020	October 20, 2020
Tolling history (as of March 31, 2026) (in years)	6.26	6.26	6.26	6.26	6.26	6.26	6.26	6.26	6.26
End of concession[(2)]	October 19, 2045	October 19, 2050	October 19, 2050	October 17, 2050, 2051	October 19, 2045	October 19, 2045	October 19, 2045	October 19, 2050	October 19, 2050
Residual Concession Life (as of March 31, 2026) (in years)[(3)]	19.55	24.55	24.55	24.55	19.55	19.55	19.55	24.55	24.55
O&M Handover Date	Not applicable	Not applicable	Not applicable	Not applicable	March 2027	March 2027	Not applicable	March 2029	March 2028

(1) Tollable length is determined as per the NHAI notifications published in the National Gazette and is used as the basis for the toll rate of each of the roads. The formula is 10 x length of roads + 1.5 x length of bypasses.

(2) The concession period is specified under the concession agreements entered into by the respective SPVs with the grantors (the NHAI or the relevant state authorities). However, the concession period may vary depending upon the achievement of conditions relating to target traffic or target revenue generated at the target date specified in the concession agreement. For the purposes of estimation of variation in the concession period at each reporting period, the Trust evaluates the contractual entitlement to variations in concession period on a case-to-case basis taking into account the provisions of the concession agreement of the respective SPVs, the facts and circumstances giving rise to such variations and the status of the approvals for such variation. Estimating variation in the concession period under Appendix C of Ind AS 115 requires a careful analysis of the specific service concession arrangement. For estimation of the concession period, we consider future traffic estimates with the help of an independent expert, assessment of outcomes with respect to disputes/arbitration with the relevant grantor for the SPVs, claims for variation in concession period on account of Target Traffic, among others, based on the legal advice received, discount rates, revenue growth rate and inflation and other economic factors, as considered relevant. Based on the above, we have considered variation in concession period for certain SPVs for the purpose of estimating amortization of Intangible Assets- Toll Road Carriageway, estimating fair value of net assets of SPVs and also for determination of recoverable amounts for Intangible Assets- Toll Road Carriageway of SPVs.

(3) The Residual Concession Life is indicative in nature, and in accordance with the relevant concession agreement, the actual term of the concession is dependent on the revenue generated by each road.

The details of our hybrid annuity model ("**HAM**") and Annuity Roads, as of March 31, 2026, are as follows:

Particulars	APEPL	BWHPL	MSHPL	MHPL	THPL	SIPL	SPPL	QEPL	JUHPL
Project stretch	Kothakota-Kurnool	Borgaon - Watambare	Mangalwedha - Solapur	Mangloor-Telangana/Maharashtra Border	Chittoor - Mallavaram	Trichy- Kallagam	Ramsanpalle - Mangloor	Quazigund - Banihal	Jammu - Udhampur
Geographic location (state/union territory)	Andhra Pradesh and Telangana	Maharashtra	Maharashtra	Telangana	Andhra Pradesh	Tamil Nadu	Telangana	Jammu and Kashmir	Jammu and Kashmir
Number of lanes	4	4	4	4	6	4	4	4	4
National Highway Number (New | Old)	NH44 | NH7	NH166	NH166	NH161	NH140	NH81 | NH227	NH161	NH44 | NH1A	NH44 | NH1A
Project length (km)	74.6	52.0	55.9	49.0	61.1	38.7	46.8	16.0	48.0
Appointed date	September 15, 2009	April 19, 2019	May 23, 2019	April 12, 2019	January 4, 2019	March 1, 2019	May 2, 2019	June 5, 2011	June 16, 2011
Commercial operations date (COD)	September 26, 2022	March 1, 2023	March 1, 2023	October 27, 2025	June 8, 2023	June 15, 2023	June 21, 2022	December 15, 2022	May 31, 2018
End of concession	September 30, 2026	September 23, 2036	December 13, 2036	December 14, 2036	May 9, 2036	May 29, 2036	October 4, 2036	June 4, 2031	July 16, 2031
Residual Concession Life (as of March 31, 2026) (in years)	0.50	10.48	10.70	10.71	10.11	10.16	10.51	5.18	5.21
Annuity payment received in the Financial Year 2026 *(in ₹ million)**	1,130	913.8	993.6	840	1,383.7	951.1	1,107.5	4,900	4,038
Number of annuity payments received (as of March 31, 2026)	34	9	8	8	9	9	8	19	23
Number of annuity payments to be received (as of March 31, 2026)	1	21	21	22	21	21	22	11	11

* *Annuity payments received from HAM Assets are presented in terms of the amounts payable to each of the respective assets under the terms of the respective concession agreement and are not Ind AS metrics of revenue. Payments are subject to adjustments based on CPI linking factors and other factors set out in the respective concession agreements.*

Also see "– *Our Existing Portfolio*", "*Summary of Key Agreements - Summary of the Concession Agreements*" and "*Capitalization Statement*" on pages 265, 316, and 351, respectively, for further details of the ownership structure of our assets, the terms of our assets' concession agreements and the capital structure of our Portfolio Assets.

Description of build, operate and transfer and design, build, finance, operate and transfer toll roads

1. **Jaipur-Mahua Tollway Private Limited**

Overview of the Project and the Concession

On September 23, 2005, NHAI and Jaipur-Mahua Tollway Private Limited ("**JMTPL**") entered into the JMTPL Concession Agreement whereby JMTPL was engaged, on a build, operate and transfer ("**BOT**") basis, to widen a portion of NH 21 (erstwhile NH11) in Rajasthan from two lanes to four lanes with an overall length of 109.1 kilometers (the "**JMTPL Project**").

JMTPL has the sole and exclusive right to demand, collect and appropriate tolls payable by vehicles using the JMTPL Project in accordance with the JMTPL Concession Agreement and at the rates set out in the National Highways Fee (Determination of Rates and Collection) Rules, 2008, as amended. For further details on the JMTPL Concession Agreement, please see the section entitled "*Summary of the Concession Agreements*" on page 320.

Corridor and Network Description and Traffic Characteristics

According to Traffic Consultant, the JMTPL Project is located in Rajasthan and connects the state capital, Jaipur, to Mahwa. It forms part of a key east–west movement corridor linking southern Rajasthan, including Udaipur, Bhilwara and Chittorgarh, with Uttar Pradesh and eastern India. The corridor serves major urban centres such as Jaipur, Agra, Alwar and Bharatpur and lies on an alignment that supports long-distance movements.

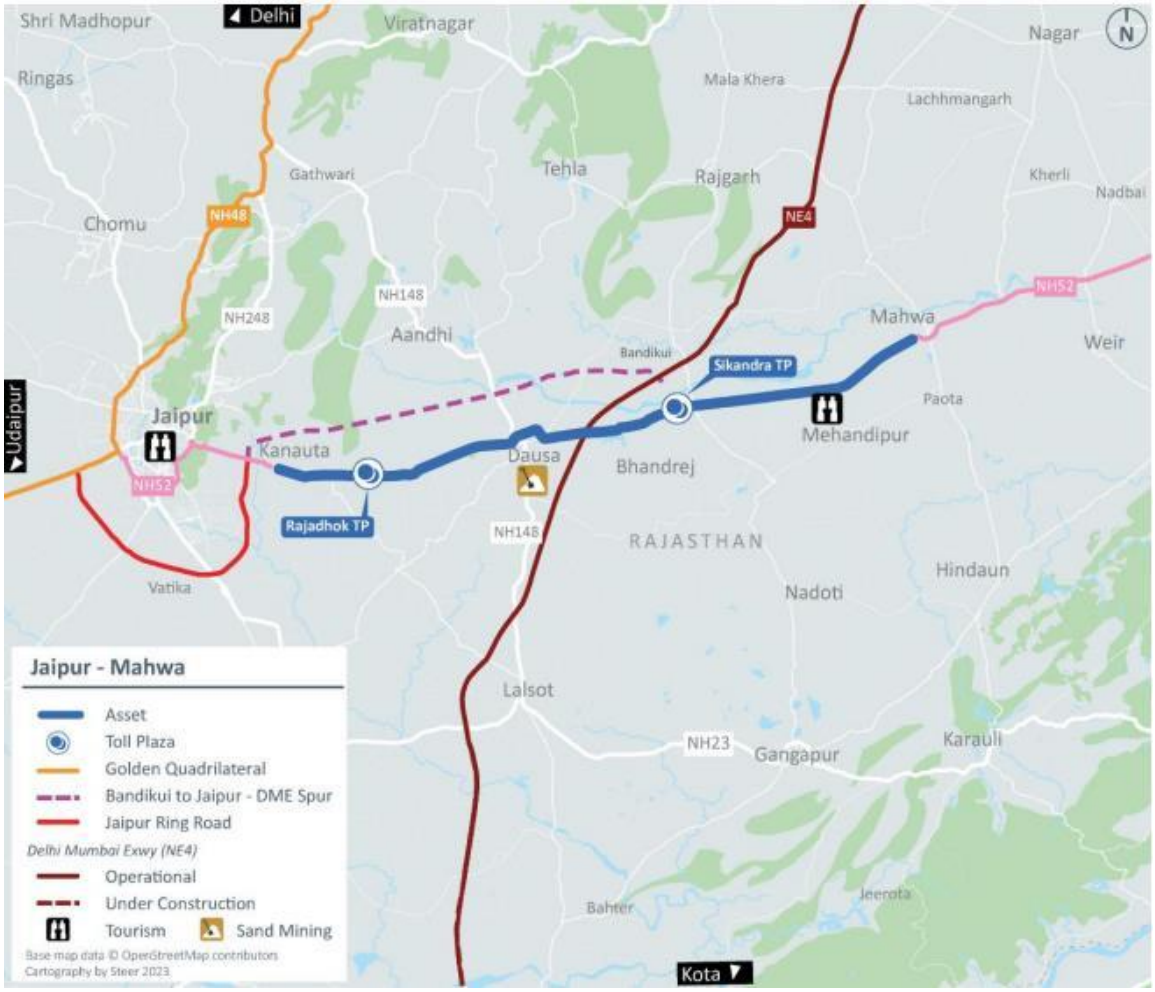
Passenger traffic on the JMTPL Project is supported by local movements between Jaipur, Agra, Alwar and Bharatpur, as well as tourism-related travel, since the JMTPL Project forms part of the Golden Triangle corridor connecting Delhi NCR, Agra and Jaipur. Goods traffic comprises agricultural commodities, construction-related materials including stone and sand, and a range of consumption-related freight. Heavy commercial vehicles (3A/MAV) primarily support long-distance flows between western and eastern India, and the Traffic Consultant observed a recovery in both passenger and goods traffic in recent months.

The Dausa–Lalsot corridor connects to the Asset between the two toll plazas, functioning as an important feeder, while the Tonk–Lalsot–Dausa corridor provides an alternate route for medium-distance movements and has contributed to increased traffic at Sikandra, with some redistribution at Rajadhok. For longer-distance traffic between Gujarat and southern Rajasthan and Uttar Pradesh, an established parallel route exists via NH27 through Chittorgarh, Kota and Jhansi.

The 67-km Bandikui to Jaipur Ring Road spur (part of the Delhi-Mumbai Expressway) opened in July 2025, and, as noted in the Traffic Reports, this incremental traffic for TP2 has diverted to the spur (as can be seen in the FY26 traffic at Rajadhok), as the new link offers a faster and shorter route between Delhi and Jaipur. The Traffic Consultant further stated that the spur has been open to the public since July 2025 and is expected to lead to a further decline in traffic on Rajadhok as it provides a faster alternate route, and that since the Bandikui spur allows traffic to bypass Rajadhok and not Sikandra, the magnitude of the impact at Rajadhok is larger.

Several network upgrades influence traffic along the JMTPL Project. Completion of the southern bypass of the Agra Ring Road is expected to improve service for long-distance traffic toward Kanpur and Lucknow. Operational sections of the Delhi–Mumbai Expressway, including the Delhi–Sohna–Dausa–Lalsot section and connectivity via NE4 and the Faridabad bypass, provide alternative routes for movements between Lalsot, Jaipur, Faridabad and Delhi. These changes have contributed to some redistribution of traffic, although increased CJV volumes at Sikandra are observed due to pilgrimage-related travel to nearby temples. Overall, the Traffic Consultant considers the corridor to serve major regional centres and to benefit from strong underlying growth drivers.

The map below illustrates the location of the JMTPL Project and the corridor it covers:



2. **Mahua Bharatpur Expressways Limited**

Overview of the Project and the Concession

On October 13, 2005, NHAI and Madhucon Agra-Jaipur Express Limited (the erstwhile concessionaire) entered in a concession agreement whereby Madhucon Agra-Jaipur Express Limited was engaged, on a BOT basis, to widen a portion of NH 21 (erstwhile NH11) in Rajasthan from two lanes to four lanes with an overall length of 57.3 kilometers (the "**MBEL Project**").

MBEL has the sole and exclusive right to demand, collect and appropriate tolls payable by vehicles using the MBEL Project in accordance with the MBEL Concession Agreement and at the rates set out in the National Highways Fee (Determination of Rates and Collection) Rules, 2008, as amended. For further details on the MBEL Concession Agreement, please see the section entitled "*Summary of the Concession Agreements*" on page 320.

Corridor and Network Description and Traffic Characteristics

According to Traffic Consultant, the MBEL Project is strategically located within the Delhi–Agra–Jaipur "Golden Triangle". The road connects Rajasthan and Uttar Pradesh supporting both short- and long-distance travel.

Traffic growth along the MBEL Project is supported by several structural and regional demand drivers. Material for the under-construction Agra–Gwalior Expressway is also being sourced through the MBEL corridor.

Operational enhancements have also supported improved throughput on the corridor. The introduction of electronic tolling through FASTag has increased compliance and lane productivity. Overall, the Traffic Consultant considered MBEL to be well-positioned within a high-demand regional corridor driven by tourism, commuter traffic, and industrial freight, with sustained long-term growth potential supported by both structural and local economic factors.

The map below illustrates the location of the MBEL Project and the corridor it covers:

3. **DA Toll Road Private Limited**

Overview of the Project and the Concession

On July 16, 2010, NHAI and DA Toll Road Private Limited ("**DATRPL**") entered into a concession agreement whereby DATRPL was engaged, on a design, build, finance, operate and transfer ("**DBFOT**") basis, for six-laning of the Delhi-Agra portion of NH 19 (erstwhile NH2) in Delhi, Uttar Pradesh and Haryana with a total length of 179.5 kilometers (the "**DATRPL Project**").

DATRPL has the sole and exclusive right to demand, collect and appropriate tolls payable by vehicles using the DATRPL Project in accordance with the DATRPL Concession Agreement and at the rates set out in the National Highways Fee (Determination of Rates and Collection) Rules, 2008, as amended. For further details on the DATRPL Concession Agreement, please see the section entitled "*Summary of the Concession Agreements*" on page 320.

Corridor and Network Description and Traffic Characteristics

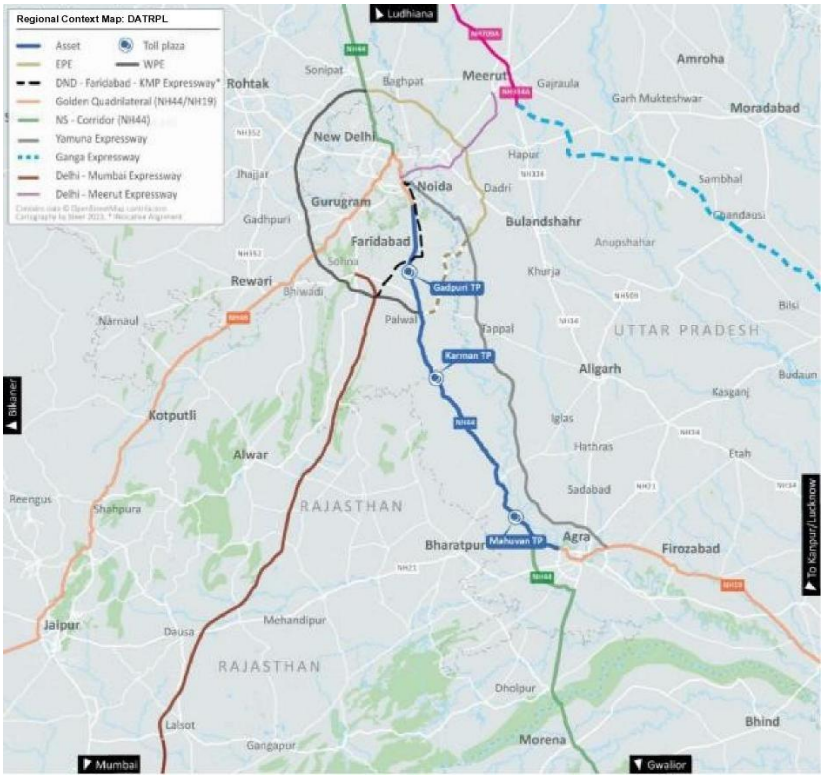
According to the Traffic Consultant, the DATRPL Project is situated in the states of Haryana and Uttar Pradesh and connects the Central National Capital Region, including Delhi, to Agra in the south via Palwal and Mathura. The DATRPL Project forms a 179.5 km section of the NH19/NH44 corridor (erstwhile NH2) and operates three toll plazas at Gadpuri, Karman and Mahuvan. The DATRPL Project lies on a critical segment of the Grand Trunk Road, which forms part of Asian Highway 1 and supports both east–west and north–south long-distance movement. East–west travel links Kashmir through to the India–Bangladesh border, while north–south movements connect major centres from Srinagar to Kanyakumari.

Passenger traffic along the corridor is supported by daily commuting between Delhi NCR and satellite towns such as Faridabad and Palwal. Mathura is an important pilgrimage destination and along with leisure traffic to Agra, a major domestic and international tourist destination.

The surrounding network includes several alternate and feeder routes. The Palwal–Tappal–Aligarh corridor provides an alternate east–west connection toward Lucknow, while NH27 via Chittorgarh, Kota and Jhansi offers a parallel long-distance east–west route. The Traffic Consultant also notes that traffic between Greater Noida industrial areas and Agra, or regions further south, makes extensive use of the Yamuna Expressway, and that forthcoming connectors to the Eastern Peripheral Expressway are expected to improve access to the DATRPL Project.

The Delhi–Mumbai Expressway introduces a competing north–south long-distance route and is expected to attract a portion of through traffic as sections progressively become operational. The Ganga Expressway is anticipated to compete for certain east–west movements once fully operational, while the Yamuna Expressway–EPE connector is expected to generate positive spill-over effects on the km. 94 and km. 164 plazas by improving regional bypass options for traffic destined to the northern parts of Delhi NCR.

The map below illustrates the location of the DATRPL Project and the corridor it covers:



4. **Nelamangala Devihalli Expressway Private Limited**

Overview of the Project and the Concession

On July 9, 2007, the NHAI and Lanco Devihalli Highways Limited (the erstwhile concessionaire) entered into a concession agreement whereby Lanco Devihalli Highways Limited was engaged, on a BOT basis, for four-laning of the carriageway on the Nelamangala junction in Karnataka with an overall length of 80.3 kilometers (the "**NDEPL Project**"). Since Lanco Devihalli Highways Limited was unable to meet its debt obligations under its financing agreements, Nelamangala Devihalli Expressway Private Limited ("**NDEPL**") was substituted as the concessionaire for the concerned road.

NDEPL has the sole and exclusive right to demand, collect and appropriate tolls payable by vehicles using the NDEPL Project in accordance with the NDEPL Concession Agreement and at the rates set out in the National Highways Fee (Determination of Rates and Collection) Rules, 2008, as amended. For further details on the NDEPL Concession Agreement, please see the section entitled "*Summary of the Concession Agreements*" on page 320.

Corridor and Network Description and Traffic Characteristics

According to the Traffic Consultant, the NDEPL Project is situated in the southern state of Karnataka and connects Bengaluru to Mangaluru along National Highway 75 ("**NH75**"). It is one of three key sections of this corridor, along with the Devihalli–Hassan and Hassan–Mangaluru stretches, and includes two toll plazas: one at Doddakarenahalli near Nelamangala, close to Bengaluru, and the other at Karbylu near Devihalli. The NDEPL Project provides critical connectivity between Bengaluru and the port city of Mangaluru.

Leisure and tourism-related travel between Bengaluru, Hassan, Madikeri, Mangaluru and Commercial traffic includes consumption-based agro-related commodities in light goods vehicles and petroleum products transported in bullet tankers. Key trip generators include the Bharat Petroleum Corporation Limited bottling plant at Solur, the Hindustan Petroleum Corporation Limited bottling plant at Yediyur and petroleum-refining and port facilities in Mangaluru. Historically robust economic growth in the state, reflected by Karnataka's GSDP CAGR of 7.4% between the Financial Year 2012 and the Financial Year 2024.

Upgrades to Bengaluru airport, broader economic development in the Bengaluru metropolitan region, and improvements to the Shiradi Ghat section of NH75 are contributing to the observed growth. The planned development of the Gundya–Sakleshpur tunnel between Hassan and Mangaluru is also expected to enhance service levels on the corridor.

The map below illustrates the location of the NDEPL Project and the corridor it covers:

5. **Walayar Vadakkencherry Expressways Private Limited**

Overview of the Project and the Concession

On September 17, 2012, the NHAI and KNR Walayar Tollways Private Limited (the erstwhile concessionaire) entered into a concession agreement whereby KNR Walayar Tollways Private Limited was engaged, on a DBFOT basis, for four-laning of the carriageway on the Walayar-Vadakkencherry section of NH 544 (erstwhile NH 47) in Kerala with an overall length of approximately 54 kilometers (the "**WVEPL Project**").

WVEPL has the sole and exclusive right to demand, collect and appropriate tolls payable by vehicles using the WVEPL Project in accordance with the WVEPL Concession Agreement and at the rates set out in the National Highways Fee (Determination of Rates and Collection) Rules, 2008, as amended. For further details on the WVEPL Concession Agreement, please see the section entitled "*Summary of the Concession Agreements*" on page 320.

Corridor and Network Description and Traffic Characteristics

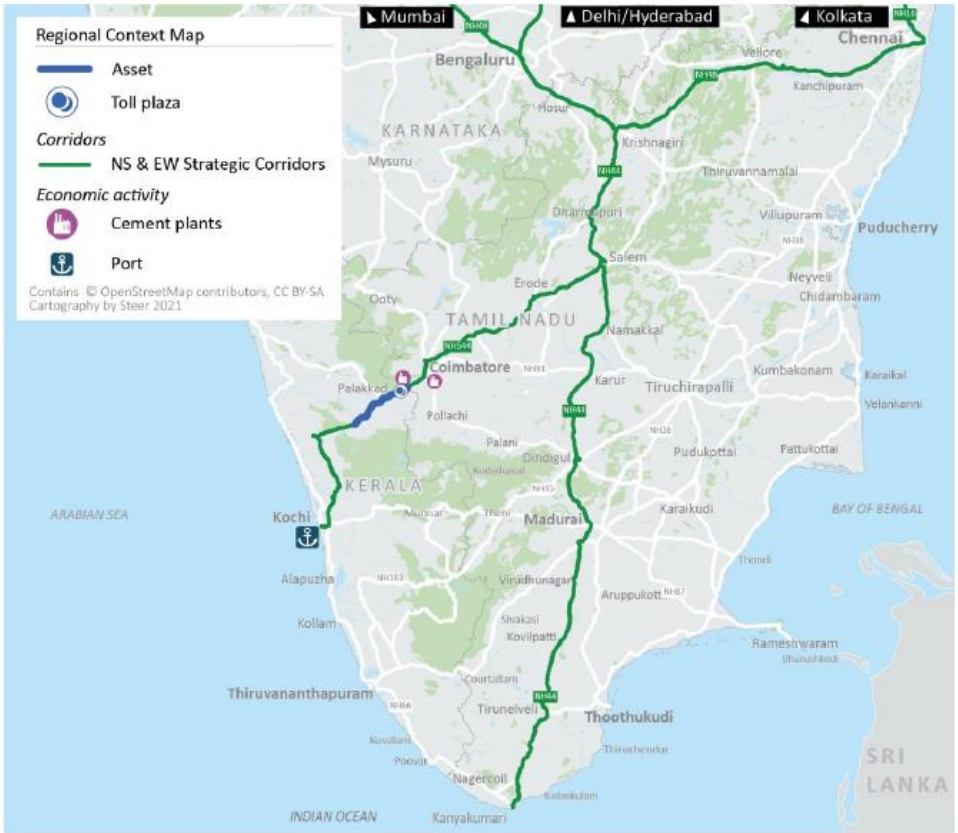
According to the Traffic Consultant, the WVEPL Project comprises an approximately 54 km section of NH 544 between Walayar and Vadakkencherry in Kerala, with a single toll plaza located at Pampampallam near the Kerala–Tamil Nadu border. The corridor forms part of the broader Salem–Kochi national highway system, providing an important inter-state connection between Tamil Nadu's industrial belt and Kerala's major consumption centres.

The WVEPL Project supports a mix of passenger and freight traffic. Passenger flows include intercity movement between Palakkad, Thrissur and Kochi, as well as cross-border trips between Kerala and Coimbatore. Freight movement is underpinned by significant cross-border trade, with commodities such as cement, steel, petroleum products and agricultural goods moving between Coimbatore's industrial clusters and Kerala's consumption markets. The Traffic Consultant highlighted that the corridor also functions as a key highway connecting Salem in Tamil Nadu to Kochi in Kerala, reinforcing its role as an integral part of the NH544 east-west corridor.

Traffic growth is supported by structural demand drivers. Kerala's high population density, increasing vehicle ownership and dependence on other states for meeting its demand for agricultural products and construction material. Commercial traffic is strengthened by economic activity in the Coimbatore–Palakkad industrial region and Kerala's import-driven economy, while passenger traffic benefits from continued tourism and regional commuting.

Overall, the Traffic Consultant considers the WVEPL corridor to be a critical inter-state link within the Salem–Kochi highway system, characterised by strong long-term economic drivers on both sides of the border.

The map below illustrates the location of the WVEPL Project and the corridor it covers:



6. **Farakka-Raiganj Highways Private Limited**

Overview of the Project and the Concession

On July 19, 2010, the NHAI and Farakka-Raiganj Highways Private Limited ("**FRHPL**") entered into the FRHPL Concession Agreement whereby FRHPL was engaged, on a BOT basis, for four-laning of the carriageway on the Farakka-Raiganj junction in West Bengal with an overall length of 100.1 kilometers (the "**FRHPL Project**").

FRHPL has the sole and exclusive right to demand, collect and appropriate tolls payable by vehicles using the FRHPL Project in accordance with the FRHPL Concession Agreement and at the rates set out in the National Highways Fee (Determination of Rates and Collection) Rules, 2008, as amended. For further details on the FRHPL Concession Agreement, please see the section entitled "*Summary of the Concession Agreements*" on page 320.

Corridor and Network Description and Traffic Characteristics

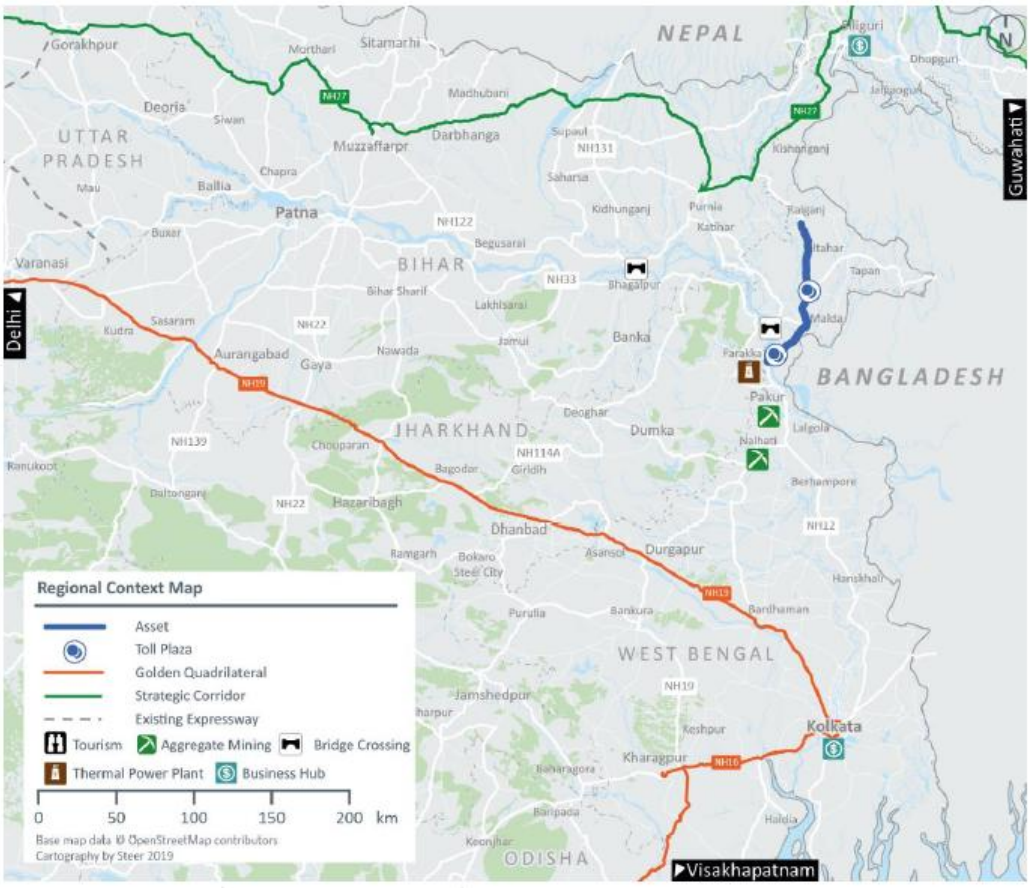
According to Traffic Consultant, the FRHPL Project is located in West Bengal and connects the cities of Farakka and Raiganj, providing intermediate connectivity to Malda. The FRHPL Project lies on the NH12 north–south corridor. The corridor is situated close to the international border with Bangladesh, and is connected to major land ports at Mahadipur and Hili via NH512. The FRHPL Project, therefore, forms part of a strategic long-distance national freight route.

Traffic using the corridor is predominantly commercial, serving goods movement across West Bengal, the north-eastern states, Bihar, Jharkhand and parts of southern India. The FRHPL Project covers short-distance movements within Malda and Murshidabad districts, medium-distance movements between southern and northern West Bengal (including Pakur in Jharkhand and Malda and Bangladesh), and long-distance movements between Kolkata and the north-eastern region. Trip patterns reflect the corridor's role in supporting the distribution of agricultural commodities, construction materials, petroleum products and manufactured goods.

The corridor's location at the southern end of the Farakka Barrage (the only river-crossing available on NH12 in the region) makes it a critical funnelling point for both medium- and long-distance traffic. All traffic between Kolkata/Durgapur/Bardhaman and Kishanganj/north-east India must traverse this crossing.

Recent improvements to the NH12 corridor north of the FRHPL Project, including completion of the Dalkhola bypass, full 4-laning of the Raiganj–Dalkhola section, and opening of the Raiganj bypass and ROB. Conversely, the future completion of the Sahibganj Bridge across the Ganges may divert a portion of specific OD pairs from Financial Year 2028 onward, primarily short- and medium-distance trips. Recovery of Bangladesh-bound traffic.

The map below illustrates the location of the FRHPL Project and the corridor it covers:



7. **Western UP Tollway Private Limited**

The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. Although WUPTPL contributed to our consolidated revenue from operations during the last three Financial Years, we do not expect such contribution to continue going forward. The Investment Manager shall fulfil its obligations in respect of WUPTPL in accordance with the SEBI circular dated May 15, 2026, bearing the reference number SEBI/HO/DDHS/DDHS-PoD-2/I/11698/2026, read with the InvIT Regulations, as amended. Details of the WUPTPL Project prior to its handover are set out below:

Overview of the Project and the Concession

On September 9, 2005, the NHAI and Western UP Tollway Private Limited ("**WUPTPL**") entered in a concession agreement whereby Western UP Tollway Limited was engaged, on a BOT basis, for four laning of the carriageway of Meerut to Muzaffarnagar section of NH 334 (erstwhile NH 58) in Uttar Pradesh with an overall length of 77.8 kilometers (the "**WUPTPL Project**").

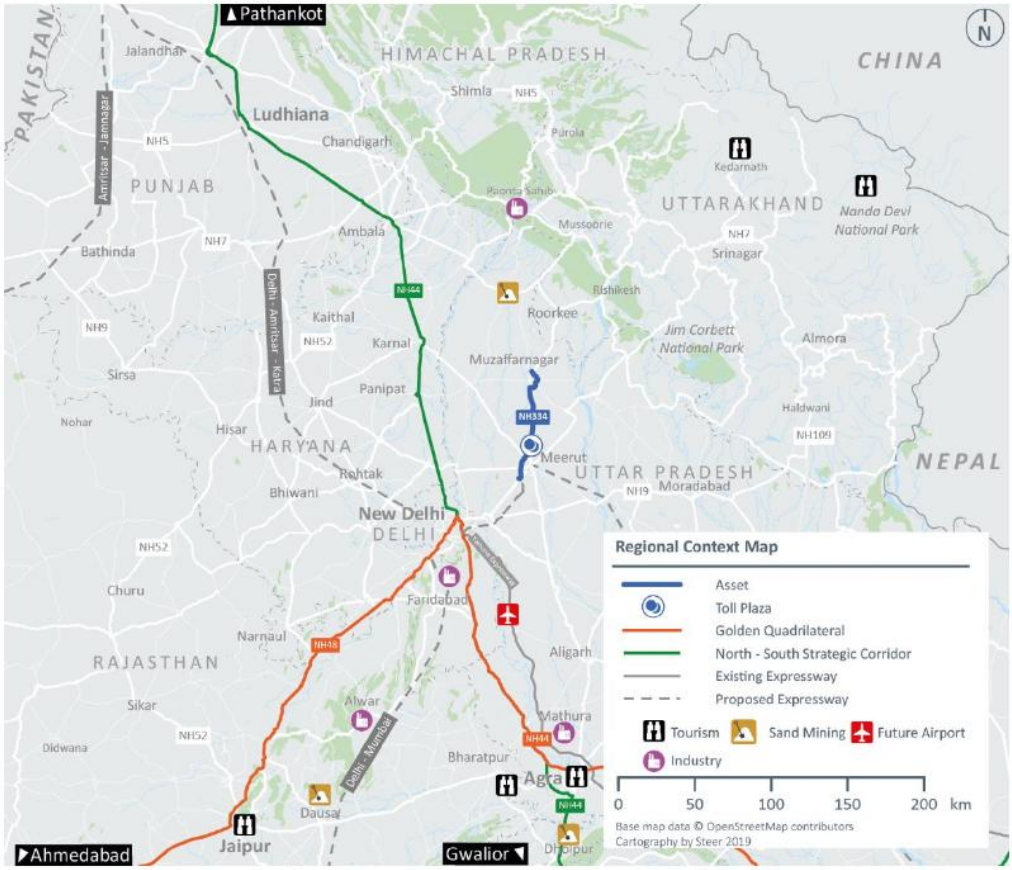
WUPTPL has the sole and exclusive right to demand, collect and appropriate tolls payable by vehicles using the WUPTPL Project in accordance with the WUPTPL Concession Agreement and at the rates set out in the National Highways Fee (Determination of Rates and Collection) Rules, 2008, as amended.

Corridor and Network Description and Traffic Characteristics

According to the Traffic Consultant, the WUPTPL Project lies in the state of Uttar Pradesh and connecting the state capital of Dehradun with the NCR. Traffic on the corridor comprises a combination of short-, medium- and long-distance movements. This section also attracts a significant volume of tourism, including pilgrimages to centres such as Dehradun, Haridwar, Rishikesh, Auli, and Badrinath/Kedarnath. Commercial traffic is substantial and comprises a mix of goods vehicles transporting, among others, agricultural produce, construction materials, manufactured goods.

The Traffic Consultant also noted that the WUPTPL Project benefits from strong underlying economic drivers in Uttar Pradesh, including population growth, urbanisation, tourism flows and a large consumption market, all of which contribute to sustained long-term demand.

The map below illustrates the location of the WUPTPL Project and the corridor it covers:



8. **Ghaziabad Aligarh Expressway Private Limited**

Overview of the Project and the Concession

On May 20, 2010, the NHAI and Ghaziabad Aligarh Expressway Private Limited ("**GAEPL**") entered into the GAEPL Concession Agreement whereby GAEPL was engaged, on a BOT basis, for four-laning of the carriageway on the Ghaziabad-Aligarh section of NH 91 in Uttar Pradesh with an overall length of 126.3 kilometers (the "**GAEPL Project**").

GAEPL has the sole and exclusive right to demand, collect and appropriate tolls payable by vehicles using the GAEPL Project in accordance with the GAEPL Concession Agreement and at the rates set out in the National Highways Fee (Determination of Rates and Collection) Rules, 2008, as amended. For further details on the GAEPL Concession Agreement, please see "*Summary of the Concession Agreements*" on page 320.

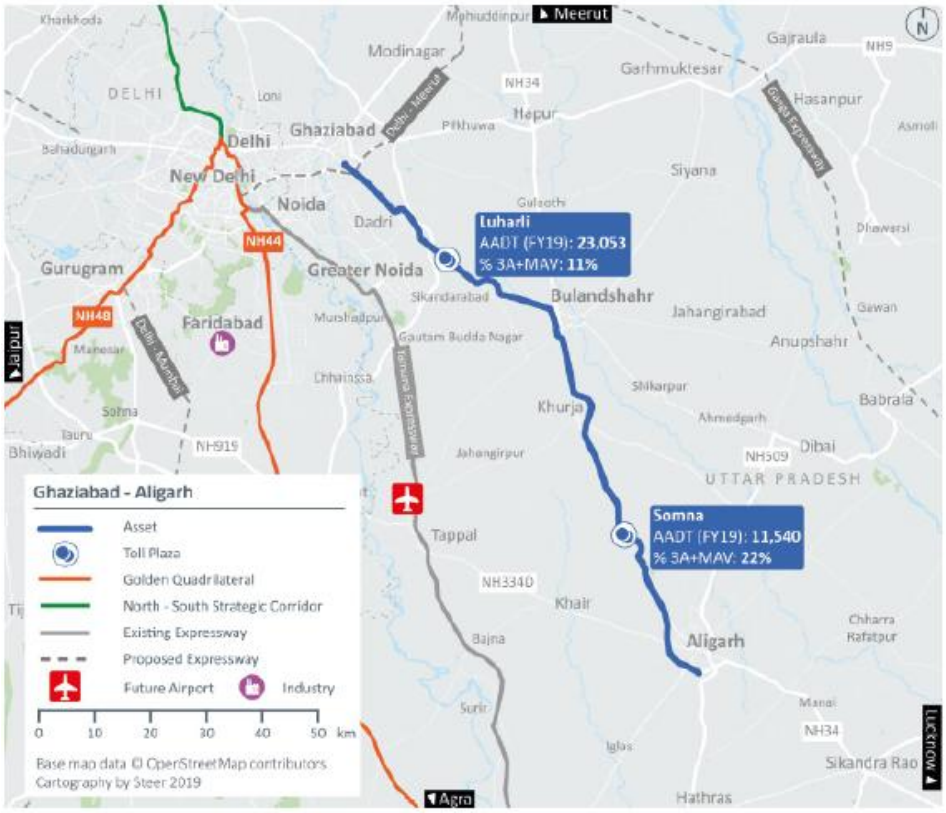
Corridor and Network Description and Traffic Characteristics

According to the Traffic Consultant, the GAEPL Project is located in western Uttar Pradesh and connects the cities of Ghaziabad and Aligarh via Khurja and Bulandshahr. It forms a 126.3-km six-lane segment of NH 91. The GAEPL Project includes two toll plazas: Luharli (TP1) near Ghaziabad and Somna (TP2) near Aligarh. The corridor underwent significant upgrades in October 2023, when six-laning was completed, and in July 2025.

Local traffic includes trips between the urban centres of Ghaziabad, Khurja, Bulandshahr, Sikandrabad and Aligarh, as well as daily commuting into Delhi–NCR. Industrial activity along the corridor materially influences traffic patterns. Commercial traffic also includes vehicles transporting construction materials, petroleum products and manufactured items between Ghaziabad, Sikandrabad, Bulandshahr and Aligarh. TP2 Somna exhibits a higher share of medium- and long-distance freight, including flows to and from Kanpur, Etawah and other eastern UP districts, as well as goods originating from industries in Aligarh.

For long-distance movements between Delhi and Lucknow, users may choose among parallel highways, including NH 9 (Old NH 24), the NH2/NH19 corridor, and the combination of the Yamuna Expressway and Agra–Lucknow Expressway. Medium-distance users southeast of the GAEPL Project have access to upgraded highway networks, such as the four-lane Aligarh–Kanpur section. The Traffic Consultant also identified local leakage routes near TP1 and TP2, which historically enabled toll evasion; a check plaza operated between August 2023 and September 2024 reduced leakage, and the newly commissioned staggered TP1 plaza is expected to further improve compliance.

The map below illustrates the location of the GAEPL Project and the corridor it covers:



9. **N.A.M. Expressway Private Limited**

Overview of the Project and the Concession

On July 23, 2010, the relevant state authorities in Andhra Pradesh and Telangana and N.A.M. Expressway Private Limited ("**NAMEPL**") entered into the NAMEPL Concession Agreement whereby NAMEPL was engaged, on a BOT basis, for the design, engineering, construction, development, finance, operation and maintenance of the Narketpally-Addanki-Medarametla Road (SH-2) from Km. 0.000 to 212.500 in the state of Andhra Pradesh under Public Private Partnership on DBFOT (toll) basis (the "**NAMEPL Project**").

NAMEPL has the sole and exclusive right to demand, collect and appropriate tolls payable by vehicles using the NAMEPL Project in accordance with the NAMEPL Concession Agreement. For further details on the NAMEPL Concession Agreement, please see the section entitled "*Summary of the Concession Agreements*" on page 320.

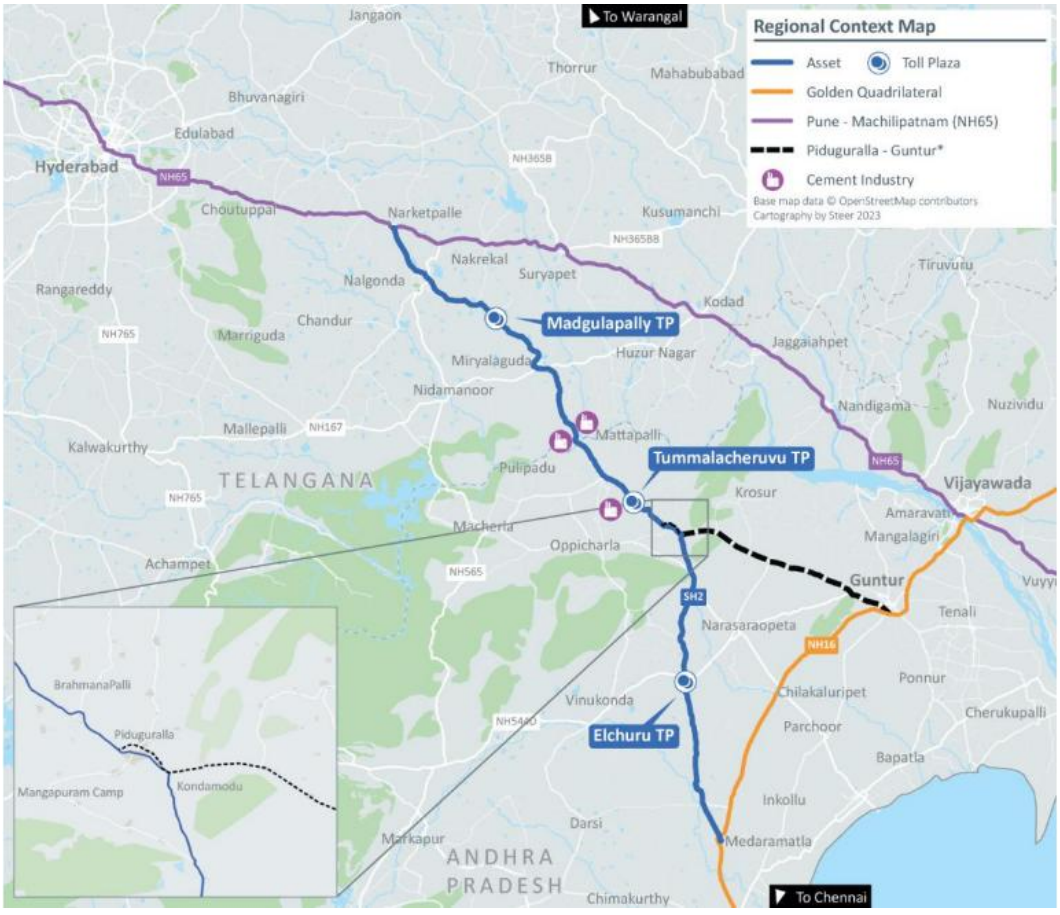
Corridor and Network Description and Traffic Characteristics

According to the Traffic Consultant, the NAMEPL Project is an interstate corridor connecting southeastern Telangana with northern Andhra Pradesh along State Highway 2 (new SH-36 in AP). The NAMEPL Project runs from Narketpally in Nalgonda district to Medarametla in Prakasam district, spanning 212.5 km, and includes three toll plazas (Madgulapally (TP1), Tummalacheruvu (TP2) and Elchuru (TP3)) in increasing order of distance from Hyderabad.

Long-distance traffic includes flows along multiple national corridors that use SH-2 as an intermediate connector, such as the NH44–SH2–NH16 corridor linking northern India (Delhi, Haryana, Punjab, Uttarakhand) with Chennai, the NH65–SH2–NH16 corridor linking Mumbai with Chennai, and the NH52–SH2–NH16 corridor linking Gujarat and Rajasthan with Chennai.

The NAMEPL Project also carries medium-distance inter-regional movement between Hyderabad, Vijayawada, and cement-production centres located along and near the corridor. The Traffic Consultant further identified medium-distance movements between SH2 and NH16. In addition, short-distance trips occur between Hyderabad.

The map below illustrates the location of the NAMEPL Project and the corridor it covers:



Description of toll, operate and transfer toll roads

1. Kotwa – Muzaffarpur Tollway Private Limited

Overview of the Project and the Concession

On December 27, 2019, NHAI and Kotwa-Muzaffarpur Tollway Private Limited ("**KMTPL**") entered into the KMTPL Concession Agreement whereby KMTPL was engaged, on a toll, operate and transfer ("**TOT**") basis, for the project highway in Bihar with an overall length of 80.0 kilometers (the "**KMTPL Project**"). KMTPL has the sole and exclusive right from the Appointed Date (as defined under the KMTPL Concession Agreement) to undertake tolling activities. For further details on the KMTPL Concession Agreement, please see the section entitled "*Summary of the Concession Agreements*" on page 316.

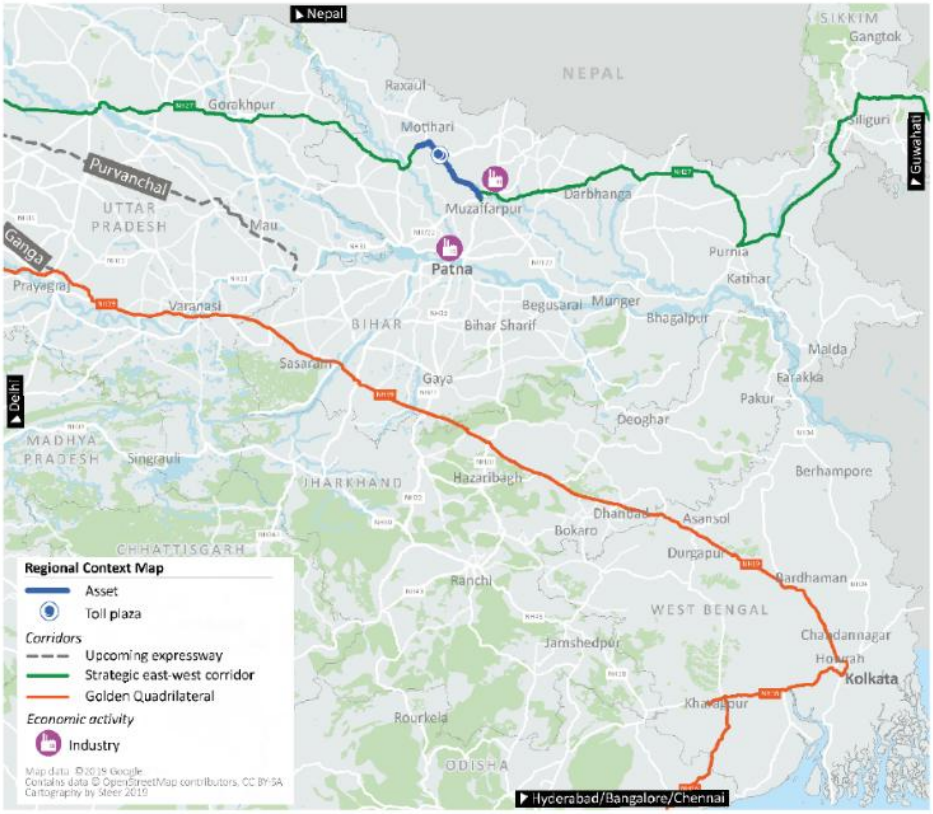
Corridor and Network Description and Traffic Characteristics

According to the Traffic Consultant, the KMTPL Project is situated in Bihar and forms part of National Highway 27, connecting Kotwa near Motihari with Muzaffarpur. The Traffic Reports state that the corridor lies along the East–West movement axis, serving traffic flows between Uttar Pradesh and parts of north India, West Bengal and the north-eastern states. The Traffic Consultant also noted that the route provides connectivity to Nepal, and that a number of industrial and fuel-distribution projects in the region contribute to movement along the corridor.

The Traffic Consultant identified SH74 as an alternate connection between Muzaffarpur and NH27, describing it as a state highway running through towns and villages, providing an attractive shorter-distance option. The report notes that vehicles travelling from Uttar Pradesh and western regions toward the north-eastern states may use this alternate route to save time and tolls. The Traffic Consultant also observed that users travelling toward Darbhanga or eastwards may join SH74 at Rampur Khajuria and exit via Kesariya, Chakia or Motipur, depending on their origin and destination.

The Traffic Consultant noted that the 568-km Gorakhpur–Siliguri Expressway, approved in 2025, will run through Gorakhpur, Gopalganj, Champaran, Kotwa, Muzaffarpur and Siliguri, providing a high-speed alternative route between Uttar Pradesh, Bihar and West Bengal. Because the alignment runs parallel to the KMTPL Project, the Traffic Reports state that once the expressway becomes operational, long-distance trips moving east–west may divert to the new corridor.

The map below illustrates the location of the KMTPL Project and the corridor it covers:



2. Lucknow-Raebareli Tollway Private Limited

Overview of the Project and the Concession

On December 27, 2019, NHAI and Lucknow-Raebareli Tollway Private Limited ("**LRTPL**") entered in the LRTPL Concession Agreement whereby LRTPL was engaged, on a TOT basis, for the project highway in Uttar Pradesh with an overall length of 70.0 kilometers (the "**LRTPL Project**"). LRTPL has the sole and exclusive right from the Appointed Date (as defined under the LRTPL Concession Agreement) to undertake tolling activities and with effect from the O&M Handover Date (as defined under the LRTPL Concession Agreement). For further details on the LRTPL Concession Agreement, please see the section entitled "*Summary of the Concession Agreements*" on page 316.

Corridor and Network Description and Traffic Characteristics

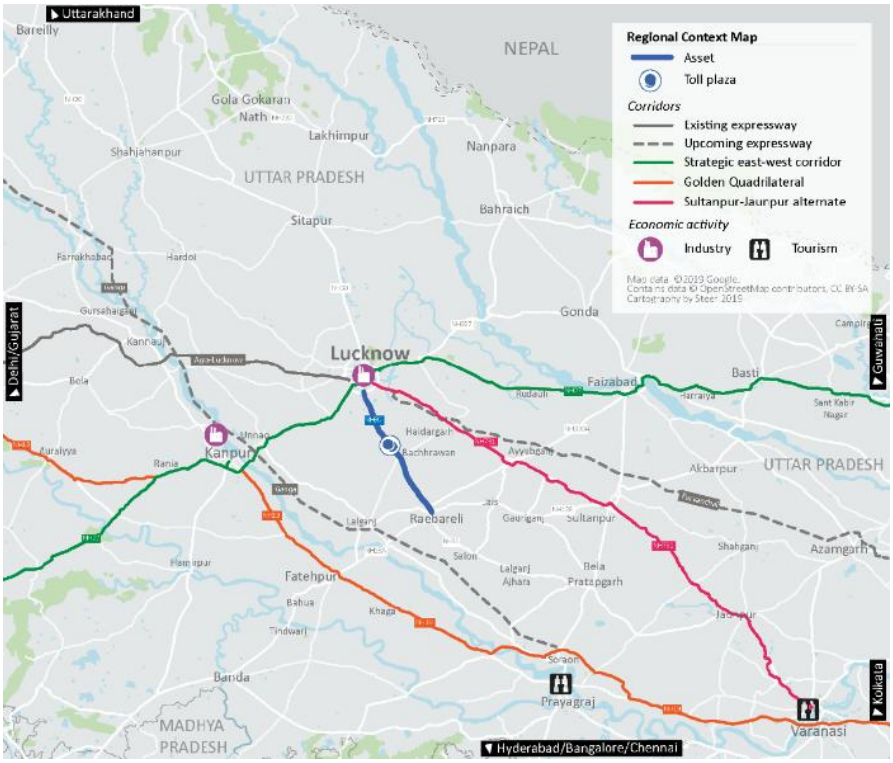
According to the Traffic Consultant, the LRTPL Project is situated in the state of Uttar Pradesh, connecting the state capital Lucknow to Raebareli in the south-central part of the state. The Traffic Reports note that the LRTPL Project forms a part of NH 30, is 70 km long and contains one toll plaza, Dakhina Sekhpur, located at Km 42.5 closer to Lucknow. The corridor lies within a regional road network that links Lucknow to important cities such as Prayagraj, Varanasi and Mirzapur.

The Traffic Consultant stated that the LRTPL Project caters to short-distance trips undertaken mainly by passenger vehicles for work, business and tourism/pilgrimage, with movement predominantly local between Lucknow, Raebareli, Prayagraj, Varanasi and Mirzapur. The Traffic Reports also note that LCVs cater to local consumption demand generated by the two major centres, Lucknow and Raebareli, and that short-distance MAV trips feed into that demand and carry significant quantities of cement from nearby cement factories.

The Traffic Reports also identify long-distance trips undertaken by heavy trucks travelling between Punjab, Haryana, Uttar Pradesh, West Bengal and Jharkhand, carrying commodities such as agricultural and grocery items, metal, cement, petroleum and manufactured items. Origin–destination analysis shows that several key OD pairs include movement between Lucknow, Raebareli, Prayagraj, Varanasi, and other districts in Uttar Pradesh.

The Traffic Consultant highlighted several network developments that influence the LRTPL Project. The 594 km Ganga Expressway connecting Meerut and Prayagraj was made operational in April 2026, and passes through districts including Raebareli and Prayagraj, benefitting long- and medium-distance users making end-to-end trips. The corridor also experiences periodic increases in passenger traffic during the Kumbh and Ardha-Kumbh festivals in Prayagraj, with higher car and bus volumes observed in festival years.

The map below illustrates the location of the LRTPL Project and the corridor it covers:



3. Madurai Kanyakumari Tollway Private Limited, Kanyakumari-Etturavattam Tollway Private Limited, Salaipudhur-Madurai Tollway Private Limited and Nanguneri-Kanykakumari Tollway Private Limited (collectively referred to as "MK")

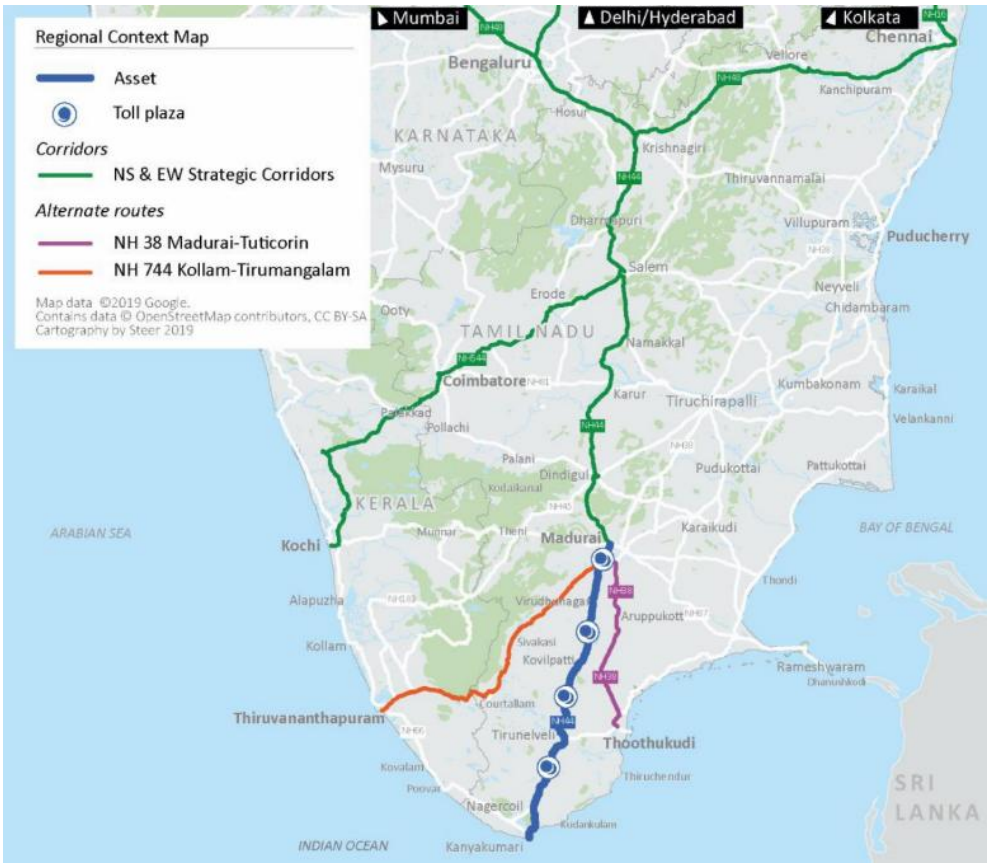
Overview of the Project and the Concession

On December 27, 2019, each of the entities of MK entered into individual concession agreements with NHAI whereby each was engaged, on a TOT basis, for the project highway in Tamil Nadu with an overall length of approximately 243.0 kilometers (the "**MK Project**"). Each of these entities has the sole and exclusive right from the Appointed Date (as defined under the respective concession agreements) to undertake tolling activities on its individual stretches. For further details on these concession agreements, please see "*Summary of the Concession Agreements*" on page 316.

Corridor and Network Description and Traffic Characteristics

According to the Traffic Consultant, the MK Project together covers the Madurai–Kanyakumari section of NH-44. Traffic along the MK Project comprises a mix of short-, medium-, and long-distance movements. Passenger vehicle trips are primarily driven by commuting within southern Tamil Nadu, inter-city travel between Madurai and tourism- and pilgrimage-related travel to locations such as Kanyakumari. Commercial traffic includes agricultural produce, construction materials, and manufactured goods. The Traffic Reports identify that the MK Project serves movements coming from both ends of the corridor.

The map below illustrates the location of the MK Project and the corridor it covers:



4. Jhansi-Lalitpur Tollway Private Limited and Jhansi-Vigakhet Tollway Private Limited

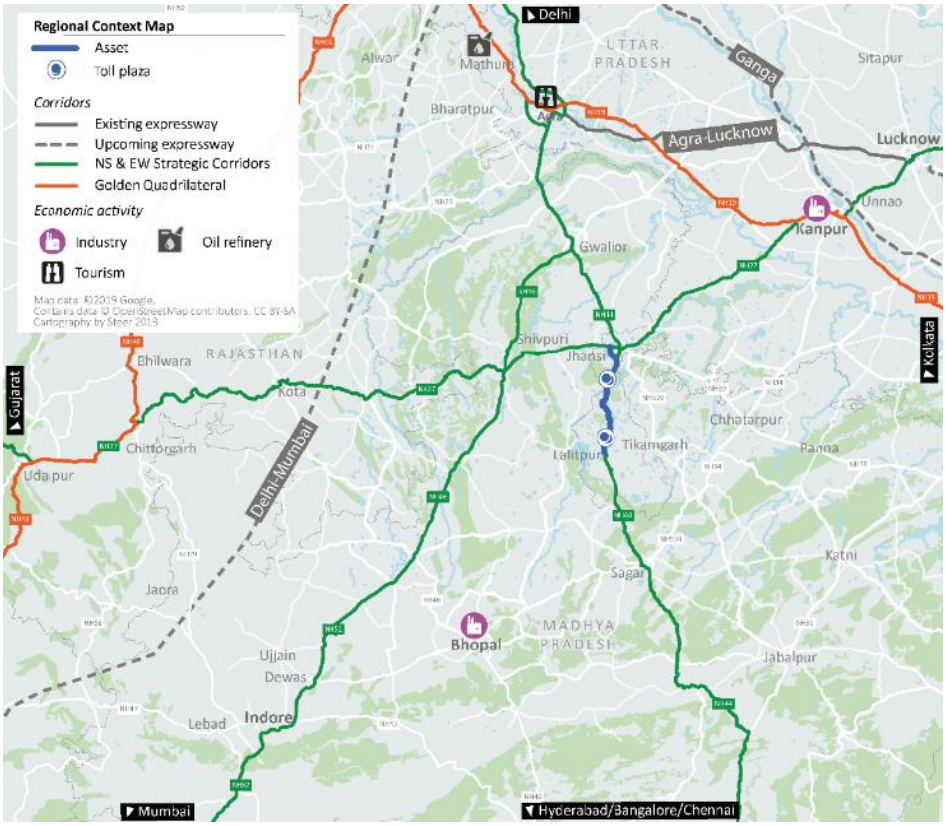
Overview of the Project and the Concession

On December 27, 2019, NHAI and Jhansi-Lalitpur Tollway Private Limited ("**JLTPL**") and Jhansi-Vigakhet Tollway Private Limited ("**JVTPL**") entered into the JLTPL Concession Agreement and JVTPL Concession Agreement, respectively, whereby JLTPL and JVTPL were engaged, on a TOT basis, for the project highway in Uttar Pradesh with an overall length of 99.0 kilometers (each referred to as the "**JLTPL Project**" and "**JVTPL Project**", respectively and together, the "**JL Project**"). JLTPL and JVTPL have the sole and exclusive right from the Appointed Date (as defined in the JLTPL Concession Agreement and JVTPL Concession Agreement, respectively) to undertake tolling activities (on their individual stretches) and with effect from the O&M Handover Date (as defined in the JLTPL Concession Agreement and JVTPL Concession Agreement, respectively). For further details on the JLTPL Concession Agreement and JVTPL Concession Agreement, please see "*Summary of the Concession Agreements*" on page 316.

Corridor and Network Description and Traffic Characteristics

According to Traffic Consultant, the JL Project comprises a 99-km section of NH-44 (old NH-25/26) in Uttar Pradesh, connecting Jhansi with Lalitpur. The Traffic Reports describe NH-44 as a major national north–south corridor serving movements between Jammu & Kashmir in the north and Kanyakumari in the south, and note that this route also connects important economic centres including New Delhi, Gwalior, Nagpur, Hyderabad, Bengaluru and Chennai. The Traffic Consultant identified the JL Project as part of a strategic corridor that supports regional and long-distance travel.

The Traffic Consultant noted that the assets carry short-distance passenger trips between Jhansi, Orchha, Talbehat and Lalitpur, including work, business, and local intercity travel within the Bundelkhand region. The corridor also serves tourism and pilgrimage movements, reflecting Jhansi's historical significance and the presence of religious and cultural destinations in the region. Passenger movement is predominantly intra-state and regional. The Traffic Reports state that heavy trucks undertake long-distance movements from Punjab, Haryana and Delhi in the north, transporting commodities such as agricultural products, manufacturing inputs. The map below illustrates the location of the JL Project and the corridor it covers:



5. Hazaribagh Tollway Private Limited

Overview of the Project and the Concession

On December 27, 2019, NHAI and Hazaribagh Tollway Private Limited ("**HTPL**") entered into the HTPL Concession Agreement, under which HTPL was engaged, on a TOT basis, for the project highway in Jharkhand with an overall length of 73.8 kilometers (the "**HTPL Project**"). HTPL has the sole and exclusive right from the Appointed Date (as defined in the HTPL Concession Agreement) to undertake tolling activities, with effect from the O&M Handover Date (as defined in the HTPL Concession Agreement). For further details on the HTPL Concession Agreement, please see the section entitled "*Summary of the Concession Agreements*" on page 316.

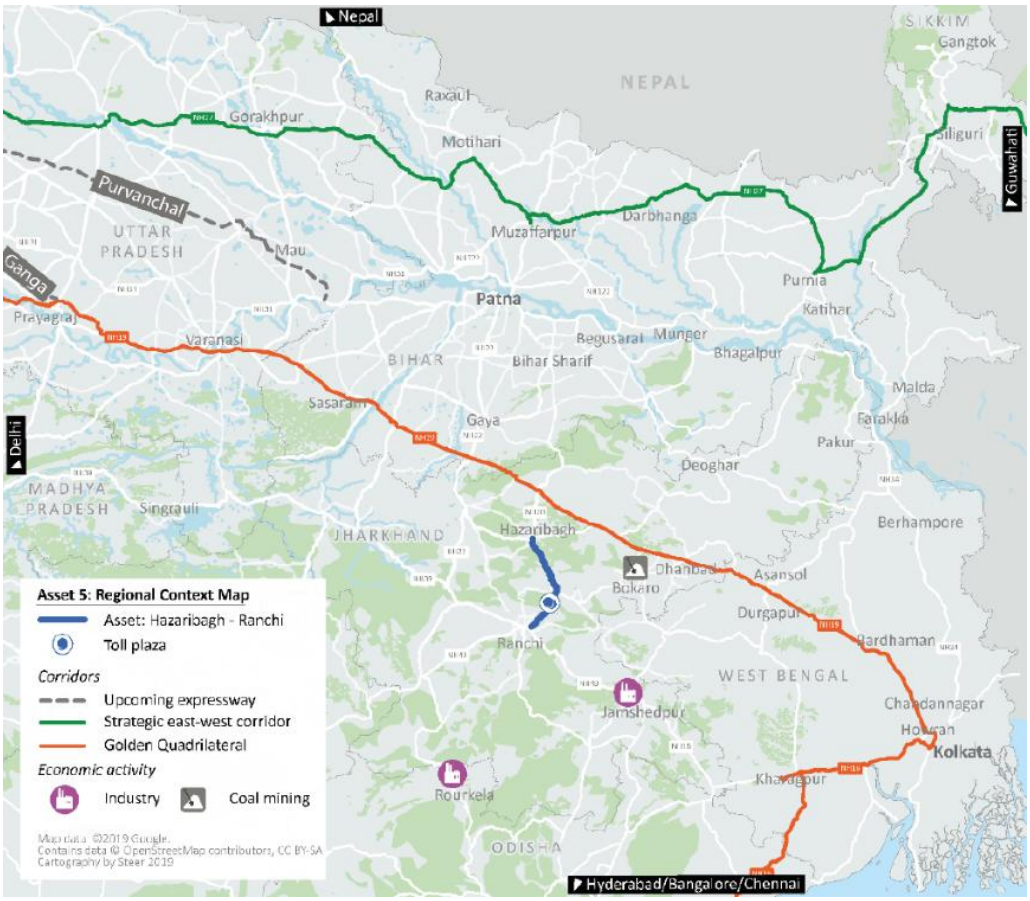
Corridor and Network Description and Traffic Characteristics

According to the Traffic Consultant, the HTPL Project connects Ranchi and Hazaribagh in the state of Jharkhand along NH 20 (erstwhile NH 33). Traffic on the HTPL Project is described as diverse, comprising short-, medium- and long-distance movements. Passenger traffic includes commuting between Ranchi, Ramgarh and Hazaribagh, and the Origin Destination (OD) survey shows that 34% of CJV trips are Ranchi–Ramgarh and 24% are Ranchi–Hazaribagh. Passenger movements also include tourism flows to destinations within Jharkhand.

OD commodity-distribution tables show meaningful shares of construction materials (up to 24%), petroleum products (up to 14%), and metals (up to 37%), as well as substantial proportions of empty return trips across categories, consistent with resource-based freight flows.

The Traffic Reports further identify long-distance freight movements between southern West Bengal, Bihar and southern/central India, reflecting the HTPL Project's role in connecting multiple regional economies. The Traffic Consultant also highlighted ongoing and upcoming network changes, including the Gola–Ormanjhi section and the Gola–Bokaro section by December 2026, and a proposed Varanasi–Ranchi–Kolkata greenfield expressway that will cross north of Ramgarh and is not expected to divert significant existing flows on the HTPL Project.

The map below illustrates the location of the HTPL Project and the corridor it covers:



Description of Hybrid Annuity Model and Annuity Toll Roads

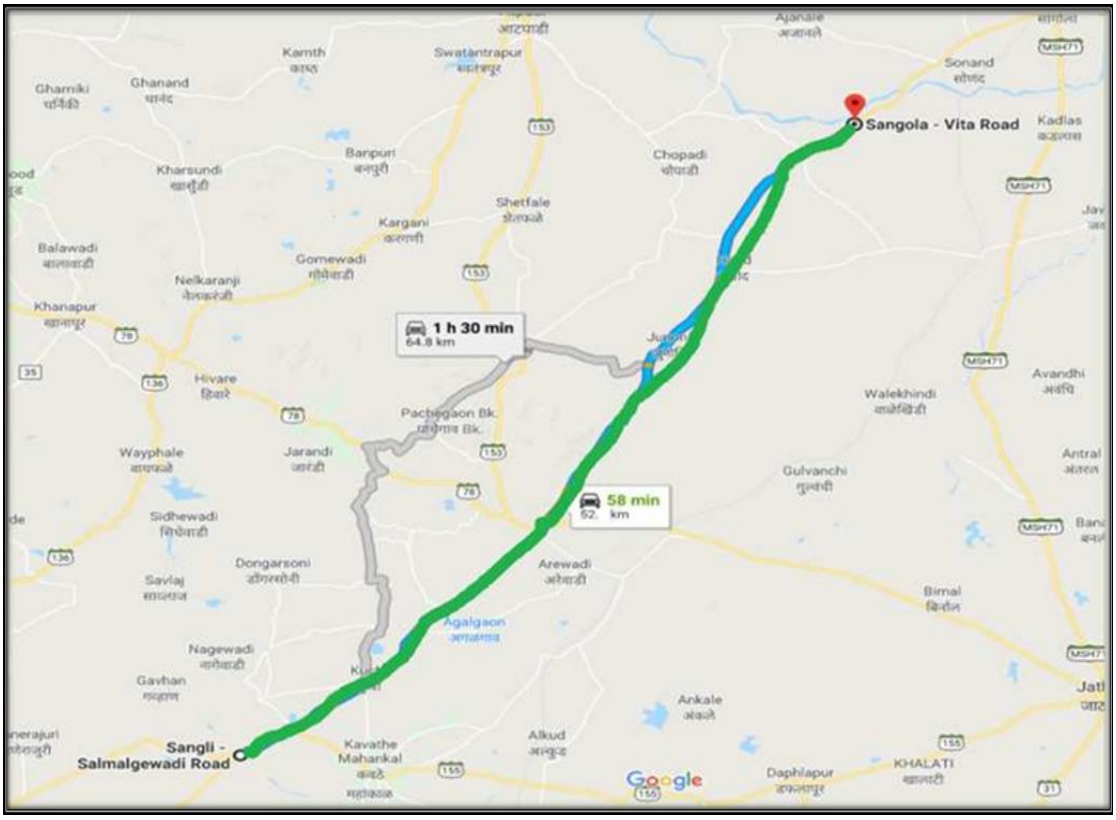
1. Andhra Pradesh Expressway Private Limited

Andhra Pradesh Expressway Private Limited ("**APEPL**") is a part of NH-44 (erstwhile NH 7), between Kothakota in Telangana and Kurnool in Andhra Pradesh (from km. 136+077 in Kothakota to km. 210+699 in Kurnool) in the state of Telangana on a Hybrid Annuity Model. The map below illustrates the location of the APEPL project and the corridor it covers:

2. Borgaon Watambare Highways Private Limited

Borgaon Watambare Highways Private Limited ("**BWHPL**") entered into a concession agreement on May 10, 2018, with the NHAI for the development, maintenance and management of a stretch of National Highway from Sangli to Solapur (Package-II: Borgaon to Watambare) section (from existing chainage km. 219.956 to chainage km. 272.394/Design chainage km. 224.000 to chainage km. 276.000) of NH166 in the state of Maharashtra on a Hybrid Annuity Model (the "**BWHPL Project**").

The map below illustrates the location of the BWHPL Project and the corridor it covers:

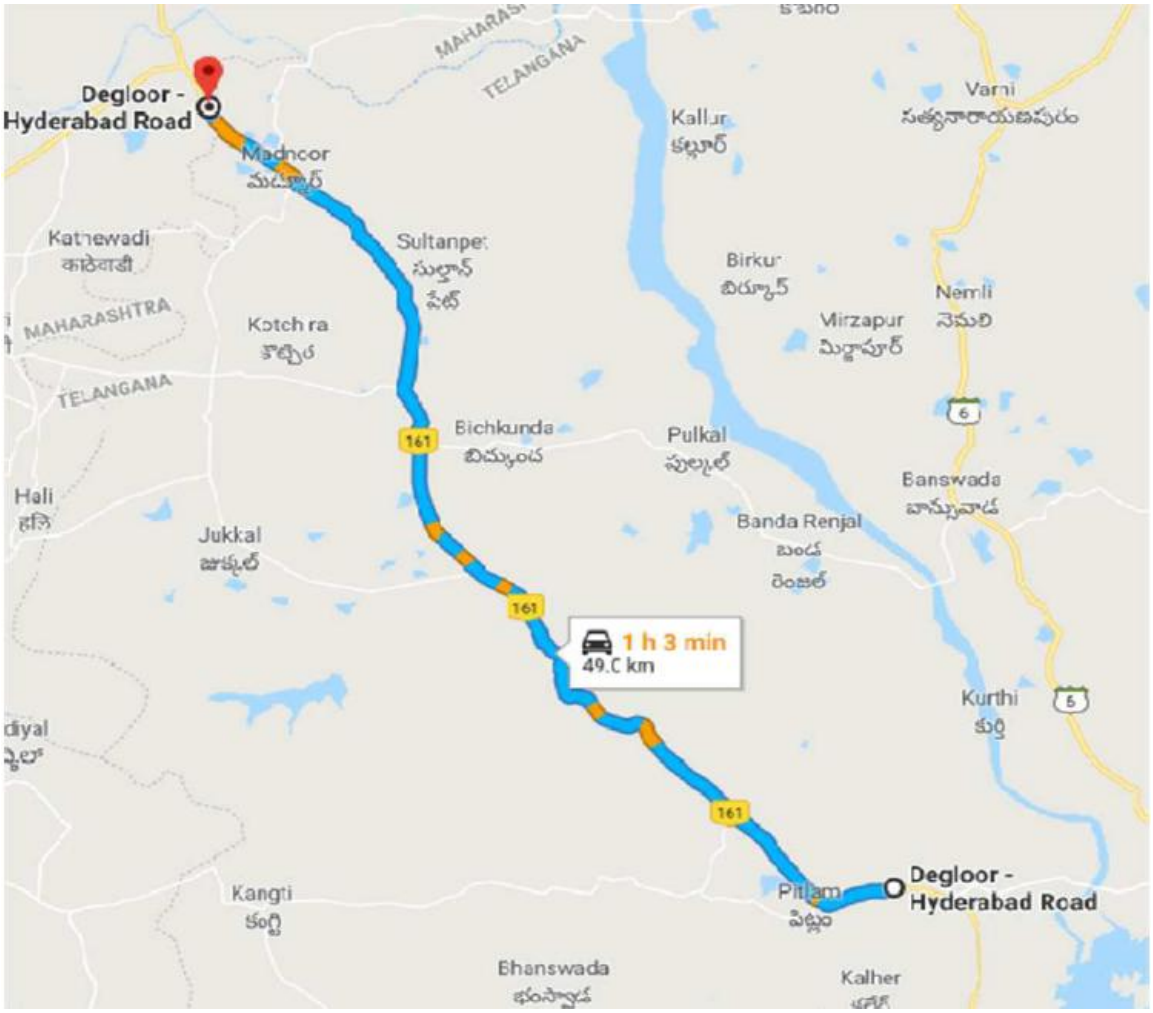


3. Mangalwedha Solapur Highways Private Limited

Mangalwedha Solapur Highways Private Limited ("**MSHPL**") entered into a concession agreement on May 10, 2018 with the NHAI for the development, maintenance and management for a stretch of National Highway from Sangli to Solapur (Package-IV: Mangalwedha to Solapur) section (from existing chainage km. 314.969 to chainage km. 370.452/Design chainage km. 321.600 to chainage km. 378.100) of NH166 in the state of Maharashtra on HAM (the "**MSHPL Project**"). The map below illustrates the location of the MSHPL Project and the corridor it covers:

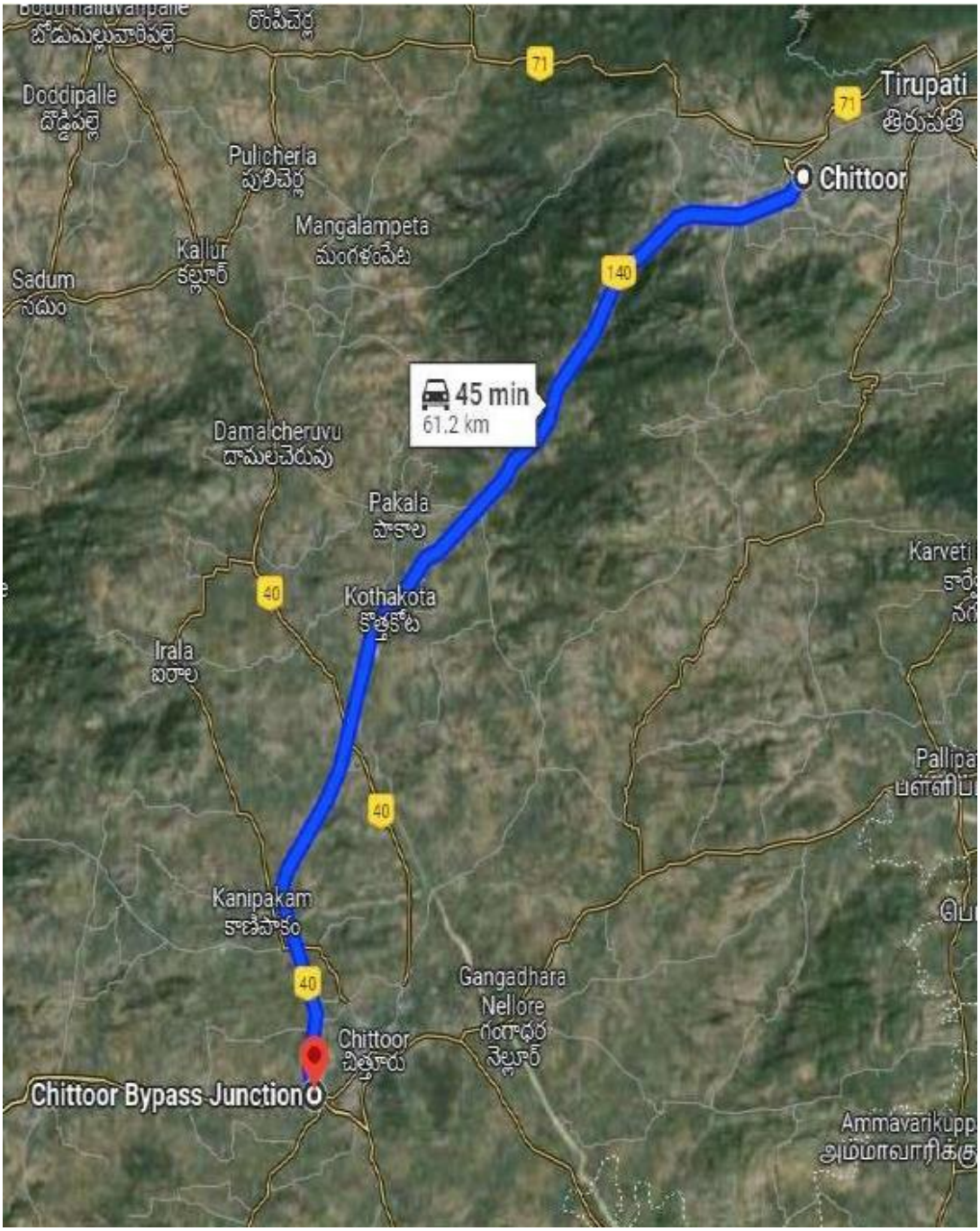
4. Mangloor Highways Private Limited

Mangloor Highways Private Limited ("**MHPL**") entered into a concession agreement on May 9, 2018, with the NHAI for the development, maintenance and management of a stretch of National Highway from Mangloor to Telangana/Maharashtra border section (Existing km. 91.350 to 140.873/Design km. 86.788 to km. 135.751) of NH161 in the state of Telangana under Bharatmala Pariyojana on HAM (the "**MHPL Project**"). The map below illustrates the location of the MHPL Project and the corridor it covers:



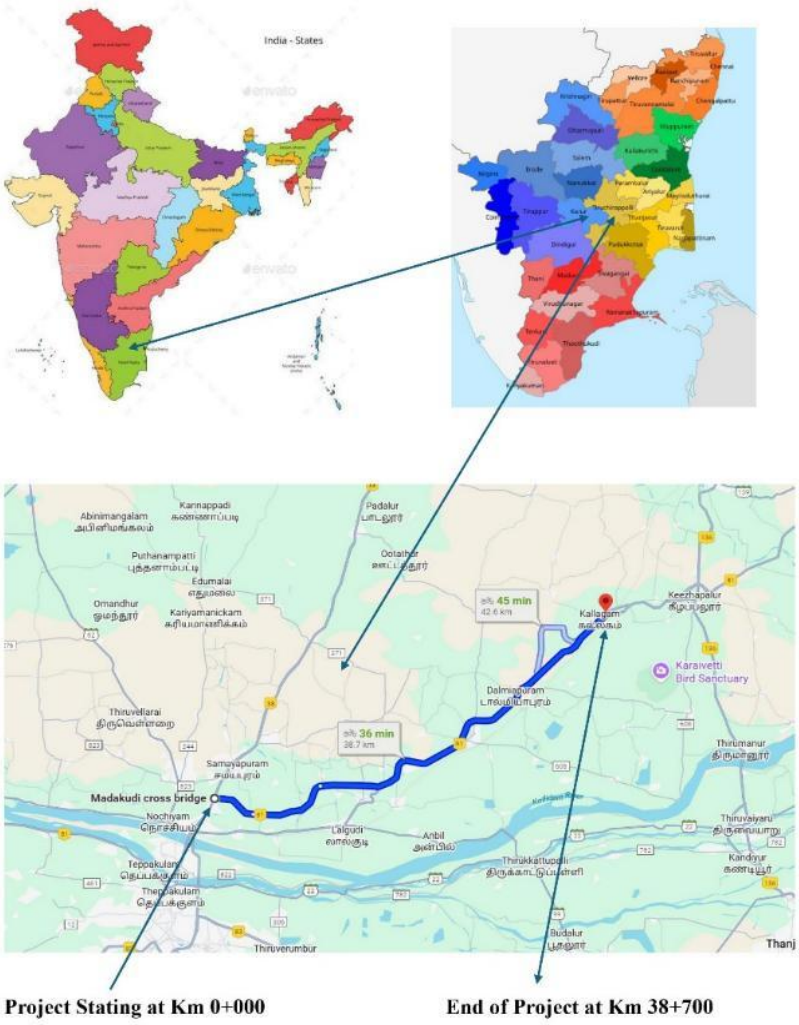
5. Tirumala Highways Private Limited

Tirumala Highways Private Limited ("**THPL**") entered into a concession agreement on May 9, 2018, with the NHAI for the development, maintenance and management of a stretch of National Highway from Chittor to Mallavaram section (from existing km. 158.000 to km. 41.800/Design km. 0.000 to km. 61.128) of NH-140 in the state of Andhra Pradesh under Bharatmala Pariyojana on HAM (the "**THPL Project**"). The map below illustrates the location of the THPL Project and the corridor it covers:



6. Srirangan Infra Private Limited

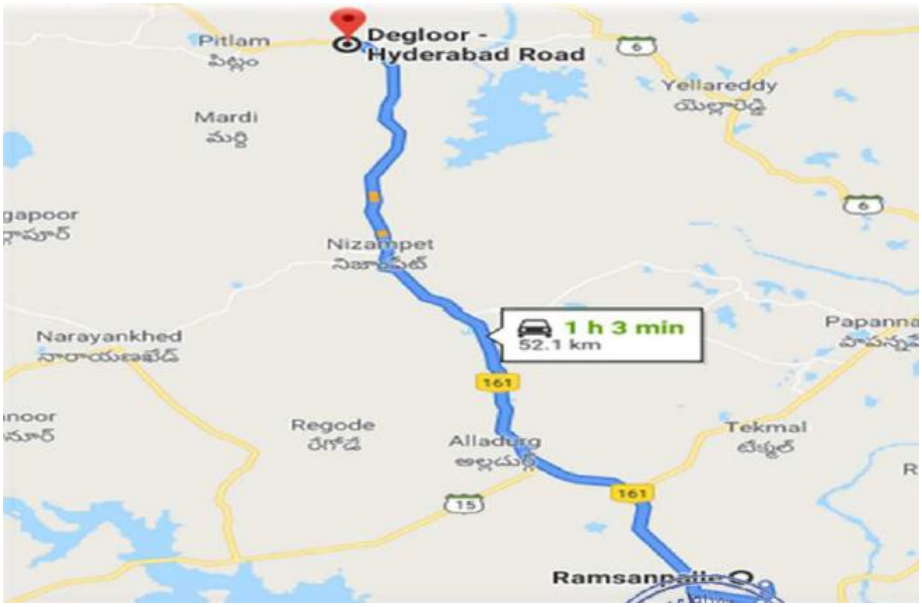
Srirangam Infra Private Limited ("**SIPL**") entered into a concession agreement on April 11, 2018, with the NHAI for the development, maintenance and management of a stretch of National Highway from Trichy to Kallagam section (from km. 0.000 to km. 38.700) of NH227 in the state of Tamil Nadu under Bharatmala Pariyojana on HAM (the "**SIPL Project**"). The map below illustrates the location of the SIPL Project and the corridor it covers:



Four Laning of Tiruchirappalli (Km.0+000) to Kallagam (Km.38+700) Section of NH-81

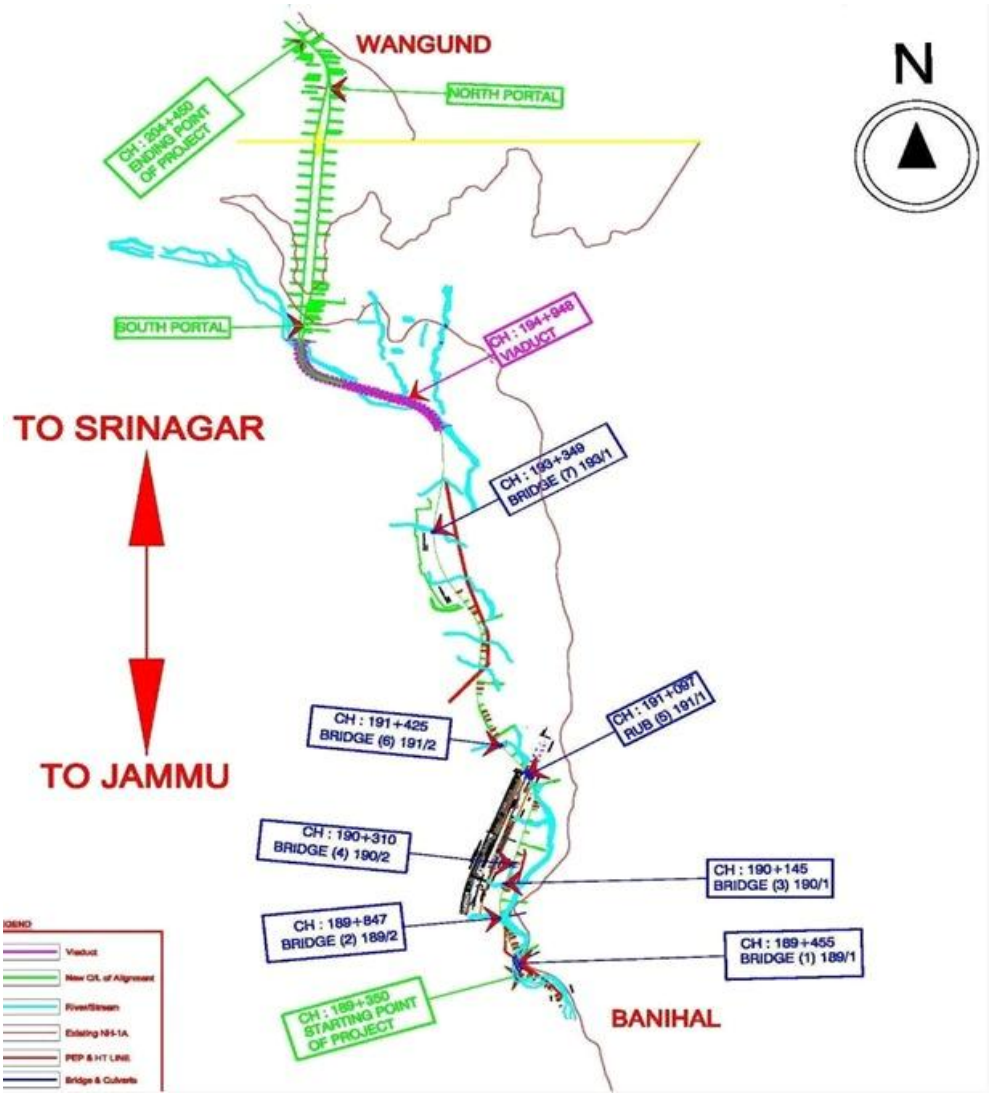
7. Shankarampet Projects Private Limited

Shankarampet Projects Private Limited ("**SPPL**") entered into a concession agreement on May 9, 2018, with the NHAI for the development, maintenance and management of a stretch of National Highway from Ramsanpalle village to Mangloor village section (from existing km. 44.757 to km. 91.350/Design km. 39.980 to km. 86.788) of NH 61 in the state of Telangana under Bharatmala Pariyoana on HAM (the "**SPPL Project**"). The map below illustrates the location of the SPPL Project and the corridor it covers:



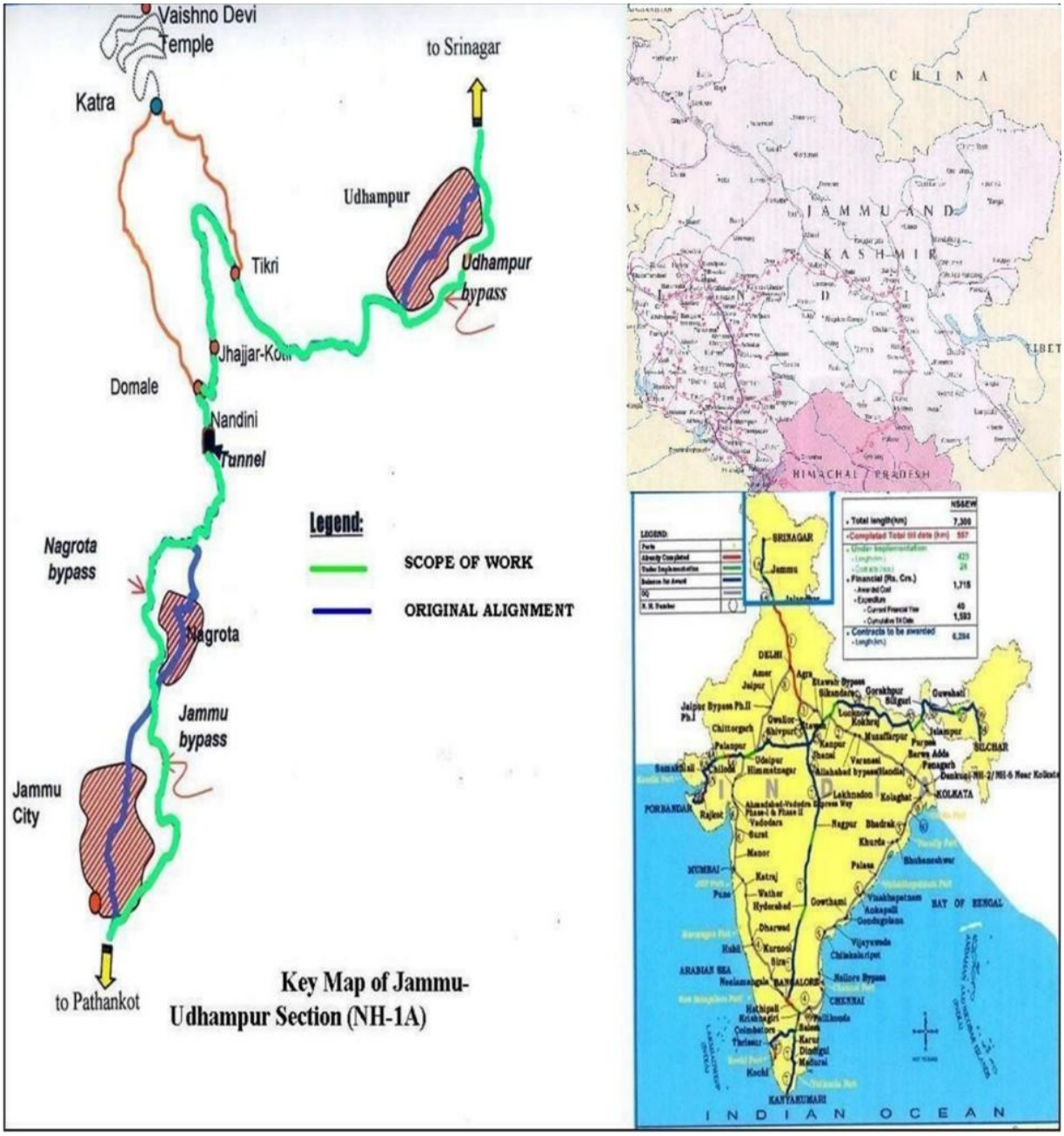
8. Quazigund Expressway Private Limited

Quazigund Expressway Private Limited ("**QEPL**") entered into a concession agreement dated July 13, 2010, for development and maintenance of NH-1A from 189.350 km to 204.700 km, including 2 tunnels (2 Lane) of 0.69 kms and 8.45 kms (approx. 15.25 km) on the Quazigund - Banihai section of NH 1A in Jammu & Kashmir on DBFOT on an annuity basis. The map below illustrates the location of the QEPL Project and the corridor it covers:



9. Jammu Udhampur Highway Private Limited

Jammu Udhampur Highway Private Limited ("**JUHPL**") entered into a concession agreement dated July 19, 2010, for the development and maintenance of NH-1A from km 15.000 to km 67.000 (approx. 64.58 km) on the Jammu - Udhampur section by four-laning on DBFOT on an annuity basis. The map below illustrates the location of the JUHPL Project and the corridor it covers:



Environment, health and safety

The Portfolio Assets are required to meet certain health, safety and environmental specifications and standards in the operation and maintenance of the projects, and are subject to a number of laws and regulations relating to health, safety and environmental protection. The Portfolio Assets are also required to adhere to various labour and workplace-related laws and regulations in India. The Portfolio Assets have policies and procedures in place to ensure that the operation and maintenance of the Projects conform to existing health, safety and environmental regulatory standards and that adequate employees' compensation and group medical insurance policies are maintained.

Health, safety, and environmental compliance are an integral part of our operations. The Portfolio Assets maintain safety management systems. We have conducted regular internal and third-party environmental and safety audits at three of our Portfolio Assets, and have implemented standardized protocols for road user and worker safety. Comprehensive health and well-being programs are provided for on-site personnel, supported by employees' compensation and group medical insurance.

We continued to strengthen road user safety through the deployment of route-patrolling vehicles and enhanced emergency response systems, as well as the standardization of work-zone safety layouts across all Project SPVs. Regular safety training and toolbox sessions are conducted, and our digital safety dashboards enable real-time tracking of incidents and near-miss reporting, supporting proactive risk mitigation and behavioural safety improvements.

Environmental stewardship forms a key component of our asset management practices. Our Portfolio Assets have implemented a range of sustainable construction technologies, including CCPR and HiMA, to reduce greenhouse gas emissions and extend pavement life. We have also expanded the use of recycled and refurbished materials, introduced solar-powered lighting across toll plazas and administrative facilities, and initiated the use of electric vehicles in patrolling and maintenance operations.

The Investment Manager has adopted an Environmental and Social Due Diligence ("**ESDD**") Policy, which provides a comprehensive system for assessing, managing and monitoring environmental and social risks. These frameworks are applied both prior to and after acquisitions, ensuring that all investments are evaluated for compliance with Indian regulatory requirements, IFC Performance Standards, and the UN Sustainable Development Goals. The ESDD Policy requires a detailed review of Environmental Impact Assessments, environmental and social management systems, and ongoing performance monitoring for all infrastructure assets. These procedures ensure that both existing and future projects are benchmarked against high environmental and social performance standards and that any identified gaps are addressed through corrective action plans. Each of the Portfolio Assets are required to implement our Environment and Social Management System (ESMS) and adopt standardized SOPs and related policies. These systems ensure consistent governance and compliance across all operating sites. On-ground implementation is ensured through the delivery of in-house periodic training and sensitisation on ESMS and SOPs, EHS, environmental regulatory compliance, and sustainability to SPVs and contractor staff.

We undertake comprehensive measurement of our Scope 1, Scope 2 and Scope 3 greenhouse gas emissions in accordance with the GHG Protocol. In addition to portfolio-wide emissions accounting, we also quantify the greenhouse gas reductions attributable to our adoption of sustainable operating and maintenance practices, including material circularity and resource-efficient periodic maintenance. We have implemented decarbonisation initiatives across our Portfolio Assets and continue to align our operations to reduce Scope 1 and Scope 2 emissions over time, supported by the systems, processes and governance embedded in our ESG framework.

Through our Livelihood Enhancement Programme at two of the Portfolio Assets (namely, GAEPL and NAMEPL), we supported displaced communities along project corridors with skills training and employment facilitation. At GAEPL, 415 affected people were compensated for their losses, and in the year 2023, 24 vulnerable families were resettled into permanent housing. Through the Livelihood Enhancement Programme at NAMEPL, a total of 1,007 households were supported in agriculture and allied sectors, livestock, and microenterprise. These initiatives were complemented by community health and safety initiatives such as the RAAHI eye check-up programme for highway users, our TB Mukt Bharat Initiatives, solar street lighting initiatives and the distribution of winter clothing to local communities.

Together, these initiatives demonstrate our commitment to maintaining the highest standards of environmental sustainability, workplace safety, and community responsibility, aligned with international best practices and our long-term objective of sustainable value creation.

Operations and maintenance

Under the concession agreements, the Portfolio Assets are required to operate and maintain the project highways and tunnelways in accordance with the concession agreement either by itself, or through an O&M contractor. Typically, the operation and maintenance obligations include:

- permitting safe, smooth and uninterrupted flow of traffic during normal operating conditions;
- collecting and appropriating fees from the applicable dates;
- minimizing disruption to traffic in the event of accidents or other incidents affecting the safety and use of the project highway by providing rapid and effective response and maintaining liaison procedures with emergency services;

- undertaking periodic preventive and routine maintenance, including prompt repairs of potholes, cracks, joints, drains, line markings, lighting and signage, and cleaning and maintenance of sapling plantations;

- undertaking major maintenance such as resurfacing of pavements, repairs to structures, repairs and refurbishment of tolling system and hardware and other equipment;

- the protection of the environment and the provision of equipment and materials; and

- maintaining a public relations unit to interface with and attend to suggestions from concerned authorities and law enforcement agencies to preserve the legal right of way on the highway.

In performing these functions, the Portfolio Assets employ advanced digital systems such as Road-Aid, which enables real-time monitoring of road conditions and maintenance activities, and our proprietary HiRate application, which provides multi-parameter asset rating and benchmarking of performance standards across our portfolio.

Optimization initiatives for operational costs

Our operational optimization initiatives have enabled us to maintain stable O&M expenses across the Portfolio Assets. This stability in O&M expenses was as a result of multiple initiatives across maintenance, insurance, staffing, tolling operations, energy use and technology systems.

- We conducted routine maintenance through leveraging Road-AID-enabled predictive and preventive maintenance, which improved asset tracking and reduced costs. A focus on bulk procurement, localized solutions and specification improvements has helped maintain quality while reducing costs.

- Insurance expenses have been reduced by aggregating renewals across more assets and negotiating premiums.

- SPV staffing costs have been managed through multi-skilled roles, centralized payroll administration, efficiency-linked bonuses, and streamlined staffing across contiguous assets to reduce redundancies.

- For tolling, security, incident management and vehicle operations, we used centralized procurement and biometric-linked payments to improve efficiency. Technology integration, including Road-AID, helps reduce manpower requirements. Real-time monitoring is used to curb non-operational vehicle use and fuel waste, and we are phasing in electric vehicles to reduce fuel costs in an environment responsible manner going forward.

- For ROW horticulture, we have engaged local vendors for more competitive rates and faster turnaround. We have also reduced our reliance on other vendors in an effort to reduce logistics expenses.

- For electricity and diesel, we have deployed LED lighting, smart timers and solar pilots at plazas to reduce energy costs, and carried out regular energy audits and load-reduction initiatives to stabilize consumption and costs.

- TMS / ATMS system expenses were controlled through predictive maintenance and condition-based monitoring to extend uptime and reduce repair frequencies. We have entered into long-term contracts to keep annual costs stable and minimize our year-to-year increases.

Bitumen procurement initiatives

Bitumen is a critical input in our major maintenance ("**MM**") and resurfacing programmes. We, through our Erstwhile Project Manager have undertaken various bitumen procurement initiatives which we propose to continue through our Project Manager as follows: (a) We have developed an integrated procurement strategy that combines bulk procurement, supplier diversification, and in-house processing capabilities to ensure cost efficiency, quality consistency and security of supply across our Portfolio Assets. Despite an increase in bitumen prices since 2020, we have effectively managed our MM costs and avoided a proportionate increase in MM costs, through our procurement strategies. We procure base bitumen largely through long-term arrangements with a national bitumen supplier, under which we receive fixed bulk discounts to prevailing refinery prices. Our supplier's nationwide footprint provides location flexibility and reduces logistical variability. As a preferred customer, we have been able to mitigate supply shortages that may arise during refinery maintenance shutdowns or peak seasonal demand. In addition to domestic procurement, we supplement supply through direct imports where appropriate; (b) To reduce input cost volatility and avoid dependence on any single supplier, we have engaged multiple qualified vendors for key raw materials. A diversified vendor base also supports competitive pricing and reduces counterparty concentration risk. We maintain regular rate negotiations based on performance, volume commitments and payment history, securing discounts for larger offtake and timely payments. Contract structures typically include escalation clauses tied to market indices, which provide predictable pricing and reduce the risk of operational disruption; (c) For polymer-modified bitumen ("**PMB**") and emulsions, we have established long-term memorandum of understanding ("**MOUs**") with a leading polymer supplier for the supply of high-vinyl grade polymer at a fixed spread over international monomer prices, ensuring the continuity of additive supply, which is essential for PMB-based maintenance works. We have also entered into MOUs with other vendors for PMB and emulsion modification at fixed rates per tonne. These engagements enhance quality assurance and support lifecycle-cost optimisation, particularly for long-tenure concession assets. Each PMB project includes a secondary modifier to ensure uninterrupted supply in the event of disruptions at the primary processing unit; and (d) We take various measures to ensure bitumen quality control, including testing at various

stages of the value chain, GPS monitoring, and sealing bitumen tankers at the source. Further, to account for annual maintenance shutdowns at domestic refineries and to ensure a continuous supply of bitumen, we import it directly from suppliers. We also deploy advanced materials such as 30–40 mm PMB overlays, micro-surfacing and cold-recycling technologies where appropriate, based on asset-specific engineering diagnostics. Our data-driven models are enriched with NSV, FWD, ATCC, OD/TVC, and sensor streams, helping determine the optimal material, thickness, alignment, and timing of interventions.

Taken together, these measures have enabled us to manage pricing volatility, ensure quality control from source to site, and maintain a stable MM cost profile across maintenance cycles.

Toll collection system and operations

Tolls are collected for each journey by a vehicle through toll plazas. Signs displaying the toll rates for the Toll Road assets are posted at the toll booths, and tolls can be paid electronically or in cash.

Electronic toll collection

In 2014, an electronic toll collection ("**ETC**") system based on radio-frequency identification ("**RFID**") technology was introduced in India. FASTags (an RFID-based cashless payment mechanism) were affixed on windscreens to auto-debit toll fees from a linked account, without requiring vehicles to stop for transactions. This ETC based on RFID gained wider adoption following an Indian transport ministry directive in January 2019, which mandated that all user fee plazas be made ETC-compliant. The GoI has also made FASTag mandatory at toll plazas.

During the Financial Year 2026, all 27 toll plazas on Portfolio Assets had more than 96.00% ETC collection rate.

Cash

Tolls are paid in cash by toll collectors at manual toll booths.

Monitoring

Toll collection

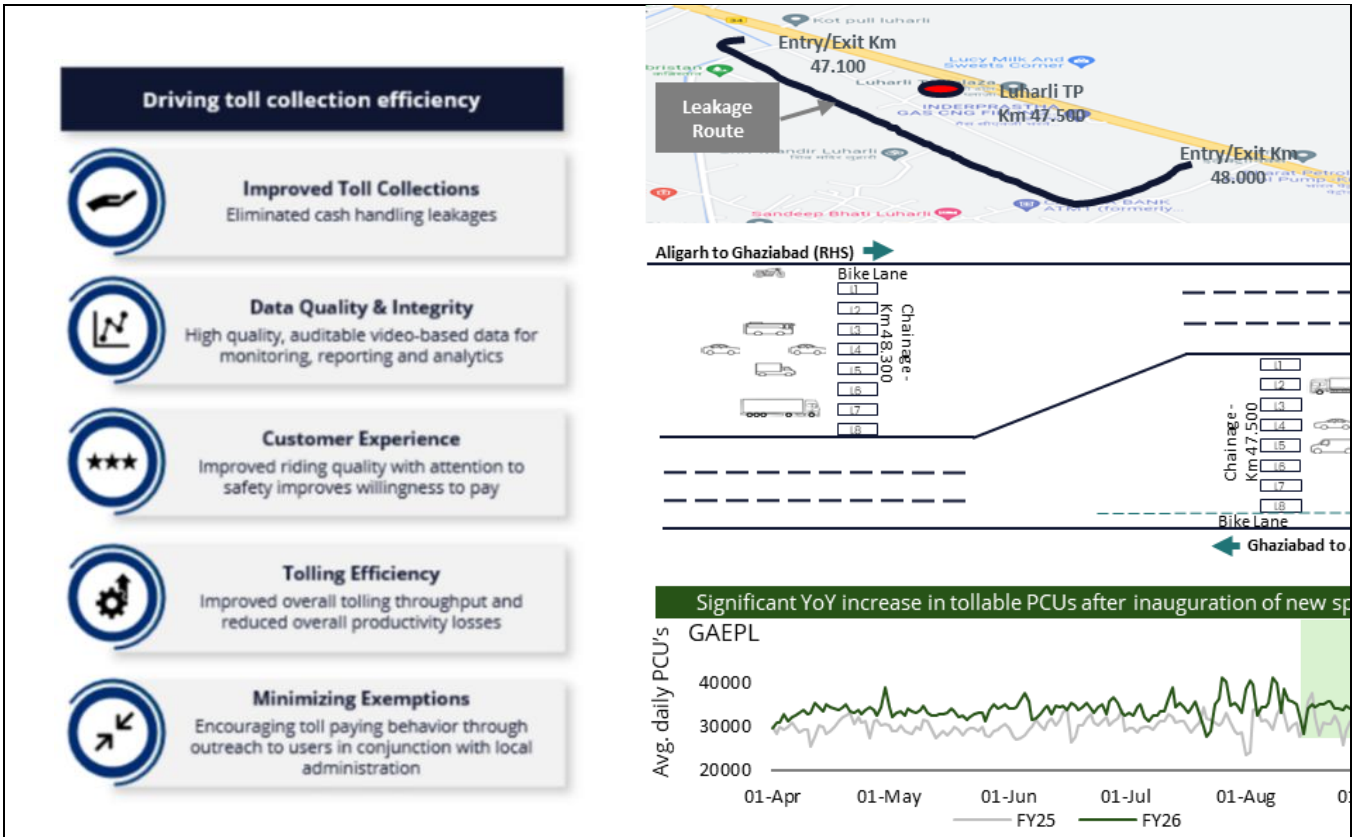
Payments at the toll plazas, both electronic and cash, are processed through an electronic toll collection system that supports RFID, wallets, UPI, cards, and cash-based transactions. The electronic toll collection system collects and stores traffic and payment data through system-generated reports, thereby reducing the need for manual operation. The electronic toll collection system consists of revenue collection software, a barrier gate, smart card readers, license plate image-capturing cameras and lane monitoring cameras, a fully automatic vehicle counting-cum-classifier, RFID readers/antennas, a validation system, communication channels, and traffic control equipment. All our toll plazas are equipped to process near-real-time transactions through API communications with acquirer banks.

For identifying categories of vehicles and to charge an appropriate toll rate, automatic vehicle identification based on video cum artificial intelligence ("**AI**") cameras/infrared sensors is deployed. Automatic Vehicle Classification and Counting enables the collection of variable amounts of tolls depending on the class of motor vehicles and serves as a traffic information system. The Portfolio Assets use weigh-in-motion technology (Medium Speed WIMs) for projects where weight-based toll collection is mandated. Weight-based tolling systems are integrated with the fully automatic toll collection system to enhance revenue controls.

We have transitioned to an in-house Toll Management System ("**TMS**") that integrates revenue collection, reconciliation, and FASTag data, thereby reducing third-party dependency. There is also a backup power supply system in each lane, toll plaza, and server room to ensure no interruption in power supply at the toll plazas, maintaining a stable power supply for critical operations of our in-house TMS. Servers used in the toll collection systems at the toll plazas are capable of real-time uploading of transaction data from TMS and performing an automatic daily backup to prevent any toll data loss and to enable system recovery, which would allow the Portfolio Assets to collect variable amounts of tolls depending on the class of motor vehicles and serves as a traffic information system. To monitor the TMS, a dedicated team is deployed at the toll plazas along with an annual maintenance contract with respective system integrators.

Only authorized persons have access to the toll collection systems and their servers, and their activities are recorded for security purposes. The Portfolio Assets are responsible for operating the toll collection systems at their toll plazas and for taking regular preventive and corrective measures to maintain these systems.

Case study: Toll collection initiatives



Upon acquiring new toll road assets, our teams deploy digital tools, including FASTag-based automated collections, booth cameras, AI-enabled vehicle classification, automated number plate recognition, and sensor-supported classification systems, to improve toll collection accuracy and the customer experience. At GAEPL, these measures reduced the "exemptions and violations" share of vehicles, leading to improvements in tollable traffic volumes.

We also deploy physical and engineering interventions where required. A notable example is the Luharli split-plaza implementation, where the asset experienced leakage due to a diversion route that allowed vehicles to bypass toll collection. Following engineering redesign, we installed check plazas at both ends of the leakage route and converted the existing plaza into a split-plaza arrangement, enabling complete capture of through traffic, as the new plazas captured some of the diverted traffic. This increased tolling capacity from 10 to 15 lanes, and post-integration, the asset achieved approximately ~23% year-on-year growth in tollable PCUs at Luharli in Financial Year 2026, reduced queuing, and enhanced revenue compliance.

Technology

We, through the Project Manager, have adopted a technology-driven approach to the operations and maintenance of our portfolio assets. Our digital systems and proprietary platforms enable predictive maintenance, operational transparency, and standardised asset management across all Portfolio Assets. The Portfolio Assets can utilise a number of analytics tools and software applications, such as:

- *Road-Aid*: a centralized, app-based Road Asset Management System used across all Project SPVs to monitor asset performance in real time. Road-Aid digitizes maintenance workflows, enables seamless ticketing and reporting, and provides dashboards that track daily operations, inspection cycles, and response times. The platform integrates photographic evidence, geotagging, and performance information to improve accountability and transparency in field operations;

- *HiRate*: an in-house digital rating and assessment system that objectively evaluates the condition of road assets and their maintenance status. HiRate combines on-ground audit data and technical performance parameters to generate a standardized performance score for each project, supporting data-based prioritization of maintenance interventions and benchmarking across the portfolio;

- *Build-Aid*: a digital construction quality management system that facilitates real-time progress tracking, quality testing, and compliance monitoring during major maintenance and rehabilitation works. The platform provides automated alerts for deviations, ensures adherence to specifications, and enables faster decision-making during execution; and

- *Setu Sthiti*: a structure audit application designed in accordance with Indian Roads Congress standards, used for real-time bridge and structure inspections. The app automates data capture, generates inspection reports and bills of quantities, and ensures compliance with asset integrity and safety standards.

In addition, dashcam footage from patrolling vehicles is processed using AI-based defect-detection algorithms to identify cracks, potholes, and signage deficiencies. These insights are used to schedule maintenance proactively and reduce manual intervention. These systems enable rapid customisation and real-time data flow between the Project Manager and our Project SPVs for performance tracking. These tools help ensure the timely completion of maintenance and construction activities and minimal disruption for commuters.

Our current pavement distress identification AI model can identify cracks based on approximate crack width in black, grey, and rigid pavement. Machine learning and AI have also been implemented to analyse video from route-patrolling vehicles, ensuring compliance with employee PPE and road safety standards at maintenance project work zones.

In addition to these platforms, the Project Manager employs automated vehicle tracking systems, geospatial mapping, and cloud-based data storage to provide real-time visibility into field operations. Predictive analytics are used to forecast material requirements, optimize major maintenance cycles, and improve lifecycle cost management.

Our maintenance programme also incorporates non-destructive testing and sensor-based inspection technologies, including falling weight deflectometers, laser profilers, and network survey vehicles to assess pavement condition and ride quality. These technologies, combined with data collected through Road-Aid and HiRate, form the backbone of a predictive maintenance model that enhances pavement life and reduces unplanned outages.

Collectively, these technology systems allow the Project Manager to ensure consistent O&M quality, enhance road user experience, improve cost efficiency, and maintain safety across our portfolio.

Research & development

We have established a dedicated, state-of-the-art research and development ("**R&D**") platform to institutionalize innovation across our Portfolio Assets and enhance operational performance. Our R&D infrastructure comprises a pavement laboratory, an AI laboratory, an in-house data centre, and a learning and development centre, enabling us to evaluate materials, test engineering hypotheses, and scale technology-led initiatives across assets. These facilities support our ongoing and future projects in advanced pavement technologies, structural health monitoring, durability studies, traffic engineering, AI-based modelling, and automation applications.

Our R&D function is supported by MINDS (Mentoring Innovation and New Developments in Science), our in-house innovation framework launched in 2023 to identify, mentor and deploy new technologies and process improvements. MINDS enables cross-functional teams to collaborate on engineering, digital, operational and sustainability projects, creating a structured funnel for ideation, testing, piloting, and scaling. Since its launch, the MINDS programme has evaluated a wide range of proposals, including pavement rehabilitation solutions, automated data capture systems, road safety analytics, and O&M optimisation tools.

Traffic and motorway assistance services

Traffic assistance

Each Portfolio Asset is required to conduct regular patrolling and to regulate and maintain traffic order within their projects. Patrol vehicles continuously move along the project stretch to regulate traffic and conduct surveillance. Helpline numbers are also displayed alongside the projects to enable communication between road users and the control room in case of emergencies, and the Portfolio Assets are required to maintain the emergency telephone system.

In terms of our standard operating procedures, in the case of a vehicle breakdown or traffic accident, the control room is required to announce the occurrence via mobile phones or handsets to instruct a mobile supervisor and a recovery supervisor to proceed to the scene immediately, and file relevant reports with the police if personal injury is involved. At the scene of a traffic accident or vehicle breakdown, the mobile supervisor is required to report the incident to the control room, take safety precautions, and provide first aid to injured persons, if any. The recovery supervisor must determine whether the vehicle can be recovered on site or whether recovery vehicles must be deployed for towing. The traffic officer is required to stop traffic, close the affected lane where necessary, and direct trapped vehicles to other unaffected lanes.

Case Study: Route Patrol Vehicle Modernization Initiative

We implemented a modernization programme for our Route Patrol Vehicle ("**RPV**") fleet to strengthen incident response and standardise service quality across the Portfolio. The initiative addressed earlier challenges related to inconsistent operating procedures, vehicle design limitations and non-standardised equipment, and introduced updated RPV layouts with colour-theory-based uniforms, closed-cabinet storage, and revised inventory aligned with NHAI policy. Uniform SOPs, improved coordination across incident-management teams and optimized staffing were rolled out nationwide, resulting in faster, safer and more reliable on-road incident management and a consistent standard of service across all SPVs.

Further, we have implemented an ATMS that integrates CCTV, automatic incident detection, and variable message signs to monitor traffic and road safety conditions along the corridor.

Competition

As all toll revenues depend on toll receipts and are affected by changes in traffic volumes, the amount of revenue generated by the Portfolio Assets and future road projects will depend on a number of factors which can influence the level of traffic volume on those particular toll roads, including competition from other roads that operate in the same area, as well as from other modes of transportation (such as railways and airplanes).

We face competition from other road operators, financial investors, private equity funds and other InvITs in acquiring lucrative concessions for existing and future projects. In respect of opportunities, the Trust depends on the reputation of the Sponsor and the execution ability of the Investment Manager and Project Manager, which face competition from both domestic and international entities in the roads and highways infrastructure sector, as most of the contracts awarded by the Government and state governments are awarded on a competitive bidding basis and subject to satisfaction of other prescribed pre-qualification criteria. While service quality, technological capacity and performance, health and safety records and personnel, as well as reputation and experience, are important considerations in award decisions, price is a major factor in most tender awards. The ability of the Sponsor and Investment Manager to bid for and win major infrastructure development projects also depends on experience in executing large projects, strong engineering capabilities for technically complex projects, and sufficient financial resources and/or the ability to access funds.

Management

The Trust is managed by qualified personnel of the Investment Manager. These personnel have management and operational experience in the roads and highways sector. For further details about the Investment Manager, please see "*Parties to the Trust – The Investment Manager – Cube Highways Fund Advisors Private Limited*" on page 146.

The Investment Manager, in consultation with the Trustee, has appointed a majority of the directors of the Project SPVs in accordance with the InvIT Regulations. The Portfolio Assets' boards of directors have formed the relevant committees required for their respective operations and as required under applicable law. For details, please see the section entitled "*Corporate Governance*" on page 171.

Our Project Manager has a team with end-to-end, in-house expertise across multiple aspects of road asset management and investment, as set out below:

- *Traffic and Toll management*: The Project Manager's team undertakes in-house traffic forecasting supported by advanced traffic management systems ("**ATMS**") and traffic management platforms that integrate AI- and image-based sensors, enabling automated vehicle classification, toll data validation and cash-management controls. Its systems incorporate real-time monitoring, incident detection and safety analytics, improving traffic flow, revenue assurance and enforcement;

- *Design and engineering*: The engineering team performs pavement and structural design reviews and ensures compliance with Indian Roads Congress, MoRTH and concession requirements. The team also focuses on road efficiency, safety engineering and construction innovation, including evaluation of materials and technologies across corridors;

- *Technology development:* The Project Manager maintains an in-house IT team that develops and maintains custom software and digital tools supporting seamless operational workflows, analytics and data-driven decision-making. This includes AI/ML applications for pavement distress identification, asset inventory mapping and automated safety-compliance monitoring;

- *Operations and maintenance*: Predictive and preventive maintenance systems are deployed, supported by ATMS-driven road-safety tracking and real-time condition monitoring. Standardised processes and digital tools enable consistent execution of routine and major maintenance across assets;

- *Procurement*: Procurement is centrally managed to ensure cost efficiency, quality control and vendor accountability, including a dedicated bitumen procurement team to ensure supply reliability and material integrity. ESG-aligned procurement practices promote ethical sourcing, waste minimisation and carbon reduction;

- *Legal, finance, HR and compliance*: In-house legal, finance, HR and compliance functions ensure unified policy enforcement, streamlined approvals, and faster cycle times across budgeting, contracting, payroll and regulatory compliance. Cross-functional coordination is supported by dedicated committees guiding governance, planning and execution; and

- *Sustainability and ESG*: The Project Manager integrates ESG risk management across the asset lifecycle, including pre-acquisition environmental due diligence, implementation of ESMS and SOPs, sustainability training, internal inspections, and continuous monitoring. ESG considerations are embedded in procurement, O&M, safety and stakeholder engagement.

Seasonality

Traffic volume typically shows seasonal variation, temporarily slowing during the monsoon season and increasing during holiday and festive seasons. While the northern parts of India experience monsoon rains from June or July to September or October every year, the southern parts of India, especially the coastal parts of Andhra Pradesh, experience monsoon rains even during October to December. The monsoon season may also restrict the Trust's ability to carry out activities related to the operation and maintenance of its toll roads. For further details on risk associated with seasonality, please see "*Risk Factors – Risks Relating to Our Business and Industry – Our business will be subject to seasonal fluctuations, which may adversely affect our cash flows"* on page 89.

Insurance

The Trust's operations are subject to hazards inherent in providing operations and maintenance services, such as the risk of equipment failure, workplace accidents, fire, earthquakes, floods, and other force majeure events. This includes hazards that may cause injury and loss of life, damage and destruction of property, equipment and environmental damage. The Portfolio Assets' principal types of insurance coverage include comprehensive or commercial general liability, employees' compensation insurance, group medical insurance, and industrial all-risk insurance, to the extent applicable to their respective operations. The Investment Manager and the Trustee confirm that the amount of insurance that each Portfolio Asset presently maintains represents an adequate and appropriate level of coverage required to insure its business and operations and assets, in accordance with the relevant concession agreement and industry standards in India and as available on commercial and reasonable terms, and that they will perform regular assessment on the adequacy of insurance coverage on a yearly basis.

Employees

As of March 31, 2026, our Portfolio Assets and the Investment Manager employed an aggregate of 802 employees. The table below shows the number of employees employed by each of the Portfolio Assets and the Investment Manager:

S. No.	Name of Entity	Number of Employees
1.	Investment Manager	12
	Portfolio Assets	
2.	Andhra Pradesh Expressway Private Limited	10
3.	DA Toll Road Private Limited	83
4.	Farakka – Raiganj Highways Private Limited	38
5.	Ghaziabad Aligarh Expressway Private Limited	63
6.	Hazaribagh Tollway Private Limited	16
7.	Jaipur Mahua Tollway Private Limited	53
8.	Jhansi – Lalitpur Tollway Private Limited	22
9.	Jhansi – Vigakhet Tollway Private Limited	21
10.	Kanyakumari – Etturavattam Tollway Private Limited	30
11.	Kotwa – Muzaffarpur Tollway Private Limited	34
12.	Lucknow – Raebareli Tollway Private Limited	28
13.	Madurai – Kanyakumari Tollway Private Limited	34
14.	Mahua Bharatpur Expressways Limited	42
15.	Nanguneri – Kanyakumari Tollway Private Limited	30
16.	Nelamangala Devihalli Expressway Private Limited	34
17.	Salaipudhur – Madurai Tollway Private Limited	31
18.	Walayar Vadakkencherry Expressways Private Limited	24
19.	Western UP Tollway Private Limited	29
20.	Borgaon Watambare Highways Private Limited	11
21.	Mangalwedha Solapur Highways Private Limited	14
22.	Mangloor Highways Private Limited	10
23.	Tirumala Highways Private Limited	14
24.	Srirangam Infra Private Limited	14
25.	Shankarampet Projects Private Limited	14
26.	N.A.M. Expressway Private Limited	72
27.	Quazigund Expressway Private Limited	11
28.	Jammu Udhampur Highway Private Limited	8

Pursuant to the resolution dated February 27, 2026, the board of directors of the Investment Manager had approved the change of the project manager and Cube Highways Asset & Project Advisory Private Limited has been appointed as the project manager of the Trust with effect from June 26, 2026, replacing the Erstwhile Project Manager whose engagement continued up to June 25, 2026. As of June 30, 2026, the number of employees in the Project Manager is 134.

Our SPV-level workforce has grown in line with our expanding AUM, reflecting operational requirements across our assets. Our Portfolio Assets employee headcount stood at 790 as of March 31, 2026, having grown from 752 as of March 31, 2025 and 590 as of March 31, 2024. As of March 31, 2026, 18% of our SPV employees were post-graduates, with 58% being graduates and professionals, and the remaining being non-graduates. The functional composition of our SPV employee base is weighted towards core operational and maintenance roles, as set out below:

Function	Number of Employees
On-ground operations	474
Maintenance execution	185
Finance and Accounts	49
Safety	16
M&A and Project Finance	7
Compliance	5
Other functions	54
Total	**790**

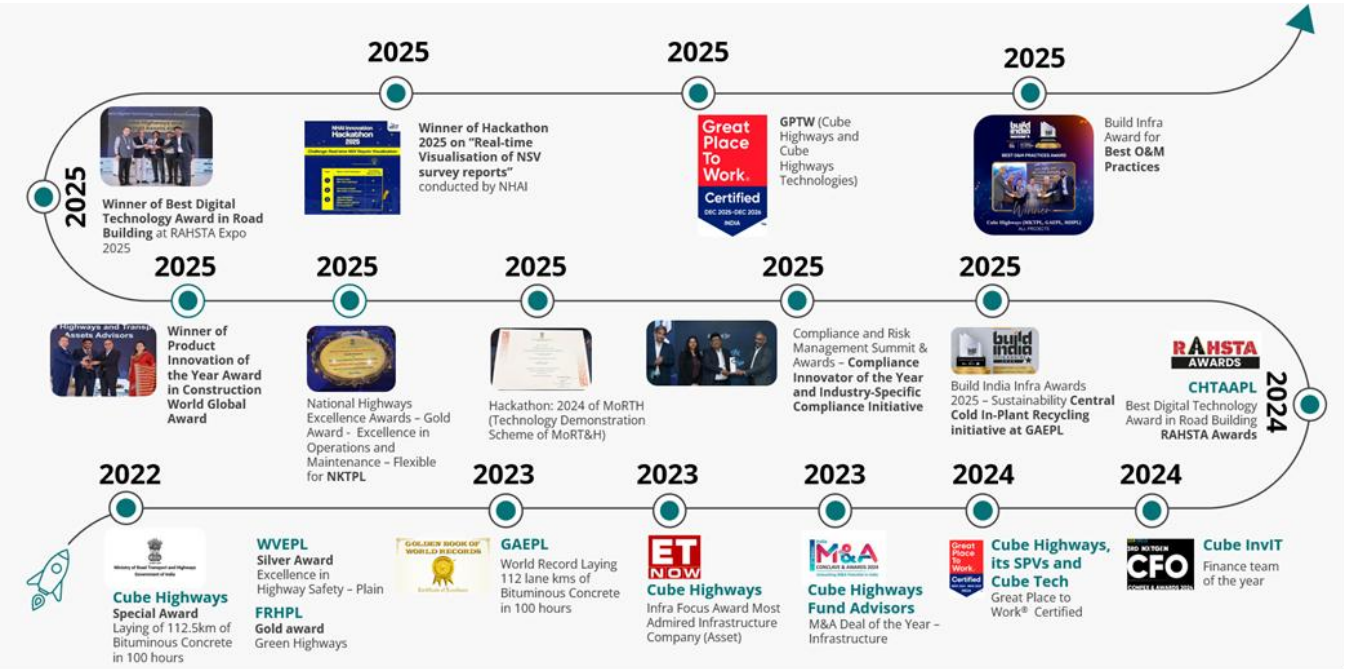
Further, as of March 31, 2026, we have employed 5,014 contractual staff members.

We have continued to advance initiatives on workforce welfare, gender diversity, and community engagement. During the Financial Year 2025, the Investment Manager introduced "Cube Care," an employee well-being programme that included annual health check-ups, digital access to medical reports, and regular "Wellness Wednesday" awareness sessions. We also maintain comprehensive group medical, life and accident insurance coverage for all employees, ensuring financial protection and workplace security. We further strengthen employee engagement through our "Cube Kutumb" initiative, which promotes inclusion and collaboration by organising family events and cross-functional interactions at project sites.

(space intentionally left blank)

Awards and Achievements

Set out below is a timeline of awards and achievements received by us:



Properties

The Investment Manager's registered office is located at B-376, Upper Ground Floor, Nirman Vihar, New Delhi 110 092 and is occupied on a leasehold basis. The Investment Manager conducts its administrative and reporting activities from its corporate office located on the 19th Floor, Unit No. 1901, Tower B, World Trade Tower, Plot No. C-1, Sector -16, Noida, Uttar Pradesh 201 301. Also, please see the section entitled "*Description of the Portfolio Assets*" on page 38 for details of the registered offices of the Portfolio Assets.

Under the terms of the concession agreements, title to the roads and related infrastructure, such as toll plazas and monitoring posts, remains with the NHAI or the relevant state concessioning authority for the duration of the concession period. During the concession period, the Portfolio Assets are licensed to use the roads and related infrastructure, which constitute the concession assets. The Portfolio Assets are entitled to income on a toll-collection or annuity basis. Upon the expiration of a concession period, each Portfolio Asset is required to transfer possession of its concession assets to the NHAI or the relevant state concessioning authority.

SUMMARY OF KEY AGREEMENTS

Summary of the Concession Agreements

The following are brief descriptions of the concession agreements entered into by the Portfolio Assets. The descriptions and summaries of the concession agreements below are indicative and have been categorized based on the nature of the project, i.e. (i) TOT assets; (ii) BOT/DBFOT assets; (iii) BOT annuity assets; and (iv) HAM assets, and they are not, nor do they purport to be, full, complete or exhaustive descriptions and summaries. Certain terms used in this section have the meaning as assigned to such terms in the respective concession agreements. Copies of these concession agreements were made available for inspection at the principal place of business of the Cube Highways Trust at B-376, Upper Ground Floor, Nirman Vihar, New Delhi 110 092, from 10:00 A.M. to 5:00 P.M., on all Working Days from the date of filing the Offer Document until the date of the Bid/Offer Closing Date. For further details, please see the section entitled 'Material Contracts and Documents for Inspection' on page 470.

TOT SPVs

Certain Portfolio Assets, namely, LRTPL, JLTPL, JVTPL, KMTPL, HTPL, MKTPL, KETPL, SMTPL, and NKTPL (collectively, the "**TOT SPVs**") hold projects based on the toll, operation, maintenance and transfer model and accordingly, have entered into concession agreements with NHAI.

The concession agreements for the TOT SPVs include the following:

(i) the LRTPL Concession Agreement executed between LRTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the stretch in the state of Uttar Pradesh from 12.70 km to 82.70 km for a total length of 70 km and all project assets for a concession fee of ₹ 4,305,660,000;

(ii) the JLTPL Concession Agreement executed between JLTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Jhansi Lalitpur Package 1 stretch in the state of Uttar Pradesh from km 00+000 to 49+700 km for a total length of 49.700 km for a concession fee of ₹ 4,537,128,000;

(iii) the JVTPL Concession Agreement executed between JVTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Jhansi Lalitpur Package 2 stretch in the state of Uttar Pradesh from 49+700 km to 99+005 km for a total length of 49.305 km for a concession fee of ₹ 2,729,795,000;

(iv) the KMTPL Concession Agreement executed between KMTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Kotwa-Muzzaffarpur stretch in the state of Bihar from km 440.000 to 520.000 km for a total length of 80.000 km for a concession fee of ₹ 6,881,478,000;

(v) the HTPL Concession Agreement executed between HTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Hazaribagh Ranchi stretch in the state of Jharkhand from km 41+500 to 115+290 km for a total length of 73+790 km for a concession fee of ₹ 9,378,502,000;

(vi) the MKTPL Concession Agreement executed between MKTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Madurai Kanyakumari Package 1 stretch in the state of Tamil Nadu from 00+000 km to 52+300 km for a total length of 52.300 km for a concession fee of ₹ 6,667,151,000;

(vii) the KETPL Concession Agreement executed between KETPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Madurai Kanyakumari Package 2 stretch in the state of Tamil Nadu from 52+300 km to 116+500 for a total length of 64.200 km for a concession fee of ₹ 4,609,806,000;

(viii) the SMTPL Concession Agreement executed between SMTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Madurai Kanyakumari Package 3 stretch in the state of Tamil Nadu from km 116+500 to km 180+000 for a total length of 63.500 km for a concession fee of ₹ 4,806,288,000; and

(ix) the NKTPL Concession Agreement executed between NKTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement, for tolling operation, management, maintenance and transfer of the existing road comprising of the Madurai Kanyakumari Package 4 stretch in the state of Tamil Nadu from km 180+000 to km 243+470 for a total length of 63.470 km for a concession fee of ₹ 6,194,192,000.

The concession agreements entered into by the TOT SPVs are substantially similar. Accordingly, a summary of the key terms of the concession agreements entered into by the TOT SPVs has been set out below:

1. *Operations & Maintenance:*

   The TOT SPVs are required, on and from the O&M Handover Date (as defined in the relevant concession agreements), to operate and maintain the project highway by themselves, or through O&M contractors and if required, modify, repair, improvements to the project highway held by them ("**Project Highways**") to comply with specifications and standards mentioned in the concession agreements, good industry practice, applicable laws and applicable permits as specified in the concession agreement and more specifically to comply with the following ("**Maintenance Requirements**"):

   a) permitting safe, smooth and uninterrupted flow of traffic during normal operating conditions;

   b) collecting and appropriating the fees, from the applicable date;

   c) minimizing disruption to traffic in the event of accidents or other incidents affecting the safety and use of the project highway;

   d) undertaking periodic preventive and routine maintenance, including prompt repairs of potholes, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and traffic control devices;

   e) undertaking major maintenance such as resurfacing of pavements, repairs to structures, and repairs and refurbishment of tolling system and other equipment;

   f) protection of the environment and provision of equipment and materials therefore;

   g) preventing with the assistance of concerned law enforcement agencies, unauthorised entry to and exit from the project highway;

   h) operation and maintenance of all communication, control and administrative systems necessary for the efficient operation of the project highway;

   i) maintaining a public relations unit to interface with and attend to suggestions from the users, government agencies, media and other agencies;

   j) adherence to the safety standards set out in the respective concession agreement; and

   k) ensure conformity with maintenance requirements provided under the schedule to the concession agreements.

2. *Change of Scope:*

   In accordance with the concession agreements, change of scope ("**COS**") means: (a) any change in the specifications and standards; (b) omission of any work from the scope of the project; provided that NHAI shall not omit any work under this provision in order to get it executed by any other person; (c) any additional works or services which are not included in the scope of the project, including any associated tests as per the respective concession agreements.

   The payment for COS shall be made by NHAI. NHAI is required to make an advance payment to the TOT SPVs amounting to 20% of the cost of COS, as agreed between the parties, and in the event of a dispute over the COS cost, 20% of the cost assessed by the independent engineer appointed under the concession agreement.

3. *Insurance:*

   The TOT SPVs are required to maintain, at no cost to NHAI, during the concession period, insurance of such types and such maximum amounts as may be considered necessary or prudent in accordance with good industry practices to cover third-party claims and force majeure events and as required under applicable law. NHAI is required to be designated as "co-insured" under such insurance. Such insurance must include a waiver of the insurer's right of subrogation against, among others, NHAI. The failure by the TOT SPVs to maintain such insurance entitles NHAI to recover the cost of such insurance from the TOT SPVs.

4. *Escrow Account:*

   The TOT SPVs are required to open an escrow account with an escrow bank, and all funds, constituting the financing package, fees and other revenues in respect of the project highway as well as all payments made by NHAI are required to be credited to such escrow account. The concession agreements also provide for the order of disbursement and appropriation of funds during the concession period and upon termination.

5. *Effect of force majeure:*

Upon the occurrence of any force majeure event, as defined in the TOT SPVs Concession Agreements prior to the appointed date, as provided for in the concession agreement, the period for achieving the appointed date would be extended by a period equal in length to the duration of the force majeure event.

If any force majeure event occurs after the appointed date and, the TOT SPVs are unable to collect fee despite making best efforts or it is directed by NHAI to suspend the collection thereof during the subsistence of such force majeure event, the concession period would be extended by a period, equal in length to the period during which the TOT SPVs were prevented from collection of fee on account thereof; provided that in the event of partial collection of fee where the daily collection is less than 90% of the average daily fee, as defined in the respective concession agreements, NHAI would extend the concession period in proportion to the loss of fee on a daily basis (loss of 25% in collection of fee as compared to the average daily fee for four days shall entitle the TOT SPVs to extension of one day in the concession period).

Allocation of costs arising out of Force Majeure

Upon the occurrence of any force majeure event prior to the appointed date, the parties to the TOT SPVs Concession Agreements shall bear their respective costs and no party shall be required to pay to the other party any costs thereof. Upon occurrence of a force majeure event after the appointed date, the costs incurred and attributable to such event and directly relating to the project ("**Force Majeure Costs**") shall be allocated and paid as follows:

- upon occurrence of a Non-Political Event, as defined in the TOT SPVs Concession Agreement, the parties shall bear their respective Force Majeure Costs and neither party shall be required to pay to the other party any costs thereof;

- upon occurrence of an Indirect Political Event, as defined in the TOT SPVs Concession Agreement, all Force Majeure Costs attributable to such Indirect Political Event, and not exceeding the insurance cover for such Indirect Political Event, shall be borne by TOT SPVs, and to the extent Force Majeure Costs exceed such insurance cover, one half of such excess amount shall be reimbursed by NHAI to TOT SPVs; and

- upon occurrence of a Political Event, as defined in the TOT SPVs Concession Agreement, all Force Majeure Costs attributable to such Political Event shall be reimbursed by NHAI to TOT SPVs.

Force Majeure Costs may include interest payments on debt, O&M expenses, any increase in the cost of construction works on account of inflation and all other costs directly attributable to the force majeure event, but shall not include loss of fee revenues or debt repayment obligations, and for determining such costs, information contained in the Financial Package, as defined in the TOT SPVs Concession Agreement, may be relied upon to the extent that such information is relevant.

Termination

If a force majeure event subsists for a period of 120 days within a continuous period of 365 days, either party to the respective concession agreement would be entitled to terminate the concession agreement.

6. *Compensation for breach of Concession Agreement*

The party in material breach or default of the concession agreement is required to compensate the non-defaulting party for all direct costs suffered by the non-defaulting party, as a result of such material breach or default. No compensation would be payable for material breach or default in respect of items for which damages are expressly provided for in the respective concession agreement (or for any consequential losses incurred by NHAI in case of the default by the TOT SPVs).

Extension of Concession Period

a) If a material default or breach of the concession agreement by NHAI leads to suspension of or reduction in the collection of fee, NHAI is required to, in addition to payment of compensation, extend the concession period with such extension being equal in duration to the period by which the collection of the fee remained suspended.

b) In the event of a reduction in the collection of fees where the daily collection is less than 90% of the Average Daily Fee, as defined in the respective concession agreement, NHAI is required, in addition to paying compensation, to extend the concession period in proportion to the daily loss of fee.

7. *Termination*

If any of the defaults specified under the concession agreement occur (the **"TOT SPV Defaults"**), and the TOT SPVs fail to cure the same within the cure period set thereunder, or where no cure period is specified within a cure period of

60 days, the TOT SPV would be deemed to be in default of the concession agreement. Some of the key TOT SPV Defaults are specified below:

a) the performance security, as specified in the relevant concession agreement, is encashed/appropriated and the TOT SPV fails to replenish or provide fresh performance security within a cure period of 15 (fifteen) days;

b) subsequent to the replenishment or furnishing of fresh performance security in accordance with the concession agreement, the TOT SPV fails to cure, within a cure period, the concessionaire default for which whole or part of the performance security was appropriated;

c) the TOT SPV abandons or manifests an intention to abandon the operation and maintenance without the prior written consent of NHAI;

d) the TOT SPV fails to roll over, renew and furnish a new bank guarantee performance security subject to and in accordance with the concession agreement, at least three months prior to the expiry of the subsisting bank guarantee;

e) the TOT SPV is in breach of the maintenance requirements or the safety requirements, as specified in the concession agreement;

f) a breach of any of the project agreements by the TOT SPV has caused a material adverse effect;

g) the TOT SPV repudiates the concession agreement or otherwise takes any action or evidences or conveys an intention not to be bound by the concession agreement;

h) the TOT SPV has failed to make any payment to NHAI within the period specified in the concession agreement;

i) the TOT SPV creates any encumbrance in breach of the concession agreement;

j) a change in ownership has occurred in breach of the provisions of the respective concession agreement;

k) there is a transfer, pursuant to law, either of (i) the rights and/or obligations of the TOT SPV under any of the project agreements, or of (ii) all or part of the assets or undertaking of the TOT SPV, and such transfer causes a material adverse effect as specified in the concession agreement;

l) an execution levied on any of the assets of the TOT SPV has caused a material adverse effect;

m) the TOT SPV is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for the TOT SPV or for the whole or material part of its assets that has a material bearing on the project;

n) the TOT SPV has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of NHAI, a material adverse effect;

o) any representation or warranty of the TOT SPV which is, as of the date of the concession agreement, found to be materially false, incorrect or misleading;

p) any petition for the winding up of the TOT SPV is passed or is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 days of the date thereof or TOT SPV is ordered to be wound up by a court, except if there is an amalgamation or reconstruction, and the property, assets and undertaking of the TOT SPV are transferred to the amalgamated or reconstructed entity and such entity has unconditionally assumed the obligations of the TOT SPV under the concession agreement and provided that: (i) such entity has the technical capacity and operating experience to perform its obligations under the respective concession agreement; (ii) such entity has the financial standing to perform its obligations under the respective concession agreement and has a credit worthiness at least as good as that of the TOT SPV; and (iii) each of the project agreements remains in full force and in effect.

q) TOT SPV submits to NHAI any statement, notice or other document, in written or electronic form, which has a material effect on NHAI's rights, obligations or interests and which is false in material particulars;

r) TOT SPV have failed to fulfil any obligation, for which failure termination has been specified in the concession agreement;

s) TOT SPV commits a default in complying with any other provision of this concession agreement if such default causes a material adverse effect on NHAI;

t) an escrow default has occurred and the TOT SPV fails to cure the default within a cure period of 15 days;

Upon occurrence of the TOT SPV Default and expiry of the relevant cure period (or 60 days where no cure period is specified), NHAI is entitled to terminate the concession agreement.

NHAI's Default: In the event any of the defaults specified below occur (the "**NHAI Defaults**"), and NHAI fails to cure such default within a cure period of 90 days or such longer period as has been expressly provided in the concession agreement, NHAI would be deemed to be in default: Some of the key NHAI Defaults are as follows:

a) NHAI commits a material default in complying with any of the provisions of the concession agreement and such default has a material adverse effect on the TOT SPV (as defined in the relevant concession agreement);

b) NHAI repudiates the concession agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by the concession agreement; or

c) the state government commits a material default in complying with the provisions of the respective state support agreement if such default has a material adverse effect on the TOT SPV and the breach continues for a period of 90 days from the date of notice given on behalf of the TOT SPV to NHAI.

Upon occurrence of NHAI Default and expiry of the 90 (ninety) day cure period or such longer period as prescribed, the Concessionaire shall be entitled to terminate the respective concession agreement.

8. *Indemnity:*

Indemnity by TOT SPVs

The TOT SPVs are required to fully indemnify NHAI and the NHAI Indemnified Persons (as defined in the TOT SPVs Concession Agreements) from and against any and all loss and/or damages arising out of or with respect to:

a) any loss, damage, cost and expense, whether arising out of any breach by the TOT SPV of any of its obligations under the concession agreement or any related agreement or on account of any defect or deficiency in the provision of services by the TOT SPVs to any user or from any negligence of the TOT SPV;

b) failure of the TOT SPV to comply with applicable laws and applicable permits (as defined in the relevant concession agreement);

c) payment of taxes required to be made by the TOT SPV in respect of the income or other taxes of the TOT SPV's contractors, suppliers and representatives;

d) non-payment of amounts due as a result of materials or services furnished to the TOT SPV or any of its contractors, which are payable by the TOT SPV or any of its contractors; and

e) claims of infringement of any domestic or foreign patent rights, copyrights or other intellectual property, proprietary or confidentiality rights with respect to any materials, information, design or process used by the TOT SPV or by the TOT SPV's contractors.

NHAI Indemnity

NHAI is required to indemnify the TOT SPV against any and all suits, proceedings, actions, demands and claims from third parties for any loss, damage, cost and expense of whatever kind and nature arising out of (i) defect in title and/or the rights of NHAI in the land comprised in the site, and/or (ii) breach by NHAI of any of its obligations under the concession agreements or any related agreement, which materially and adversely affect the performance by the TOT SPV of its obligations under the concession agreements unless by reason of the TOT SPV's own negligence or omission.

BOT/DBFOT SPVs

The Portfolio Assets, including JMTPL, MBEL, NDEPL, FRHPL, WVEPL, DATRPL, GAEPL, and NAMEPL (collectively, the "**BOT/DBFOT SPVs**"), holding projects based on build, operate transfer ("**BOT**") and design, build, finance, operate, transfer ("**DBFOT**") model and accordingly, have entered into concession agreements with NHAI ("**BOT/DBFOT SPVs Concession Agreements**"), as set out below:

(i) the JMTPL Concession Agreement executed between JMTPL and NHAI dated September 23, 2005, as amended from time to time, read with the relevant supplementary agreement, for improvement, operation and maintenance, rehabilitation and strengthening of the existing 2-lane road and widening to a 4-lane divided highway of the Mahua-Jaipur section of NH-11 from km 120.000 to km 228.000 in the state of Rajasthan on a BOT basis under NHDP Phase - IIIA;

(ii) the MBEL Concession Agreement executed between MBEL and NHAI dated October 13, 2005, as amended from time to time, read with the relevant supplementary agreement, for design, engineering, financing, procurement, construction, completion, operation and maintenance of existing 2 lane road and widening to 4 lane divided highway

of km 63.000 to km 120.000 of NH-11 (Bharatpur-Mahua section) in the state of Rajasthan on a BOT basis under NHDP Phase IIIA;

(iii) the DATRPL Concession Agreement executed between DATRPL and NHAI dated July 16, 2010, as amended from time to time, read with the relevant supplementary agreement, for six-laning of the Delhi-Agra section of NH-2 from 20.500 km to 200.00 km (179.500 km length) in the state of Haryana/ Uttar Pradesh under NHDP Phase V on a BOT basis;

(iv) the NDEPL Concession Agreement executed between Lanco Devihalli Highways Limited and NHAI dated July 9, 2007, and endorsed in favour of NDEPL pursuant to the endorsement agreement dated January 11, 2021 entered into between NDEPL and NHAI, as amended from time to time, read with the relevant supplementary agreement, for design, engineering, construction, development, finance, operation and maintenance of Nelamangala Junction on NH-4 with NH-48 to Devihalli from 28.200 km to 110.000 km of NH-48 in the state of Karnataka under NHDP Phase IIIA on a BOT basis;

(v) the FRHPL Concession Agreement executed between FRHPL and NHAI dated July 19, 2010, as amended from time to time, read with the relevant supplementary agreement, for four-laning of the Farakka-Raiganj section of NH-34 from 295.00 km to 398.00 km in the state of West Bengal under NHDP Phase III as a DBFOT toll basis;

(vi) the WVEPL Concession Agreement executed between WVEPL and NHAI dated September 17, 2012, as amended from time to time, read with the relevant supplementary agreement, for four-laning of Walayar-Vadakkancherry section in Kerala (182.250 km to 240.000 km of NH-47) – package NS-2/BOT/KL-2 on DBFOT (Toll) basis under NHDP Phase II in the state of Kerala;

(vii) the GAEPL Concession Agreement executed between GAEPL and NHAI dated May 20, 2010, as amended from time to time, read with the relevant supplementary agreement, for the design, engineering, construction, development, finance, operation and maintenance of the Ghaziabad Aligarh section of NH-91 from km 23.600 to km 140.200 in the state of Uttar Pradesh under NHDP Phase III on a BOT basis; and

(viii) the NAMEPL Concession Agreement executed between NAMEPL and the relevant state authorities in Andhra Pradesh dated July 23, 2010, as amended from time to time between NAMEPL and the relevant state authorities in Andhra Pradesh and Telangana for the design, construction, finance, operation and maintenance of the Narketpally-Addanki-Medarametla Road (SH-2) from Km. 0.000 to 212.500 in the State of Telangana and Andhra Pradesh under Public Private Partnership on DBFOT (Toll) basis.

The BOT/DBFOT SPVs Concession Agreements are substantially similar with minor differences in some of the terms. Accordingly, a summary of the key terms of the BOT/DBFOT SPVs Concession Agreements has been set out below:

1. *Operations and Maintenance*

BOT/DBFOT SPVs are required to, operate and maintain the project, either by itself or through a contractor, including by modifying, repairing or otherwise making improvements to the project to comply with the requirements set out in the BOT/DBFOT SPVs Concession Agreement, the minimum maintenance requirements set out in Schedules to the BOT/DBFOT SPVs Concession Agreement, good industry practices and applicable laws and permits. The BOT/DBFOT SPVs' operations and maintenance obligations include:

a) permitting the safe, smooth and uninterrupted flow of traffic during normal operating conditions;

b) charging, collecting and retaining fee in accordance with the BOT/DBFOT SPVs Concession Agreement;

c) minimizing disruption to traffic in the event of accidents or other incidents affecting the safety and use of the project by providing rapid and effective responses and maintaining liaison procedures with emergency services;

d) undertaking routine maintenance, including repairs of potholes, cracks, concrete joints, drains, line markings, lighting and signage;

e) undertaking major maintenance, including resurfacing of pavements, repairs to structures, repairs and refurbishment of tolling systems, hardware and other equipment;

f) carrying out periodic preventive maintenance to the project including the tolling system;

g) preventing, with the assistance of the concerned law enforcement agencies, unauthorized entry to and exit from the project;

h) preventing, with the assistance of the concerned law enforcement agencies, encroachments on the project and preserving the right of way of the project;

i) maintaining a public relations unit to interface with and attend to suggestions from users of the project, the media, government agencies and other external agencies; and

j) adhering to the safety standards as set out in the BOT/DBFOT SPVs Concession Agreement.

2. *Change in Scope*

The concessioning authorities are entitled to issue a change in scope order and require the BOT/DBFOT SPVs to perform additional work and services, or delete any portion of the works and services to be performed by the BOT/DBFOT SPVs, provided that such changes do not require any increase / reduction in expenditure exceeding 5% of the total project cost as provided in the BOT/DBFOT SPVs Concession Agreement and do not adversely affect the COD of the Project ("**CoS**"). In the BOT/DBFOT SPVs Concession Agreements executed with NHAI, the cost of the CoS is required to be borne by NHAI if the CoS involves an increase in the bill of quantities, and NHAI can recover the amounts as certified by the independent consultant if the CoS involves a decrease in the bill of quantities. NHAI may require the BOT/DBFOT SPVs to undertake CoS pending resolution of the dispute between the parties regarding the costs.

3. *Insurance*

BOT/DBFOT SPVs are required to maintain at no cost to the concessioning authority, during the construction and operation period under the BOT/DBFOT SPVs Concession Agreement, insurance of such types and such amounts as may be considered necessary in accordance with good industry practice and as required under the financing documents and applicable law. Such insurance must include a waiver of any right of subrogation of the insurers against, among others, the concessioning authority. The failure by BOT/DBFOT SPVs to maintain such insurance will entitle the concessioning authority to recover the cost of such insurance from such BOT/DBFOT SPV.

4. *Escrow Account*

The funds from the project lenders, fee collected and disbursements or payments by the concessioning authority in exercise of its rights under the BOT/DBFOT SPVs Concession Agreement, subject to any deductions and appropriation, will be deposited into the escrow account. The bank/escrow agent is required make payments from the escrow account in the order of priority set out thereunder each month, or proportionately if not due in that particular month, during the concession period. Such order cannot be modified without the prior written consent of the concessioning authority.

5. *Indemnities*

BOT/DBFOT SPVs are required to indemnify the concessioning authority, its officers, servants, agents, subsidiaries and contractors (the "**Indemnified Persons**") against any and all loss and damages arising out of the BOT/DBFOT SPVs failure to: (i) comply with applicable laws and permits; (ii) make payment of taxes relating to its contractors, suppliers and representatives, income or other taxes required to be paid by the BOT/DBFOT SPVs without reimbursement under the BOT/DBFOT SPVs Concession Agreement; or (iii) make payment of amounts due resulting from materials or services provided to the BOT/DBFOT SPVs or its contractors which are payable by any such party. In addition, the BOT/DBFOT SPVs are required to indemnify the Indemnified Persons from and against any and all damages they may suffer as a result of demands, claims, suits or proceedings arising out of claims of infringement of any patent rights, copyrights or other intellectual property, proprietary or confidentiality rights with respect to any material, information, design or process used by the BOT/DBFOT SPVs or its contractors.

6. *Miscellaneous*

The concession agreements entered into by the BOT/DBFOT SPVs contain clauses in relation to force majeure, compensation of breach of agreements and termination which are substantially similar to the clauses in the concession agreements entered into by the TOT SPVs. For details, please see the section entitled "*Summary of Key Agreements – Summary of Concession Agreements*" on page 316.

Annuity SPVs

Annuity SPVs Concession Agreements, as set out below:

(i) APEPL entered into a concession agreement dated March 20, 2006, as amended from time to time, read with the relevant supplementary agreement, for development and maintenance of NH-7 from km 135.469 to km 211.000 covering 74.653 kms in the State of Andhra Pradesh on BOT Annuity basis.

(ii) JUHPL entered into a concession agreement dated July 19, 2010, as amended from time to time, read with the relevant supplementary agreement, for the development and maintenance of NH-1A from km 15.000 to km 67.000 (approx. 64.58 km) on the Jammu - Udhampur section by Four-Laning on design, build, finance, operate and transfer on BOT Annuity basis; and

(iii) QEPL entered into a concession agreement dated July 13, 2010, as amended from time to time, read with read with the relevant supplementary agreement, for development and maintenance of NH-1A from 189.350 km to 204.700 km including 2 tunnels (2 Lane) of 0.69 kms and 8.45 kms (approx. 15.25 km) on the Quazigund - Banihai section of NH 1A in the Jammu & Kashmir on design, build, finance, operate and transfer on DBFOT Annuity basis.

The Annuity SPVs Concession Agreements are substantially similar with minor differences. Accordingly, a summary of the key terms of the Annuity SPVs Concession Agreements have been set out below:

1. *Operations & Maintenance*

Annuity SPVs are required to operate and maintain the project highway by itself, or through O&M contractors and if required, modify, repair, make improvements to the project highway to comply with specifications and standards mentioned in the Schedule of the Annuity SPVs Concession Agreements, minimum maintenance requirements set forth in the Schedule of the Annuity SPVs Concession Agreements, good industry practices, applicable laws and applicable permits and more specifically to comply with the following among others:

a) permitting safe, smooth and uninterrupted flow of traffic during normal operating conditions;

b) allowing NHAI collect and appropriate the fees;

c) minimizing disruption to traffic in the event of accidents or other incidents affecting the safety and use of the project highway;

d) undertaking routine maintenance including prompt repairs of potholes, cracks, joints, drains, line/pavement marking, lighting and signage among others;

e) undertaking major maintenance such as resurfacing of pavements, repairs to structures, and other equipment among others;

f) carrying out periodic preventive maintenance to project highway;

g) preventing with the assistance of concerned law enforcement agencies unauthorised use of the project highway;

h) preventing with the assistance of the concerned law enforcement agencies encroachments on the project highway; and

i) adherence to the safety standards and requirements set out in the Annuity SPVs Concession Agreements.

2. *Performance Security*

Annuity SPVs has provided to NHAI a bank guarantee (the "**Performance Security**"). As per the Annuity SPVs Concession Agreements, NHAI can encash and appropriate the Performance Security as damages in case of default or failure to meet the conditions under the Annuity SPVs Concession Agreements.

3. *Annuity*

Under the Annuity SPVs Concession Agreements, Annuity SPVs is entitled to annuity from the occurrence of COD, for the period set out in the Annuity SPVs Concession Agreements. NHAI has agreed and undertaken under the Annuity SPVs Concession Agreements to pay to Annuity SPVs, on each annuity payment date.

4. *Consideration*

In consideration of the grant of the concession, Annuity SPVs are required to pay in advance to NHAI a sum of ₹1 per annum during the term of the Annuity SPVs Concession Agreements.

5. *Change in scope of work*

NHAI is entitled to request further improvements to the Portfolio Assets and project highway, subject to a limit mentioned in the Annuity SPVs Concession Agreements, during the operations period in the form of a COS order which is required to make the project highway comply with the latest specifications and standards mentioned in the Schedule of Annuity SPVs Concession Agreements, and good industry practice, applicable laws and applicable permits during the entire operations period as set forth in the Annuity SPVs Concession Agreements.

6. *Limitations on shareholding changes*

The Annuity SPVs Concession Agreements requires that change in the equity shareholding shall be only as provided for in the Annuity SPVs Concession Agreements.

7. *Insurance*

Annuity SPVs are required to maintain, at no cost to NHAI, during the construction and operation period under the Annuity SPVs Concession Agreements, insurance of such amounts as may be considered necessary in accordance with good industry practices and as required under the financing documents and applicable law. Such insurance must include a waiver of any right of subrogation of the insurers against, among others, NHAI. The failure by Annuity SPVs to maintain such insurance entitles NHAI to recover the cost of such insurance from Annuity SPVs.

8. *Escrow Account*

Annuity SPVs are required to open an escrow account with an escrow bank and all funds, constituting the financing package for meeting the total project cost, are required to be credited to such escrow account. During operations period all annuity, and any other payment which becomes payable by NHAI to Annuity SPVs is required to be exclusively deposited therein. The Annuity SPVs Concession Agreements also provides for order of appropriation of funds in case of termination of such agreement.

9. *Indemnities*

Annuity SPVs is required to indemnify NHAI, its officers, servants, agents, subsidiaries and contractors (the "**NHAI Indemnified Persons**") against any and all loss and damages arising out of the Annuity SPVs' failure to: (i) comply with applicable laws and permits; (ii) make payment of taxes relating to its contractors, suppliers and representatives, income or other taxes required to be paid by Annuity SPVs; or (iii) make payment of amounts due resulting from materials or services provided to Annuity SPVs or its contractors which are payable by any such party. In addition, Annuity SPVs is required to indemnify NHAI Indemnified Persons from and against any and all damages they may suffer as a result of demands, claims, suits or proceedings arising out of claims of infringement of any patent rights, copyrights or other intellectual property, proprietary or confidentiality rights with respect to any material, information, design or process used by Annuity SPVs or its contractors. Annuity SPVs is required to make every reasonable effort to restrain or secure the suspension of any temporary restraint order or preliminary injunction that may be granted in any suit, claim or proceedings. If any part of the project is held to constitute an infringement, Annuity SPVs is required to also promptly make every reasonable effort to secure a license for NHAI, at its own cost, failing which, Annuity SPVs is required to, at its own expense and without affecting the specifications and standards mentioned in Schedule D of the Annuity SPVs Concession Agreements, replace the affected work, or part or process thereof with non-infringing work or parts or processes, or modify the same so that it becomes non-infringing.

10. *Effect of force majeure event:*

If a force majeure event, as defined in the Annuity SPVs Concession Agreements subsists for a period of 180 days or more within a continuous period of 365 days, either party may in its sole discretion terminate the Annuity SPVs Concession Agreements by giving termination notice to the other party.

If any force majeure event occurs: (a) before COD, the dates set forth in the Scheduled Project Completion Date (*as defined in the Annuity SPVs Concession Agreements)*, and the concession period can be extended by the period for which such force majeure event shall subsist. The Annuity SPVs Concession Agreements does not provide for extension of the Concession Period in such a scenario.

11. *Termination*

Annuity SPVs' event of default

The Annuity SPVs Concession Agreement may be terminated on the occurrence of Annuity SPVs' default or NHAI's default. Annuity SPVs will be deemed to be in default if, among other things:

a) it fails to achieve any milestones (as described in the Annuity SPVs Concession Agreements) within the period set out in the Annuity SPVs Concession Agreements and such failure is not cured within the time period mentioned in the Annuity SPVs Concession Agreements;

b) it is in material breach of the Annuity SPVs Concession Agreements;

c) it creates any encumbrance, charge or lien, except as permitted under the Annuity SPVs Concession Agreements;

d) the single entity / consortium, as applicable, selected for the project is required to hold (i) 51% during the construction period and for 3 years after the commercial operations date of the project; (ii) 26% for the rest of the operations period. If there is a change in shareholding and the same is not rectified within 90 days of its occurrence it will constitute an event of default under Annuity SPVs Concession Agreements;

e) there is a transfer of either (i) the rights and/or obligations of Annuity SPVs under any of the project agreements; or (ii) of all or a material part of the assets or undertaking of Annuity SPVs except for such transfer which, in the reasonable opinion of NHAI, does not affect the ability of Annuity SPVs to perform,

and Annuity SPVs has the financial and technical capacity to perform its material obligations under the project agreements;

f) a resolution is passed by the shareholders of Annuity SPVs for its voluntary winding up;

g) Annuity SPVs is adjudged bankrupt or insolvent or if a trustee or receiver is appointed for Annuity SPVs or for any of its property that has a material bearing on the project;

h) any petition for the winding up of Annuity SPVs is admitted by a court of competent jurisdiction or Annuity SPVs is ordered to be wound up by the court;

i) it is in material breach of any of the project agreements;

j) an event of default by Annuity SPVs under any of the financing documents or any of the senior lenders to the project has recalled its loan under any of the financing documents;

k) unless such abandonment (i) is as a result of an occurrence of a force majeure event and such force majeure event is continuing or (ii) results from a breach of obligations by NHAI; and/or

l) Annuity SPVs delays any payment that is due under the Annuity SPVs Concession Agreements and the delay exceeds 90 days.

NHAI's event of default:

Annuity SPVs may terminate the Annuity SPVs Concession Agreements by giving 90 days' notice in writing to NHAI. NHAI will be deemed to be in default of the Annuity SPVs Concession Agreements if:

a) NHAI is in material breach of the Annuity SPVs Concession Agreements, causing a material adverse effect on the Annuity SPVs and such breach is not rectified or effective steps are not taken by NHAI for curing such breach within 90 days of receipt of notice;

b) NHAI repudiates the Annuity SPVs Concession Agreements or otherwise evidences its irrevocable intention not to be bound by it; or

c) The government or any governmental agency has acted or omitted to act thereby creating circumstances that have a material adverse effect on the performance of the Annuity SPVs obligations and have failed to cure such material adverse effect within 90 days of receipt of notice by NHAI; or NHAI has delayed in making any payment due under the Annuity SPVs Concession Agreements and such delay exceeds 90 days.

In the event of termination, NHAI may be required to pay certain termination payments to Annuity SPVs, subject to the cause for termination and as set out in the Annuity SPVs Concession Agreements. Termination payments become due and payable to Annuity SPVs within the specified time period of a demand being made by Annuity SPVs. If NHAI fails to pay the termination payments, NHAI is required to pay interest.

HAM SPVs

The Portfolio Assets including SIPL, MHPL, BWHPL, MSHPL, SPPL and THPL (collectively, the "**HAM SPVs**") are holding projects based on hybrid annuity models and accordingly, have entered into concession agreements with NHAI ("**HAM SPVs Concession Agreements**"), as set out below:

(i) the SIPL Concession Agreement executed between SIPL and NHAI dated April 11, 2018, as amended from time to time, read with the relevant supplementary agreement, for construction, O&M of the project at the site, comprising Km. 311.516 (existing chainage of NH 45) to Km. 39.100 (existing chainage of NH 227) (Design chainage from Km. 0.000 to Km. 38.70) of Thiruchirapalli to Kallagam Section of NH 227 (Total Design Length = 38.700 Km) in the State of Tamil Nadu under NHDP Phase-IV;

(ii) the MHPL Concession Agreement executed between MHPL and NHAI dated May 9, 2018, as amended from time to time, read with the relevant supplementary agreement, for construction, O&M of the project at the site, comprising of NH-161 from Mangloor (Design Km. 86.788/Existing Km. 91.350) to Telangana/Maharashtra Border (Design Km. 135.751 / Existing Km. 140.873) (Design Length = 48.963 Km) in the state of Telangana under Bharatmala Pariyojana on Hybrid Annuity Model;

(iii) the BWHPL Concession Agreement executed between BWHPL and NHAI dated May 10, 2018, as amended from time to time, read with the relevant supplementary agreement, for construction, O&M of the project at the site, comprising of Sangli-Solapur section of NH-166 from design chainage Km. 224.000 to Km. 276.000 existing Ch. 219.956 to Ch. 272.394 – (Package – II: Borgaon to Watambare of length 52 km) in the state of Maharashtra on Hybrid Annuity Model;

(iv) the MSHPL Concession Agreement executed between MSHPL and NHAI dated May 10, 2018, as amended from time to time, read with the relevant supplementary agreement, for construction, O&M of the project at the site, comprising of Sangli- Solapur (Package IV: Mangalwedha to Solapur) Section of NH-166 from existing Ch.Km. 314.969 to Ch. 370.452 (Design Ch. Km. 321.600 to Km. 378.100) of length 56.500 Km in the state of Maharashtra on Hybrid Annuity Model;

(v) the SPPL Concession Agreement executed between SPPL and NHAI dated May 9, 2018, as amended from time to time, read with the relevant supplementary agreement, for construction, O&M of the project at the site, comprising of NH-161 from Ramsanpalle village (Design Km. 39.980/ Existing Km. 44.757) to Mangloor village (Design Km. 86.788/ Existing Km. 91.350) (Design Length = 46.808 Km) in the State of Telangana under the Bharatmala Pariyojana on Hybrid Annuity Model; and

(vi) the THPL Concession Agreement executed between THPL and NHAI dated May 9, 2018, as amended from time to time, read with the relevant supplementary agreement, for construction, O&M of the project at the site, comprising of NH-140 from Chittor (Design Km. 0.000/Existing Km 158.000 of Nh-4) to Mallavaram (Design Km. 61.128/Existing Km 41.800 of NH-140) (Design Length = 61.128 Km) in the State of Andhra Pradesh under Bharatmala Pariyojana on Hybrid Annuity Model.

The HAM SPVs Concession Agreements are substantially similar. Accordingly, a summary of the key terms of the HAM SPVs Concession Agreements has been set out below:

1. *Bid Project Cost and Annuity Payments*

The bid project cost, as defined in the HAM SPVs Concession Agreements ("**Bid Project Cost**"), is subject to variation in the price index occurring after the reference index date immediately preceding the Bid Date.

NHAI has paid a portion of the completion cost, as specified in the HAM SPVs Concession Agreements ("**Completion Cost**") as payments during construction period. The remaining shall be due and payable in biannual installments over a period of 15 years commencing from commercial operation date ("**Annuity Payments**"). Each of the biannual installments, as provided in the HAM SPVs Concession Agreements, shall be paid along with the interest as specified in the HAM SPVs Concession Agreements.

2. *Change of Scope*

NHAI may require the provision of additional works and services which are not included in the scope of the Project as contemplated by the HAM SPVs Concession Agreements (the "**Change of Scope**"). Within 7 days, NHAI shall make an advance payment to HAM SPVs in a sum equal to 20% of the cost of Change of Scope, and in the event of a dispute, 20% of the cost assessed by the independent engineer, as defined in the HAM SPVs Concession Agreements ("**Independent Engineer**"). NHAI shall disburse to HAM SPVs such amounts as are certified by the Independent Engineer, as reasonable and after making a proportionate deduction for the advance payment made. HAM SPVs shall be entitled to nullify any Change of Scope order if it causes the cumulative costs relating to all the Change of Scope orders to exceed 10% of the Bid Project Cost in any continuous period of 3 years immediately preceding the date of such Change of Scope order or if such cumulative costs exceed 25% of the Bid Project Cost at any time during the concession period.

3. *O&M*

HAM SPVs shall operate and maintain the Project, in accordance with the HAM SPVs Concession Agreements either by itself, or through the O&M contractor, as defined in the HAM SPVs Concession Agreements ("**O&M Contractor**"), and if required, modify, repair or otherwise make improvements to the Project to comply with provisions of the HAM SPVs Concession Agreements applicable laws, applicable permits and conform to specifications, standards and good industry practice. The obligations of HAM SPVs, among other things, shall include:

- procuring and ensuring safe, smooth and uninterrupted use of the Project, including prevention of loss or damage thereto, during normal operating conditions;
- carrying out periodic preventive maintenance of the Project;
- undertaking routine maintenance including prompt repairs of potholes, cracks, joints, drains, embankments, structures, markings, lighting, signage and other control devices;
- undertaking major maintenance such as resurfacing, repairs to structures, and repairs and refurbishment of system and equipment;
- protection of the environment and provision of equipment and materials thereof; and
- operation and maintenance of all communication, control and administrative systems necessary for the efficient operation of the Project and for providing safe, smooth and uninterrupted use of the Project.

4. *Maintenance manual*

No later than 90 days prior to the scheduled completion date, as defined in the HAM SPVs Concession Agreements, HAM SPVs shall, in consultation with the Independent Engineer, evolve a repair and maintenance manual, as defined in the HAM SPVs Concession Agreements (the "**Maintenance Manual**"), for the regular and preventive maintenance of the Project in conformity with the specifications and standards, maintenance requirements, safety requirements and good industry practice. The Maintenance Manual shall be revised and updated once every three years.

5. *Maintenance programme*

On or before COD and no later than 45 days prior to the beginning of each accounting year during the operation period, as defined in the HAM SPVs Concession Agreements , HAM SPVs shall provide to NHAI and the Independent Engineer its proposed annual programme of preventive, urgent and other scheduled maintenance (the "**Maintenance Programme**") to comply with the maintenance requirements, Maintenance Manual and safety requirements. Such Maintenance Programme shall include the following:

- preventive maintenance schedule;
- arrangements and procedures for carrying out urgent repairs;
- criteria to be adopted for deciding maintenance needs;
- intervals and procedures for carrying out inspection of all elements of the Project;
- intervals at which HAM SPVs shall carry out periodic maintenance;
- arrangements and procedures for carrying out safety related measures; and
- intervals for major maintenance works and the scope thereof.

6. *Obligations relating to change in ownership*

HAM SPVs shall not undertake or permit any change in ownership, except with the prior written approval of NHAI. Notwithstanding anything to the contrary contained in the HAM SPVs Concession Agreements, HAM SPVs agrees and acknowledges that:

- all acquisitions of equity by an acquirer, either by himself or with any person acting in concert, directly or indirectly, including by transfer of the direct or indirect legal or beneficial ownership or control of any equity, in aggregate of 25% or more of the total equity of HAM SPVs; or
- acquisition of any control directly or indirectly of the board of directors of HAM SPVs by any person either by himself or together with any person or persons acting in concert with him, shall constitute a change in ownership requiring prior approval of NHAI from national security and public interest perspective, the decision of NHAI in this behalf being final, conclusive and binding on HAM SPVs, and undertakes that it shall not give effect to any such acquisition of equity or control of the board of directors of HAM SPVs without such prior approval of NHAI. It has been expressly agreed that approval of NHAI hereunder shall be limited to national security and public interest perspective, and NHAI shall endeavour to convey its decision thereon expeditiously. It has also been agreed that NHAI shall not be liable in any manner on account of grant or otherwise of such approval and that such approval or denial thereof shall not in any manner absolve HAM SPVs from any liability or obligation under the HAM SPVs Concession Agreements.

7. *Indemnities*

- HAM SPVs shall indemnify, defend, save and hold harmless NHAI and its officers, servants, agents, government instrumentalities and government owned and/or controlled entities/enterprises, (the "**NHAI Indemnified Persons**") against any and all suits, proceedings, actions, demands and claims from third parties for any loss, damage, cost and expense of whatever kind and nature, whether arising out of any breach by HAM SPVs of any of its obligations under the HAM SPVs Concession Agreements or any related agreement or on account of any defect or deficiency in the provision of services by HAM SPVs to NHAI or to any user or from any negligence of HAM SPVs under contract or tort or on any other ground whatsoever, except to the extent that any such suits, proceedings, actions, demands and claims have arisen due to any negligent act or omission, or breach or default of the HAM SPVs Concession Agreements on the part of NHAI Indemnified Persons.
- HAM SPVs shall fully indemnify, hold harmless and defend NHAI and NHAI Indemnified Persons from and against any and all loss and/or damages arising out of or with respect to:

- failure of HAM SPVs to comply with applicable laws and applicable permits, each as defined in the HAM SPVs Concession Agreements ("**Applicable Laws**" and "**Applicable Permits**");

- payment of taxes required to be made by HAM SPVs in respect of the income or other taxes of HAM SPVs' contractors, suppliers and representatives; or

- non-payment of amounts due as a result of materials or services furnished to HAM SPVs or any of its contractors which are payable by HAM SPVs or any of its contractors.

- HAM SPVs shall fully indemnify, hold harmless and defend NHAI Indemnified Persons from and against any and all suits, proceedings, actions, claims, demands, liabilities and damages which NHAI Indemnified Persons may hereafter suffer, or pay by reason of any demands, claims, suits or proceedings arising out of claims of infringement of any domestic or foreign patent rights, copyrights or other intellectual property, proprietary or confidentiality rights with respect to any materials, information, design or process used by HAM SPVs or by HAM SPVs' contractors in performing the obligations of HAM SPVs or in any way incorporated in or related to the Project. If in any such suit, action, claim or proceedings, a temporary restraint order or preliminary injunction is granted, HAM SPVs shall make every reasonable effort, by giving a satisfactory bond or otherwise, to secure the revocation or suspension of the injunction or restraint order. If, in any such suit, action, claim or proceedings, the Project, or any part thereof or comprised therein, is held to constitute an infringement and its use is permanently enjoined, HAM SPVs shall promptly make every reasonable effort to secure for NHAI a licence, at no cost to NHAI, authorising continued use of the infringing work. If HAM SPVs is unable to secure such licence within a reasonable time, HAM SPVs shall, at its own expense, and without impairing the specifications and standards, either replace the affected work, or part, or process thereof with non-infringing work or part or process, or modify the same so that it becomes non-infringing.

8. *Suspension of HAM SPVs' rights*

Upon occurrence of a HAM SPVs default, as defined in the HAM SPVs Concession Agreements ("**HAM SPVs Default**"), NHAI shall be entitled, without prejudice to its other rights and remedies under the HAM SPVs Concession Agreements including its rights of termination, as defined in the HAM SPVs Concession Agreements ("**Termination**"), thereunder, to (i) suspend all rights of HAM SPVs under the HAM SPVs Concession Agreements, and pursuant thereto, and (ii) exercise such rights itself and perform the obligations hereunder or authorise any other person to exercise or perform the same on its behalf during such suspension ("**Suspension**"). Suspension hereunder shall be effective forthwith upon issue of notice by NHAI to HAM SPVs and may extend up to a period not exceeding 180 days from the date of issue of such notice; provided that upon written request from HAM SPVs and the lenders' representative, as defined in the HAM SPVs Concession Agreements ("**Lenders' Representative"**), NHAI shall extend the aforesaid period of 180 days by a further period not exceeding 90 days. At any time during the period of Suspension, the Lenders' Representative, on behalf of senior lenders, as defined in the HAM SPVs Concession Agreements ("**Senior Lenders**"), shall be entitled to substitute HAM SPVs under and in accordance with the substitution agreement, as defined in the HAM SPVs Concession Agreements ("**Substitution Agreement**"), and upon receipt of notice thereunder from the Lenders' Representative, NHAI shall withhold Termination for a period not exceeding 180 days from the date of Suspension, and any extension thereof, for enabling the Lenders' Representative to exercise its rights of substitution on behalf of Senior Lenders.

9. *Effect of force majeure event on the Concession*

- Upon the occurrence of any force majeure event prior to the appointed date, each as defined in the HAM SPVs Concession Agreements ("**Force Majeure Event**" and "**Appointed Date**"), the period for fulfilment of conditions precedent and achieving financial close, as defined in the HAM SPVs Concession Agreements ("**Conditions Precedent**"). shall be extended by a period equal in length to the duration of the Force Majeure Event.

- At any time after the Appointed Date, if any Force Majeure Event occurs:

  - before COD, the construction period and the dates set forth in the project completion schedule, as defined in the HAM SPVs Concession Agreements ("**Project Completion Schedule")** shall be extended by a period equal in length to the duration for which such Force Majeure Event subsists; or

  - after COD, HAM SPVs shall be entitled to receive Annuity Payments plus interest due and payable under the HAM SPVs Concession Agreements.

  Provided any payment to be made under this clause shall be subject to deduction of outstanding dues of NHAI, if any.

10. *Allocation of costs arising out of Force Majeure*

- Upon occurrence of any Force Majeure Event prior to the Appointed Date, the parties to the HAM SPVs Concession Agreements shall bear their respective costs and no party shall be required to pay to the other party any costs thereof.

- Upon occurrence of a Force Majeure Event after the Appointed Date, the costs incurred and attributable to such event and directly relating to the project ("**Force Majeure Costs**") shall be allocated and paid as follows:

    - upon occurrence of a non-political event, as defined in the HAM SPVs Concession Agreements ("**Non-Political Event**"), the parties shall bear their respective Force Majeure Costs and neither party shall be required to pay to the other party any costs thereof;

    - upon occurrence of an indirect political event, as defined in the HAM SPVs Concession Agreements ("**Indirect Political Event**"), all Force Majeure Costs attributable to such Indirect Political Event, and not exceeding the insurance cover for such Indirect Political Event, shall be borne by HAM SPVs, and to the extent Force Majeure Costs exceed such insurance cover, one half of such excess amount shall be reimbursed by NHAI to HAM SPVs; and

    - upon occurrence of a political event, as defined in the HAM SPVs Concession Agreements ("**Political Event**"), all Force Majeure Costs attributable to such Political Event shall be reimbursed by NHAI to HAM SPVs.

  Force Majeure Costs may include interest payments on debt due, O&M expenses, any increase in the cost of construction works on account of inflation and all other costs directly attributable to the Force Majeure Event, but shall not include any costs which are expressly under any provision of the HAM SPVs Concession Agreements or debt repayment obligations, and for determining such costs, information contained in the financial package, as defined in the HAM SPVs Concession Agreements ("**Financial Package**"), may be relied upon to the extent that such information is relevant.

11. *Divestment Requirements*

Upon Termination of HAM SPVs Concession Agreements, HAM SPVs shall comply with and conform to the following requirements, amongst others:-

- notify NHAI forthwith the location and particulars of all project assets, as defined in the HAM SPVs Concession Agreements ("**Project Assets**");

- deliver forthwith the actual or constructive possession of the Project, free and clear of all encumbrances, save and except to the extent set forth in the Substitution Agreement;

- cure all Project Assets, including the road, bridges, structures and equipment, of all defects and deficiencies so that the Project is compliant with the maintenance requirements, provided that in the event of Termination during the construction period, all Project Assets shall be handed over on 'as is where is' basis after bringing them to a safe condition;

- deliver and transfer relevant records, reports, intellectual property and other licences pertaining to the Project and its design, engineering, construction, operation and maintenance, including all programmes and manuals pertaining thereto, and complete 'as built' drawings as on the transfer date, as defined in the HAM SPVs Concession Agreements ("**Transfer Date**");

- transfer and/or deliver all Applicable Permits to the extent permissible under Applicable Laws;

- execute such deeds, conveyance, documents and other writings as NHAI may reasonably require for conveying, divesting and assigning all the rights, title and interest of HAM SPVs in the Project Assets, including manufacturers' warranties in respect of any plant or equipment and the right to receive outstanding insurance claims to the extent due and payable to NHAI, absolutely unto NHAI or its nominee; and

- comply with all other requirements as may be prescribed or required under Applicable Laws for completing the divestment and assignment of all rights, title and interest of HAM SPVs in the Project, free from all encumbrances, absolutely unto NHAI or to its nominees.

12. *Termination for HAM SPVs Default*

Subject to the provisions of the HAM SPVs Concession Agreements , in the event that any of the defaults specified below shall have occurred, and HAM SPVs fails to cure the default within the mentioned cure period set forth below, or where no cure period is specified, then within a cure period of 60 days, HAM SPVs shall be deemed to be in default of the HAM SPVs Concession Agreements (the "**HAM SPVs Default**"), unless the default has occurred as a result of

any breach of the HAM SPVs Concession Agreements by NHAI or due to Force Majeure Event. The defaults referred to shall include, among other things, the following:

- The performance security, as defined in the HAM SPVs Concession Agreements ("**Performance Security**"), has been encashed and appropriated in accordance with the HAM SPVs Concession Agreements and HAM SPVs fails to replenish or provide fresh Performance Security within a cure period of 15 days;

- subsequent to the replenishment or furnishing of fresh Performance Security in accordance with the HAM SPVs Concession Agreements, HAM SPVs fails to meet any Condition Precedent or cure the HAM SPVs Default, as the case may be, for which whole or part of the Performance Security was appropriated, within a cure period of 120 days;

- HAM SPVs does not achieve the latest outstanding project milestone due in accordance with the provisions of the HAM SPVs Concession Agreements and continues to be in default for 120 days;

- upon occurrence of a financial default, as defined in the HAM SPVs Concession Agreements ("**Financial Default**"), the Lenders' Representative has by notice required NHAI to undertake Suspension or Termination, as the case may be, in accordance with the Substitution Agreement and HAM SPVs fails to cure the default within the cure period specified;

- HAM SPVs abandons or manifests intention to abandon the construction or operation of the Project without the prior written consent of NHAI;

- HAM SPVs is in breach of the maintenance requirements or the safety requirements as the case may be;

- HAM SPVs has failed to fulfil any obligation, for which failure termination has been specified in the HAM SPVs Concession Agreements;

- HAM SPVs has failed to make any payment to NHAI within the period specified in the HAM SPVs Concession Agreements; and

- a change in ownership has occurred in breach of the provisions of the HAM SPVs Concession Agreements.

Upon occurrence of a HAM SPVs Default, NHAI shall be entitled to terminate the HAM SPVs Concession Agreements by issuing a termination notice, as defined in HAM SPVs Concession Agreements ("**Termination Notice**"), to HAM SPVs; provided that before issuing the Termination Notice, NHAI shall by a notice inform HAM SPVs of its intention to issue such Termination Notice and grant 15 days to HAM SPVs to make a representation, and may, after the expiry of such 15 days, whether or not it is in receipt of such representation, issue the Termination Notice.

13. *Termination for NHAI Default*

HAM SPVs may terminate the HAM SPVs Concession Agreements on account of occurrence of a default by the NHAI which is not rectified within the cure period of 90 days or such longer period as has been expressly provided in this HAM SPVs Concession Agreements (the "**NHAI Default**") and includes – (i) material default causing a material adverse effect on HAM SPVs; (ii) the failure to make any payment due to HAM SPVs; (iii) repudiation of the HAM SPVs Concession Agreements etc.

HAM SPVs may, under the HAM SPVs Concession Agreements , upon occurrence of a NHAI Default, subject to the provisions of Substitution Agreement, terminate the HAM SPVs Concession Agreements by issuing a Termination Notice to NHAI; provided that before issuing the Termination Notice, HAM SPVs shall by notice inform NHAI of its intentions to issue the Termination Notice and grant 15 days to NHAI to make a representation, and may after the expiry of such 15 days, whether or not it is in receipt of such representation, issue the Termination Notice.

14. *Defects liability after termination*

HAM SPVs shall be responsible for all defects and deficiencies in the Project for a period of 120 days after Termination, and it shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies observed by the Independent Engineer in the Project during this period. In the event that HAM SPVs fails to repair or rectify such defect or deficiency within a period of 15 days from the date of notice issued by NHAI, NHAI shall be entitled to get the same repaired or rectified at the risk and cost of HAM SPVs so as to make the Project conform to the maintenance requirements. All costs incurred by NHAI in this regard shall be reimbursed by HAM SPVs to NHAI within 15 days of receipt of demand thereof, and in the event of default in reimbursing such costs, NHAI shall be entitled to recover the same from the funds retained in the escrow account or from the performance guarantee, in accordance with the provisions of the HAM SPVs Concession Agreements. A sum equal to 15% of the Annuity Payment due and payable immediately preceding the Transfer Date will be retained in the escrow account for a period of 120 days after Termination for meeting the liabilities, arising out of or in connection with the HAM SPVs Concession Agreements. Independent Engineer will carry out an inspection of the Project at any time between 210

and 180 days prior to the Termination and if it recommends that the status of the Project is such that a sum larger than the amount of 15% as stipulated above will be retained in the escrow account and for a period longer than the aforesaid 120 days, the amount recommended by the Independent Engineer shall be retained in the escrow account for the period specified by it. HAM SPVs will have option to provide to NHAI a performance bank guarantee of equal amount in lieu of retention in accordance with the HAM SPVs Concession Agreements.

INFORMATION CONCERNING THE UNITS

Unitholding of the Trust as of June 30, 2026:

Category	Category of Unitholders	Number of Units held	As a percentage of total outstanding Units (%)	No. of Units mandatorily held		Number of Units pledged or otherwise encumbered	
				No. of Units	As a % of total Units held	No. of Units	As a % of total Units held
(A)	**Sponsor(s)/ Investment Manager/ Project Manager and their associates/related parties and Sponsor Group, as may be applicable**						
(1)	**Indian**						
(a)	Individuals / HUF	0	0	0	0	0	0
(b)	Central/State Govt.	0	0	0	0	0	0
(c)	Financial Institutions/Banks	0	0	0	0	0	0
(d)	Any Other(specify)	0	0	0	0	0	0
	Bodies Corporates	0	0	0	0	0	0
	Indian unit holding Sub-Total (A) (1)	0	0	0	0	0	0
(2)	**Foreign**						
(a)	Individuals (Non-Resident Indians / Foreign Individuals)	0	0	0	0	0	0
(b)	Foreign government	0	0	0	0	0	0
(c)	Institutions	0	0	0	0	0	0
(d)	Foreign Portfolio Investors	0	0	0	0	0	0
(e)	Any Other(specify)						
	Corporate Body – Foreign Bodies	490,381,123	36.48	0	0	0	0
	Foreign unit holding Sub - Total (A) (2)	**490,381,123**	**36.48**	0	0	0	0
	Total unit holding of Sponsor and Sponsor Group* (A) = (A)(1)+(A)(2)	**490,381,123**	**36.48**	0	0	0	0
(B)	**Public Holding**						
(1)	**Institutions**						
(a)	Mutual Funds	43,100,000	3.21				
(b)	Financial Institutions/Banks	7,825,000	0.58				
(c)	Central/State Govt.	0	0.00				
(d)	Venture Capital Funds	0	0.00				
(e)	Insurance Companies	49,200,000	3.66				
(f)	Provident/pension funds	0	0.00				
(g)	Foreign Portfolio Investors	8,154,072	0.61				
(h)	Foreign Venture Capital investors	0	0				
(i)	Any Other(specify)						
	Alternative Investment Fund	25,550,000	1.90				
	Bodies Corporate (FB)	329,884,567	24.54				
	Institutions unit holding Sub- Total (B) (1)	**463,713,639**	**34.50**				
(2)	**Non-Institutions**						
(a)	Central Government/State Governments(s)/President of India	0	0				
(b)	Individuals	103,418,586	7.69				
(c)	NBFCs registered with RBI	2,250,000	0.17				
(d)	Any Other (specify)						
	Trusts	18,011,000	1.34				
	Non Resident Indians	6,850,000	0.51				
	Clearing Members	0	0				
	Bodies Corporates	259,445,414	19.30				
	Non-Institutions Sub-Total (B) (2)	389,975,000	29.01				
	Total Public Unit holding (B) = (B)(1)+(B)(2)	853,688,639	63.52				
	Total Units Outstanding (C) = (A) + (B)	**1,344,069,762**	**100.00**				

** includes Units held by Associates / Related Parties of Investment Manager, Sponsor & Project Manager*

Note: The Trust has 1,025 Unitholders as on June 30, 2026

Unitholding of the Trust

Particulars	Number of Units
Units	
Units issued and outstanding prior to this Offer	1,344,069,762
Units issued and outstanding after this Offer	1,344,069,762

Unitholders holding more than 5% of the Units as on June 30, 2026

Sr. No.	Name of Unit Holders*	Pre-Offer		Post-Offer*	
		Number of Units	Percentage of holding (%)	Number of Units	Percentage of holding (%)
1.	Cube Highways and Infrastructure III Pte. Ltd.	252,604,900	18.79	201,946,019	15.02
2.	Cube Mobility Investments Pte. Ltd.	133,647,336	9.94	47,880,363	3.56
3.	Cube Highways and Infrastructure II Pte. Ltd.	104,128,887	7.75	685,072	0.05
4.	BCI IRR India Holdings Inc.	249,241,294	18.54	197,167,479	14.67
5.	Larsen and Toubro Limited	104,175,000	7.75	104,175,000	7.75
6.	Seventy Second Investment Company LLC	80,643,273	6.00	44,974,589	3.35

***** *Subject to finalisation of Basis of Allotment*

Unitholding of the Sponsor and the Sponsor Group

The members of the Sponsor Group currently hold 490,381,123 Units as on the date of this Final Offer Document.

CH-V, being the Sponsor, does not hold any Units of the Trust as on the date of filing this Final Offer Document. Further, certain Selling Unitholders, who are the members of the Sponsor Group have offered a portion of their Units in the Offer for Sale, subject to the Sponsor and Sponsor Group holding Units aggregating to 15% of the total issued and outstanding Units on a post-Offer basis.

Unitholding of the Investment Manager, Project Manager and Trustee

The Trustee, Investment Manager and Project Manager do not hold any Units and have not acquired any Units in this Offer.

Unitholding of the directors of the Investment Manager^

As on the date of this Final Offer Document, none of the directors of the Investment Manager holds any Units or proposes to hold any Units in the Trust except as permitted under applicable law.

^ *One of the directors of the Investment Manager has Bid in the Offer and the Allotment is subject to finalisation of Basis of Allotment*

Sponsor and Sponsor Group lock-in

In terms of the InvIT Regulations, the Sponsor and the Sponsor Group were required to, collectively, hold not less than 15% (fifteen per cent) of the Units for a period of three years from the Listing Date, which has been completed on April 19, 2026.

The Units held by the Sponsor and the Sponsor Group shall be locked-in as follows, in accordance with the InvIT Regulations:

From the beginning of 4th year after the date of listing pursuant to the initial offer and till the end of 5th year from the date of listing pursuant to the initial offer	5% of total Units issued and allotted by the Trust post August 18, 2023# or ₹ 500 crores, whichever is lower*
From the beginning of 6th year after the date of listing pursuant to the initial offer and till the end of 10th year from the date of listing pursuant to the initial offer	3% of total Units issued and allotted by the Trust post August 18, 2023# or ₹ 500 crores, whichever is lower*
From the beginning of 11th year after the date of listing pursuant to the initial offer and till the end of 20th year from the date of listing pursuant to the initial offer	2% of total Units issued and allotted by the Trust post August 18, 2023# or ₹ 500 crores, whichever is lower*
After completion of the 20th year from the date of listing pursuant to the initial offer	1% of total Units issued and allotted by the Trust post August 18, 2023# or ₹ 500 crores, whichever is lower*

* *Provided that the maximum value of Units to be held by the Sponsor and Sponsor Group for compliance with the above shall not exceed ₹500 crores or such other value as may be decided by SEBI from time to time wherein such valuation shall be based on the latest available asset value of the Trust.*

\# *The requirement for this lock-in on the units held by the Sponsor and Sponsor Group was introduced vide the Securities and Exchange Board of India (Infrastructure Investment Trusts) (Second Amendment) Regulations, 2023, with effect from August 18, 2023.*

The Sponsor and the Sponsor Group (i) currently hold 490,381,123 Units (being the number of Units held as on the date of this Final Offer Document and prior to the finalisation of Allotment pursuant to the Offer and the transfer of Units by the Selling Unitholders thereunder) aggregating to 36.48 % of the total outstanding Units as on the date of this Final Offer Document; and (ii) will hold 250,511,454 Units aggregating to 18.64 % of the Units on a post-Offer basis. Selling Unitholders, other than our Sponsor, its Related Parties and its Associates, who have offered Units towards the Offer shall not be eligible to participate in the Offer.

The Sponsor and the Sponsor Group, undertake and agree to lock in its unitholding in the manner specified in the InvIT Regulations and the InvIT Master Circular.

In terms of the InvIT Regulations, the locked-in units held by the Sponsor or its Sponsor Group entities may be transferred only amongst such Sponsor or its Sponsor Group entities subject to the condition that lock-in on such units shall continue for the remaining period with the transferee and such transferee shall not be eligible to transfer such units till the lock-in period has expired. In the case of an InvIT with multiple sponsors, the locked-in units held by a sponsor or its sponsor group entities can be transferred only among such sponsor or its sponsor group entities and shall not be transferred to any other sponsor or its sponsor group entities. Provided further that in case of a change in sponsor, locked-in units held by the outgoing sponsor or its sponsor group entities may be transferred to the incoming sponsor or its sponsor group entities, subject to the condition that the incoming sponsor or its group entities shall meet the minimum unitholding requirements after the transfer.

Anchor Investor lock-in

Any Units Allotted to Anchor Investors in the Offer shall be locked-in for a period of 30 days from the date of Allotment.

Strategic Investor lock-in

The Units Allotted to Strategic Investors in the Offer shall be locked-in for a period of 180 days from the date of listing of the Units.

USE OF PROCEEDS

The object of the Offer is for conversion of the Trust from a privately listed infrastructure investment trust to a publicly listed infrastructure investment trust through an Offer for Sale of 328,947,365 Units^ of the Trust at an Offer Price of ₹ 152 per Unit, aggregating to approximately ₹ 50,000 million.

^Subject to finalisation of Basis of Allotment

The Trust will not receive any proceeds of the Offer ("**Offer Proceeds**"). The Selling Unitholders will be entitled to the entirety of the proceeds of the Offer after deducting their respective portion of the Offer related expenses and the relevant taxes thereon.

The details of the Offer for Sale are set out below:

Name of the Selling Unitholder	Number of Offered Units and amount raised pursuant to the Offer*	Date of consent letter	Date of corporate action / board resolution
BCI IRR India Holdings Inc.	52,073,815 Units^, aggregating to ₹ 7,915.22 million	July 6, 2026	July 3, 2026
BCI IRR India Holdings Limited Partnership	1,335,197 Units^, aggregating to ₹ 202.95 million	July 6, 2026	July 3, 2026
Cube Highways and Infrastructure II Pte. Ltd.	103,443,815 Units^, aggregating to ₹ 15,723.46 million	July 6, 2026	March 17, 2026
Cube Highways and Infrastructure III Pte. Ltd.	50,658,881 Units^, aggregating to ₹ 7,700.15 million	July 6, 2026	March 17, 2026
Cube Mobility Investments Pte. Ltd.	85,766,973 Units^, aggregating to ₹ 13,036.58 million	July 6, 2026	March 17, 2026
Seventy Second Investment Company LLC	35,668,684 Units^, aggregating to ₹ 5,421.64 million	July 6, 2026	July 6, 2026

* *With respect to the Units offered by the Selling Unitholders in the Offer for Sale, the Selling Unitholders, have held Units for a period of at least one year immediately preceding the date of the Draft Offer Document and are free from any encumbrance or lock-in on the date of the Draft Offer Document*

^ *Subject to finalisation of Basis of Allotment*

For further details of the Units offered by the Selling Unitholders, please see the section entitled "*The Offer*" on page 32.

Offer Expenses

The total expenses of this Offer are estimated to be ₹ 1,025.34 million ("**Offer Expenses**"). The Offer Expenses consist of fee and commissions payable to the Book Running Lead Managers, fee payable to legal counsels, fee payable to Banker to the Offer, Registrar to the Offer, fee payable to Trustee, Valuer, SEBI (filing of the Offer Documents), Stock Exchanges, Depositories, Technical Consultant, Traffic Consultant, Auditor and such other intermediaries, printing and stationary costs, and all other incidental and miscellaneous expenses for listing the Units on the Stock Exchanges pursuant to the Offer. The Offer Expenses shall be proportionately divided amongst the Selling Unitholders, except for the listing fees and statutory audit fees to be paid to the statutory auditor of the Trust, which shall be borne by the Trust. The break-up for the Offer Expenses is as follows:

(In ₹ million)

Activity	Estimated Expenses (₹ in million)	As a % of total estimated Offer related Expenses	As a % of Offer Size
Fees and commissions to advisors to for Offer(1)	615.61	60.04	1.23
Fee payable to others	409.73	39.96	0.82
Total estimated Offer Expenses	**1,025.34**	**100**	**2.05**

(1) Includes selling commission and brokerage.

For ease of operations, if required, the Offer Expenses, at the outset, may be borne by the Sponsor and/or the Investment Manager and/or such other parties on behalf of the Trust, and the Investment Manager (on behalf of the Trust) agrees that it will reimburse the Sponsor and/or the Investment Manager and/ or such other parties for all such expenses as may be incurred by the Sponsor or the Investment Manager on actual basis, from the Offer Expenses portion.

Selling Commissions

Selling commission on the Non-Institutional Investor Portion, which is procured by Syndicate Members (including their sub-syndicate members), SCSBs, RTAs and CDPs would be as set forth:

Non-Institutional Bidders* 0.50% of the Amount Allotted* (plus applicable taxes)

* *Amount Allotted is the product of the number of Units Allotted and the Offer Price.*

Selling commission payable to the SCSBs will be determined on the basis of the bidding terminal id as captured in the Bid book of BSE or NSE.

No processing fees shall be payable by the Investment Manager to the SCSBs on the applications directly procured by them.

Processing fees payable to the SCSBs of ₹10 per valid application (plus applicable taxes) for processing the Bid cum Application Form for Non-Institutional Bidders (excluding UPI Bids) which are procured by the members of the syndicate/sub-syndicate/Registered Broker/RTAs/CDPs and submitted to SCSB for blocking.

1. Brokerage, selling commission and processing/uploading charges on the portion for Non-Institutional Bidders which are procured by members of the syndicate (including their sub-syndicate members), RTAs and CDPs or including by using UPI Mechanism or using 3-in-1 type accounts linked online trading, demat & bank account provided by some of the brokers which are members of syndicate (including their sub-syndicate members) would be as follows:

Non-Institutional Bidders*	0.50% of the Amount Allotted* (plus applicable taxes)

* *Amount Allotted is the product of the number of Units Allotted and the Offer Price.*

The selling commission payable to the syndicate/sub-syndicate members will be determined on the basis of the application form number/series, provided that the application is also bid by the respective syndicate/sub-syndicate member. For clarification, if a syndicate ASBA application on the application form number/series of a syndicate/sub-syndicate member, is bid by an SCSB, the Selling Commission will be payable to the SCSB and not the syndicate/sub-syndicate member.

2. Uploading Charges payable to Syndicate Members (including their sub-syndicate members), RTAs and CDPs on the applications made by Bidders using 3-in-1 accounts/syndicate ASBA mechanism which are procured by them and submitted to SCSB for blocking would be as follows:

₹10 plus, applicable taxes, per valid application bid by the syndicate (including their sub-syndicate members), RTAs and CDPs.

The selling commission and bidding charges payable to Registered Brokers, the RTAs and CDPs will be determined on the basis of the bidding terminal id as captured in the Bid Book of BSE or NSE.

3. Selling commission/uploading charges payable to the Registered Brokers on the portion for Non-Institutional Bidders which are directly procured by the Registered Broker and submitted to SCSB for processing, would be as follows:

Portion for Non-Institutional Bidders *	₹10 per valid application (plus applicable taxes)

* *Based on valid applications.*

4. Uploading charges/Processing fees for applications made by UPI Bidders using the UPI Mechanism would be as under:

Members of the syndicate/RTAs/CDPs/ Registered Brokers	₹30 per valid application (plus applicable taxes)
Sponsor Banks	NIL per valid application (plus applicable taxes)

Processing fees for applications made by UPI Bidders using the UPI mechanism for each valid Bid cum application form. The Sponsor Banks shall be responsible for making payments to the third parties such as remitter bank, NPCI and such other parties as required in connection with the performance of its duties under the SEBI circulars, the Syndicate Agreement and other applicable laws.

All such commissions and processing fees set out above shall be paid as per the timelines in terms of the Syndicate Agreement and the Cash Escrow and Sponsor Bank Agreement.

The processing fee for applications made by UPI Bidders using the UPI mechanism may be released to the remitter banks (SCSBs) only after such banks provide a written confirmation on compliance with SEBI circular no. SEBI/HO/DDHS/DDHS_Div3/P/CIR/2022/085 dated June 24, 2022, the InvIT Master Circular and any subsequent circulars or notifications issued by SEBI in this regard.

FINANCIAL INDEBTEDNESS AND DEFERRED PAYMENTS

The details of indebtedness of the Trust as at March 31, 2026:

Sr. No.	Particulars*	Principal Amount outstanding, as on March 31, 2026 (in ₹ million)
1.	***Cube Highways Trust#***	
	Secured Borrowings	
	Term Loan	131,990.21
	Non - Convertible Debt Securities	43,444.71
2.	***Portfolio Assets***	
	MBEL	
	Non – Convertible Debt Securities	1,045.30
	Unsecured Borrowings	
	WVEPL	150.99
	QEPL	15.92
	Total Borrowings	**1,76,647.13**

* *Borrowings numbers are on a discounted basis*

\# *On June 29, 2026, the Trust has allotted 63,700 senior, secured, rated, listed, redeemable, non-convertible debentures of ₹0.1 million each, aggregating to ₹ 6,370 million, at a coupon of 7.3925% per annum for a tenor of 11 years, 9 months and 2 days, on a private placement basis, for the purpose of refinancing existing debt at the Trust level.*

The details of the indebtedness, with a brief description of certain material covenants of the relevant financing agreements, are provided below:

Principal terms of the borrowings availed by the Trust including bank guarantees (InvIT Loans):

1. *Tenor:* The tenors of the borrowings availed by the Trust range from 18 to 20 years. Further, the tenor for the bank guarantees is 12 months and higher.

2. *Purpose:* The purpose for the various loans availed by the Trust are as follows:

   (a) Senior debt facility documents: Towards various repayment and refinancing of existing facilities, among other purposes listed in the facility agreements

   (b) Short-term loan facility: Towards cash flow mismatch and general corporate purposes

   (c) Bank guarantee: Towards debt service reserve amount and performance guarantee

   (d) Overdraft facility: Towards the working capital requirement

3. *Interest:* The interest for the borrowings availed by the Trust is the lending rate for each period which is the aggregate of the spread and the relevant benchmark rate. Further, in case of one of the bank guarantees, interest at the rate of 2% + MCLR per annum will be charged on amount outstanding in case of delay in payment.

4. *Security:* The borrowings availed by the Trust are secured and the bank guarantees are both secured and unsecured. The secured borrowings are secured by, among other things:

   (a) A first ranking *pari passu* security interest, by way of hypothecation on the following:

      (i) on all movable assets and the receivables of the Trust in relation to certain Portfolio Assets

         a. all receivables of the Trust from certain Portfolio Assets;

         b. loans and advances made by the Trust to certain Portfolio Assets except for the excluded SPVs (*as defined in the relevant facility agreements*);

         c. the interest and principal repayment of loans advanced by the Trust;

         d. dividends and any other amounts to be paid / payable by certain Portfolio Assets to the Trust;

         e. inventories, contractual rights, securities, patents, trademarks, other intellectual property, equipment and/or insurances (in each instance, if any); and

         f. all other current assets of the Trust, including all the Trust's tangible and intangible assets, including but not limited to its goodwill, undertaking and uncalled capital, both present and future.

      (ii) all the accounts and all other bank accounts of the Trust in which the free cashflows from certain Portfolio Assets owned by the Trust will be deposited/ credited or any other account opened/ maintained by the Trust in relation to certain Portfolio Assets.

(b) A first ranking exclusive security interest, by way of hypothecation on the DSRA (as defined below), in respect of the debt securities, standing to the credit of debt service reserve account;

(c) An agreement to assign the loans advanced by the Trust to certain Portfolio Assets, (except for the excluded SPVs, *as defined in the relevant facility agreements*) and securities created by the Trust in respect of such loans granted by the Trust;

(d) A pledge of all bonds, non-convertible debentures, or any other security (except the equity shares) of certain Portfolio Assets, (other than the excluded SPVs, *as defined in the relevant facility agreements*), held by the Trust;

(e) A pledge of 100% equity shares on a fully diluted basis of certain Portfolio Assets (except for the excluded SPVs, *as defined in the relevant facility agreements*), held by the Trust, other than the nominees' shares.

(f) A negative lien, other than on permitted disposals, on the immovable and movable assets (including current assets and cash flows) of certain Portfolio Assets (except for the excluded SPVs, *as defined in the relevant facility agreements*), subject to the rights of the authorities under the respective concession agreements.

(g) A non-disposal undertaking by Cube Highways (*as defined in the facility agreement*) regarding the non-disposal of the NDU units, to be released upon expiry of a period of 3 years from the initial drawdown date and upon the Trust achieving a DSCR of at least 1.25 in any fiscal year after the expiry of 3 years from the initial drawdown date, as evidenced by compliance certificate issued in this regard by an independent chartered accountant to the satisfaction of the facility agent.*

* *The above security is specifically for the senior debt facility tranche I.*

(h) A pledge of bonds, non-convertible debentures, or any other security (except equity shares) of the excluded SPVs, *as defined in the relevant facility agreements*, held by the Trust and pledge over 100% of certain SPVs and 99.97% of certain SPVs as set out in the relevant senior debt facility documents and 100% of the equity shared of the other excluded SPVs, *as defined in the relevant facility agreements*.

(i) A contractual arrangement to ensure that the security trustee is appointed as the irrevocable agent of the Trust under the loans and advances granted/ proposed to be granted by the Trust to certain Portfolio Assets, except the excluded SPVs, *as defined in the relevant facility agreements*.

5. *Prepayment premium:* The senior debt facility documents provide the Trust with the right to prepay the lenders the outstanding amounts in part or in full. The Trust is required to provide 30 (thirty) days written notice to the lenders and prepay the outstanding principal amount with prepayment premium at the rate of 0.50% on the principal amount being prepaid. No prepayment premium shall be payable by the Trust as per the conditions prescribed in the facility agreements, which include, among other things:

(a) prepayment is made at the instance of the lenders or upon acceleration of the loans by the lenders (in accordance with the terms of the facility agreement) or any prepayment is made by the Trust to cure breach of any financial covenants;

(b) prepayment is made from internal accruals/contribution by the unitholders of the Trust, with a prior written notice of at least 30 (thirty) days to the lenders;

(c) prepayment is made pursuant to the occurrence of a mandatory prepayment event;

(d) prepayment is made upon exercise of the put option by any lender.

6. *Negative Covenants:* Under the senior debt facility documents, the Trust on behalf of itself and certain Portfolio Assets, confirms that, until the final settlement date, it shall not take any action contemplated under the negative covenants section unless prior written consent of the lenders is obtained, which include, among others:

(a) any change in its capital structure (including any change in the shareholding pattern) other than as contemplated under the financing documents.

(b) change of control in certain Portfolio Assets.

(c) any material change in the scope of the projects other than as permitted under the terms of the concession agreement, the general nature of its business or operations resulting in adverse impact on the ability of the Trust to meet its obligations or substantial change in the technical, financial aspects of the projects resulting in material adverse effect.

(d) certain Portfolio Assets shall not revalue its assets and properties as reflected in the books of accounts of the Trust as of agreement date, other than as may be permitted under the accounting principles and/ or the relevant concession agreement.

(e) amend constitutional documents such that it causes or is likely to cause a material adverse effect/affects the rights of the lender under the financing documents. The investment manager and certain Portfolio Assets shall not amend its memorandum and articles of association, which materially impacts the interests of the lenders except if required by law.

(f) certain Portfolio Assets shall not undertake any new acquisition/investment or advance any funds or place deposits with any person except permitted acquisition, permitted investment, permitted indebtedness, and/ or normal trade credit or security deposits in the ordinary course of business as permitted under the project documents.

(g) the Trust shall not contract, create, incur, assume or suffer to exist any financial indebtedness other than permitted indebtedness, provided the Trust has complied with the permitted indebtedness conditions prescribed in the facility agreements.

(h) the Trust shall not make any restricted payments unless the restricted payment conditions as prescribed under the facility agreement are satisfied.

7. *Event of default:* The following events, among other things, shall constitute as an event of default:

(a) non-payment of amounts due on the relevant due date;

(b) incorrectness of any material representation or warranty made by the Trust; and

(c) any form of government action as specified in the relevant facility agreements against all or substantial part of the Trust's properties resulting in downgrade of the credit rating of the Trust to AA- or below within 30 days of occurrence of such event.

(d) Additionally, the following events, among others, shall be declared as an event of default by the senior lenders under the senior debt facility documents:

i. failure to perform any material obligations under the financing documents which has not been cured within 30 (thirty) days of such breach;

ii. breach of financial covenants by the Trust which has not been cured within the prescribed time period;

iii. declaration of an event of default on account of payment default under the documents in relation to financial indebtedness availed by the Trust.

iv. declaration of an event of default under certain Portfolio Assets' financing documents leading to downgrade in credit rating of the Trust to AA- or below;

v. change of control occurring without the prior consent of the lenders or in contravention of the facility document

vi. one or more event(s) having a material adverse effect;

8. *Consequences of default:* Upon occurrence of an event of default and failing to cure such default within the cure period provided, the lender may, among other things, exercise the following rights:

(a) cancellation of the facilities as permitted in the relevant facility agreements;

(b) acceleration of the repayment obligations as permitted in the relevant facility agreements;

(c) exercise of other remedies as permitted or available under the facility agreements.

For further details, please refer to note 23 of the Audited Consolidated Financial Statements.

Principal terms of the non-convertible debentures issued by the Trust:

1. *Tenor:* The tenor of the debt security is for a period commencing from the relevant deemed date of allotment till the relevant final redemption date.

2. *Purpose:* Towards repayment of existing debt amongst others as prescribed in the debt security trust deeds.

3. *Face value:* The face value of each senior, secured, rated, listed, redeemable, non-convertible debt securities is ₹100,000.

4. *Security:* The outstanding dues, are secured by, amongst others:

(a) A first ranking *pari passu* security interest, by way of hypothecation on the following:

(i) on all movable assets and the receivables of the Trust in relation to certain Portfolio Assets

a. all receivables of the Trust from certain Portfolio Assets;

b. loans and advances made by the Trust to certain Portfolio Assets except for the relevant excluded SPVs, *as defined in the relevant facility agreements*;

c. the interest and principal repayment of loans advanced by the Trust;

d. dividends and any other amounts to be paid / payable by certain Portfolio Assets to the Trust;

e. inventories, contractual rights, securities, patents, trademarks, other intellectual property, equipment and/or insurances (in each instance, if any); and

f. all other current assets of the Trust, including all the Trust's tangible and intangible assets, including but not limited to its goodwill, undertaking and uncalled capital, both present and future.

(ii) all the accounts and all other bank accounts of the Trust in which the free cashflows from certain Portfolio Assets owned by the Trust will be deposited/ credited or any other account opened/ maintained by the Trust in relation to certain Portfolio Assets.

(b) A first ranking exclusive security interest, by way of hypothecation on the DSRA (as defined below), in respect of the debt securities, standing to the credit of debt service reserve account.

(c) An agreement to assign the loans advanced by the Trust to certain Portfolio Assets (except for the excluded SPVs, *as defined in the relevant facility agreements*) and securities created in favour of the Trust in respect of such loans granted by the Trust.

(d) A pledge of all bonds, non-convertible debentures, or any other security (except the equity shares) of certain Portfolio Assets (other than the excluded SPVs, *as defined in the relevant facility agreements*) held by the Trust.

(e) A pledge of 100% equity shares on a fully diluted basis of certain Portfolio Assets (except for the excluded SPVs, *as defined in the relevant facility agreements*), held by the Trust, other than the nominees' shares.

(f) A negative lien, other than on permitted disposals, on the immovable and movable assets (including current assets and cash flows) of certain Portfolio Assets (except for the excluded SPVs, *as defined in the relevant facility agreements*), subject to the rights of the authorities under the respective concession agreements.

(g) A pledge of bonds, non-convertible debentures, or any other security (except equity shares) of excluded SPVs, *as defined in the relevant facility agreements*, held by the Trust and pledge over 100% equity shares of certain SPVs and 99.97% equity shared of certain other SPVs as set out in the relevant debt security trust deed and a pledge over 100% of the equity shared of the other excluded SPVs, *as defined in the relevant facility agreements*, in each case other than the nominee's shares.

(h) A contractual arrangement to ensure that the security trustee is appointed as the irrevocable agent of the Trust under the loans and advances granted/ proposed to be granted by the Trust to certain Portfolio Assets, except the excluded SPVs, *as defined in the relevant facility agreements*.

5. *Mandatory Redemption Event, inter alia, shall mean:*

a. The debt securities cease to have a valid credit rating from any credit rating agency; or

b. Any application or petition is filed for corporate insolvency resolution or bankruptcy or dissolution or liquidation or winding up against certain Portfolio Assets under the Insolvency and Bankruptcy Code, 2016 or any other such prevailing applicable law and such application results in a downgrade in the credit rating of the Trust to AA- or below as determined by a credit rating agency. Such credit rating shall be obtained within 30 (thirty) days of occurrence of such event; or

c. Cessation of business by any of the relevant Portfolio Assets, which results in a downgrade in the credit rating of the Trust or the debt securities to AA- or below as determined by any credit rating agency. Such credit rating shall be obtained within 30 (thirty) days of occurrence of such event; or

d. Termination of any concession agreement and upon such termination, the credit rating of the Issuer as determined by any credit rating agency falls below the AAA credit rating; or

6. *Voluntary Redemption:*

a. The Trust may redeem together with coupon, additional interest and other outstanding dues (in full or part, as the case may be) *inter alia* as below:

i. The debt securities held by all the debt security holders, within 120 (one hundred and twenty) days of the credit rating of the Trust or the debt securities being downgraded to AA or below by any credit rating agency, with prior written notice of at least 30 (thirty) business days';

ii. The debt securities held by all the debt security holders, pursuant to the occurrence of a mandatory redemption events;

7. *Negative Covenants:*

a. *Change in Control:* The Trust shall not permit and shall ensure that the relevant Portfolio Assets shall not permit any of the relevant Portfolio Assets change of control.

b. *Bank Accounts:* The Trust shall not and shall ensure that the relevant Portfolio Assets shall not open any bank account other than those contemplated by the escrow agreement or the supplementary escrow agreement, financing documents executed by the excluded SPVs, *as defined in the relevant facility agreements*, and in relation to the excluded facilities (as specified in the facility agreement) till the same are not closed in accordance with the terms of the debt documents, as applicable.

c. *New Acquisition/Investment:* The Trust shall not and ensure that the relevant Portfolio Assets shall not undertake any new acquisition/ investment or advance any funds or place deposits with any person except any permitted acquisition, permitted investment, permitted indebtedness, and/ or normal trade credit or security deposits in the ordinary course of business as permitted under the project documents.

d. *Indebtedness:* The Trust shall not contract, create, incur, assume or suffer to exist any financial indebtedness other than permitted indebtedness, provided the Trust has complied with the permitted indebtedness conditions prescribed in the facility agreements. The Trust does not require prior written consent of the secured parties to avail any permitted indebtedness.

8. *Debt Service Reserve Account ("**DSRA**"):*

a. The reserve amount required to be maintained in such form and manner as specified in the debt document and as provided in the escrow agreement and relevant supplementary escrow agreement, equivalent to the aggregate of the redemption amount/repayment instalment and the coupon/interest payable in the next 3 months to the debt security holders and the additional reserve amounts (if required to be maintained as per the specific agreement).

b. In the event of a downgrade in the external credit rating of the Trust by a credit rating agency to AA or below, which is continuing, the Trust shall have ensured that the DSRA is the aggregate of an amount equivalent to the redemption amount/repayment instalment and the coupon/interest payable in respect of the debt securities during the subsequent 2 fiscal quarters and the additional reserve amounts (if required to be maintained as per the specific agreement).

c. Such debt service reserve amount is required to be maintained by the specified Portfolio Assets in the form of permitted investments. In the event the Trust is required to maintain the debt service reserve amount, the Trust may provide a bank guarantee in the same form and manner specified in the agreement or any other format from a scheduled commercial bank with a minimum rating as specified in the specific agreement.

9. *Events of Default:* The following events, among other things, shall constitute an event of default:

(i) Non-payment of any redemption amount, coupon, default payment charges, non-compliance charges or fee or any other amounts due and payable by the Trust on the relevant due date;

(ii) Non-performance of (a) any material obligations under any debt documents or breach of material terms and conditions of the debt documents (other than the financial covenants) and such failure has not been cured within the specified time period; (b) breach of any financial covenants and not cured to the satisfaction of the majority debt security holders; (c) any insurance contract is not or ceases to be in effect when it is required to be in effect;

(iii) Any event that may have a material adverse effect;

(iv) Cross default: (a) declaration of an event of default on account of payment default under the documents in relation to financial indebtedness availed by the Trust (b) declaration of an event of default under the relevant Portfolio Assets' financing documents leading to downgrade in credit rating of the Trust to AA- or below;

(v) Non-creation of security within the stipulated time;

(vi) Incorrectness of any material representation or warranty made by the Trust and/or any of the relevant Portfolio Assets in the debt document (or in any document delivered by or on behalf of the Trust);

(vii) Cessation of business by the Trust or certain Portfolio Assets or a notice in writing or an action through authorised officers which can be construed as threatening to cease business;

(viii) Termination of any concession agreement by the relevant authority or the relevant Portfolio Assets, or the occurrence of an event of default under any concession agreement which is not cured, where such termination or event of default results in downgrade of the credit rating of the Trust to AA- or below;

(ix) Downgrade of the external credit rating of the Trust or the debt securities, as determined by a credit rating agency, to AA(-) or below;

(x) Breach of any project documents/InvIT documents by any party thereto which adversely affects the ability of the Trust to perform its obligations under the debt documents.

(xi) Voluntary winding up of the Trust or any of the relevant Portfolio Assets;

(xii) Any of the relevant Portfolio Assets abandons their respective project resulting in credit rating of the Trust to downgrade to AA- or below;

(xiii) Certain facility documents provide for change of control occurring without the prior consent of the debt security holders or in contravention of the terms of the facility document as an event of default. Others provide for only change of control occurring without the prior consent of the debt security trustee as an event of default.

10. *Consequences of default*: upon the occurrence of an event of default the debt security holders may, among other things, exercise the following rights, provided the debt security holders have recourse only in relation to the relevant Portfolio Assets over which they have security interest:

(i) declare all outstanding dues payable on demand;

(ii) to enter upon and take possession of the assets of the Trust comprised with the security;

(iii) to transfer the assets of the Trust in favour of the secured parties or such other person by way of lease, leave and license, sale or otherwise;

(iv) sue for creditors' process and/ or exercise rights with respect to the security;

(v) enforcement of security; and

(vi) exercise of other remedies as permitted or available under the debt documents.

(vii) exercise one or more rights available under the applicable laws.

For further details, please refer to note 23 of the Audited Consolidated Financial Statements.

This is an indicative list of the terms of the borrowings availed by the Trust and there may be additional terms, conditions and requirements under the various borrowing arrangements entered into by the Trust. Where applicable the term 'debt security holders' may include the relevant lenders.

Given the nature of these borrowings and the terms of prepayment, the aggregate outstanding borrowing amounts may vary from time to time.

This Final Offer Document does not, directly or indirectly, relate to any invitation, offer or sale of any securities, instruments or loans (including listed non-convertible debentures, bonds or other debt securities, if any) that may be issued by the Trust after the Offer. Any person or entity investing in such issue or transaction by the Trust should consult its own advisors. Neither the Book Running Lead Managers, nor their associates or affiliates have any responsibility or liability for such issue or transaction by the Trust.

Principal terms of the non-convertible debentures issued by MBEL

MBEL has issued and allotted redeemable, listed, rated, secured non-convertible debentures of a nominal value of ₹ 1,000,000 each on a private placement basis, aggregating to ₹ 1,842 million comprising 13 series (the "**Series A Debentures**") and issued and allotted redeemable, listed, rated, secured non-convertible debentures of a nominal value of ₹ 1,000,000 each on a private placement basis, aggregating to ₹ 78 million comprising 3 series (the "**Series B Debentures**" and together with Series A Debentures, the "**Debentures**"). Series B NCDs have been redeemed.

The key terms of the debenture trust deed dated November 9, 2017, as amended on December 13, 2017, (the "**Deed**") entered into by MBEL and Catalyst Trusteeship Limited (the "**Debenture Trustee**") in relation to Debentures are as follows:

1. *Tenor:* Series A Debentures are issued for approximately 12.5 years from October 3, 2018, to March 29, 2030.

2. *Security:*

   (a) The debt in relation to the Series A Debentures shall be secured in favour of the Debenture Trustee by way of:

      (i) first pari-passu charge by way of hypothecation of:

         a. MBEL's tangible moveable assets (other than project assets as defined in the Deed); and

         b. the accounts (excluding the distribution account and DRR investments) and the permitted investments, any other receivables, monies received/ receivable under the O&M agreements or from any other person (whether as liquidated damages or otherwise), all other monies credited or liable to be credited to the accounts and the permitted investments, all money, claims or money proceeds or receivables of whatsoever nature arising howsoever and wheresoever, which are now due and owning or which may at any time hereafter during the continuance of the security created hereunder become due and owing to or acquired by MBEL in the course of its business, and the full benefit of all rights and remedies relating thereto, including but not limited to fees, deposit and all claims damages and other remedies for non-payment of the same and all claims under any insurance whether in addition to or by way of renewal, extension or replacement of any money previously deposited in or credited to the accounts (excluding the distribution account and the DRR investments) and the permitted investments or otherwise, together with any interest from time to time accruing in respect of such monies (hereinafter, referred to collectively as the "First Hypothecated Assets");

      (ii) first pari-passu charge-cum-assignment by way of security created through hypothecation/ charge by way of assignment or creation of charge over all of MBEL's rights, titles, interest, benefits, claims and demands under each of the:

         a. the insurance contracts (except to the extent they are not project assets) together with any receivables or insurance proceeds thereunder;

         b. the concession agreement of MBEL (in accordance with the substitution agreement); and

         c. the project documents (other than the concession agreement of MBEL) (including any guarantees. liquidated damages, performance bonds and letters of credit that may be provided by any counterparty to the project documents (other than the concession agreement of MBEL)) except to the extent they are not project assets, and hie authorisations in respect of the project including, without limitation, the right to compel performance thereunder, and to substitute, or to be substituted for, MBEL there under, exercise any rumination rights, and to commence and conduct either in the name of MBEL or in its own name or otherwise any proceedings against any person in respect of any breach of the project documents (other than the concession agreement of MBEL) and the authorisations, to the extent capable of being charged and, including without limitation, rights and benefits to all amounts owing to, or received by, MBEL and all claims thereunder and all other claims of MBEL under or In any proceedings against all or any such persons and together with the right to further charge and/or assign any of the project documents (other than the concession agreement of MBEL) and the authorisations, to any person whether presently in existence or created hereafter (hereinafter, referred to collectively as the "**Second Hypothecated Assets**").

3. *Interest:* If payment of any amount due to a debenture holder is not made in accordance with the Deed, MBEL shall unconditionally pay a default interest which is a sum of 8.40% per annum (coupon rate) and 2% per annum, payable on such amount calculated on a daily basis.

4. *Mandatory redemption event:* The Deed provides for the following events as mandatory redemption events:

   (a) termination by MBEL of the concession agreement;

   (b) termination by the concessioning authority other than on the occurrence of a concessionaire event of default as described in the concession agreement;

(c) concessioning authority awarding MBEL the concession to perform augmentation to the capacity of the project pursuant to the concession agreement or in the instance where MBEL has not submitted any proposal, the concessioning authority has awarded the concession for augmentation of the capacity of the project to a third person pursuant to the concession agreement.

5. *Negative Covenants:* The Deed provides that MBEL shall not affect any of the following, without the prior written consent of the Debenture Trustee, including but not limited to:

(a) Capital Structure: any change in its capital structure (other than as contemplated under the debenture documents).

(b) Merger: entering into any amalgamation, merger, demerger, or corporate reconstruction.

(c) Guarantees and Indemnities: provide, or permit to subsist, any guarantee or indemnity in respect of any financial indebtedness obtained by any third.

(d) Disposals: entering into any transaction (related or not, or voluntary or involuntary) to sell, lease, transfer or otherwise dispose of any material rights in relation to the project.

(e) Constitutional documents: amend constitutional documents which adversely affects the rights of the debenture holders under the debenture documents.

(f) Restricted payments: MBEL shall not, without the prior written consent of the Debenture Trustee upon an event of default continuing:

(i) pay, repay or prepay any principal, interest or other amount on or in respect of or redeem, purchase or decrease any financial indebtedness owed as described in the Deed;

(ii) declare, pay or make any dividend or other payment or distribution of any kind on or in respect of an of its shares; or

(iii) reduce, return, purchase, repay, cancel or redeem any of its share capital.

6. *Events of Default:* The Deed provides the following events of defaults, amongst others:

(a) non-payment of any amount payable by MBEL on the due date;

(b) non-compliance with any obligations by MBEL under any debenture document;

(c) any misrepresentation made or deemed to be made by MBEL in any debenture document;

(d) occurrence of cross default;

(e) inability to pay its debts;

(f) moratorium is declared in respect of any indebtedness of MBEL;

(g) the Debenture Trustee determines that an event or circumstance that has occurred or exists has a material adverse effect;

(h) Occurrence of a debenture delisting event as defined in the Deed;

(i) the Debentures cease to be rated by any rating agency;

(j) the accounts are not established with the escrow bank or are not duly funded operated and maintained in accordance with the terms of the debenture documents;

(k) occurrence of a concessionaire event of default;

(l) cessation of business;

(m) abandonment of the project;

(n) suspension of the project

(o) any insurance required under the relevant transaction documents is not maintained or ceases to be in effect and has not been remedies within 25 business days.

7. *Consequences of default:* upon the occurrence of an event of default the debenture Trustee shall, among other things:

   (a) accelerate the payment of the debt;

   (b) substitute the company under the concession agreement as per the terms of the substitution agreement;

   (c) declare by a written notice to MBEL, that the debt shall be due and payable forthwith;

   (d) upon the security created pursuant to security documents having become enforceable, the Debenture Trustee shall, if directed by the debenture holders by a majority resolution, enforce any such security as per the terms thereof; and

   (e) upon the security created pursuant to security documents having become enforceable, the Debenture Trustee shall, if directed by the debenture holders by a majority resolution, exercise such other rights and remedies as may be available to the Debenture Trustee under applicable law.

8. *Governing Law and Jurisdiction:* The Deed shall be governed by Indian law and the courts and tribunals in Delhi shall have exclusive jurisdiction.

NHAI, MBEL and Catalyst Trusteeship Limited have also entered into a substitution agreement dated June 05, 2018 (the "**Substitution Agreement**") for the benefit of the senior lenders and NHAI. Certain rights available to the senior lenders under the Substitution Agreement include, among other things:

1. *Substitution of the concessionaire by a selectee:* Catalyst may substitute the concessionaire by a selectee selected by the senior lenders in accordance with the Substitution Agreement and NHAI's approval.

2. *Interim protection of service and preservation of security:* the Senior lenders are entitled to institute protective legal proceedings for a receivership to maintain and protect the assets held as security upon the occurrence of an event of default as described in the Substitution Agreement.

3. *Senior lenders right to receive termination payment:* NHAI is entitled to deposit the termination payments into escrow account and the senior lenders shall be entitled to receive the same without further reference to or the consent of the concessionaire.

For further details, please refer to note 23 of the Audited Consolidated Financial Statements.

Principal terms of the unsecured borrowings availed by the Portfolio Assets from their respective erstwhile holding company:

1. WVEPL:

Cube Highways and Infrastructure III Pte. Ltd ("**CH-III**") (erstwhile holding company of WVEPL) acquired 100% equity share capital of WVEPL from KNR Constructions Limited ("**KNR**" or "**Seller**") pursuant to the Share Purchase Agreement dated January 9, 2020, as amended by an amendment agreement dated September 18, 2020, (collectively referred to as the "**SPA**") entered into between CH-III, KNR and WVEPL. KNR agreed to waive a portion of the seller loan prior to the closing date. As per the seller loan agreement, the portion thus waived shall be determined as per the SPA and indicated to KNR in writing by WVEPL. It shall be confirmed by WVEPL prior to the closing date. After repayment of the redeemable seller loan, the portion of the seller loan (i.e., equal to the agreed holdback amount and the WC pass through amounts, as described in the seller loan agreement), shall remain outstanding. The agreed holdback amount is a cumulative sum of ₹617,496,000. For further details, please refer to note 21 of the Audited Consolidated Financial Statements.

2. QEPL:

QEPL issued 28,000 unsecured and unlisted non-convertible debentures ("**NCD**") of face value of ₹10,000 each to National Investment and Infrastructure Fund (NIIF) (the erstwhile holding company of QEPL). Since then, 21,729 NCDs have been redeemed and 6,271 NCDs are outstanding as of June 11, 2025. Pursuant to the terms of the amendment agreement dated June 11, 2025, redemption of the outstanding debentures is contingent and shall be due & payable only on the occurrence of certain redemption events as defined in the said amendment agreement. Further, such NCD shall not carry any coupon but will be redeemed at a redemption premium to be calculated based on conditions defined in the amendment agreement. The final redemption date as per the amendment agreement is June 4, 2031, and if any of the redemption events do not occur by the final redemption date then such debentures shall be written off, as described in the amendment agreement. As per the amendment agreement these debentures are non-transferable and non-marketable, except to affiliates or associates of NIIF. For further details, please refer to note 21 of the Audited Consolidated Financial Statements.

Principal terms of borrowings availed by certain Portfolio Assets from the Trust

The debt financing provided by the Trust to certain Portfolio Assets comprises:

(i) unsecured subordinate loans; and

(ii) loans which, subject to the approval of the concessioning authority and the senior lenders, may be classified as (1) debt owed to a senior lender; or as (2) loans which are not classified as debt owed to a senior lender, which are secured by a first-ranking exclusive charge, *pari passu* to the charge created to secure the debt owed to the other senior lenders on, *inter alia* (a) the escrow account of certain Portfolio Assets; (b) the rights, title, interest, claims and demands of certain Portfolio Assets in its concession agreement, other project agreements, insurance policies and project clearances; and (c) all other movable assets of certain Portfolio Assets.

The Portfolio Assets have availed the debt financing by way of the Trust Loan Agreements. Senior loans and the other secured loans have been provided by the Trust out of the proceeds of the InvIT Loans and further debt availed by the Trust and are subject to consents, conditions and compliance with law, as may be applicable. For further details, please refer to note 23 of the Audited Consolidated Financial Statements.

The principal terms of the Trust Loan Agreements are as follows:

Facility	i. Senior loan/secured loan of ₹ 97,259.89 million as on March 31, 2026, (collectively, the "**Secured Loan**"); and ii. Subordinated unsecured loan of ₹73,681.30 million as on March 31, 2026, ("**Subordinate Loan**").
Summary of financing documents executed by certain Portfolio Assets	For Secured Loan: • Loan Agreements • Security trustee agreements • Escrow agreements* • Supplementary escrow agreements* • Unattested deed of hypothecations along with the corresponding power of attorneys • Substitution agreements* For Subordinate Loan, subordinated loan agreements have been entered into. * *The escrow agreements, supplementary escrow agreements and substitution agreements in relation to the Secured Loan have been executed subsequent to the first disbursement of the Secured Loan.*
Purpose	**Secured Loan:** Towards refinancing of the outstanding amounts under the existing debt arrangements of certain Portfolio Assets. **Subordinate Loan:** Towards refinancing/redemption of the facilities availed by certain Portfolio Assets from the Cube Group or any other purpose as may be agreed between the Trust and certain Portfolio Assets. Certain Subordinate Loans are also for repayment of existing NCDs.
Terms of Repayment	**Secured Loan:** As per the repayment schedule specified under the facility agreement or earlier in accordance with the terms of the relevant facility agreement, only if (a) on the relevant principal repayment date(s), sufficient cashflows are available with certain Portfolio Assets (which are available and permitted to be utilised towards repayment of such principal amounts, without such utilisation being in or resulting in a breach of the financing documents) to make such payments in full or part or (b) the Trust or its representative has sent a letter to the relevant Portfolio Assets requesting it to make payment on the relevant repayment date. If the relevant Portfolio Assets are unable to pay any portion of the principal amount due to the unavailability of sufficient cashflows, such an event shall not be a default or event of default under the facility agreement. If the Trust / Trust's representative has sent an intimation to the relevant Portfolio Assets requesting it to make payment on the relevant repayment date, and the identified portfolio asset fails to make payment on the said repayment date, it shall be an event of default under the facility agreement, whether or not such failure is due to the unavailability of sufficient cashflows. **Subordinate Loan:** The relevant Portfolio Assets shall repay the principal amount to the Trust on such date(s) as may be agreed between the relevant Portfolio Assets and the Trust from time to time as and when surplus cash is available at the identified portfolio assets or in any case not later than the last day of the concession period (as defined in the concession agreement) and to the extent commercially feasible in line with the repayment schedule of the relevant InvIT loans/InvIT senior debt.

Interest Rate	**Secured Loan:** Certain Secured Loans carry interest at rates in the range of 11 to 15% per annum which may be reset on any interest reset date. Other Secured Loans carry interest as per the transfer pricing report. **Subordinate Loan:** Such rates as may be agreed between the Trust and the relevant Portfolio Assets and be reset from time to time (subject to a benchmarking report being obtained for interest rate at every such instance) and such interest shall be payable from time to time subject to: (i) withholding of applicable taxes, if any, and (ii) availability of surplus cash flows at the relevant Portfolio Assets.
Security for Secured Loan	Certain Secured Loans provide the following security: • First ranking exclusive charge on the Project Receivables (as defined in the facility agreements), both present and future; • First ranking exclusive charge over the escrow account (or any accounts in substitution thereof) of the relevant Portfolio Assets opened in relation to its project and all receivables deposited therein from time to time; • First ranking exclusive charge or assignment over the rights, title and interest, claims and demands of the relevant Portfolio Assets in (i) the concession agreement; (ii) any insurance policies taken out by the relevant Portfolio Assets; (iii) the clearances in respect of its project; and (iv) each other project agreement, in each instance, pursuant to and in accordance with the provisions of the concession agreement and to the extent as provided in the Substitution Agreement (as defined in the facility agreements); and • First ranking exclusive charge on all other movable assets of the relevant Portfolio Assets, both present and future (other than the project assets). Other Secured Loans provide the following security: • first charge on the relevant Portfolio Assets' tangible moveable assets; • first charge over all accounts of the relevant Portfolio Assets including the escrow account and the sub-accounts that may be opened; • a first charge on all intangible assets of the relevant Portfolio Assets; and • assignment by way of security in: all the rights, title, interest, benefits, claims and demands whatsoever in the project agreements; rights title and interest in, to and under all the clearances; all the rights, title, interest, benefits, claims and demands whatsoever of the relevant Portfolio Assets in any letter of credit, guarantee, and performance bond; and all rights, title, interest, benefits, claims and demands whatsoever of the relevant Portfolio Assets under all insurance contracts;
Premature Payment for Secured Loan	• The relevant Portfolio Assets shall be entitled to prepay the outstanding facility in full or in part, without any prepayment penalty, only with the prior written consent of the Trust. The relevant Portfolio Assets shall not be entitled to prepay the outstanding facility in its entirety ahead of the repayment schedule, except with the prior written consent of the Trust's representative or pursuant to the conditions for mandatory pre-payment under the relevant facility agreement. However, arrears which have not been paid as per the repayment schedule shall be permitted to be paid, and any prepayments not resulting in complete prepayment / repayment of the facility, shall be permitted in accordance with the terms of the financing documents. • The relevant Portfolio Assets shall mandatorily repay the facility in full or in part, without payment of any prepayment premium from the proceeds (to the extent indicated below, net of all taxes, costs and expenses incurred in claiming/recovering such amounts) from any event as mentioned in the Secured Loan facility agreement, such as: - any proceeds from the sale / disposal of any material project assets (other than the proceeds from sale / disposal in the normal course of business to the extent of ₹ 10 million in a financial year); - any expiration payment received in connection with any clearance under any project agreement, to the extent of the expiration payment; - any insurance proceeds received pursuant to claims made, as set out in the facility agreement to the extent not applied by it towards repair, renovation, restoration, reinstatement or replacement of the project assets, provided such amount is in excess of ₹ 20 million per claim. This shall not apply to proceeds of insurance in relation to business interruption leading to the loss of revenue or profit, as long as the servicing of the facility on the respective due dates, has continued during the period of business interruption including up to receipt of insurance claims, workers/employee liability insurance, public liability/personal injury insurance, directors and officers insurance, or any third party insurance proceeds;

	- the proceeds resulting from the expropriation or other takeover event by any Governmental Authority of the project assets of the relevant Portfolio Assets, to the extent of the proceeds received; - the proceeds, resulting from an arbitral or judicial award in connection with any project agreement of the relevant Portfolio Assets, as set out in the facility agreement; - all proceeds of any Termination Payments (as defined in the facility agreement); and - all proceeds of buy-out payments received from the relevant authority under the relevant concession agreement or other project agreements.
Representations and Warranties	Some of the key representations and warranties made by the relevant Portfolio Assets, which are deemed to be repeated by the relevant Portfolio Assets on each date until the final settlement date, are, amongst others, as follows: • it is a company, duly incorporated and validly existing under the laws of India and has all corporate powers and all material governmental licenses, authorizations, consents and approvals required to carry on its business and the project; • the execution, delivery and performance by it of the financing documents and the consummation of the transactions contemplated hereby by the relevant Portfolio Assets is within its corporate powers and have been duly authorized by all necessary corporate action and the obligations expressed to be assumed by the relevant Portfolio Assets under each financing document are legal, valid, binding and enforceable against it; • the execution, delivery and performance of the financing documents do not and will not contravene or conflict with (i) the certificate of incorporation or (ii) its articles or memorandum of association or (iii) the concession agreement; and (iv) any provision of any law, regulation, judgment, injunction, order, decree, approval or clearance binding upon it;
Covenants	**Secured Loan:** The relevant Portfolio Assets shall not, without the prior written consent of Trust, among other things: • amend its constitutional documents, if such amendment affects the rights of the Trust; • propose or participate in the bidding process for any enhancement or a change in scope of the project, if such enhancement or change is not permitted under the concession agreement; • take any action or fail to take any action which materially affects the security; • take any action which may result in change in control of the relevant Portfolio Assets; • avail any indebtedness, provide any security other than the permitted indebtedness; • prepay in full, the facilities and all amount due under the financing documents. **Subordinate Loan:** The relevant Portfolio Assets shall at all times: • comply with all applicable laws and • preserve and maintain its corporate existence, legal structure, legal name, rights, privileges, and franchises.
Events of Default for Secured Loan	Some of the key events or circumstances upon the occurrence of any of which the Trust will be entitled to declare an event of default by providing a written notice to the relevant Portfolio Assets are, amongst others, as follows: • Non-payment of principal: The relevant Portfolio Assets defaults in the payment of the principal amounts under the facility on the dates on which such principal amounts are due and payable, in accordance with the facility agreement. • Non-payment of interest: The relevant Portfolio Assets defaults in the payments, when due and payable, in accordance with the facility agreement, to the Trust, of any interest payment owing in relation to the facility. • Non-performance: The relevant Portfolio Assets defaults or commits a material breach in the performance of any condition, obligation or agreement (other than a default covered under any other provisions of clauses for payment default) under any financing document and the same is not cured in the opinion of the Trust within a period of 30 days. • Cross-default: An event of default (howsoever defined or described) occurs and is continuing under the InvIT senior debt, as defined in the facility agreement.

	• Security: The security required to be created under the terms of the facility agreement is not created and perfected within the timelines stipulated therein or the occurrence of any material event or circumstance that is prejudicial to or materially imperils or materially depreciates the security created or to be created.
Consequences of Event of Default under the loan agreements pertaining to the Secured Loan	• If an event of default has occurred, the Trust / Trust's representative may, *inter alia*, accelerate the repayment of the outstanding amounts under the facility and all other amounts outstanding in relation thereto by delivery of a written notice to the relevant identified portfolio asset (the "**EOD Notice**"). Upon receipt of the EOD Notice, all amounts outstanding under the facility (including accrued interest) shall become due and payable by the relevant Portfolio Assets with immediate effect and shall be repaid immediately upon the issue of the EOD Notice. The Trust and/or the Investment Manager shall be entitled to cancel the undrawn facility and/or pursue any other legal remedy for any other relief as may be available to them under applicable law and any financing document. • On and from the occurrence of an event of default, the Trust / Trust's representative shall have the right to enforce the security towards repayment of the outstanding amounts owed / payable to the finance parties, as defined in the facility agreement, and enforce its rights under the memorandum of hypothecation. • Notwithstanding the foregoing, upon occurrence of an event of default (other than certain specified defaults), the Trust / Trust's representative may waive such event of default at its sole discretion subject to the terms specified under the facility agreement. Certain events of default may only be waived by the Trust's representative. On the occurrence and during the continuation of an event of default, the Trust shall take any action under the financing documents only with the prior written consent of the Trust's representative.
Rights of the Lenders' Representatives pertaining to the Secured Loan	The Trust (in its capacity as the lender in respect of the Secured Loan) has appointed SBICAP Trustee Company Limited (the "**Lender's Representative**"), to act as the lenders' representative for the benefit of the Trust (in its capacity as the lender in respect of the Secured Loan), under and in respect of the relevant concession agreement and any financing document to which the Lender's Representative is required to be a party in its capacity as the lenders' representative of the Trust (in its capacity as the lender in respect of the Secured Loan).
Jurisdiction	Delhi/New Delhi
Governing Laws	India

Leverage

In accordance with and subject to the InvIT Regulations, the provisions of the Trust Deed, and the borrowing policy adopted by the Investment Manager, the aggregate consolidated borrowings and deferred payments of the Trust may be up to 70% of the aggregate of the Portfolio Assets, subject to the conditions prescribed under Regulation 20 of the InvIT Regulations.

For details of the capital structure of the Portfolio Assets, including any borrowings or deferred payments with respect to the Portfolio Assets prior to the Offer and post-Offer, on a standalone and consolidated basis, please refer to the sections entitled "*Description of the Portfolio Assets*" and "*Financial Indebtedness and Deferred Payments*" on pages 35 and 337 respectively.

Post-Offer Indebtedness of the Trust

The post-Offer consolidated borrowings and deferred payments of the Trust will be in accordance with the InvIT Regulations and the Borrowing Policy. The indebtedness and deferred payments of the Trust, on a consolidated basis, shall not exceed 55%, as approved by the Unitholders by way of resolution dated April 17, 2025, subject to any additional indebtedness incurred after listing of Units pursuant to the Offer, in accordance with applicable laws.

Status of lender consents

The Trust has availed debt from certain third-party lenders and consents from the respective lenders are required for and in connection with the Offer. As on the date of this Final Offer Document, the Trust has received the required consent and confirmations from its lenders.

Borrowing Policy

The Investment Manager shall ensure that all funds borrowed in relation to the Trust comply with the InvIT Regulations. Accordingly, the Investment Manager has formulated a borrowing policy outlining the process for borrowing funds in relation to the Trust. For further details, please see the section entitled "*Corporate Governance – Investment Manager – Policies of the Board of Directors of the Investment Manager in relation to the Trust – Borrowing Policy of the Trust*" on page 179.

Proposed Financial Indebtedness

The Investment Manager intends to maintain an optimal mix of debt and equity to provide the Trust with flexibility to manage its risk exposure, and implement its strategies.

PERFORMANCE OF THE TRUST VIS-À-VIS THE PROJECTIONS AT THE TIME OF INITIAL OFFER

Set out below is the comparison of the actual performance of the Trust in Fiscals 2024, 2025 and Fiscal 2026 against the projections made in the final placement memorandum dated April 17, 2023, as required under Chapter 14 of the InvIT Master Circular:

(In ₹ million, unless stated otherwise)

Particulars	Fiscal 2026		Fiscal 2025		Fiscal 2024	
	Projected	Actual	Projected	Actual	Projected	Actual
Projected revenue from operations						
Jaipur-Mahua Tollway Private Limited	3,240.39	2,428.28	3,059.02	2,586.62	2,647.02	2,287.38
Mahua Bharatpur Expressways Limited	1,548.05	1,218.08	1,394.72	1,159.85	1,219.94	1,027.06
Western UP Tollway Private Limited	2,155.95	1,812.03	1,938.07	1,694.54	1,750.82	1,651.62
Andhra Pradesh Expressway Private Limited	338.56	386.29	1,124.30	1,520.62	1,094.70	395.49
Ghaziabad Aligarh Expressway Private Limited	3,545.29	4,521.90	3,230.81	4,127.38	4,874.48	6,938.40
Nelamangala Devihalli Expressway Private Limited	1,422.52	1,241.59	1,273.48	1,129.52	1,125.73	1,001.60
Farakka-Raiganj Highways Limited	3,273.34	2,716.24	2,934.21	2,539.64	2,646.99	2,284.13
DA Toll Road Private Limited	7,545.91	6,579.04	6,886.99	6,047.90	6,377.41	5,500.97
Walayar Vadakkencherry Expressways Private Limited	1,174.28	1,163.09	1,059.53	1,081.68	961.19	1,023.06
Hazaribagh Tollway Private Limited	1,317.72	1,504.47	1,181.95	1,285.25	1,063.09	1,020.39
Jhansi-Lalitpur Tollway Private Limited	1,071.84	1,089.33	961.74	990.84	872.10	861.53
Jhansi-Vigakhet Tollway Private Limited	754.03	758.47	675.11	690.72	615.31	601.55
Lucknow-Raebareli Tollway Private Limited	1,073.57	709.12	948.34	689.11	851.99	595.05
Kotwa-Muzaffarpur Tollway Private Limited	1,490.21	1,248.92	1,329.19	1,152.15	1,199.02	1,045.53
Madurai-Kanyakumari Tollway Private Limited	1,357.98	1,735.76	1,213.14	1,136.77	1,088.62	1,031.82
Kanyakumari-Etturavattam Tollway Private Limited	764.78	876.37	688.33	693.98	627.67	618.38
Salaipudhur-Madurai Tollway Private Limited	808.43	943.32	722.56	746.47	655.75	650.75
Nanguneri-Kanyakumari Tollway Private Limited	808.95	943.61	726.71	680.05	654.63	626.66
Revenue from operations (A)	**33,691.80**	**31,875.91**	**31,348.20**	**29,953.09**	**30,326.46**	**29,161.37**
Net cashflow from operating activities						
Jaipur-Mahua Tollway Private Limited	2,500.89	1,810.67	2,396.19	1,362.55	1,489.18	1,435.13
Mahua Bharatpur Expressways Limited	1,122.18	828.88	1,020.40	657.07	180.42	397.64
Western UP Tollway Private Limited	1,074.86	863.91	1,534.26	1,070.64	1,411.49	1,347.24
Andhra Pradesh Expressway Private Limited	956.69	1,015.62	463.02	41.61	489.89	1,099.29
Ghaziabad Aligarh Expressway Private Limited	3,036.38	3,700.13	2,754.18	3,107.40	2,501.00	2,094.32
Nelamangala Devihalli Expressway Private Limited	1,075.53	968.22	977.36	882.63	860.75	688.31
Farakka-Raiganj Highways Limited	2,730.04	2,184.62	2,431.49	2,082.54	2,196.73	1,763.05
DA Toll Road Private Limited	6,469.55	5,334.67	6,010.99	5,097.43	5,590.47	4,175.33
Walayar Vadakkencherry Expressways Private Limited	947.90	913.68	847.92	828.09	771.30	772.44
Hazaribagh Tollway Private Limited	1,184.12	1,378.24	1,058.42	1,174.16	949.15	913.40
Jhansi-Lalitpur Tollway Private Limited	960.67	987.16	858.96	907.37	777.19	786.60
Jhansi-Vigakhet Tollway Private Limited	657.84	675.06	586.08	609.65	532.95	518.93
Lucknow-Raebareli Tollway Private Limited	946.57	596.14	831.10	602.67	743.80	470.48
Kotwa-Muzaffarpur Tollway Private Limited	1,203.11	985.91	1,060.91	880.38	948.67	768.76
Madurai-Kanyakumari Tollway Private Limited	1,125.61	1,525.18	996.31	909.39	886.69	807.37
Kanyakumari-Etturavattam Tollway Private Limited	541.79	683.47	479.49	495.74	432.42	466.32
Salaipudhur-Madurai Tollway Private Limited	599.75	759.29	527.14	545.70	473.00	472.26
Nanguneri-Kanyakumari Tollway Private Limited	606.58	742.06	537.31	453.87	477.78	407.45
Cube Highways Trust – Standalone	(385.94)	(844.02)	(351.08)	(628.18)	(317.88)	(680.87)
Net cashflow from operating activities	**27,354.12**	**25,108.89**	**25,020.45**	**21,080.71**	**21,395.00**	**18,703.48**

Notes:

(1) Please note that following the Listing Date, the Trust has acquired nine additional road assets. As these acquisitions occurred subsequent to the issuance of the Final Placement Memorandum dated April 17, 2023, projections relating to such assets were not included therein. Accordingly, the projections in the table above are not comparable with the actual revenue from operations and cash flows from operations for the year ended March 31, 2026.

(2) For the year ended March 31, 2024, the actual revenue from operations and cash flows from operations reflect the period post-acquisition of the assets by the Trust i.e. with effect from April 17, 2023.

CAPITALISATION STATEMENT

The following table sets forth the Trust's capitalization (including any borrowing or deferred payment) as of March 31, 2026, on the basis of amounts derived from the Audited Consolidated Financial Statements, and as adjusted for the Offer. This table should be read in conjunction with the sections entitled "*Management's Discussion and Analysis of Financial Position and Results of Operations*", "*Summary Audited Consolidated Financial Information of the Trust*" and "*Risk Factors*" on pages 356, 47 and 80, respectively.

For the Trust on a consolidated basis:

Particulars	Pre-Offer as at March 31, 2026 (in ₹ million)	As adjusted for Offer
Current borrowings	5,293.39	*Since the Offer comprises of an Offer for Sale of Units by the Selling Unitholders and the Trust will not receive any proceeds from the Offer, the Offer will not result in any change in the capitalization of the Trust. Accordingly, the capitalization of the Trust, as adjusted for the Offer, would remain unchanged from the capitalization as of March 31, 2026.*
Non-current borrowings	171,353.74	
Interest accrued on borrowings	174.79	
Total adjusted debt (A)	**176,821.92**	
Unit capital	134,396.03	
Other equity and distribution-repayment of capital	(36,569.15)	
Total equity attributable to Unitholders (B)	**97,826.88**	
Debt to equity ratio (A)/(B)	**1.81**	

For details related to debt payment history, see Note 23 of Audited Consolidated Financial Statements for the year ended March 31, 2026. For further details in relation to the the borrowings and deferred payments and capitalization statement of the Portfolio Assets, see the section entitled "*Financial Indebtedness and Deferred Payments*" on page 337.

DISTRIBUTION

Statements contained in this section entitled "Distribution" that are not historical facts are forward-looking statements. Such statements are subject to certain risks and uncertainties that could cause actual results to differ materially from those that may be projected. Under no circumstances should the inclusion of such information herein be regarded as a representation, warranty or prediction with respect to the accuracy of the underlying assumptions by the Trustee, the Sponsor, the Investment Manager, the Book Running Lead Managers or any other person. Bidders are cautioned not to place undue reliance on these forward-looking statements that are stated only as at the date of this Final Offer Document. For details in relation to such forward-looking statements, please see the section entitled "Forward-Looking Statements" on page 30.

The net distributable cash flows of the Trust (the "**Distributable Income**") are based on the cash flows generated by it, including from the underlying operations undertaken by the special purpose vehicles and any holding companies held by the Trust (together, the " **InvIT Assets**") and any return of capital in accordance with the policy on distribution. For details of the business and operations presently undertaken by the InvIT Assets, please see the section entitled "*Our Business*" on page 262. Presently, cash flows receivable by the Trust may be in the form of dividend, interest income, gains, principal repayment or other income received from the InvIT Assets in relation to any debt sanctioned by the Trust, or a combination of both.

Distribution Policy and Applicable Law

In terms of the InvIT Regulations, not less than 90% of the net distributable cash flows of the InvIT Assets, shall be distributed to the Trust in proportion of its holding in such InvIT Assets, subject to applicable provisions in the Companies Act, 2013, as amended, and not less than 90% of the net distributable cash flows of the Trust shall be distributed to the Unitholders.

Further, in terms of the InvIT Regulations, with regard to distribution of net distributable cash flows by any Holding Company to the Trust, 100% of cash flows received by the Holding Company from underlying SPVs shall be distributed to the Trust (net of any expenses and applicable taxes including withholding taxes) and with respect to the cash flows generated by a Holding Company on its own, not less than 90% of such net distributable cash flows shall be distributed by the Holding Company to the Trust. If the net distributable cash flow generated by the Holdco on its own is negative, the Holdco may adjust it against the cash flows received from its underlying SPVs, provided that it makes appropriate disclosures in this regard to the Unitholders in such form and manner as may be specified by the SEBI.

The Trust shall distribute the distributable income with an endeavour to distribute 100% of the distributable income to its Unitholders. Such distribution and the distributions mentioned in the Distribution Policy shall be declared and made once every quarter of a financial year or such other period as mandated under the InvIT Regulations, Income Tax Act, 2025 and other applicable laws. The distribution, when made, shall be made in Indian Rupees. All distributions to the Unitholders shall be made in compliance with the InvIT Regulations. The amount actually received by the Unitholders will be subject to taxes and other statutory deductions as applicable. The Investment Manager shall be responsible for deducting all applicable taxes from all payments made by the Investment Manager and depositing them with the relevant governmental agency, if stipulated, in the manner specified under the InvIT Regulations.

Given that there is currently no regulatory framework that has been prescribed for the redemption, buy back of units of the Trust or reduction of capital, no distributions shall be made to the Unitholders by way of redemption or buy back of units, return of unit capital or reduction of unit capital, prior to a period of four years from the date of allotment in the initial offer by the Trust.

For details on the risks relating to distribution, please see the section entitled "*Risk Factors– Risks Relating to our Business and the Concession Agreements - We may not be able to make regular distributions to Unitholders or the level of our distributions may fall.*" on page 80.

Method of calculation of Distributable Income

Subject to the InvIT Regulations and other applicable laws and accounting standards, it is clarified that, for the purpose of calculation of the distributable income, the cash flows of the Trust shall be classified into two parts:

1. Dividend, interest, treasury income and capital gains of the Trust ("**Income Bucket A**"). All expenditures of the Trust (including, amongst others, interest expenses and fees payable to the Investment Manager, the ("**Expenditures**") shall be paid out of Income Bucket A, proportionately towards various income streams; and

2. Capital repayments to the Trust ("**Income Bucket B**"). Any capital outflows (including, among others, principal repayments by the Trust on its borrowings and capital infusions into the SPVs, referred to as the ("**Capital Outflows**") shall be paid out of Income Bucket B. If any expenses are directly attributable to this bucket, they can be reduced from this bucket.

In the event the cash flows in Income Bucket A are not sufficient to meet the Expenditures set out above, such Expenditures shall be paid of Income Bucket B. Similarly, in the event the cash flows in Income Bucket B are not sufficient to meet the Capital Outflows set out above, such Capital Outflows shall be paid of Income Bucket A. The Distributable Income calculated on the basis of Income Bucket A shall be further classified as interest, dividend, gains, or other income in the ratio of the inflows.

In accordance with the InvIT Master Circular the framework for computation of NDCF by InvITs and its Holdcos/SPVs shall be as under:

(a) Calculation of the net distributable cash flows at HoldCo/Project SPV level:

Description
Cash flow from operating activities as per Cash Flow Statement of HoldCo/ SPV
Add: Cash Flows received from SPV's which represent distributions of NDCF computed as per relevant framework (refer note 1 and 8 below) (relevant in case of Hold Cos)
Add: Treasury income / income from investing activities (interest income received from FD, tax refund, any other income in the nature of interest, profit on sale of Mutual funds, investments, assets etc., dividend income etc., excluding any Ind AS adjustments. Further clarified that these amounts will be considered on a cash receipt basis)
Add: Proceeds from sale of infrastructure investments, infrastructure assets or shares of SPVs or Investment Entity adjusted for the following: • Applicable capital gains and other taxes; • related debts settled or due to be settled from sale proceeds; • directly attributable transaction costs; • proceeds reinvested or planned to be reinvested as per Regulation 18(7)(a) of the InvIT Regulations or any other relevant provisions of the InvIT Regulations.
Add: Proceeds from sale of infrastructure investments, infrastructure assets or sale of shares of SPVs or Investment Entity not distributed pursuant to an earlier plan to re-invest as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations, if such proceeds are not intended to be invested subsequently.
Less: Finance cost on Borrowings as per Profit and Loss Account excluding finance cost on any shareholder debt / loan from Trust. The amortization of any transaction costs can be excluded provided such transaction costs have already been deducted while computing NDCF of previous period when such transaction costs were paid
Less: Debt repayment (to include principal repayments as per scheduled EMI's except if refinanced through new debt including overdraft facilities and to exclude any debt repayments / debt refinanced through new debt, in any form or equity raise as well as repayment of any shareholder debt / loan from Trust)
Less: any reserve required to be created under the terms of, or pursuant to the obligations arising in accordance with, any: (i) loan agreement entered with banks / financial institution from whom the Trust or any of its SPVs/ HoldCos have availed debt, or (ii) terms and conditions, covenants or any other stipulations applicable to debt securities issued by the Trust or any of its SPVs/ HoldCos, or (iii) terms and conditions, covenants or any other stipulations applicable to external commercial borrowings availed by the Trust or any of its SPVs/ HoldCos, or (iv) agreement pursuant to which the SPV/ HoldCo operates or owns the infrastructure asset, or generates revenue or cashflows from such asset (such as, concession agreement, transmission services agreement, power purchase agreement, lease agreement, and any other agreement of a like nature, by whatever name called); or (v) statutory, judicial, regulatory, or governmental stipulations; – (refer note 2)
Less: any capital expenditure on existing assets owned / leased by the SPV or Holdco, to the extent not funded by debt / equity or from reserves created in the earlier years (refer note 9)
NDCF for HoldCo/SPVs

Note: Distribution of up to 90% of the above NDCF as per the InvIT Regulations is subject to compliance of Companies Act.

(b) Calculation of the net distributable cash flows at the Trust level:

Description
Cashflows from operating activities of the Trust
Add: Cash flows received from SPV's / Investment entities which represent distributions of NDCF computed as per relevant framework (refer note 1 and 8 below)

Description
Add: Treasury income / income from investing activities of the Trust (interest income received from FD, any investment entities as defined in Regulation 18(5), tax refund, any other income in the nature of interest, profit on sale of Mutual funds, investments, assets etc., dividend income etc., excluding any Ind AS adjustments. Further clarified that these amounts will be considered on a cash receipt basis)
Add: Proceeds from sale of infrastructure investments, infrastructure assets or shares of SPVs/Holdcos or Investment Entity adjusted for the following: • applicable capital gains and other taxes; • related debts settled or due to be settled from sale proceeds; • directly attributable transaction costs; • proceeds reinvested or planned to be reinvested as per Regulation 18(7)(a) of the InvIT Regulations or any other relevant provisions of the InvIT Regulations
Add: Proceeds from sale of infrastructure investments, infrastructure assets or sale of shares of SPVs/ Hold cos or Investment Entity not distributed pursuant to an earlier plan to re-invest as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations, if such proceeds are not intended to be invested subsequently
Less: Finance cost on Borrowings as per Profit and Loss Account. However, amortization of any transaction costs can be excluded provided such transaction costs have already been deducted while computing NDCF of previous period when such transaction costs were paid
Less: Debt repayment at Trust level (to include principal repayments as per scheduled EMI's except if refinanced through new debt including overdraft facilities and to exclude any debt repayments / debt refinanced through new debt in any form or funds raised through issuance of units)
Less: any reserve required to be created under the terms of, or pursuant to the obligations arising in accordance with, any: (i). loan agreement entered with financial institution, or (ii). terms and conditions, covenants or any other stipulations applicable to debt securities issued by the Trust or any of its SPVs/ HoldCos, or (iii). terms and conditions, covenants or any other stipulations applicable to external commercial borrowings availed by the Trust or any of its SPVs/ HoldCos, or (iv). agreement pursuant to which the Trust operates or owns the infrastructure asset, or generates revenue or cashflows from such asset (such as, concession agreement, transmission services agreement, power purchase agreement, lease agreement, and any other agreement of a like nature, by whatever name called); or (v). statutory, judicial, regulatory, or governmental stipulations; - (refer note 2)
Less: any capital expenditure on existing assets owned / leased by the InvIT, to the extent not funded by debt / equity or from contractual reserves created in the earlier years (refer note 9)
NDCF at Trust Level

Notes/ Other Rules:

1. *NDCF computed at SPV level for a particular period to be added under this line item, even if the actual cashflows from SPV to InvIT has taken place post that particular period, but before finalization and adoption of accounts of the InvIT.*
2. *The Trust retains the option to distribute any surplus amounts, unless such surplus is required to create reserves for any subsequent period. However, any reserve created out of debt funds at the time of availing debt as per the terms of the financing documents shall not be reduced.*
3. *The option to retain 10% distribution under Regulation 18(6) needs to be computed by taking together the retention done at HoldCo, SPV level and Trust level.*
4. *Surplus cash available in InvITs/HoldCos/SPVs due to:*
   a. *10% of NDCF withheld in line with the Regulations in any earlier year or half year or*
   b. *Such surplus being available in a new Holdco/SPV on acquisition of such HoldCo/SPV by InvIT or*
   c. *Any other reason, excluding if such surplus cash is available due to any debt raise*

   could be considered for distribution by the HoldCo/SPV to the InvIT/Holdco, or by the InvIT to its Unitholders in part or in full. Also, such distribution of surplus funds shall be separately disclosed after the NDCF computation for the respective period.
   Provided that with regard to the point 4 (ii) above, if an acquisition of such SPV was funded by external debt, then surplus cash available with such SPV should first be used to repay such external debt. after such debt repayment, remaining surplus, if any, can be used for distribution.
5. *Similarly, any restricted cash (disclosed as such) should not be considered for NDCF computation by the SPV or InvIT (e.g. unspent CSR balance for any year deposited in a separate account as per Companies Act which will be utilized in subsequent years, DSRA reserve, major maintenance reserve etc).*
6. *Further, it is expressly provided that no Trust or SPVs can distribute any cashflows by obtaining external debt, except to the extent clarified in note 2 and 7 (this will exclude any working capital / OD facilities obtained by Trust/ SPVs as part of Treasury management / working capital purposes as long as they are squared off within the quarter).*
7. *Further, it is also clarified that Proceeds from sale of infrastructure investments, infrastructure assets or shares of SPVs or Investment Entity adjusted for transaction costs or repayment of debt taken for such assets or other items as mentioned above which is intended to be reinvested or planned to be reinvested as per Regulation 18(7) of InvIT Regulations, could be temporarily parked in Overdraft accounts or used to repay any additional/ unrelated debt. Further if such proceeds are not intended to be reinvested as per the timeline provided in the Regulations and*

such fresh issue proceeds are to be distributed back to Unitholders, then redrawing such temporarily parked funds to distribute such fresh issue proceeds will not be considered as a contravention of note 6 above.

8. *Cash flows received from HoldCos / SPV's / Investment entities which represent distributions of NDCF computed as per relevant framework at the Trust and/ or HoldCo level for further distribution to Unitholders shall exclude any such cash flows used by the Trust and/ or HoldCo for onward lending to any other SPVs / Investment entities/ HoldCo to meet operational / interest expenses or debt servicing of such entities.*
9. *Capital expenditure include amounts incurred and paid towards asset enhancement and are capitalized to asset value in the financial statements including lease payments. It is further clarified that Portfolio Assets as referred to in this line item includes any new structure / building / other infrastructure constructed on an existing infrastructure as set which is already a part of the InvIT.*
10. *Debt repayment at Trust level will not be reduced from NDCF to the extent such debt is refinanced at the HoldCo/SPV level and such proceeds from refinancing have been transferred by the HoldCo/SPV to the Trust for such debt repayment.*
    Similarly, debt repayment at HoldCo/SPV level will not be reduced from NDCF to the extent such debt is refinanced at the Trust level and such proceeds from refinancing have been transferred by the Trust to the HoldCo/SPV for such debt repayment.
11. *Investment Manager of the InvIT is required to ensure the following while making distributions:*
    a. *The period of making distribution should be followed consistently whether on a half-yearly/quarterly/monthly basis and the same should be part of distribution policy of the InvIT which should be disclosed in the offer document, annual report and the website of InvIT.*
    b. *The distribution policy should prescribe the frequency of the distribution. Further, for each distribution, it should be ensured that cash flows from all assets, whether held by InvIT or any of the underlying SPVs or HoldCos, are being distributed together.*
    c. *The first quarterly distribution out of the NDCF computed for a financial year (or period thereof) should be minimum 90% / 100% as mandated in the InvIT Regulations. Thereafter, minimum distribution requirement should be met on a cumulative basis for the subsequent distributions out of the NDCF for such financial year.*
    d. *In case of any change in distribution policy other than regulatory changes, unitholder approval shall be required where votes cast in favour of the resolution are more than fifty percent of the total vote cast.*

In terms of the InvIT Regulations, if the distribution is not made within five working days from the record date where the record date shall be two working days from the date of the declaration of distribution, excluding the date of declaration and the record date, the Investment Manager shall be liable to pay interest to the Unitholders at the rate of 15% per annum or such other rate as may be specified under applicable law, till the distribution is made. Such interest shall not be recovered in the Management Fees of the Investment Manager or in the form of fee or any other form payable to the Investment Manager by the Trust. For risks in relation to distribution, please see the section entitled "*Risk Factors*" on page 80.

Conflict with NDCF Laws (as defined under the Distribution Policy)

The Distribution Policy shall not contradict the provisions of the InvIT Regulations and other applicable laws. In the event of any discrepancy, the provisions of the InvIT Regulations and other applicable laws shall prevail over the provisions of the Distribution Policy.

Amendment

Any amendment or variation to the Distribution Policy shall be undertaken by the IM Board, in compliance with applicable law. Notwithstanding the above, the Distribution Policy will stand amended to the extent of any change in applicable law, including any amendment to the InvIT Regulations, without any action from the Investment Manager or approval of the Unitholders of the Trust.

Distributions by Trust

The details of distributions declared by the Trust are provided below:

(₹ per Unit)

Sr. No.	Record Date	Total Distribution*	Cumulative distribution till date*
1.	August 11, 2023	2.15	34.86
2.	November 16, 2023	2.00	
3.	February 13, 2024	2.00	
4.	May 24, 2024	3.94	
5.	August 9, 2024	2.00	
6.	November 4, 2024	2.00	
7.	February 4, 2025	3.25	
8.	June 2, 2025	3.75	
9.	August 4, 2025	2.50	
10.	November 4, 2025	3.60	
11.	February 4, 2026	4.10	
12.	May 27, 2026	3.57	

* *Note: Figures have been rounded off to two decimal places*

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion of our financial condition and results of operations together with our Audited Consolidated Financial Statements as of and for the Financial Years 2026, 2025 and 2024, including the related notes, schedules and annexures. The Audited Consolidated Financial Statements are prepared in accordance with Indian Accounting Standards, which differ in certain material respects from IFRS and U.S. GAAP. See section entitled "Risk Factors – Significant differences exist between Ind AS and other accounting principles, such as IFRS and U.S. GAAP, which may be material to your assessment of our results of operations, financial condition and cash flows" on page 114.

This discussion contains forward-looking statements that involve risks and uncertainties and reflect our current view with respect to future events and financial performance. Actual results may differ from those anticipated in these forward-looking statements as a result of factors such as those set forth under the sections entitled "Forward-looking Statements" and "Risk Factors" beginning on pages 30 and 80, respectively.

Unless otherwise stated, references in this section to "we", "our" or "us" are to the Cube Highways Trust, together with the Portfolio Assets. The Trust acquired 51% of the shareholding in Borgaon Watambare Highways Private Limited, Mangalwedha Solapur Highways Private Limited, Mangloor Highways Private Limited, Srirangam Infra Private Limited (formerly known as KNR Srirangam Infra Private Limited), Shankarampet Projects Private Limited (formerly known as KNR Shankarampet Projects Private Limited) and Tirumala Highways Private Limited (formerly known as KNR Tirumala Infra Private Limited) (collectively, the "HAM SPVs") on June 4, 2024, and acquired the remaining 49% shareholding in the HAM SPVs on December 3, 2024. Further, the Trust acquired 100% of the shareholding in N.A.M. Expressway Private Limited ("NAMEPL") on February 12, 2025. Thereafter, the Trust acquired 100% of the shareholding in Quazigund Expressway Private Limited ("QEPL") and Jammu Udhampur Highway Private Limited ("JUHPL" and together with QEPL, the "NIIF SPVs") on June 12, 2025. Accordingly, the HAM SPVs, NAMEPL and the NIIF SPVs have been accounted for as subsidiaries in our Audited Consolidated Financial Statements with effect from June 4, 2024, February 12, 2025 and June 12, 2025, respectively. Disclosures in relation to our Portfolio Assets across this Final Offer Document include data in relation to Western UP Tollway Private Limited for the Financial Years 2026, 2025 and 2024. However, the concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. Although WUPTPL contributed to our consolidated revenue from operations during the last three Financial Years, we do not expect such contribution to continue going forward. The Investment Manager shall fulfil its obligations in respect of WUPTPL in accordance with the InvIT Regulations and applicable circulars issued by the SEBI.

We have included certain non-Ind AS financial measures and other performance indicators relating to our financial performance and business in this Final Offer Document, each of which is a supplemental measure of our performance and liquidity and not required by, or presented in accordance with, Ind AS, IFRS or U.S. GAAP. Furthermore, such measures and indicators are not defined under Ind AS, IFRS, U.S. GAAP, or other accounting standards, and therefore should not be viewed as substitutes for performance, liquidity, or profitability measures under those standards. In addition, such measures and indicators are not standardised, and a direct comparison between companies may not be possible. Other companies or InvITs may calculate these measures and indicators differently from us, limiting their usefulness as a comparative measure. Although such measures and indicators are not performance measures calculated in accordance with applicable accounting standards, our management believes they are useful to investors in evaluating our operating performance. Investors are cautioned against placing undue reliance on such information in making an investment decision and must evaluate such information in the context of the Audited Consolidated Financial Statements.

*Industry, macro-economic and market data, and all industry-related statements in this section have been extracted or derived from the report titled "Assessment of the Indian Road Sector" prepared and released by the Industry Expert, which has been commissioned and paid for by the Investment Manager on behalf of the Trust (the "**Industry Report**"). Investors must rely on their independent examination of the Trust, and should not place undue reliance on, or base their investment decision solely on, this information. Also, please see the section entitled "Risk Factors – We have relied on data derived from third-party reports, which are based on certain estimates and assumptions and are subject to the limitations set out therein" on page 106 for details of risks in relation to commissioned reports.*

Overview

We are an Indian infrastructure investment trust sponsored by Cube Highways and Infrastructure V Pte. Ltd. and established with the objective of acquiring and operating road and other infrastructure assets in India. We are engaged in implementing the public-private partnership model in India's highways sector to operate and manage highways in association with the central and state governments. We are registered with SEBI under the InvIT Regulations, and our Units have been listed on the Stock Exchanges since April 19, 2023.

As of March 31, 2026, through our Portfolio Assets, we operate 27 road assets aggregating to 8,754 lane kilometers and 2,005 kilometers in distance across 12 states and one union territory in India. As of such date, our Portfolio Assets had a weighted average residual concession period of 18.0 years (weighted on the basis of pre-MM EBITDA) and operating history of 9.2 years, and we maintained Enterprise Value/AUM aggregating to ₹368,417.57 million, exhibiting an AUM CAGR of 19.47% since March 31, 2024. This growth has corresponded with a 45.77% increase in our NAV per Unit from listing in April 2023 through March 31, 2026, at a CAGR of 13.62%. We operate our assets under different types of concessions, with a balanced

mix of toll and annuity income. As of March 31, 2026, among our Portfolio Assets, our Toll AUM to Annuity AUM ratio was 85:15. We currently operate 26 road assets, upon the conclusion of the concession period of the WUPTPL Project on June 23, 2026. For further information, see "*Our Business — Recent Developments*" on page 269.

We are currently sponsored by CH-V but were initially sponsored by Cube Highways and Infrastructure Pte. Ltd. and Cube Highways and Infrastructure III Pte. Ltd. Our Sponsor invests in road and highway projects, as well as other select infrastructure sectors in India, focusing on acquiring mature, cash-generating highway assets, stabilizing and derisking them, and operating them while focusing on delivery of returns to our investors. Additionally, CH-V is an active growth vehicle of the Cube Group, with a strong track record of acquiring, operating, and integrating complex and diverse road assets across India. Our Sponsor and Sponsor Group together hold a portfolio of seven operational road assets spanning 2,169.8 lane kilometers, as of March 31, 2026. Our Sponsor and Sponsor Group are a part of the Cube Group, which is an institutionally-owned road infrastructure platform backed by a diversified investor base, including I Squared Capital (through ISQ Fund III Asia Infrastructure Holdings Pte. Ltd), Platinum Rock, BCI and MIC (through Seventy Second Investment Company LLC). We have raised ₹134,406.97 million in unit capital (excluding issue expenses of ₹10.94 million) since our settlement, and our Unitholders include several marquee investors, including BCI and MIC (through wholly owned subsidiaries) and a variety of domestic mutual funds and insurance companies, among others.

Our debt facilities have been rated (i) AAA/Stable by India Ratings & Research Private Limited on February 10, 2026 for term loan and bank guarantee; (ii) AAA/Stable by India Ratings & Research Private Limited on August 14, 2025 for non-convertible debentures and A1+ for commercial paper; (iii) AAA/Stable by ICRA on September 1, 2025 for term loan and bank guarantee; *(*iv) AAA/Stable by ICRA on September 1, 2025 for, non-convertible debentures; (v) AAA/Stable by CRISIL Ratings Limited on March 20, 2026 and February 10, 2026 for long term rating; and (vi) A1+ by CRISIL Ratings Limited on April 30, 2026, for short term rating.

Since our listing as a private InvIT in April 2023, our Unitholder base has expanded significantly, from 40 Unitholders as of April 28, 2023 to over 700 Unitholders as of March 31, 2026, reflecting increased investor participation from non-institutional investors alongside traditional institutional categories, including corporates, mutual funds, financial institutions and insurance companies.

We have had a consistent track record of quarterly distributions since our listing. Each financial year, we have distributed, at least quarterly, a minimum of 90% of the net distributable cash flows of the Trust available for distribution to our Unitholders, as required under the InvIT Regulations. Our consolidated net distributable cash flows during the Financial Year 2026 aggregated to ₹16,256.52 million. Our cumulative distributions since listing have aggregated to ₹46,206.37 million (representing cumulative DPU of ₹34.86), as of March 31, 2026. Since listing until March 31, 2026, we have delivered an average annual DPU yield of 9.8% (computed as the average of DPU yield for the Financial Years 2026, 2025 and 2024, with DPU yield being computed as DPU divided by the average traded price of the Units on the BSE), with a total XIRR of 23.63%, according to the Industry Report. For further details, please see "*Distribution*" on page 352.

Significant Factors Affecting Our Financial Condition and Results of Operations

Traffic volumes and toll collections

Our results of operations are substantially dependent on our portfolio of toll-based road assets, with revenue generated from toll assets contributing to 80.51% of our revenue from operations for the Financial Year 2026. The operation of toll roads principally involves toll collection and maintenance. Toll revenues generated by each toll road asset will be influenced by factors such as traffic volume by vehicle category, vehicle weight, applicable toll rates, and distance travelled. The volume of traffic on these assets is influenced by a range of macroeconomic, regional, and asset-specific factors, including national and state GDP growth, industrial and agricultural output, consumer spending, vehicle ownership trends, and patterns of commodity movement. Other important factors include seasonal variations, regional connectivity, the quality of competing routes, fuel prices, and toll rate revisions as notified by applicable concessioning authorities, including the National Highways Authority of India (the "**NHAI**").

During the Financial Year 2026, our toll portfolio demonstrated resilient performance, supported by a favourable economic environment and continued industrial expansion along key corridors. Weighted average daily traffic across our toll assets increased by approximately 8.10% year-on-year, while average daily tollable traffic stood at 37,269 Passenger Car Units ("**PCUs**"). This translated into toll revenue growth of approximately 10.60% year-on-year, driven by both higher traffic volumes and an improved mix of commercial vehicle categories.

According to the Traffic Reports, several of our assets lie on nationally significant highway corridors, including sections of the North–South Corridor (NH-44) and key stretches that form part of the Delhi–Agra–Jaipur Golden Triangle, while others are located on important east–west and regional freight routes. The Traffic Consultant noted that these corridors carry a mix of long-distance freight, including construction materials, petroleum products, agricultural produce, manufactured goods and essential commodities, alongside substantial passenger movement driven by commuting, inter-city travel and tourism. Across individual assets, the Traffic Reports highlight the presence of industrial clusters, agricultural belts, cross-border trade flows and major urban centres, which together support sustained traffic volumes and long-term corridor relevance. This diversity limits concentration risk and aligns our revenues with multiple segments of the real economy. For example, roads serving industrial regions such as Sikandrabad and Aligarh carry significant volumes of construction materials, manufactured goods

and metals, while other corridors (including long-distance routes such as Farakka–Raiganj and the southern NH-44 stretches) carry a mix of passenger traffic, tourism movements and long-haul freight.

In recent years, we have observed a positive elasticity between traffic growth and regional GDP. For example, the Ghaziabad–Aligarh Expressway (GAEPL) and Farakka–Raiganj Highways (FRHPL) corridors benefited from increased freight volumes following industrial expansion in nearby clusters. The completion of six-laning projects and the elimination of bottlenecks along NH91 and other corridors further enhanced service levels and contributed to traffic growth. Our operational performance also reflects improvements in tolling efficiency, supported by the widespread adoption of Electronic Toll Collection (through FASTag), which accounted for approximately 96.00% of transactions across our plazas in the Financial Year 2026.

While the long-term trend in traffic growth remains positive (according to the Traffic Reports), performance may vary across assets and time periods due to external factors, such as regional administrative disruptions or temporary diversions during construction. Longer-term factors include the commissioning of alternate routes and expressways such as the Ganga Expressway and the Shamli–Gorakhpur Expressway, which may divert a portion of through traffic from certain corridors.

In summary, the performance of our toll portfolio and, therefore, our overall results of operations, depends on sustained economic growth, vehicle movement across key industrial and consumption corridors, and continued efficiency in tolling operations. A sustained slowdown in macroeconomic activity, changes in traffic composition, or the development of competing routes could adversely affect toll collections and the results of our operations, while improvements in industrial output, logistics integration, and regional connectivity are expected to drive steady growth in toll revenue over the medium- to long-term. Also see the section entitled "*Risk Factors – Our toll collections and traffic volumes are subject to uncertainties, including competing roads, exemptions, toll leakage, changes in vehicle mix, and government directives, which could adversely affect our business, results of operations, financial condition and cash flows*" on page 83.

Portfolio composition and acquisition of new assets

Our results of operations are significantly influenced by the composition and scale of our portfolio, as well as the timing and performance of asset acquisitions and integrations. As an InvIT operating in the road sector, our income profile is determined by the mix of toll-based and annuity-based projects within the portfolio, each with distinct cash flow characteristics, revenue visibility, and operating cost profiles. Also see "*Our Business – Our Existing Portfolio*" on page 265.

Since privately listing on the Stock Exchanges in April 2023, we have expanded our portfolio from 18 to 27 operating road assets, increasing our Enterprise Value/AUM from ₹236,807.96 million at the time of listing to ₹368,417.57 million as of March 31, 2026. This expansion reflects the implementation of our calibrated growth strategy of acquiring operating, de-risked assets from the Cube Group and select third parties, while maintaining conservative leverage and prioritizing accretive transactions. Our Existing Portfolio now spans approximately 2,005 kilometres (8,754 lane kilometres) across 12 Indian states and one union territory, providing us with broad geographic and economic diversification. Several of our assets are located in contiguous or clustered regions, such as the Madurai–Kanyakumari corridor, Uttar Pradesh–Delhi belt, and South Andhra cluster, which enables optimized manpower planning, centralized procurement, and standardized O&M practices.

Further, we have completed several strategic acquisitions that enhanced our portfolio since listing, including:

- the acquisition of six HAM SPVs, namely, Borgaon Watambare Highways Private Limited, Mangalwedha Solapur Highways Private Limited, Mangloor Highways Private Limited, Srirangam Infra Private Limited, Shankarampet Projects Private Limited and Tirumala Highways Private Limited;

- the acquisition of N.A.M. Expressway Private Limited ("**NAMEPL**"), a 212.9 km toll road connecting Andhra Pradesh and Telangana, financed through India's first sustainability-linked bond in the road sector, raising ₹8,600.00 million from the IFC; and

- the subsequent acquisition of two annuity-based projects, Quazigund Expressway Private Limited and Jammu Udhampur Highway Private Limited, from the National Investment and Infrastructure Fund in June 2025, with a combined enterprise value of approximately ₹33,464.41 million.

The integration of annuity and HAM assets enhances revenue stability, reduces exposure to short-term traffic volatility, and improves the predictability of our net distributable cash flows.

The timing of acquisitions and the pace of capital deployment are critical determinants of our consolidated performance. Newly acquired assets typically contribute only partially in their first reporting period due to transaction-closing timelines, integration costs, and the harmonization of accounting and maintenance practices. In the Financial Year 2025, for instance, our consolidated income reflected only partial-period contributions from the HAM SPV and NAMEPL acquisitions, while acquisition-related financing and transaction costs were fully recognised in the same period. Over time, upon these assets stabilizing and achieving full-period operations, their contribution to cash flow and distributions is expected to increase.

Our growth strategy is guided by capital allocation and the evaluation of assets under our ROFO Agreement with our Sponsor. These arrangements provide a visible pipeline of future acquisitions and refinancing opportunities, enabling us to pursue selective expansion while maintaining portfolio quality. The acquisition of the ROFO Assets, Committed Assets and other third-party opportunities will depend on prevailing market conditions, regulatory approvals, and our targeted leverage levels.

As of March 31, 2026, our Net Borrowing ratio stood at 46.82%, providing adequate headroom to fund future acquisitions and capital expenditure.

Going forward, our results of operations will depend on the successful integration and operation of these newly acquired assets, the continued execution of our M&A pipeline, and our ability to identify and acquire accretive assets that meet our investment criteria. While expansion increases our scale and diversification, it may also result in short-term increases in borrowing costs, transaction expenses, and integration overheads. Also see "*Risk Factors – There can be no assurance that we will be able to successfully undertake future acquisitions of road assets or efficiently manage the infrastructure road assets we have acquired or may acquire in the future*" on page 97.

Operating and maintenance costs

Our results of operations are significantly influenced by the level, timing, and efficiency of operating and maintenance ("**O&M**") expenditure incurred across our portfolio assets. These costs primarily comprise operation of toll plazas, routine and periodic maintenance, safety management, and administrative expenses related to the Portfolio Assets and the Project Manager. O&M expenditure directly affects our EBITDA margins, which stood at 70.94% in the Financial Year 2026, reflecting our focus on disciplined cost management and lifecycle-based maintenance practices.

Operating costs vary by asset type, concession model, and maintenance cycle stage. For toll assets, major cost components include toll collection system management, manpower and security costs, periodic and emergency repairs, and technology-related expenses such as surveillance, communication, and toll automation. For hybrid annuity and annuity assets, the O&M framework is governed by fixed-payment contracts, ensuring predictable cost outflows and stable margins. The diversity of our asset base, therefore, provides a natural hedge against volatility in individual cost categories.

We actively manage O&M costs through centralized procurement, data-driven maintenance planning, and a mix of in-house oversight and outsourced execution. Our Project Manager employs a lifecycle management strategy that emphasizes preventive and predictive maintenance over reactive interventions. Advanced technologies such as Road-Aid, HiRate, and the Structure Audit App enable real-time monitoring of road condition, inventory, and performance. These digital platforms standardise inspection protocols, generate data-driven ratings, and enable faster decision-making on maintenance priorities. The adoption of such systems across our portfolio has materially reduced unplanned interventions and improved asset reliability.

A significant component of our maintenance costs is material procurement, particularly bitumen, cement, and aggregates, which are subject to commodity price fluctuations. Our dedicated bitumen procurement team sources high-quality polymer-modified bitumen and highly modified asphalt blends to enhance pavement performance and reduce lifecycle costs. We also deploy sustainable materials, such as Reclaimed Asphalt Pavement and cold in-place recycling, which reduce both costs and the carbon footprint while extending pavement life.

The Project Manager's centralized O&M oversight team continuously benchmarks asset-level performance and cost structures against comparable assets within the portfolio. Cost efficiency is also achieved through standardized contract structures, regional clustering of maintenance operations, and joint procurement across SPVs. For example, in southern India, contiguous assets along the Madurai–Kanyakumari corridor share plant, equipment, and manpower resources, enabling better cost absorption and productivity gains.

While operating and maintenance costs are expected to increase moderately in absolute terms, in line with inflation and portfolio expansion, their proportion to total revenue is expected to remain stable due to ongoing efficiency improvements, technology adoption, and economies of scale. Over the medium term, our continued focus on predictive maintenance, material innovation, and digital process integration is expected to preserve our high operating margins and support consistent cash generation. Also see "*Risk Factors – We may be subject to increases in costs, including operation and maintenance costs, which we cannot recover by increasing toll fees or annuity income under the relevant concession agreements*" on page 92.

Financing costs, refinancing activity and leverage management

Our consolidated results of operations are influenced by the level and structure of our borrowings, the cost and tenor of our debt and the efficiency with which the Investment Manager manages refinancing and leverage across the Trust and its Project SPVs. Financing costs primarily include interest expenses on bank loans and listed non-convertible debentures, as well as transaction and arrangement fees related to refinancing, sustainability-linked financing, and working capital facilities.

We follow a conservative approach to capital management aimed at maintaining stable cash flows and preserving our credit quality. We actively monitor leverage metrics and maintain internal thresholds well within the regulatory limits prescribed under the InvIT Regulations. As of March 31, 2026, our Borrowings (on an undiscounted basis and including interest accrued) stood at ₹177,557.72 million, translating into a Net Borrowing ratio of 46.82%, which provides adequate headroom for future acquisitions and capital expenditure. Our debt facilities have been rated (i) AAA/Stable by India Ratings & Research Private Limited on February 10, 2026 for term loan and bank guarantee; (ii) AAA/Stable by India Ratings & Research Private Limited on August 14, 2025 for non-convertible debentures and A1+ for commercial paper; (iii) AAA/Stable by ICRA on September 1, 2025 for term loan and bank guarantee; *(*iv) AAA/Stable by ICRA on September 1, 2025 for, non-convertible debentures; (v) AAA/Stable by CRISIL Ratings Limited on March 20, 2026 and February 10, 2026 for long term rating; and (vi) A1+ by CRISIL Ratings Limited on April 30, 2026, for short term rating. As of March 31, 2026, 25.23% of our consolidated borrowings

were at fixed rates, compared to 21.19% as of March 31, 2025 and 11.16% as of March 31, 2024. Our financing strategy remains focused on achieving an optimal balance between fixed- and floating-rate exposures to maintain resilience across rate cycles.

Our refinancing initiatives have also consistently reduced the weighted average cost of debt, from 8.23% as of June 30, 2023 (the first quarter of our listing) to 7.53% as of March 31, 2026. During the Financial Year 2025, we raised ₹48,790 million of long-term debt through a combination of term loans and fixed-coupon NCDs to refinance project-level borrowings associated with newly acquired HAM assets and the NAMEPL project. In April 2025, we further issued two tranches of AAA-rated secured NCDs aggregating to ₹11,520.00 million, with three-year and seven-year tenors and coupons of 7.25% and 7.30%, respectively, both to institutional investors such as insurance companies, pension funds, and mutual funds.

Going forward, the trajectory of financing costs will depend on macroeconomic conditions, movements in benchmark interest rates, and market demand for infrastructure credit instruments. While the near-term interest rate environment remains stable, we continue to manage exposure through active duration matching, hedging where appropriate and prudent liquidity management. Sustained refinancing activity, disciplined leverage management, and diversification of funding sources are expected to support predictable interest coverage and stable distributions to Unitholders. Also see "*Risk Factors – Our ability to refinance our debt and maintain access to long-term funding is crucial to our business, and adverse conditions in the debt markets, regulatory restrictions or downgrades in our credit ratings could adversely affect our liquidity and consequently our business, results of operations, financial condition and ability to make distributions*" on page 87.

Major maintenance and lifecycle management

Our financial performance is affected by the timing, cost, and scope of major maintenance ("**MM**") activities across our portfolio as well as by the continued adoption of advanced technologies that extend asset life and reduce lifecycle costs. Major maintenance is typically performed every five to seven years, depending on pavement condition, traffic loads, and concession requirements. It comprises large-scale resurfacing, structural rehabilitation, and restoration of pavement quality, safety furniture, and signage. These costs are cyclical and can result in year-on-year variations in operating margins and net distributable cash flows depending on the number of projects undergoing maintenance in a given period.

We manage our portfolio using a lifecycle-based asset management approach that integrates predictive modelling, material innovation, and digital monitoring systems. The Project SPVs undertake engineering planning and quality assurance under standardized operating procedures to ensure consistency across all assets. Preventive maintenance is prioritized over corrective interventions, minimizing traffic disruptions and unplanned expenditures. This approach has allowed us to maintain a high level of serviceability while preserving strong operating margins across cycles.

The timing of MM cycles across multiple SPVs can therefore influence consolidated performance, with higher-activity years temporarily reducing reported EBITDA and net cash flows on toll assets. We maintain MM provisions at the SPV level and plan major works in a phased manner to smooth expenditure over the concession lifecycle.

The integration of digital monitoring and innovative materials has also produced measurable cost savings. Standardization of O&M contracts and supply arrangements across clusters, such as the southern corridor comprising the Madurai–Kanyakumari, Kanyakumari–Etturavattam, and Salaipudhur–Madurai assets, has lowered procurement and execution costs while maintaining quality consistency. Continuous feedback from inspection data and field performance informs the recalibration of maintenance intervals, improving capital efficiency and asset longevity. Also see "*Risk Factors – Our concession agreements contain mandatory capacity augmentation and major maintenance obligations, which could increase our costs and reduce traffic during works, thereby adversely affecting our business, results of operations, financial condition and cash flows*" on page 86.

Macroeconomic, regulatory and policy environment

Our performance is influenced by overall macroeconomic conditions and infrastructure investment trends in India. The growth of toll and annuity revenues is correlated with national and regional GDP, industrial activity, consumption, and logistics demand. According to the Industry Report, India's real GDP grew by 6.5% in the Financial Year 2025, supported by public investment, resilient consumption, and strong services exports, and is expected to maintain a growth trajectory of 6-7% between the Financial Years 2026 and 2030. Real GDP growth stood at 7.8% in the fourth quarter of the Financial Year 2026, slightly lower than the 8.0% recorded in the preceding quarter but above the average growth rate of 7.4% observed over the previous ten quarters. Growth momentum was sustained despite disruptions arising from geopolitical tensions in West Asia and heightened global uncertainty.

Rising manufacturing and e-commerce activity, along with expanding trade flows, continues to support traffic growth on key freight corridors where our portfolio is concentrated. The direction of inflation, fuel prices, and interest rates also affects travel costs and borrowing levels, which can influence operating margins and cash generation.

Our Portfolio Assets operate under concession agreements with the NHAI or relevant state authorities, and the Trust is governed by the InvIT Regulations and the circulars issued thereunder. These frameworks determine toll revisions, leverage thresholds, and distribution policies that shape our results of operations. While we believe that India's policy environment remains stable and supportive of infrastructure investment, changes in toll calculation factors, fiscal priorities, or regulatory requirements could affect cash flows.

Key Components of our Statement of Profit and Loss

The key components of our statement of profit and loss are described below:

Income

Total income consists of revenue from operations, realized/unrealized gain on mutual funds, interest on fixed deposits and other income.

Revenue from operations. Revenue from operations consists of revenue from toll fee collections, construction income, operation and maintenance income, finance income on annuity receivables, revenue from additional work (net of related cost), renewals and overlay income, and claims for compensation from NHAI.

Realized/unrealized gain on mutual funds. Realized/unrealized gain on mutual funds consists of capital gains on redemption and gains recognized at FVTPL on investments in mutual funds.

Interest on fixed deposits. Interest on fixed deposits consists of interest income generated from fixed deposits.

Other income. Other income consists of interest on income tax refund, income from the sale of scrap, insurance claim received, profit on the sale/write off of property, plant and equipment (net), liabilities no longer required written back / remission in loan liability and miscellaneous income.

Expenses

Total expenses consist of cost of construction, operation and maintenance expenses, employee benefits expense, depreciation and amortization expense, legal & professional fees, finance costs, investment management fees, project management fees, trustee fees, custodian fees, insurance expense, audit fees (including for subsidiaries), valuation expense, impairment charge towards impairment of intangible assets, and other expenses.

Cost of construction: Cost of construction refers primarily to the costs incurred for construction undertaken to expand highway stretches mandated under the Concession Agreement.

Operation and maintenance expenses: Operation and maintenance expenses consist of periodic major maintenance expenses, repair and maintenance of carriageway, toll operation expenses, security charges, vehicle hire charges, power and fuel, route patrolling expenses, professional charges, site and miscellaneous expenses.

Employee benefits expense. Our employee benefits expenses consist of salaries and wages, gratuity expenses, contributions to provident and other funds, and staff welfare expenses.

Depreciation and amortization expenses. Our depreciation and amortization expenses consist of depreciation of property, plant and equipment, depreciation of investment property and amortization of intangible assets.

Legal and professional fees. Our legal and professional fees consist of fees for internal audit, traffic and technical studies, credit ratings, tax advisory and support, due diligence, litigation and legal opinions, environmental studies, secretarial audit and advisory, financial reporting tools and ancillary services, and others.

Finance costs. Our finance costs consist of interest on financial liabilities classified at amortized cost (term loans, non-convertible debentures, and optionally convertible debentures), interest on delayed payment to MSME vendors, other interest costs, unwinding of interest (on processing fees, on major maintenance / infrastructure upgrade, and on unsecured loan) and other borrowing costs. Other borrowing costs include bank guarantee commission, fixed arranger fees, and others.

Investment Management Fees. Our investment management fees refer to the fees we pay to the investment manager under the investment management agreement dated July 24, 2024.

Project Management Fees. Our project management fees refer to the fees we pay to the Erstwhile Project Manager pursuant to the project implementation and management agreement dated January 2, 2023.

Trustee Fees. Our trustee fees refer to fees paid to the Trustee.

Custodian Fees. Our custodian fees refer to fees paid to the custodian.

Insurance Expense. Our insurance expense refers to costs incurred to obtain and maintain insurance policies for our business, including comprehensive or commercial general liability, workers' compensation, group medical, and industrial all-risk insurance.

Audit Fees (including subsidiaries). Our audit fees consist of payments to auditors for their audit services, other services such as certification, and out-of-pocket expenses.

Valuation Expense. Our valuation expense refers to fees paid to the valuer.

Impairment Charge Towards Impairment of Intangible Assets. Our impairment charge for intangible assets refers to impairment losses recognised when the carrying amount of intangible assets exceeds their recoverable amount.

Other expenses. Our other expenses consist of expenses relating to rent, rates and taxes, advertising expenses, travelling and conveyance, printing and stationary, communication expenses, penalty to NHAI for delay in execution of major maintenance expenses, impairment loss allowance on trade receivables/unbilled revenues, doubtful advance/balances written off, allowance for doubtful advances, bad debts written off (net of adjustments from impairment loss allowance on trade receivables), information technology related cost, royalty expenses, net loss on foreign currency transaction, corporate social responsibility expense, loss on write-off of property, plant and equipment (net), and miscellaneous expenses.

Tax expenses

Tax expenses consist of current tax, tax for earlier years, and deferred tax.

Results of Operations

The following table sets forth select financial data from our Audited Consolidated Financial Statements for the Financial Years 2026, 2025 and 2024, the components of which are also expressed as a percentage of total income for such years:

Particulars	Financial Year					
	2026		2025		2024	
	(₹ in million)	*(% of total income)*	*(₹ in million)*	*(% of total income)*	*(₹ in million)*	*(% of total income)*
Income						
Revenue from operations	42,388.85	97.24%	33,071.44	95.77%	29,161.37	94.86%
Other income	1,201.41	2.76%	1,460.08	4.23%	1,579.68	5.14%
Total income (I)	**43,590.26**	**100.00%**	**34,531.52**	**100.00%**	**30,741.05**	**100.00%**
Expenses						
Cost of construction	172.65	0.40%	634.14	1.84%	4,025.77	13.10%
Operation and maintenance expenses	8,786.92	20.16%	7,554.62	21.88%	5,046.42	16.42%
Employee benefits expense	721.45	1.66%	514.68	1.49%	429.66	1.40%
Finance costs	14,653.82	33.62%	11,171.01	32.35%	8,731.29	28.40%
Depreciation and amortization expense	14,444.75	33.14%	13,129.12	38.02%	11,825.72	38.47%
Impairment of intangible assets	(1,421.00)	(3.26%)	-	-	5,871.87	19.10%
Other expenses	2,984.80	6.85%	2,031.08	5.88%	1,678.77	5.46%
Total expenses (II)	**40,343.39**	**92.55%**	**35,034.65**	**101.46%**	**37,609.50**	**122.34%**
Profit/(Loss) before tax (III = I - II)	**3,246.87**	**7.45%**	**(503.13)**	**(1.46%)**	**(6,868.45)**	**(22.34%)**
Tax expense/(income)						
Current tax	488.65	1.12%	367.11	1.06%	287.41	0.93%
Tax for earlier years	4.58	0.01%	18.54	0.05%	5.40	0.02%
Deferred tax	586.49	1.35%	(531.58)	(1.54%)	(102.11)	(0.33%)
Total tax expense/(income) (IV)	**1,079.72**	**2.48%**	**(145.93)**	**(0.42%)**	**190.70**	**0.62%**
Profit/(Loss) for the year (V = III - IV)	**2,167.15**	**4.97%**	**(357.20)**	**(1.03%)**	**(7,059.15)**	**(22.96%)**

Financial Year 2026 compared to Financial Year 2025

Our results of operations for the Financial Year 2026 compared with the Financial Year 2025 were primarily driven by the movements set out below.

Total Income. Our total income increased by 26.23% to ₹43,590.26 million for the Financial Year 2026, from ₹34,531.52 million for the Financial Year 2025, primarily due to higher revenue from operations, driven by higher operation and maintenance income, increased finance income on annuity receivables and growth in toll collections across our project portfolio.

Revenue from Operations. Our revenue from operations increased by 28.17% to ₹42,388.85 million for the Financial Year 2026, from ₹33,071.44 million for the Financial Year 2025, mainly on account of (i) an increase in toll revenue arising from revision in toll rates and higher traffic volumes during the Financial Year 2026 and (ii) the acquisition of N.A.M Expressway Private Limited on February 12, 2025 , which resulted in a full-year impact on revenue from operations for the Financial Year 2026 as compared to revenue from operations for the Financial Year 2025.

The increase in revenue from operations was also due to increases in (i) operation and maintenance income to ₹4,423.10 million for the Financial Year 2026 from ₹1,862.68 million for the Financial Year 2025, and (ii) finance income on annuity receivables to ₹2,933.99 million for the Financial Year 2026 from ₹1,106.90 million for the Financial Year 2025, primarily on account of acquisition of QEPL and JUHPL on June 12, 2025 and acquisition of the HAM SPVs on June 4, 2024 resulted in a full-year impact on revenue from operations for the Financial Year 2026 as compared to revenue from operations for the Financial Year 2025.

Other income. Other income decreased by 17.72% to ₹1,201.41 million for the Financial Year 2026 from ₹1,460.08 million for the Financial Year 2025, primarily due to decreases in gain on mutual funds, insurance claims received, sale of scrap, interest on income tax refund and liabilities no longer required written back / remission in loan liability.

The decreases comprised decreases in (i) insurance claim received by 61.33% to ₹29.57 million for the Financial Year 2026 from ₹76.47 million for the Financial Year 2025, primarily due to lower claims settled during the year; (ii) gain on mutual funds (net) by 34.68% to ₹545.67 million for the Financial Year 2026 from ₹835.36 million for the Financial Year 2025, primarily due to lower mark-to-market gains and lower treasury deployment in mutual funds; (iii) sale of scrap by 15.80% to ₹21.26 million for the Financial Year 2026 from ₹25.25 million for the Financial Year 2025, primarily due to lower scrap generation and disposal activities; (iv) interest on income tax refund by 5.84% to ₹29.18 million for the Financial Year 2026 from ₹30.99 million for the Financial Year 2025, primarily due to lower tax refunds received during the year; and (v) liabilities no longer required written back / remission in loan liability by 0.55% to ₹76.11 million for the Financial Year 2026 from ₹76.53 million for the Financial Year 2025, primarily due to lower write-backs of liabilities compared to the previous year.

These decreases were partially offset by increases in (i) extinguishment of financial liability related to contingent consideration to ₹24.14 million for the Financial Year 2026 from nil for the Financial Year 2025, due to reassessment of contingent consideration obligations; (ii) reversal of impairment loss allowance on trade receivables to ₹17.63 million for the Financial Year 2026 from nil for the Financial Year 2025 due to improvement in recoverability assessment of certain receivables; (iii) profit on sale/write off of property, plant and equipment (net) by 30.91% to ₹1.44 million for the Financial Year 2026 from ₹1.10 million for the Financial Year 2025, on account of disposal of certain assets during the year; (iv) interest on financial assets carried at amortized cost - bank deposits by 10.14% to ₹444.25 million for the Financial Year 2026 from ₹403.34 million for the Financial Year 2025, primarily due to higher average bank deposit balances; and (v) miscellaneous income by 10.14% to ₹12.16 million for the Financial Year 2026 from ₹11.04 million for the Financial Year 2025, primarily due to higher incidental income from operations.

Total expenses. Our total expenses increased by 15.15% to ₹40,343.39 million for the Financial Year 2026, from ₹35,034.65 million for the Financial Year 2025, primarily due to increases in operation and maintenance expenses, employee benefits expense, depreciation and amortization expense, finance costs and other expenses.

Cost of construction. Our cost of construction decreased by 72.77% to ₹172.65 million for the Financial Year 2026 from ₹634.14 million for the Financial Year 2025, primarily due to completion of a majority of the construction activities in GAEPL.

Operation and maintenance expenses. Operation and maintenance expenses increased by 16.31% to ₹8,786.92 million for the Financial Year 2026 from ₹7,554.62 million for the Financial Year 2025, primarily due to increases in (i) periodic major maintenance expense to ₹3,549.38 million for the Financial Year 2026 from ₹3,298.54 million for the Financial Year 2025, mainly on account of full year provision for major maintenance recognized for N.A.M Expressway Private Limited, which was acquired on February 12, 2025 and full year provision for major maintenance as per new cycle, whose scheduled major maintenance was completed in the Financial Year 2025; (ii) repair and maintenance of carriageway to ₹2,583.14 million for the Financial Year 2026 from ₹2,083.61 million for the Financial Year 2025; (iii) toll operation expenses to ₹894.62 million for the Financial Year 2026 from ₹795.57 million for the Financial Year 2025; (iv) security charges to ₹142.40 million for the Financial Year 2026 from ₹128.11 million for the Financial Year 2025; (v) vehicle hire charges to ₹461.69 million for the Financial Year 2026 from ₹377.36 million for the Financial Year 2025; (vi) power and fuel to ₹537.63 million for the Financial Year 2026 from ₹373.40 million for the Financial Year 2025; (vii) route patrolling expenses to ₹484.15 million for the Financial Year 2026 from ₹382.59 million for the Financial Year 2025; (viii) professional charges - site to ₹133.80 million for the Financial Year 2026 from ₹115.40 million for the Financial Year 2025; and (ix) miscellaneous expenses to ₹0.11 million for the Financial Year 2026 from ₹0.04 million for the Financial Year 2025, mainly on account of the acquisition of the acquisitions of QEPL and JUHPL for the Financial Year 2026 and full year cost of HAM SPVs and NAMEPL in the Financial Year 2026 as compared to the Financial Year 2025.

Employee benefits expense. Employee benefits expense increased by 40.17% to ₹721.45 million for the Financial Year 2026 from ₹514.68 million for the Financial Year 2025, primarily due to increases in (i) salary and wages to ₹578.81 million for the Financial Year 2026 from ₹458.90 million for the Financial Year 2025, mainly on account of increase in employee headcount due to the acquisitions of QEPL and JUHPL, and routine annual compensation revisions; and (ii) long term incentive plan to ₹69.52 million for the Financial Year 2026 from nil for the Financial Year 2025, mainly on account of recognition of employee incentive compensation expense during the year. Our employee headcount increased to 980 as of March 31, 2026, from 955 as of March 31, 2025.

Depreciation and amortization expense. Depreciation and amortization expense increased by 10.02% to ₹14,444.75 million for the Financial Year 2026 from ₹13,129.12 million for Financial Year 2025, primarily due to an increase in amortisation of intangible assets to ₹14,371.70 million for the Financial Year 2026 from ₹13,072.72 million for the Financial Year 2025, mainly on account of (i) the acquisition of the NAMEPL on February 12, 2025 which resulted in a full-year impact on depreciation and amortization expense for the Financial Year 2026; and (ii) the impact of purchase price allocations at the consolidated level for QEPL and JUHPL acquired on June 12, 2025 and full-year impact on purchase price allocations for NAMEPL and HAM during the Financial Year 2026.

Finance costs. Finance costs increased by 31.18% to ₹14,653.82 million for the Financial Year 2026 from ₹11,171.01 million for the Financial Year 2025, primarily due to (i) an increase in interest on financial liabilities classified at amortized cost for

term loans to ₹10,061.61 million for the Financial Year 2026 from ₹9,123.24 million for the Financial Year 2025; (ii) an increase in interest on financial liabilities classified at amortized cost for non-convertible debentures to ₹3,565.49 million for the Financial Year 2026 from ₹1,475.60 million for the Financial Year 2025, both arising due to higher term loans and non-convertible debentures availed to refinance the external debt of NAMEPL, QEPL and JUHPL; (iii) an increase in interest expense of ₹207.13 million incurred on account of the issuance of commercial paper during the Financial Year 2026; and (iv) an increase in unwinding of interest on processing fees and major maintenance to ₹717.65 million for the Financial Year 2026 from ₹302.19 million for the Financial Year 2025. The increase in finance costs was partially offset by a decrease in other borrowing costs to ₹99.39 million for the Financial Year 2026, from ₹267.45 million for the Financial Year 2025, on account of lower financing transaction costs and borrowing-related charges.

Impairment charge/(reversal) towards intangible assets. We recorded a reversal of impairment loss on intangible assets of ₹1,421.00 million for the Financial Year 2026, compared to nil for the Financial Year 2025, primarily due to a reassessment of the recoverable amounts of GAEPL based on revised assumptions relating to future cash flows, traffic projections and other key parameters.

Other expenses. Other expenses increased by 46.96% to ₹2,984.80 million for the Financial Year 2026, from ₹2,031.08 million for Financial Year 2025, primarily due to increases in: (i) legal and professional fees increased by 97.29% to ₹702.72 million in Financial Year 2026 from ₹356.19 million in Financial Year 2025. The increase was primarily attributable to acquisition-related due diligence activities, traffic and cost studies undertaken for acquired and prospective assets, and professional fees charged by Cube Highways Technologies Private Limited with effect from April 1, 2025; (ii) project management fees by 35.66% to ₹1,001.61 million for the Financial Year 2026 from ₹738.31 million for the Financial Year 2025 and investment management fees by 30.65% to ₹433.30 million for the Financial Year 2026 from ₹331.64 million for the Financial Year 2025, primarily due to (a) the acquisition of the HAM SPVs on June 4, 2024 and NAMEPL on February 12, 2025 resulted in a full-year impact on project management and investment management fees for the Financial Year 2026, as compared to the Financial Year 2025, (b) the acquisition of JUHPL and QEPL on June 12, 2025, and (c) an increase in toll revenue pursuant to toll rate revisions during the Financial Year 2026; (iv) custodian fees by 8.47% to ₹5.12 million for Financial Year 2026 from ₹4.72 million for Financial Year 2025; (v) insurance expense by 5.08% to ₹231.21 million for the Financial Year 2026 from ₹220.04 million for the Financial Year 2025; (vi) audit fees (including for subsidiaries) by 24.85% to ₹81.94 million for the Financial Year 2026 from ₹65.63 million for the Financial Year 2025, primarily due to increased audit scope and fees relating to subsidiaries and project entities; (vii) bad debts written off (net of adjustments from impairment loss allowance on trade receivables) to ₹42.10 million for the Financial Year 2026 from ₹1.51 million for the Financial Year 2025, primarily due to write-off of specific receivables during the year; (viii) corporate social responsibility expense by 192.33% to ₹77.73 million for the Financial Year 2026 from ₹26.59 million for the Financial Year 2025, in line with statutory requirements; (ix) information technology related cost by 67.71% to ₹27.27 million for Financial Year 2026 from ₹16.26 million for Financial Year 2025; and (x) miscellaneous expenses by 77.01% to ₹121.66 million for Financial Year 2026 from ₹68.73 million for Financial Year 2025, primarily due to higher administrative expenses.

These increases were partially offset by decreases in (i) rates and taxes by 13.51% to ₹19.78 million for the Financial Year 2026 from ₹22.87 million for the Financial Year 2025; (ii) loss on write-off of property, plant and equipment by 17.74% to ₹0.51 million for the Financial Year 2026 from ₹0.62 million for the Financial Year 2025, primarily attributable to fewer asset write-offs; (iii) penalty to NHAI for delay in execution of major maintenance expenses to nil for the Financial Year 2026 from ₹0.55 million for the Financial Year 2025; (iv) doubtful advance/balances written off to nil for the Financial Year 2026 from ₹8.91 million for the Financial Year 2025; and (v) allowance for doubtful advances to nil for the Financial Year 2026 from ₹12.31 million for the Financial Year 2025.

Tax expenses/(income). We incurred tax expenses of ₹1,079.72 million for the Financial Year 2026, growing from a tax credit of ₹145.93 million for the Financial Year 2025. For the Financial Year 2026, we incurred current tax of ₹488.65 million, deferred tax of ₹586.49 million and tax relating to earlier years of ₹4.58 million. For the Financial Year 2025, we incurred current tax of ₹367.11 million and tax relating to earlier years of ₹18.54 million, which were more than offset by a deferred tax credit of ₹531.58 million. The changes in our deferred tax credits were primarily due to the acquisition of JUHPL.

Profit for the year. As a result of the foregoing, our profit for the year increased significantly to ₹2,167.15 million for the Financial Year 2026 from a loss of ₹357.20 million for the Financial Year 2025.

Financial Year 2025 compared to Financial Year 2024

Our results of operations for the Financial Year 2025 compared with the Financial Year 2024 were primarily driven by the movements set out below.

Total Income. Our total income increased by 12.33% to ₹34,531.52 million for the Financial Year 2025, from ₹30,741.05 million for the Financial Year 2024, primarily due to higher revenue from operations.

Revenue from Operations. Our revenue from operations increased by 13.41% to ₹33,071.44 million for the Financial Year 2025, from ₹29,161.37 million for the Financial Year 2024, primarily due to an increase in revenue from toll fee collections to ₹28,275.30 million for the Financial Year 2025 from ₹24,715.17 million for the Financial Year 2024, mainly on account of (i) an increase in toll revenue arising from revision in toll rates and higher traffic volumes during the Financial Year 2025, (ii) the acquisition of toll assets on April 17, 2023, which resulted in a full-year impact on revenue from operations for the Financial

Year 2025, as compared to the period between April 17, 2023 to March 31, 2024 for the Financial Year 2024, and (iii) the acquisition of N.A.M Expressway Private Limited on February 12, 2025.

The increase in revenue from operations was also due to increases in (i) operation and maintenance income to ₹1,862.68 million for the Financial Year 2025 from ₹294.64 million for the Financial Year 2024, and (ii) finance income on annuity receivables to ₹1,106.90 million for the Financial Year 2025 from ₹105.68 million for the Financial Year 2024, both of which were on account of the acquisition of the HAM SPVs on June 4, 2024. Further, the increase in revenue from operations was also on account of an increase in renewals and overlay income to ₹1,166.12 million for the Financial Year 2025 from nil for the Financial Year 2024, on account of major maintenance work undertaken in APEPL in accordance with the financial asset model under applicable accounting standards.

Other income. Other income decreased by 7.57% to ₹1,460.08 million for the Financial Year 2025 from ₹1,579.68 million for the Financial Year 2024 primary due to decreases in (i) realized/unrealized gain on mutual funds by 17.73% to ₹835.36 million for the Financial Year 2025 from ₹1,015.38 million for the Financial Year 2024, primarily due to lower closing cash balances as at March 31, 2025 and lower average cash balances during the Financial Year 2025 following the utilization and distribution of funds to Unitholders, which resulted in a corresponding decrease in income from investments during the Financial Year 2025; and (ii) interest on fixed deposits by 7.29% to ₹403.34 million for the Financial Year 2025 from ₹435.04 million for the Financial Year 2024, primarily due to lower closing cash balances as at March 31, 2025 and lower average cash balances during the Financial Year 2025, following the utilization and distribution of funds to Unitholders, which resulted in a corresponding decrease in income from investments during the Financial Year 2025.

The decreases were partially offset by an increase in insurance claims received to ₹76.47 million for the Financial Year 2025 from ₹24.57 million for the Financial Year 2024. The increase in other income is also due to an increase in interest on income tax refund to ₹30.99 million for the Financial Year 2025 from ₹8.28 million for the Financial Year 2024.

Total expenses. Our total expenses decreased by 6.85% to ₹35,034.65 million for the Financial Year 2025, from ₹37,609.50 million for the Financial Year 2024, primarily due to lower construction costs.

Cost of construction. Our cost of construction decreased by 84.25% to ₹634.14 million for the Financial Year 2025 from ₹4,025.77 million for the Financial Year 2024, primarily due to the construction work undertaken in GAEPL being substantially completed during the Financial Year 2024, as compared to the relatively small proportion of six-laning construction work left to be undertaken in GAEPL during the Financial Year 2025.

Operation and maintenance expenses. Operation and maintenance expenses increased by 49.70% to ₹7,554.62 million for the Financial Year 2025 from ₹5,046.42 million for the Financial Year 2024, primarily due to an increase in periodic major maintenance expense to ₹3,298.54 million for the Financial Year 2025 from ₹1,663.92 million for the Financial Year 2024, mainly on account of (i) higher maintenance expenses recognized in relation to APEPL during the Financial Year 2025, as no provision was made in APEPL for future major maintenance cycles of annuity assets beyond Financial Year 2025, (ii) higher maintenance expenses recognized in relation to Ghaziabad Aligarh Expressway Private Limited, DA Toll Road Private Limited, Jaipur Mahua Tollway Private Limited, Nelamangala Devihalli Expressway Private Limited and Walayar Vadakkencherry Expressways Private Limited during the Financial Year 2025, as maintenance work towards these Project SPVs were only partially completed during the Financial Year 2024, and (iii) an increase in provision for maintenance expenses relating to N.A.M Expressway Private Limited, which was acquired on February 12, 2025.

The increase in operation and maintenance expenses was also on account of an increase in repair and maintenance of carriageway to ₹2,083.61 million for the Financial Year 2025 from ₹1,603.79 million for the Financial Year 2024, mainly on account of (i) the acquisition of the HAM SPVs on June 4, 2024, and (ii) the acquisition of toll assets on April 17, 2023, which resulted in a full-year impact on operation and maintenance expenses for the Financial Year 2025, as compared to the period between April 17, 2023 to March 31, 2024 for the Financial Year 2024.

Employee benefits expense. Employee benefits expense increased by 19.79% to ₹514.68 million for the Financial Year 2025 from ₹429.66 million for the Financial Year 2024, primarily due to an increase in salary and wages to ₹458.90 million for the Financial Year 2025 from ₹389.40 million for the Financial Year 2024, mainly on account of (i) the acquisition of the HAM SPVs on June 4, 2024, leading to an overall increase in our employee strength, (ii) the acquisition of toll assets on April 17, 2023, which resulted in a full-year impact on employee benefits expense for the Financial Year 2025, as compared to the period between April 17, 2023 to March 31, 2024 for the Financial Year 2024, and (iii) annual salary increments for employees. Our employee headcount increased to 955 as of March 31, 2025, from 802 as of March 31, 2024.

Depreciation and amortization expense. Depreciation and amortization expense increased by 11.02% to ₹13,129.12 million for the Financial Year 2025 from ₹11,825.72 million for Financial Year 2024, primarily due to (i) the acquisition of the HAM SPVs on June 4, 2024, (ii) the acquisition of toll assets on April 17, 2023, which resulted in a full-year impact on depreciation and amortization expense for the Financial Year 2025, as compared to the period between April 17, 2023 to March 31, 2024 for the Financial Year 2024, and (iii) the impact of purchase price allocations at the consolidated level for the HAM SPVs acquired during the Financial Year 2025.

Finance costs. Finance costs increased by 27.94% to ₹11,171.01 million for the Financial Year 2025 from ₹8,731.29 million for the Financial Year 2024, primarily due to (i) an increase in interest on financial liabilities classified at amortized cost for term loans to ₹9,123.24 million for the Financial Year 2025 from ₹7,672.86 million for the Financial Year 2024, and (ii) an

increase in interest on financial liabilities classified at amortized cost for non-convertible debentures to ₹1,475.60 million for the Financial Year 2025 from ₹655.03 million for the Financial Year 2024, both of which were on account of an increase in term loans and non-convertible debentures availed at the Trust level, to refinance the external debt of HAM SPVs and to fund ongoing capital expenditure of our business. The increase in finance costs was also due to an increase in other borrowing costs to ₹267.45 million for the Financial Year 2025, from ₹82.10 million for the Financial Year 2024, on account of higher interest expense incurred on borrowings related to the acquisition of HAM SPVs

Impairment charge towards impairment of intangible assets. Impairment charge towards impairment of intangible assets decreased significantly to nil for Financial Year 2025 from ₹5,871.87 million for Financial Year 2024, primarily due to impairment of intangible assets recognized during the Financial Year 2024, in relation to the following assets: Western UP Tollway Private Limited, Ghaziabad Aligarh Expressway Private Limited, Nelamangala Devihalli Expressway Private Limited, Farakka-Raigani Highways Private Limited and Lucknow-Raebareli Tollway Private Limited. Impairment charges were recognized for these assets during the Financial Year 2024 based on the outcome of impairment testing conducted in accordance with applicable accounting standards, considering the then-prevailing assumptions regarding traffic projections, cash flows and other key parameters. In the Financial Year 2025, no such impairment indicators were identified, and accordingly, no impairment charge was recognized.

Other expenses. Other expenses increased by 20.99% to ₹2,031.08 million for the Financial Year 2025, from ₹1,678.77 million for Financial Year 2024, primarily due to increase in: (i) legal and professional fees by 24.94% to ₹356.19 million for the Financial Year 2025 from ₹285.09 million for Financial Year 2024, primarily due to a one-time professional fee incurred for detailed designs, traffic studies and cost studies, in relation to new projects during the Financial Year 2025; (ii) project management fees by 36.18% to ₹738.31 million for the Financial Year 2025 from ₹542.14 million for the Financial Year 2024 and investment management fees increased by 10.85% to ₹331.64 million for the Financial Year 2025 from ₹299.17 million for the Financial Year 2024 primarily due to (a) the acquisition of the HAM SPVs on June 4, 2024, (b) the acquisition of toll assets on April 17, 2023, which resulted in a full-year impact on project management fees for the Financial Year 2025, as compared to the period between April 17, 2023 to March 31, 2024 for the Financial Year 2024, and (c) an increase in toll revenue pursuant to toll rate revisions during the Financial Year 2025; (iii) custodian fees by 34.47% to ₹4.72 million for Financial Year 2025 from ₹3.51 million for Financial Year 2024; (iv) insurance expense by 1.06% to ₹220.04 million for the Financial Year 2025 from ₹217.74 million for the Financial Year 2024; (v) audit fees (including for subsidiaries) by 10.28% to ₹65.63 million for the Financial Year 2025 from ₹59.51 million for the Financial Year 2024, primarily due to the audit of the HAM SPVs, and NAMEPL which were acquired during the Financial Year 2025; (vi) rates and taxes by 93.65% to ₹22.87 million for the Financial Year 2025 from ₹11.81 million for the Financial Year 2024; (vii) corporate social responsibility expense by 70.34% to ₹26.59 million for the Financial Year 2025 from ₹15.61 million for the Financial Year 2024; and (viii) royalty expenses by 58.77% to ₹76.45 million for Financial Year 2025 from ₹48.15 million for Financial Year 2024.

These increases were partially offset by a decrease in valuation expense by 17.13% to ₹12.53 million for the Financial Year 2025 from ₹15.12 million for the Financial Year 2024, primarily attributable to lower valuation fees incurred for fewer assets acquired during the Financial Year 2025, compared to the Financial Year 2024.

Tax expenses. Tax expenses decreased by 176.52% to a credit of ₹145.93 million for the Financial Year 2025 from expenses of ₹190.70 million for the Financial Year 2024. For the Financial Year 2025, we incurred current tax of ₹367.11 million, tax for earlier years of ₹18.54 million and earned a deferred tax credit of ₹531.58 million. For the Financial Year 2024, we incurred current tax of ₹287.41 million, tax for earlier years of ₹5.40 million and earned a deferred tax credit of ₹102.11 million. The changes in our deferred tax credits were primarily due to (i) acquisition of HAM SPVs and NAMEPL; (ii) deferred tax assets created in MBEL and JMTPL on MAT credit entitlement and provision for major maintenance expenses; and (iii) reversal of deferred tax created on equity component of OCD in DATRPL.

Loss for the year. As a result of the foregoing, our loss for the year decreased by 94.94% to ₹357.20 million for the Financial Year 2025 from ₹7,059.15 million for the Financial Year 2024.

Liquidity and Capital Resources

For the Financial Years 2026, 2025 and 2024, we financed our working capital and capital expenditure requirements primarily through cash generated from operations, and borrowings such as term loans and non-convertible debentures. As of March 31, 2026, we had cash and cash equivalents (excluding earmarked balances) of ₹4,791.79 million.

Cash flows

The following table summarizes our cash flows data for the Financial Years 2026, 2025 and 2024:

Particulars	For the Financial Year		
	2026	2025	2024
	(₹ in million)		
Net cash generated from operating activities (I)	38,029.48	29,163.58	18,699.46
Net cash used in investing activities (II)	(7,584.78)	(3,019.42)	(10,328.89)
Net cash used in financing activities (III)	(38,694.32)	(21,865.02)	(12,240.50)
Net increase / (decrease) in cash and cash equivalents (IV = I + II + III)	**(8,249.62)**	**4,279.13**	**(3,869.93)**

Particulars	For the Financial Year		
	2026	2025	2024
	(₹ in million)		
Cash and cash equivalents at the beginning of the year	**8,163.86**	**2,415.24**	**-**
Cash and cash equivalents acquired on asset acquisition	4,877.55	1,469.49	6,285.17
Cash and cash equivalents at the end of the year	**4,791.79**	**8,163.86**	**2,415.24**

Operating activities

Net cash generated from operating activities was ₹38,029.48 million for the Financial Year 2026. While our profit before tax was ₹3,246.87 million for the Financial Year 2026, we had operating cash flows before working capital changes and other adjustments of ₹30,032.61 million, which was primarily adjusted for:

- depreciation and amortisation expense of ₹14,444.75 million; and
- finance costs of ₹14,653.82 million.

This was further adjusted for working capital changes and other adjustments, which primarily consisted of:

- decrease in financial assets and non-financial assets of ₹6,643.40 million;
- increase in provisions of ₹2,303.17 million;
- increase in trade receivables of ₹634.25 million; and
- decrease in financial liabilities and non-financial liabilities of ₹236.07 million.

As a result, cash flow generated from operating activities post working capital changes for the Financial Year 2026, was ₹38,758.85 million before adjusting for income tax paid (net) of ₹729.37 million.

Net cash generated from operating activities was ₹29,163.58 million for the Financial Year 2025. While our loss before tax was ₹503.13 million for the Financial Year 2025, we had operating cash flows before working capital changes and other adjustments of ₹22,555.20 million, which was primarily adjusted for:

- depreciation and amortisation expense of ₹13,129.12 million; and
- finance costs of ₹11,171.01 million.

This was further adjusted for working capital changes and adjustments, which primarily consisted of:

- decrease in financial assets and non-financial assets of ₹4,363.99 million,
- increase in provisions of ₹1,570.82 million, and
- decrease in trade receivables of ₹542.58 million.

As a result, cash flow generated from operating activities, post working capital changes, for the Financial Year 2025 was ₹29,255.12 million, before adjusting for income tax paid (net) of ₹91.54 million.

Net cash generated from operating activities was ₹18,699.46 million for the Financial Year 2024. While our loss before tax was ₹6,868.45 million for the Financial Year 2024, we had an operating cash flow before working capital changes and other adjustments of ₹18,084.38 million, which was primarily adjusted for:

- depreciation and amortization expense of ₹11,825.72 million,
- finance costs of ₹8,731.29 million, and
- impairment of intangible assets (net) of ₹5,871.87 million.

This was further adjusted for working capital changes and adjustments, which primarily consisted of:

- decrease in financial assets and non-financial assets of ₹1,605.42 million,
- decrease in trade payables of ₹597.79 million, and
- decrease in trade receivables of ₹151.16 million.

As a result, cash flow generated from operating activities post working capital changes for the Financial Year 2024 was ₹19,066.56 million before adjusting for income tax paid (net) of ₹367.10 million.

Investing activities

Net cash used in investing activities was ₹7,584.78 million for the Financial Year 2026. This was primarily due to investments in SPVs of ₹10,532.83 million, payments towards property, plant and equipment & intangible assets (after adjustment for increases/decreases in capital work-in-progress, intangible assets under development (net) and advances for capital expenditure)

of ₹604.65 million and, the investment in mutual funds (net) of ₹4,564.71 million. This was partially offset by movement in bank balances (including deposits), not considered cash and cash equivalents (net) of ₹7,529.48 million and interest received of ₹587.93 million.

Net cash used in investing activities was ₹3,019.42 million for the Financial Year 2025. This was primarily due to investment in SPVs of ₹17,884.00 million, payment towards property, plant and equipment & intangible assets (after adjustment of increase/decrease in capital work-in progress, intangible assets under development (net) and advances for capital expenditure) of ₹1,928.97 million and movement in bank balances (including deposits) not considered as cash and cash equivalents (net) of ₹738.53 million. This was partially offset by investment in mutual funds (net) of ₹16,841.17 million and interest received of ₹574.98 million.

Net cash used in investing activities was ₹10,328.89 million for the Financial Year 2024. This was primarily due to payment towards property, plant and equipment & intangible assets (after adjustment of increase/decrease in capital work-in progress, intangible assets under development (net) and advances for capital expenditure) of ₹5,107.58 million, movement in bank balances (including deposits) not considered as cash and cash equivalents (net) of ₹3,287.78 million and redemption from mutual funds (net) of ₹2,187.13 million. This was partially offset by interest received of ₹255.51 million.

Financing activities

Net cash used in financing activities was ₹38,694.32 million for the Financial Year 2026. This was primarily due to repayment of long-term borrowings of ₹53,520.79 million, repayment of short-term borrowings of ₹13,292.87 million, interest paid (including interest capitalized) of ₹14,407.68 million and payment of distributions to unitholders of ₹18,713.72 million. This was partially offset by proceeds from long-term borrowings of ₹48,090.00 million and proceeds from short-term borrowings of ₹13,292.87 million.

Net cash used in financing activities was ₹21,865.03 million for the Financial Year 2025. This was primarily due to repayment of long-term borrowings of ₹44,094.23 million, payment of distributions to unitholders of ₹14,758.71 million, and interest paid (including interest capitalized) of ₹11,593.73 million, which was partially offset by proceeds from long-term borrowings of ₹48,790.00 million.

Net cash used in financing activities was ₹12,240.50 million for the Financial Year 2024. This was primarily due to repayment of long-term borrowings of ₹133,798.23 million, interest paid (including interest capitalized) of ₹16,683.62 million, and payment of distributions to unitholders of ₹7,935.63 million, which was partially offset by proceeds from long-term borrowings of ₹108,800.00 million and proceeds from issue of unit capital of ₹38,025.92 million.

Financial indebtedness

As at March 31, 2026, we had total borrowings of ₹176,647.13 million, comprising non-current borrowings of ₹171,353.74 million and current borrowings of ₹5,293.39 million. See section entitled "*Financial Indebtedness and Deferred Payments*" on page 337.

Capital and other commitments

As at March 31, 2026, our estimated amount of contracts remaining to be executed on the capital account not provided for (net of advance) was ₹136.82 million. We do not have any other long-term commitments or material non-cancellable contractual commitments/contracts, which may have a material impact on the Audited Consolidated Financial Statements.

The table below sets forth our remaining contractual maturities of financial liabilities as of March 31, 2026:

Particulars (undiscounted)	Less than 1 year	1–2 years	2-5 years	More than 5 years	Total
	(*₹ in million*)				
Borrowings	5,293.39	5,538.28	29,209.51	137,341.73	177,382.91
Trade payables	3,002.29	-	-	-	3,002.29
Other financial liabilities	1,669.08	2.11	-	-	1,671.19
Total	**9,964.76**	**5,540.39**	**29,209.51**	**137,341.73**	**182,056.39**

Contingent liabilities and claims

The following table sets forth our contingent liabilities and claims as of March 31, 2026:

Particulars	As of March 31, 2026 (*₹ in million*)
Claims against the Trust Group not acknowledged as debt	
a) In respect of Income-tax matters, disputed by SPVs	1,427.49
b) In respect of Indirect tax matters (VAT/Entry tax/Service tax/GST) disputed by SPVs [(1)]	4,507.89
c) Damages/Penalties levied by NHAI/Independent engineer on account of default/deficiencies in terms of the concession agreement	56.06

Particulars	As of March 31, 2026
	(₹ in million)
d) Revenue claim levied by state authority (in terms of the SPA entered between the SPVs and erstwhile promoters, these matters are covered under specific indemnity from erstwhile promoters)	114.40
e) In respect of Stamp Duty matters, disputed by SPVs [(2)]	1,931.80
f) Civil suits related to accident claim and land encroachment matter at one SPV	7.70

Notes:

(1) Includes GST demand of ₹3,719.97 million (inclusive of interest and penalty) (March 31, 2025: ₹3,571.72 million) received by certain HAM SPVs alleging liability to GST on entire Bid Project Cost amount upfront on receipt of completion certificate, in relation to which the SPVs have filed a writ before the High Court/appeal before the relevant appellate authority. In terms of the SPA entered between the SPVs and erstwhile promoters, these matters are covered under specific indemnity from erstwhile promoters.

(2) In light of a Supreme Court decision in Rewa Tollway P. Limited v. The State of Madhya Pradesh & ORS., the Trust has reassessed stamp duty obligations (including for stamp duty matters disputed by certain SPVs referred above) for the concession agreements entered into by the SPVs with NHAI, considering inter-alia, types of concession agreement (DBFOT/BOT/TOT/HAM/Annuity), rights under terms and conditions of the concession agreements, indemnity under the Share Purchase Agreements entered by the Trust at the time of acquisition of the SPVs, jurisdiction of the relevant authority, and status of ongoing proceedings. Based on the assessment above supported by the legal advice, the Trust group does not expect the ultimate outflow of resources embodying economic benefits, which could materially affect the financial performance and position of the Trust Group.

(3) The Management of the Group assesses all material claims in the nature of demands and the show cause notices ("SCNs"), including intimation prior to SCNs, relating to Income tax, Indirect taxes and other litigations against the Group and based on legal advice in certain cases, evaluates whether it is probable, possible or remote ("PPR"). The Group discloses matters as contingent liability that are assessed as possible. The relevant SPVs are contesting the aforesaid notices /order before various authorities and are confident that the matters will be decided in Favor of the SPVs and ultimately no liability is likely to be devolved on the respective SPVs. Future ultimate outflow of resources embodying economic benefits in respect of the above matters are uncertain as it depends on the final outcome of the matter involved.

Capital expenditures

Our historical capital expenditures were, and we expect our future capital expenditures to be, primarily for infrastructure upgradation works. For the Financial Years 2026, 2025 and 2024, our capital expenditures were ₹604.65 million, ₹1,928.97 million, ₹5,107.58 million, respectively.

Monthly toll revenues

Set out below are the toll revenues of our toll assets for the months of April 2026 and May 2026:

Project SPV*	Monthly toll revenue *(₹ in million)*		
	April 2026**	May 2026**	June 2026**
DATRPL	598.16	597.62	577.09
FRHPL	238.28	234.79	255.47
GAEPL	433.83	410.76	385.24
HTPL	139.66	138.73	132.96
JMTPL	195.55	201.65	203.79
JLTPL	101.02	106.99	103.78
JVTPL	70.28	75.20	73.21
KETPL	71.03	81.81	71.46
KMTPL	107.98	112.53	105.85
LRTPL	63.40	62.16	62.51
MKTPL	115.37	133.23	116.82
MBEL	99.12	104.68	109.92
NKTPL	69.75	81.91	69.84
NDEPL	115.09	124.42	103.76
SMTPL	78.05	90.13	77.19
WVEPL	97.75	105.80	95.30
WUPTPL	164.77	160.62	125.96
NAMEPL	309.61	314.70	317.21
Total	**3,068.69**	**3,137.73**	**2,987.37**

* *Monthly revenues for annuity and HAM assets have not been included in the table above, given that payments are received by these assets on a half-yearly or annual basis.*

** *Revenue from toll operations from April 2026 to June 2026 includes collections from annual passes which are subject to reconciliation by NHAI/Indian Highways Management Company Limited. Such reconciliation is expected to be concluded in due course and has not been completed as of the date of this Final Offer Document. Accordingly, the above toll revenue numbers are subject to change upon the completion of such reconciliation*

In an annuity project model, the respective concessioning authority pays a fixed amount semi-annually as an annuity pursuant to the applicable concession agreement. Income from the project is thus assured to the extent of the annuity to be collected under the concession agreement, thereby reducing our risk of income fluctuations resulting from changes in traffic volumes. Accordingly, monthly toll revenue collections are not applicable to our HAM and annuity toll roads.

Off-Balance Sheet Commitments and Arrangements

We do not have any off-balance sheet arrangements, derivative instruments, swap transactions or relationships with affiliates or other unconsolidated entities or financial partnerships that would have been established for the purpose of facilitating off-balance sheet arrangements.

Quantitative and qualitative analysis of financial risks

We are exposed to a variety of financial risks, including credit, liquidity, and market risks.

Credit risk

Credit risk represents the risk of financial loss to us if a counterparty to a financial instrument fails to meet its contractual obligations. It arises principally from our cash and cash equivalents, other bank balances, trade receivables, unbilled revenue, and other financial assets. Our maximum exposure to credit risk is limited to the carrying amount of these financial assets.

Credit risk management

We establish an allowance account for impairment that reflects our estimate of losses on our financial assets. The main component of this allowance is estimated losses associated with specific counterparties. The allowance account is used to provide for impairment losses.

Credit risk relating to cash and cash equivalents and bank deposits is managed by transacting only with highly rated banks and by diversifying deposits and accounts across multiple banks. Other financial assets measured at amortized cost include security deposits, annuity receivables, receivables from related parties, and others. We manage the credit risk associated with these assets by continuously monitoring their recoverability, while internal control systems ensure that exposures remain within defined limits. As at the reporting date, there are no significant concentrations of credit risk. The maximum exposure to credit risk is represented by the carrying amount of each financial asset presented in our balance sheet.

The table below sets out the reconciliation of loss allowance for trade receivables, unbilled revenue, and other financial assets from the beginning to the end of the reporting years:

Particulars	As of March 31,		
	2026	2025	2024
	(₹ in million)		
Opening Balance	**201.25**	**183.56**	**-**
Additions on account of acquisition	-	-	143.97
Movement in expected credit loss allowance on trade receivables calculated at lifetime expected credit losses	52.10	19.20	42.70
Reversal in expected credit loss allowance on trade receivables and advances	(27.49)	-	-
Adjustment against bad debts written off	-	(1.51)	(3.11)
Closing Balance	**225.86**	**201.25**	**183.56**

We estimate expected credit loss based on specific identified basis. In respect of disputed trade receivables as of March 31, 2026 aggregating to ₹523.28 million relating to the pre-acquisition period, we have withheld an amount of ₹410.54 million payable to erstwhile shareholders and for the remaining amount of ₹112.74 million, we will be indemnified by the erstwhile shareholders. In the case of the majority of other trade receivables (including those outstanding for more than one year) as of March 31, 2026, the counterparties being government undertakings, as such, do not have significant credit risk.

Other financial assets measured at amortized cost include security deposits, annuity receivables, receivables from related parties, and other assets. We manage the credit risk associated with these financial assets by continuously monitoring their recoverability, while our internal control systems ensure that exposures remain within defined limits.

Liquidity risk

Liquidity risk is the risk that we may encounter difficulty meeting our present or future obligations associated with financial liabilities that must be settled by delivering cash or another financial asset. We are exposed to liquidity risk arising from borrowings, trade payables, and other financial liabilities. We measure and manage this risk by forecasting cash flows and monitoring our funding requirements on an ongoing basis.

Our approach to managing liquidity is to ensure, as far as possible, that we always have sufficient liquidity to meet our liabilities as they fall due, without incurring unacceptable losses or risking damage to our reputation. We ensure that adequate funds are available to meet expected operational expenses and service financial obligations.

Our objective is to maintain optimal liquidity at all times to meet cash and collateral requirements. We require funds for both short-term operational needs and long-term investment programs, primarily in growth projects. To achieve this, we closely monitor our liquidity position and maintain a robust cash management system. We aim to minimize liquidity risk by generating sufficient cash flows from operations, supplemented by available cash and cash equivalents, liquid investments, and committed funding facilities.

Accordingly, we believe that our revenue, along with proceeds from financing activities, will continue to provide the necessary funds to meet our short-term liquidity requirements. We also prepare cash flow projections and maintain an appropriate level of liquid assets to ensure that liquidity needs are met in a timely manner.

Market risk

Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. Our exposure to interest rate risk relates primarily to our short-term debt obligations with floating interest rates. Our policy is to minimize interest rate risk in long-term financing. We are exposed to changes in market interest rates through variable-rate bank borrowings.

Liabilities

Our policy is to minimize exposure to interest rate cash flow risk on long-term financing. As at the reporting date, we are exposed to changes in market interest rates arising from bank borrowings with variable interest rates.

Financial Assets

Our fixed deposits are carried at amortized cost and are fixed-rate. Accordingly, they are not subject to interest rate risk as defined in Ind AS 107 *"Financial Instruments: Disclosures"*, since neither their carrying amounts nor future cash flows will fluctuate due to changes in market interest rates.

Price risk

Exposure

We require various commodities for the implementation, operation, and major maintenance of its road assets, including bitumen, cement, steel, and other construction materials, which are subject to market price fluctuations. The major maintenance projections used in the valuation and cash flow forecasts are based on technical studies and assumptions regarding future commodity prices, particularly bitumen prices.

We have considered historical price trends, expected long-term stabilisation in crude oil and bitumen markets, domestic refining capacities and current geopolitical factors while making provision for major maintenance. Regarding bitumen prices, the forecasts assume elevated prices in the near term, with a gradual moderation towards historical long-term averages over the forecast period.

We manage exposure to such commodity price risks through periodic review of maintenance plans, strategic procurement practices, contractual negotiations, and optimization of maintenance schedules. Accordingly, we believe that the overall exposure is appropriately reflected and no separate commodity price sensitivity analysis has been presented.

Our exposure to price risk also arises from investments classified at fair value through profit or loss. To manage such risks, the we maintain a diversified investment portfolio comprising fixed-rate bank deposits and mutual fund investments (growth schemes).

Foreign currency risk

Foreign currency risk is the risk that the fair value or future cash flows of an exposure will fluctuate due to changes in foreign exchange rates. We have no significant exposure to foreign exchange rate risk.

Other qualitative factors

Related party transactions

We have in the past entered into, and will likely continue to enter into, transactions with several related parties in the ordinary course of our business. For further details of our related party transactions and procedures for dealing with and approval of related party transactions, see section entitled "*Related Party Transactions*" on page 376.

The impact of all acquisitions of assets from related parties undertaken by us during the Financial Years 2026, 2025 and 2024, is reflected in the Audited Consolidated Financial Statements. Please refer to Annexure D (*Audited Consolidated Financial Statements*).

Dependence on a few suppliers or customers

We do not have any material dependence on a single or a few suppliers or customers.

Significant economic changes

Other than as described above under "— *Significant Factors Affecting our Financial Condition and Results of Operations*" on page 356, to the knowledge of our management, there are no other significant economic changes that materially affect or are likely to affect our income from continuing operations.

Unusual or infrequent events or transactions

Except as disclosed in this Final Offer Document, to our knowledge, there have been no "unusual" or "infrequent" events or transactions that have in the past, or may in the future, affect our business operations or future financial performance.

Known trends or uncertainties

Our business has been affected and we expect will continue to be affected by the trends identified above in "— *Significant Factors Affecting our Financial Condition and Results of Operations*" on page 356 and the uncertainties described in "*Risk Factors*" on page 80. To our knowledge, except as described or anticipated in this Final Offer Document, there are no known factors which we expect will have a material adverse impact on our revenues or income from continuing operations.

Future relationship between cost and income

Other than as described in this Final Offer Document, to the knowledge of our management, there are no known factors that might affect the future relationship between costs and revenues.

New products or business segments

Other than as described in "*Our Business — Investment, Risk and Capital Management Strategies*" on page 276, there are no new products or business segments in which we operate or propose to operate.

Competitive conditions

We operate in a highly competitive industry, and we expect competition in our industry from existing and potential competitors to intensify. For details, please see the discussions of our competition in the sections entitled "*Risk Factors*", "*Our Business*" and "*Industry Overview*" on pages 80, 262 and 188, respectively.

Seasonality

Our business is affected by seasonal variations. For further details, see "*Risk Factors – Our business will be subject to seasonal fluctuations, which may adversely affect our cash flows*" on page 89.

Sufficiency of Working Capital

The Trust will raise funds through appropriate manner to meet its working capital requirements. The Investment Manager confirms that the Trust will have the ability to meet its working capital requirements for at least 12 months from the completion of the Offer.

Critical accounting judgments, estimates and assumptions

The preparation of our consolidated financial statements requires us to make judgements, estimates, and assumptions that affect reported amounts of assets, liabilities, income, and expenses. We believe our estimates are prudent and reasonable; however, actual results may differ, and any such differences are recognised in the period in which they arise. Examples include:

Classification of unitholders' funds as equity

We have presented our Unit Capital as "Equity" in accordance with the InvIT Regulations, rather than as a compound financial instrument. This presentation reflects the substance of the unitholders' interest in the Trust.

Fair valuation and disclosures

The InvIT Master Circular issued under the InvIT Regulations requires us to disclose our net assets at fair value and total returns at fair value. In estimating the fair value of our investments in subsidiaries, which constitute a substantial portion of our net assets, we engage independent, qualified external valuers to perform the valuations.

Our Investment Manager works closely with these valuers to determine the appropriate valuation techniques and inputs to the valuation models. Wherever possible, we use inputs derived from observable market data; however, where such data is not available, significant judgement is applied in determining fair values.

These judgements include considerations such as projected future cash flows, traffic estimates, assessment of variations in concession periods for certain subsidiaries based on Target Traffic (subject to regulatory approvals), discount rates, revenue growth, inflation, taxation, and other relevant economic factors. Changes in assumptions relating to these factors could impact the fair value estimates.

Applicability of service concession arrangement (SCA) accounting to the concessionaire arrangements entered into by the SPVs

We have determined that Appendix C to Ind AS 115 – Revenue from Contracts with Customers, relating to Service Concession Arrangements, is applicable to the SPVs which provides an accounting by the operators of public to private service concession arrangements. Our SPVs have entered into concession agreements with the National Highways Authority of India ("**NHAI**") or the respective State Highway Authorities (collectively referred to as "**the Authority**"), under which the SPVs participate in Design, Build, Finance, Operate and Transfer ("**DBFOT**"), Toll Operate Transfer ("**TOT**"), or Hybrid Annuity Model ("**HAM**") projects for toll road infrastructure. Upon completion of the concession period, the SPVs are required to transfer the constructed infrastructure, i.e., the toll roads, to the Authority.

Accordingly, SPVs other than APEPL, JUHPL, QEPL and HAM SPVs have recognised intangible assets in accordance with our accounting policies.

For APEPL, JUHPL, QEPL and HAM SPVs, the accounting for receivables under the SCA ("financial assets") requires allocation of consideration between construction and operation and maintenance ("**O&M**") activities. Revenue related to O&M activities is recognised based on estimated future operating and maintenance cash flows. Estimating these cash flows requires us to make significant judgements and assumptions, particularly relating to expected future expenses and inflation. We periodically review and update these estimates by comparing actual results to previous forecasts to ensure reliability and consistency.

*Assessment of concession period under Service Concession Arrangements ("**SCA**")*

The concession period is defined under the SCA agreements entered into by our respective SPVs with the grantor (i.e., NHAI or the relevant State Authorities). However, the actual concession period may vary depending on the achievement of conditions relating to Target Traffic or Target Revenue specified in the respective agreements.

At each reporting date, we evaluate the contractual entitlement to any variation in the concession period on a case-by-case basis. This evaluation considers the specific terms of each concession agreement, the facts and circumstances leading to such variations, and the current status of approvals required for those variations.

Estimating the concession period under Appendix C to Ind AS 115 – Revenue from Contracts with Customers requires careful judgement and analysis of each individual arrangement. In making these estimates, we consider several factors, including:

- future traffic projections prepared with the assistance of independent experts,
- potential outcomes of ongoing disputes or arbitration with the grantor relating to claims for variation in the concession period due to Target Traffic considerations,
- relevant legal advice obtained, and
- key assumptions such as discount rates, revenue growth rates, inflation, and other economic factors.

Based on this assessment, we have considered variations in concession periods for certain SPVs for the purpose of estimating:

- the amortization of Intangible Assets – Toll Road Carriageway,
- the fair value of SPV net assets, and
- the recoverable amounts of the related intangible assets.

*Amortization of Rights under Service Concession Arrangements ("**SCA**"), i.e. Intangible Assets- Toll Road Carriageway*

Certain Portfolio Assets (viz. MBEL, JMTPL, WUPTPL, and GAEPL) that hold toll collection rights under SCAs which commenced before April 1, 2014, recognise amortization of intangible assets related to these arrangements based on the proportion of actual revenue earned during the period to the total of actual revenue earned and projected revenue expected to be earned over the remaining concession period. The future revenue projections are based on our assumptions regarding traffic growth, concession period (as discussed above), and inflation factors used to assess toll fee escalations. These projections are supported by periodic studies conducted by independent third-party consultants for each SPV.

For other Portfolio Assets with toll collection rights under SCAs that commenced on or after April 1, 2014, the related intangible assets are amortised over their estimated useful lives, which correspond to the concession period.

We review the estimated useful life of the Rights under Service Concession Arrangements and the underlying revenue projections at the end of each reporting period. Any changes in these estimates are accounted for prospectively.

Provision for periodic maintenance (overlay expenses)

We estimate and provide for our contractual obligations under the Service Concession Arrangements (SCAs) with NHAI to restore the infrastructure to a specified level of serviceability at periodic intervals during the concession period or before it is handed over to NHAI. These estimates are supported by purchase orders or work orders placed or proposed to be placed, based on road survey reports issued by independent field experts and the major maintenance strategy or methodology approved by

the Independent Consultant appointed by NHAI. The estimated costs are determined using various assumptions, including the current condition of the infrastructure (such as roads and pavements), expected timing of expenditures, inflation in material costs, applicable discount rates, and relevant government policies. Accordingly, we exercise significant judgement in evaluating and validating these assumptions. The provision for such expenses is reviewed and reassessed annually.

Provision for improvement works

Certain SPVs estimate and recognise contract liabilities for unavoidable obligations to improve or upgrade infrastructure, as required under the Concession Agreements with NHAI. These estimates are supported by purchase or work orders placed or proposed, based on road survey reports issued by independent field experts. The estimated costs are determined using various assumptions, including the current condition of the infrastructure (such as roads and pavements) and inflation in material costs. We apply significant judgement in evaluating these factors to ensure that the provision reflects the most reliable estimate of the obligations to be undertaken.

Income taxes and deferred tax

We exercise significant judgement in determining income tax provisions, including assessing whether specific tax positions are probable of being sustained upon examination by the tax authorities. Tax assessments often involve interpreting complex tax laws and regulations, which may only be resolved over extended periods.

We also apply significant judgement in determining the amount of deferred tax assets that can be recognised, based on the likely timing and level of future taxable profits, as well as our tax planning strategies.

We review the carrying amount of our deferred tax assets (net) at the end of each reporting period. Deferred tax assets relating to carried forward losses and minimum alternate tax (MAT) credits are recognised to the extent that sufficient taxable temporary differences are available against which such losses and credits can be utilised. Further, deferred tax assets are recognised to the extent of deferred tax liabilities, provided there is reasonable certainty that future taxable income will be available to utilise temporary differences.

We have not recognised deferred tax assets or liabilities on deductible temporary differences and tax losses that reverse or originate during the tax holiday period under Section 80-IA of the Income-tax Act, 1961, as estimated based on our future projections.

Deferred tax assets and liabilities are classified as non-current assets and non-current liabilities, respectively.

Accounting for the acquisition of Subsidiaries

We have applied the optional concentration test under Ind AS 103 – *Business Combinations* and concluded that the acquired set of activities and assets does not constitute a business. This is because substantially all of the fair value of the gross assets acquired is concentrated in Intangible Assets – Rights under Service Concession Arrangements (for SPVs other than APEPL, JUHPL, QEPL and HAM SPVs) and Receivables under Service Concession Arrangements (for APEPL, JUHPL, QEPL and HAM SPVs), which share similar risk characteristics.

Accordingly, we have accounted for this transaction as an asset acquisition in accordance with the applicable requirements of Ind AS 103.

Impairment of financial assets

Our impairment provision for financial assets is based on assumptions regarding the risk of default and expected loss rates. We apply judgement in developing these assumptions and in selecting the inputs used for impairment calculations, taking into account both prevailing market conditions and forward-looking information available at the end of each reporting period.

Impairment of intangible assets - Rights under Service Concession Arrangements

We assess the value in use of our intangible assets by estimating their future cash flows. These estimated cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset for which the estimated cash flows have not been adjusted.

Wherever possible, we use inputs derived from observable market data. However, where such inputs are not readily available, we apply significant judgement in determining fair values. The recoverable amounts for intangible assets are based on the value in use of the underlying SPVs, as determined by an independent valuer using the discounted cash flow method.

This process involves considerable management judgement in respect of several key assumptions, including:

- estimation of future cash flows;
- determination of the concession period, considering the relevant terms of the Service Concession Arrangement (SCA) that allow for modifications of the period;
- traffic forecasts developed with the assistance of independent experts;

- evaluation of outcomes of disputes or arbitration with the grantor relating to SPV claims for variation in concession periods due to Target Traffic, supported by legal advice; and
- assumptions relating to discount rates, revenue growth rates, inflation, and other economic factors.

The cash flow forecasts are derived from projections covering the remaining SCA period of each SPV.

Accounting for compound financial instruments

Certain SPVs within our structure have issued Unsecured, Optionally Convertible Debentures (OCDs) on a private placement basis to various related party subscribers in prior years. During the current year, the OCD holders requested premature redemption of the debentures at face value, along with accrued but unpaid interest.

We allocated the total consideration paid for the redemption of the OCDs between the liability and equity components of the instruments as of the redemption date, in accordance with the requirements of Ind AS 32 – *Financial Instruments: Presentation*.

Useful lives of property, plant, and equipment

We review the useful lives of our property, plant, and equipment at each reporting date to ensure that they reflect the expected utility of the assets to us. Any adjustments resulting from this review are accounted for prospectively to ensure that the depreciation charge appropriately reflects the pattern of economic benefits derived from the assets.

Obligations relating to employee benefits

Our employee benefit obligations depend on several factors (including applicable laws) that are determined on an actuarial basis, using various assumptions. The key assumptions used in determining the net cost or income include the discount rate, inflation rate, and mortality assumptions. Any changes in these assumptions can have a impact on the carrying amount of our employee benefit obligations.

Changes in accounting policies and recent accounting pronouncements

There have been no changes in our accounting policies during the Financial Years 2025, 2024, and 2023.

As of the date of this Final Offer Document, there are no recent accounting pronouncements that have had a material effect on our financial condition or results of operations.

Significant developments occurring after March 31, 2026

- The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. Although WUPTPL contributed to our consolidated revenue from operations during the last three Financial Years and until June 23, 2026, we do not expect such contribution to continue going forward. Our future financial results should therefore be analyzed in this context. For further details, see "*Business — Recent Developments*" and "*Risk Factors — Our failure to extend concession agreements or inability to identify and acquire new road assets that generate comparable or higher revenue from operations, profits and cash flows than the Portfolio Assets may have an adverse effect on our business, financial condition, results of operations, cash flows and our ability to make distributions to Unitholders*" on pages 269 and 82, respectively.

- On June 29, 2026, the Trust has allotted 63,700 senior, secured, rated, listed, redeemable, non-convertible debt securities of ₹0.1 million each, aggregating to ₹6,370 million, at a coupon of 7.3925% per annum for a tenor of 11 years, 9 months and 2 days, on a private placement basis, for the purpose of refinancing existing debt at the Trust level.

Except as disclosed above and elsewhere in this Final Offer Document, to the Investment Manager's knowledge, no circumstances have arisen since the date of the last financial statements included in this Final Offer Document which materially and adversely affect, or is likely to affect, our operations or profitability or the value of our assets or our ability to pay our liabilities within the next twelve months.

RELATED PARTY TRANSACTIONS

In terms of Regulation 2(1)(zv) of the InvIT Regulations, related party shall be as defined as under the Companies Act, 2013 or under the applicable accounting standards and shall also include: (i) Parties to the Trust; and (ii) promoters, directors, and partners of the Parties to the Trust. Further, related parties also include such persons and entities as defined under the applicable accounting standards, namely Ind AS 24 on "*Related Party Disclosures*" ("**Related Parties**"), in relation to related party transactions. For further details in relation to related party transactions, please see the Annexure D entitled "*Audited Consolidated Financial Statements*". The Parties to the Trust may, from time to time, enter into related party transactions in accordance with applicable law.

Procedure for dealing with Related Party Transactions

To ensure proper approval, supervision and reporting of the transactions between the Trust and its Related Parties, the IM Board has adopted the policy on related party transactions ("**RPT Policy**"), pursuant to its resolution dated July 11, 2022, to regulate the transactions between the Trust and its Related Parties. The key terms of the RPT Policy are provided below:

(i) In accordance with the InvIT Regulations, the Investment Manager will ensure that all related party transactions shall be:

(a) on an arm's length basis in accordance with the Income Tax Act, 2025 and Companies Act, 2013;

(b) in accordance with the relevant accounting standards;

(c) in the best interest of the Unitholders;

(d) consistent with the strategy and investment objectives of the Trust; and

(e) compliant with applicable law.

(ii) The Investment Manager will ensure that all related party transactions, other than the transactions set out below, are on an arm's length basis, pursuant to a benchmarking report obtained from a Big 4 Accounting Firms:

(a) acquisition of assets by the Trust;

(b) related party transactions undertaken between the Trust and the Portfolio Assets, including any borrowings availed by the Portfolio Assets from the Trust; and

(c) any fees paid by the Trust or the Portfolio Assets to the Investment Manager or Project Manager pursuant to the Investment Management Agreement, Project Implementation and Management Agreement and any shared services agreement executed by the Trust.

(iii) Review and approval of related party transactions:

(a) In the first instance, the Audit Committee shall be responsible for the approval or any subsequent modification of all transactions of the Trust with Related Parties and shall recommend the same to the IM Board.

(b) Each transaction which is identified as a related party transaction shall be pre-approved by the IM Board prior to entering into such transaction.

(c) The IM Board may grant omnibus approval for related party transactions subject to limits on quantum and nature as determined by the IM Board; however, no omnibus approval may be granted for related party transactions that are not on an arm's length basis as determined above. Each such omnibus approval shall be valid for a period not exceeding one year from the date of such approval, and related party transactions undertaken after the expiry of such period shall require fresh approval of the IM Board. The IM Board shall review, on a quarterly basis, the details of related party transactions entered into by the Trust pursuant to the omnibus approval.

(iv) The Investment Manager will establish an internal control system so as to ensure that all future related party transactions are compliant with the InvIT Regulations and applicable accounting standards. Further, the Investment Manager shall convene meetings of the Unitholders in accordance with Regulation 22 of the InvIT Regulations, and maintain records pertaining to such meetings in the manner prescribed. The Investment Manager shall also ensure compliance with any additional guidelines issued in this regard by SEBI and other relevant regulatory, statutory or governmental authorities from time to time.

(v) In addition to any other requirement that may be prescribed in terms of the InvIT Regulations or other applicable laws, all related party transactions to be entered into in the future will be decided by the IM Board after the examination of the nature of the transaction and its supporting documents or such other data as may be deemed necessary by the IM Board. Subject to point (ii) above, all related party transactions, (i) shall be on arm's length terms, and (ii) shall be notified to the IM Board prior to entering into the transaction, as soon as practicable, with relevant documents showing

how the Investment Manager determined such related party transaction to be on an arm's length basis, and in the case of any related party transaction with an aggregate value over US$ 500,000 or outside the ordinary course of business, at least ten (10) business days prior to entry into such related party transaction, following which the IM Board may require information to satisfy itself of the arm's length nature of the transaction.

(vi) Subject to the provisions of applicable law, any director, being a Related Party to a transaction and/or if he or the person who nominated him as a director has any interest in a transaction, shall not be involved in the decision making in respect of the relevant related party transaction and will recuse himself/herself and abstain from discussion and review / voting of the related party transaction.

(vii) The Investment Manager will ensure that if the total value of all the related party transactions in a financial year pertaining to acquisition or sale of assets, whether directly or through a holding company or SPV, or investments into securities, exceeds 5% of the value of the assets of the Trust or any other applicable threshold prescribed by the InvIT Regulations, approval from the Unitholders shall be obtained prior to entering into any such subsequent transaction with any Related Party, in accordance with the Regulation 22 of the InvIT Regulations.

(viii) The Investment Manager will ensure that if the value of the funds borrowed from Related Parties in a financial year exceeds 5% of the total consolidated borrowings of the Trust, any holding company and the SPVs, or any other applicable threshold prescribed by the InvIT Regulations, approval from the Unitholders shall be obtained prior to entering into any such subsequent transaction with any Related Party, in accordance the InvIT Regulations.

(ix) As a general rule, the Audit Committee must demonstrate to the IM Board that future related party transactions satisfy the criteria set out in (i) above at the time of recommending the same for the approval of the IM Board.

(x) The Investment Manager will maintain a register to record all related party transactions entered into by the Trust and the basis on which they are entered into.

(xi) The Investment Manager will also incorporate into its internal audit plan a review of all related party transactions entered into by the Trust during each financial year, including a review of the implementation of the agreements relating to related party transactions, including any right of first offer or right of first refusal arrangements, to acquire assets from the Sponsor(s).

(xii) The IM Board shall review at least quarterly in each financial year the related party transactions entered into during such quarter to ascertain that the guidelines and procedures established to monitor the related party transactions have been complied with. Provided that any person who is a Related Party interested in the related party transaction, as well as an Associate of such Related Party, who forms a part of the IM Board, shall not review such related party transactions in which he or his Associate is interested.

(xiii) While considering voting on a related party transaction which requires approval of the Unitholders, voting by any person who is a Related Party in such transaction as well as Associate of such person(s) shall not be considered on the specific issue.

Potential Conflict of Interest

(i) Subject to the applicable law and RPT Policy, all resolutions in writing of the IM Board in relation to matters concerning related party transactions of the Trust must be approved by more than 50% of the Directors on the IM Board eligible to vote on such related party transactions.

(ii) Where matters concerning the Trust relate to transactions entered into or to be entered into by the Investment Manager for and on behalf of Trust with a Related Party, the IM Board is required to consider the terms of the transactions to satisfy itself that the transactions are conducted in accordance with the parameters set out in the policy, including by way of obtaining a benchmarking report, if required, as set out above.

(iii) As part of its review of the internal audit reports at least quarterly in each financial year, the IM Board will review the internal audit reports of the implementation of the share purchase agreements to acquire assets from the Sponsor(s), to ensure compliance. The review will include an examination of supporting documents and such other data deemed necessary to the IM Board.

Disclosure and Reporting

(i) The Investment Manager shall submit to the Trustee, quarterly reports on the activities of the Trust, including the status of compliance with the requirements specified under the InvIT Regulations in relation to related party transactions, within such time as may be prescribed in the InvIT Regulations and applicable law.

(ii) Related party transactions shall be disclosed: (a) in the offer document with respect to any such transactions entered into prior to the offer of units and any such proposed transactions subsequent to the offer; and (b) to the Stock Exchanges and the Unitholders periodically, in accordance with the InvIT Regulations and the agreements to be entered into with the Stock Exchanges in relation to the listing of the Units. In respect of any related party transaction,

the Investment Manager shall adequately disclose the details of any fees or commissions received or to be received by such Related Party(ies) to the Stock Exchanges.

(iii) Where any of the Related Parties have an interest in a business which competes or is likely to compete, either directly or indirectly, with the activities of the Trust, the details required to be disclosed as per the InvIT Regulations shall be disclosed in any offer document, as applicable and in accordance with the InvIT Regulations.

(iv) In accordance with the InvIT Regulations, the annual report to be submitted by the Investment Manager to all Unitholders, electronically or by physical copies, and to the Stock Exchanges within three months from the end of the financial year, shall contain, inter alia, details of all related party transactions, including acquisitions or disposal of any projects, directly or through SPVs during the year, the value of which exceeded one percent of value of the assets of the Trust.

Related Party Transactions

Present and On-going Related Party Transactions

Related Party Transactions of the Trust in relation to the setting up of the Trust and this Offer

A number of transactions with certain Related Parties have been entered into in relation to the Trust. The Trustee and the Investment Manager confirm that the following related party transactions have been, or shall be, entered into, on an arm's length basis in accordance with the relevant accounting standards, in the best interest of the Unitholders, consistent with the strategy and investment objectives of the Trust. Please refer to Annexure D "*Audited Consolidated Financial Statements*" for a description of such related party transactions.

(A) Trust Deed

Please see the section entitled "*Parties to the Trust – Key Terms of the Trust Deed*" on page 136 for a description of the terms of the Trust Deed.

(B) Investment Management Agreement

Please see the section entitled "*Parties to the Trust – Key Terms of the Investment Management Agreement*" on page 148 for a description of the terms of the Investment Management Agreement.

(C) Project Implementation and Management Agreement

Please see the section entitled "*Parties to the Trust – Key Terms of the Project Implementation and Management Agreement*" on page 161 for a description of the terms of the Project Implementation and Management Agreement.

(D) Trust Loan Agreements

Please see the section entitled "*Financial Indebtedness and Deferred Payments – Principal terms of the borrowings availed by the Trust including bank guarantees*" on page 337 for a description of the terms of the Trust Loan Agreements.

(E) ROFO Agreement

The Sponsor (the "**Seller**") and the Trust, acting through the Investment Manager have entered into a right of first offer ("**ROFO**") agreement on March 17, 2026, (hereinafter known as "**ROFO Agreement**"), in relation to the grant of the right of first offer on the assets held by the Seller and identified under the ROFO Agreement, in favour of the Trust on the terms and conditions of the ROFO Agreement. Certain key terms of the Agreement are as follows:

1. *Right of First Offer:*

   Subject to the Seller's ability to transfer any or all of the securities held by the Seller ("**ROFO Securities**"), to certain permitted affiliates without triggering the ROFO process, the Trust shall have a ROFO all the ROFO Securities, in Kokhraj Handia Expressway Pvt. Ltd., Delhi Hapur Meerut Expressway Pvt. Ltd., and Malayagiri Highways Pvt. Ltd., as specified in the ROFO Agreement ("**Relevant ROFO SPVs**"). Such right of first offer will be available to the Trust from within 3 years following the date of the execution of the ROFO Agreement ("**Term**"). However, the Seller may sell or transfer all or any part of the ROFO Securities to an affiliate which is not: (a) incorporated in or based out of India; or (b) a SEBI registered infrastructure investment trust, during the Term of the ROFO Agreement without following such obligations set out regarding the ROFO process in the ROFO Agreement.

2. *Offer:*

   During the Term, if the Seller intends to sell the ROFO Securities, it shall deliver a written notice ("**ROFO Notice**") to the Investment Manager (acting for and on behalf of the Trust) setting out an invitation to the

Trust to make an offer for the acquisition of all (and not less than all) of the ROFO Securities within 150 days from the date of the ROFO Notice. Further, the Seller shall ensure that it provides a ROFO Notice to the Trust for acquisition of all securities of each Relevant ROFO SPVs, at least once prior to end of Term. Additionally, the Seller shall provide information that is reasonably requested by the Trust by way of a due diligence questionnaire delivered by the Trust within a period of 7 days. The Trust shall complete the due diligence of the assets of the Relevant ROFO SPVs within 60 days from the date of the ROFO Notice and bear all the costs incurred for its advisors in relation to such due diligence exercise.

Within a period of 150 days from the date of the ROFO Notice, or such other time as may be mutually agreed in writing between the Parties, the Trust shall have the right but not the obligation to send a notice ("**ROFO Response Notice**") to the Seller either: (a) making an irrevocable binding offer (subject to unitholder approval) to purchase all, and not less than all, of the ROFO Securities and specifying: (i) the price per ROFO Security at which the Trust is offering to purchase all the ROFO Securities ("**ROFO Price**"); and (ii) any other terms that impact the price and the overall consideration of the offer by the Trust, including the manner in which the consideration for the acquisition of the ROFO Securities will be discharged; or (b) indicating its refusal to purchase the ROFO Securities.

In the event the Trust is interested in the purchase of all, and not less than all, of the ROFO Securities, the Trust shall make an irrevocable binding offer (subject to unitholder approval) within a period of 150 days from the date of the ROFO Notice, or such other time as may be mutually agreed in writing. Further, the terms of the offer for the ROFO Securities shall be binding on the Trust for a period of 195 days from the date of the ROFO Response Notice ("**ROFO Acceptance Period**"), unless amended by written mutual agreement between the Parties. The Seller and Trust shall discuss the terms of the binding offer for a period of 15 days and within the aforesaid timeline the Seller shall inform the Trust whether it intends to accept the offer of the Trustor scout for other offers from third parties.

3. *Acceptance:*

In the event that the Seller has not been able to procure a binding offer from a third party transferee in the manner set out in paragraph 4 below or has elected not to sell the ROFO Securities to a third party transferee after receipt of the binding offer from such third party transferee, or in any other case, the Seller shall have the right to accept the Trust's offer by delivering a notice, prior to the expiry of the ROFO Acceptance Period, to the Trust, confirming acceptance of the Trust's offer to purchase the ROFO Securities at the ROFO Price (the "**ROFO Acceptance Notice**"). The Parties agree and acknowledge that in the event that the Seller does not issue the ROFO Acceptance Notice prior to the expiry of the ROFO Acceptance Period, then the terms of the offer made by the Trust for the ROFO Securities in the ROFO Response Notice shall be deemed to have been rejected. Upon receipt of the ROFO Acceptance Notice by the Trust, the sale of the ROFO Securities shall be completed within a period as may be mutually decided in writing by the Trust and the Seller, subject to receipt of all consents, unitholder approvals for the Trust (if applicable) and corporate approvals of the Seller.

4. *Non-acceptance:*

If the Seller decides to scout for offers from third parties, the Seller shall be entitled to market and sell the ROFO Securities to any third party transferee for a period of 180 days from the date of the intimation it provides to the Trust and it will need to procure a binding offer from such third-party for the transfer of all of the ROFO Securities to such third party transferee at a price which is higher than the ROFO Price (if applicable) by at least 5% within the aforesaid period of 180 days. In the event that the Seller has not been able to procure binding offer in the manner mentioned, or has elected not to sell the ROFO Securities to a third party transferee in pursuance of the binding offer procured from third party transferee, or in any other case, the Seller shall have the right to accept the offer of the Trust.

5. *Representation and Warranties:*

(i) Each party is duly organized and validly existing under applicable law, and has the right, power and authority to execute, deliver and perform the ROFO Agreement.

(ii) The ROFO Agreement has been duly executed and delivered by such party and, assuming the due authorization, execution and delivery by all other parties hereto, constitutes valid and binding obligations of such party enforceable against such party in accordance with its terms, subject to any insolvency proceedings.

(iii) The execution and delivery of the ROFO Agreement by such party and the performance by such party of its obligations under the ROFO Agreement has been duly and validly authorized by all necessary corporate action and does not require any further authorization or consent of any third party;

(iv) The execution, delivery and performance by such party of the ROFO Agreement, and the compliance by it with the provisions of the ROFO Agreement will not result in:

a. a breach of, or constitute a default under, any, agreement or instrument to which such party is a party or by which such party is bound; or

b. result in a violation of its constitutional documents; or

c. contravene any Applicable Law to which it is subject, or any order, writ, injunction or decree of any court or Governmental Authority to which it is subject.

(v) No liquidation, dissolution, winding up, commencement of bankruptcy, insolvency, liquidation or similar proceedings, whether voluntary or involuntary, with respect to it is pending or has been pending, or to the knowledge of such party, threatened.

6. *Termination:*

The ROFO Agreement shall be effective on and from the date of the execution of the ROFO Agreement and continue to be valid and in full force and effect for a period of 3 years from the date of the execution of the ROFO Agreement, or such other period as may be mutually agreed, and unless terminated in accordance with the provisions of the ROFO Agreement.

(F) Shared Services Agreements

Please see the section entitled "*Parties to the Trust - Shared Services Agreements*" on page 164 for a description of the terms of the Shared Services Agreements.

(G) Reimbursement Agreements

(a) Cube Highways and Infrastructure V Pte. Ltd. ("**Reimbursing Party**") has entered into a reimbursement agreement dated September 9, 2024 with Hazaribagh Tollway Private Limited, Jhansi–Vigakhet Tollway Private Limited, Kanyakumari-Etturavattam Tollway Private Limited, Lucknow-Raebareli Tollway Private Limited, Madurai-Kanyakumari Tollway Private Limited, Nanguneri-Kanyakumari Tollway Private Limited, Salaipudhur-Madurai Tollway Private Limited, Kotwa-Muzaffarpur Tollway Private Limited, Jhansi-Lalitpur Tollway Private Limited, DA Toll Road Private Limited, Walayar Vadakkencherry Expressways Private Limited, Andhra Pradesh Expressway Private Limited, Farakka Raiganj Highways Private Limited, Jaipur-Mahua Tollway Private Limited, Mahua Bharatpur Expressways Limited, Western UP Tollway Private Limited, Nelamangala Devihalli Expressway Private Limited and Ghaziabad Aligarh Expressway Private Limited ("**Incurring Parties**") in relation to reimbursement of certain costs (the "**Reimbursement Agreement**"), effective from March 21, 2023 ("**Effective Date**"). The parties to the Reimbursement Agreement have agreed that, amongst other things:

(i) The Reimbursing Party shall reimburse specific expenses incurred by the Incurring Parties, DA Toll Road Private Limited and Walayar Vadakkencherry Expressways Private Limited, on behalf of the Reimbursing Party from the Effective Date to the date of the Reimbursement Agreement, as set out in the Reimbursement Agreement, within 15 days of the receipt of the reimbursement request ("**Incurred Expense**").

(ii) If an Incurring Party incurs additional expenses on behalf of the Reimbursing Party, the Incurring Party shall be required to send a reimbursement request to the Reimbursing Party along with all supporting and necessary documentation and the Reimbursing Parties may, at their sole discretion, reimburse any Incurring Party within 15 days of receipt of the reimbursement request.

(iii) The Reimbursement Agreement shall remain valid and in full force and effect until mutually terminated in writing or terminated by any of the parties involved by giving 15 days prior written notice to the other party.

(b) The Investment Manager has entered into a reimbursement agreement dated March 28, 2025 with the Erstwhile Project Manager in relation to reimbursement of certain costs (the "**Reimbursement Agreement**") in relation to the sharing of the units located at 12th Floor, Tower B, Building 9, DLF Cyber City, DLF Phase III, Gurugram – 122002, Haryana, India used as an office space allocated to the Investment Manager ("**Managed Office**") along with the managed services rendered by Skootr Global Private Limited. The parties to the Reimbursement Agreement have agreed that, amongst other things:

(i) The Erstwhile Project Manager shall reimburse specific costs and expenses incurred by the Investment Manager on a cost-to-cost based recovery of expense as set out in the Reimbursement Agreement, within 30 days of the receipt of the invoice from the Investment Manager.

(ii) The Reimbursement Agreement shall remain valid and in full force and effect until mutually terminated in writing or terminated by any of the parties involved by giving 15 days prior written notice to the other party.

(H) Expert Services Agreement

Cube Highways Technologies Private Limited (the "**Service Provider**"), Cube Highways Trust (the "**Trust**", acting through its investment manager, Cube Highways Fund Advisors Private Limited, the "**Investment Manager**"), Cube Highways Asset & Project Advisory Private Limited (the "**Project Manager**") and certain Portfolio Assets (the "**Project SPVs**") have entered into an Expert Services Agreement dated July 3, 2026 (hereinafter known as "**Agreement**"), in relation to expert, advisory and support services to be provided by the Service Provider to the Project SPVs. The Investment Manager and the Project Manager appointed the Service Provider, to provide Services in relation to the Project SPVs, in accordance with the terms and conditions of the Agreement. Certain key terms of the Agreement are as follows:

1. Provision of Services:

The Service Provider shall, either directly or through the appointment and supervision of appropriate agents, which may be persons directly employed by the Project SPVs ("**Agents**"), and in compliance with the respective concession agreement and applicable law, provide such expert, advisory and support services in relation to the Project SPVs, as may be requested by the Investment Manager and/or the Project Manager from time to time, including, in relation to the project management functions to be performed by the Project Manager under the PIMA (collectively the "**Services**").

The Services include, without limitation: supervision of the engineering, procurement and construction works in relation to major maintenance, balance works and positive change of scope works; providing expert advisory and due diligence services in relation to traffic, safety, technical and other related matters in connection with assets/SPVs proposed to be acquired by the InvIT; conducting periodic reviews and assessment of structures and preparation of detailed estimates for repair and rehabilitation works; undertaking monitoring, operation and maintenance of the toll management system (TMS); undertaking planning, implementation, operation and maintenance of the Advance Traffic Management System (ATMS); and providing ongoing expert services in relation to traffic, safety, technical, environmental, health and other related operational matters.

2. Covenants:

The Service Provider shall develop, train and maintain a dedicated service team for providing the Services either directly or through the appointment and supervision of Agents ("**Team**"), and shall employ an adequate number of employees with adequate and appropriate experience to provide the Services. The Service Provider shall be responsible to the Investment Manager for the performance of the Team and all team members shall not be considered to be the employees of the Investment Manager/Project SPVs. The Service Provider shall at all times be solely responsible for the payment of compensation of the Team. The Service Provider shall at all times perform the Services strictly in accordance with the Agreement and shall: act in good faith; provide continuous access to the Investment Manager and the Project SPV(s) to all data and information pertaining to the Services; exercise the level of skill, care, attention and diligence as may reasonably be expected of an experienced, professional, prudent and competent third party; not cause to be done any act in violation of applicable law or the Agreement; act within the parameters laid down in the Agreement; and ensure that all Services are performed in a manner that does not infringe any applicable law.

3. Fee:

In consideration of the Services to be rendered by the Service Provider, either directly or through the appointment and supervision of Agents, in accordance with the terms of the Agreement and applicable law, each Project SPV agrees to pay fees as set out in Agreement from its funds, on an arm's length basis, to the Service Provider. Each of the Project SPVs shall pay a fee (calculated annually) equal to 0.35% of the standalone revenue of the Project SPV received from operations ("**Revenue Fee**"), and in addition, each Project SPV agrees to pay a discretionary fee of up to 0.2% of the standalone revenue of the Project SPV which shall be linked to the performance of the Project SPVs as determined by the board of directors of the Investment Manager for the relevant financial year.

The Service Provider shall raise invoices on a monthly basis for the Services provided to each Project SPV during each month in Indian Rupees, and all invoices will be at an arm's length price, based on a benchmarking study, and shall be payable within thirty (30) days upon receipt thereof. The Service Provider may charge a delay interest at the rate of 12% per annum in case of failure of the Project SPV to make the payment within the time mentioned.

4. *Representations and Warranties:*

Each Party represents and warrants to the other Party that:

(i) it has the full power and authority to enter into, execute and deliver the Agreement and to perform the transactions contemplated thereby and is duly incorporated or organised and validly existing under the laws of the jurisdiction of its incorporation or organisation;

(ii) the execution and delivery by it of the Agreement and the performance by it of the obligations contained therein has been duly authorised by all necessary corporate or other action;

(iii) the Agreement constitutes legal, valid and binding obligations, enforceable against it in accordance with its terms, except to the extent such enforceability may be limited by applicable bankruptcy, insolvency, reorganisation, moratorium or other laws of general application affecting the enforcement of creditors' rights generally and general principles of equity;

(iv) the execution, delivery and performance of the Agreement by such Party and the consummation of the transactions contemplated thereby will not result in a breach of, or constitute a default under, any agreement or instrument to which it is a party or by which it is bound, or violation of its constitutional documents or contravene any provision of any applicable law, or any order, writ, injunction or decree of any court or Governmental Authority to which such Party may be subject; and no liquidation, dissolution, winding up, commencement of bankruptcy, insolvency, liquidation or similar proceedings, whether voluntary or involuntary, with respect to it is pending or has been pending, or to the knowledge of such Party, threatened.

5. *Termination:*

The Agreement shall remain valid and effective, unless terminated by the Parties in accordance with the provisions thereof or extended by mutual consent expressed in writing by the Parties, until such time as the last of the concession agreements is in force ("**Validity Period**"), and the Agreement shall be terminated in respect of a particular Project SPV, when such Project SPV ceases to be a Project SPV of the Trust.

Prior to the expiry of its Validity Period, the Agreement may be terminated:

(i) by the Investment Manager, for any one or more Project SPV(s), by delivery of a written notice to the Service Provider at any time, upon breach of any of the terms, covenants, conditions or provisions of the Agreement by the Service Provider and a failure of the Service Provider to remedy the said breach within a period of 60 days or such other period as may be mutually agreed to cure such breach; or

(ii) by any Party by delivery of a written notice to the other Party upon the bankruptcy of such other Party or if winding up or liquidation proceedings whether voluntary or involuntary are commenced or admitted against such other Party (and such proceedings persist for a period of more than three months).

In case of early termination of the Agreement prior to the expiry of the Validity Period for any one or more Project SPV(s), the Service Provider shall be entitled to and the relevant Project SPV(s) shall be liable to pay to the Service Provider the Fee accrued up to the effective date of termination within a period of 7 business days from the date of receipt of demand failing which the Fee shall attract interest at the rate of 12%.

6. *Damages for Failure to Perform:*

In the event of failure or default by the Service Provider ("**Defaulting Party**"), the other Party ("**Aggrieved Party**") will be entitled to recover damages from the Defaulting Party and such damages shall be based on actual loss or actual damage incurred by the Aggrieved Party. The maximum liability of the Service Provider in each financial year shall be limited to the Fee paid to the Service Provider for the immediately preceding one financial year, in accordance with the terms of the Agreement. In the event that whole or part of the Services are performed through Agents, the Service Provider will be responsible for ensuring their compliance with the terms of the Agreement and any failure or default by the Agents will be considered a failure or default by the Service Provider.

7. *Governing Law and Dispute Resolution:*

The Agreement shall be governed by and interpreted in accordance with the laws of India and the Parties agree to submit to the exclusive jurisdiction of the courts in New Delhi. Disputes or differences between Parties arising out of or in connection with the Agreement shall, if not amicably settled within 30 days of reference to either Party, be resolved through arbitration in accordance with the Indian Arbitration and Conciliation Act, 1996, whereby collectively, the Project Manager, Investment Manager and the Project

SPV(s) shall nominate one arbitrator and the Service Provider shall nominate one arbitrator and the two arbitrators so appointed shall appoint the third or presiding arbitrator, with each Party bearing its costs and expenses of preparing and presenting its case and Parties sharing the costs of the conduct of arbitration including arbitrator fee equally, unless otherwise provided by the award. The venue of the arbitration shall be New Delhi.

Acquisition of the Portfolio Assets by the Trust

Related Party SPAs

The relevant members of the Cube Group (i.e. Cube Highways and Infrastructure Pte. Ltd., Cube Highways and Infrastructure III Pte. Ltd., CH-II, CH-ID and Cube Mobility Investments Pte Ltd.) (each referred to as a "**Seller**"), the Trustee (acting on behalf of the Trust), the Investment Manager and certain Portfolio Assets have entered into Related Party SPAs pursuant to which the Trust has purchased and the relevant Seller has sold the entire issued*, subscribed and paid-up share capital of the relevant Portfolio Asset*, at the time of the Trust's private listing and subsequent thereto. Pursuant to certain of these Related Party SPAs, the Trust (acting through the Investment Manager) has also executed assignment agreements with the relevant Sellers in relation to the underlying share purchase agreements through which the relevant Portfolio Assets were acquired by the Cube Group.

** In case of MBEL, Madhucon Infra Limited holds 0.03% of the shares and a letter agreement in accordance with the InvIT Regulations has been entered into.*

Acquisition of the Committed Assets by the Trust

Share Purchase Agreements

The Sponsor, in respect of BFHL, DTPL and WMTPL, and Cube Highways and Infrastructure II Pte. Ltd. ("**CH-II**"), in respect of CNTL (the Sponsor and CH-II, individually, the "**Seller**" under their respective Share Purchase Agreements), together with the Trust acting through its Investment Manager (the "**Purchaser**"), the Trustee and each of WMTPL, BFHL, DTPL and CNTL (each, a "**Company**" and collectively, the "**Companies**"), have entered into four Share Purchase Agreements for the purchase by the Trust, and the sale by the applicable Seller and its nominees, as applicable, of 100% of the issued, paid-up and subscribed share capital of BFHL, CNTL and DTPL, and at least 95% of the issued, paid-up and subscribed share capital of WMTPL, on a fully diluted basis, in a manner compliant with the InvIT Regulations.

The parties have agreed to a base number of Units which shall be subject to: (i) an upward adjustment for each month of delay from the agreed cut-off date, and (ii) a downward adjustment in the event of any specified increase in the per Unit price above the agreed threshold price, in each case in accordance with the adjustment mechanics set out therein, provided that the aggregate number of Consideration Units issuable shall in no event exceed the maximum number of Units approved under the unitholders' resolution dated January 30, 2026. Closing (*as defined in the respective Share Purchase Agreement*) shall occur after completion of the Offer, on a date mutually agreed between the Parties, in compliance with the timelines prescribed in Chapter 7 of the InvIT Master Circular. The Closing is subject to receipt of approval of the Unitholders in accordance with Chapter 7 of the InvIT Master Circular, and the conditions precedent as identified in the Share Purchase Agreements.

The Share Purchase Agreements contain certain customary representations, warranties and undertaking. Key terms of the proposed Share Purchase Agreements, in respect of each Committed Assets, are as follows:

(i) The Purchaser shall purchase from the Seller and its nominees, and the Seller and its nominees shall sell to the Purchaser, on the Closing Date, the Sale Shares (*as defined in the respective Share Purchase Agreement*), in consideration of issuance of the Units of the Purchaser pursuant to a preferential issue under Chapter 7 of the InvIT Master Circular ("**Consideration Units**") and as per the applicable law, free and clear of any encumbrances and together with all rights attaching thereto.

(ii) Further, the Purchaser shall also, within five working days from the Closing Date infuse a loan, by way of a shareholder loan, into the Company ("**Trust Loan**") and shall cause the Company to repay the outstanding debt of the Company incurred by the Seller way of subscription to securities including non-convertible debentures, optionally convertible debentures or any other securities in the nature of debt issued by the Company to the relevant Seller and the interest accruing thereon and any other indebtedness of the Company towards the Seller ("**Seller Debt**"), in accordance with the provisions of the Share Purchase Agreement.

(iii) On the Closing Date with respect to the respective Share Purchase Agreements for acquisition of WMTPL, BFHL and DTPL, the Sponsor, the relevant Company and the Purchaser shall execute an assignment agreement in an agreed form ("**Assignment Agreement**"), pursuant to which rights (including indemnification rights) and obligations of the Sponsor (including future obligations) under or arising from the Erstwhile SPAs pursuant to which the Sponsor acquired these Companies, shall be assigned to the Purchaser.

The Share Purchase Agreements shall supersede and extinguish all prior agreements, arrangements, understandings, negotiations and communications, whether written or oral, between or amongst the Parties in relation to the acquisition of the Committed Assets. The Share Purchase Agreements shall constitute the entire agreement between the Parties with respect to the subject matter hereof.

Related Party Transactions of the Portfolio Assets in relation to their registered office

The Erstwhile Project Manager had entered into a license agreement dated July 25, 2025, for a term of three years in relation to its registered office.

The Erstwhile Project Manager has sub licensed the said premises to the Investment Manager and NKTPL, SMTPL, SPPL, THPL, APEPL, BWHPL, DATRPL, FRHPL, GAEPL, HTPL, JLTPL, JMTPL, JVTPL, KETPL, KMTPL, LRTPL, MHPL, MKTPL, MSHPL, NAMEPL, NDEPL, QEPL, WUPTPL, WVEPL, SIPL, MBEL, and JUHPL, for using the said premises as their registered office.

For details of risks involved with respect to such related party transactions, please see the section entitled "*Risk Factors –The Trust and the Portfolio Assets have entered into certain related party transactions and expect to continue to enter into related party transactions and there can be no assurance that such transactions will not have an adverse effect on our results of operations and financial condition*" on page 109.

Potential Conflicts of Interest

The Investment Manager has established procedures to address conflicts of interest. For further details on management of potential conflicts of interest, please see the section entitled "*Related Party Transactions – Procedure for dealing with Related Party Transactions*" on page 376.

REGULATIONS AND POLICIES

The following description is a summary of certain sector specific laws currently in force in India, which are applicable to the business of the Portfolio Assets, and the Trust, in the road infrastructure sector. The information summarized in this section has been obtained from statutes, regulations, publications, and sector-specific policies available in the public domain. The description set out below is not exhaustive and is intended only to provide general information to Bidders; it is neither designed as, nor intended to substitute for, professional legal advice or regulatory approvals. The interpretations provided hereinbelow, are subject to modification or clarification by subsequent legislative, judicial or administrative decisions. For information regarding regulatory approvals obtained by the Portfolio Assets and the Trust, please see the section entitled "Regulatory Approvals" on page 397.

Regulatory Framework on Road Infrastructure

The regulatory framework in India in the highways sector, implemented on a public-private partnership ("**PPP**") basis, mainly derives its source from the primary legislations of National Highways Authority of India Act, 1988 (the "**NHAI Act**") and the National Highways Act, 1956 (the "**NH Act**") enacted by the Indian parliament, each as amended or supplemented. The Ministry of Road Transport and Highways is discussing with various state governments the implementation of an artificial intelligence powered traffic management system that would include AI for traffic monitoring and GIS mapping for asset management, aiming to leverage AI to optimise traffic flow and enhance road safety across the country.

The National Highways Act, 1956

The policy of the MoRTH, in implementing the NH Act, is to vest the MoRTH with the power to declare a national highway and for acquisition of land for this purpose. The GoI, by notification, can declare the intention to acquire any land for a 'public purpose' as envisaged by the law, and such land can be used for building, maintenance, management and operation of the declared national highways throughout the country. The NH Act prescribes the procedure for such land acquisition. The procedure includes, *inter alia*, a declaration of intention to acquire, entering and surveying such land, hearing objections, a declaration of acquisition, and the power to take possession. The NH Act also provides for payment of compensation to owners and any other person whose right of enjoyment or ownership in the land has been affected. The NH Act vests MoRTH with the power to appoint a competent authority for the effective implementation of the NH Act and its policies. The said appointed authority retains the right and power to (a) survey, make any inspection, valuation or enquiry; (b) take levels; (c) dig or bore into sub-soil; (d) set out boundaries and intended lines of work; (e) mark such levels, boundaries and lines placing marks and cutting trenches; or (f) do such other acts or things as may be laid down by rules made in this behalf by that government.

All the notified national highways shall vest in the name of the Union and for the purposes, shall include all lands appurtenant thereto and all the bridges, culverts, tunnels and other enlisted constructions under the said NH Act. The Central Government shall assume the responsibility of maintaining and construction of national highways in proper condition in accordance to the law. The Central Government also retains the right to levy a fee over the services and benefits rendered in relation to the use of such national highways.

The GoI is responsible for the development and maintenance of national highways. However, it may direct that such functions may also be exercised by the government of a state in which the highway is located or by any officer or authority subordinate to the GoI or to the state government. Further, the GoI has the power to enter into an agreement with any person for the development and maintenance of a part or whole of the highway. Such a person would have the right to collect and retain fees at such rates as may be notified by the GoI and will also have the powers to regulate and control the traffic, for proper management of the highway, in accordance with the provisions of the Motor Vehicles Act, 1988, as amended. The GoI also has the power to make rules for carrying out the purposes of the NH Act.

The National Highways (Amendment) Act, 2017, entails the competent authority to issue reports to the Central Government in respect of any land (either acquired or proposed to be acquired) which is, either under incorrect revenue record or which is not required due to change in geometry or alignment of the construction, to issue order for the de notification of such land from the acquisition for development and maintenance of the national highway. In pursuance of the foregoing amendment to the statute, the National Highways Rules, 1957, have been amended to ensure the exercise of the power under the NH Act. These rules provide for periodic regulatory compliance and reporting standards to be followed by the competent authority in reporting to the Central Government.

The National Highways Authority of India Act, 1988

The NHAI Act was enacted in pursuance of the powers of the Central Government for appointing a competent authority under the NH Act and provides for the constitution of an authority for the development, maintenance and management of national highways and for matters connected therewith or incidental thereto. In accordance with the NHAI Act, the GoI carries out development and maintenance of the national highways through NHAI. Subject to the provisions of the NHAI Act, the NHAI has the power to enter into and perform any contract necessary for the discharge of its functions. The NHAI has the power to acquire any land to discharge its functions, and such acquired land will be deemed to be land needed for a 'public purpose'. The NHAI Act prescribes a limit in relation to the value of the contracts that may be entered into by NHAI. However, the NHAI may enter into contracts exceeding the specified value, on obtaining prior approval of the GoI. The NHAI Act provides that the contracts for acquisition, sale, or lease of immovable property on behalf of the NHAI cannot exceed a term of 30 years unless previously approved by the GoI.

NHAI's objective is to ensure that all contract awards and procurements conform to best industry practices with regard to transparency of processes and the adoption of bid criteria to ensure healthy competition in contract awards. In accordance with the NHAI Act, the NHAI shall consist of a full-time chairman, not more than 6 full time members and not more than 6 part time members who being appointed by the Central Government. Additionally, various project implementation units headed by a project director have been set at various sites to oversee the timely completion of the projects.

In view of the challenging task of construction, development, and management of national highways being undertaken by NHAI, the Committee on public undertakings selected the subject "National Highways Authority of India (NHAI)" for comprehensive examination and report. The National Highways Authority of India (Amendment) Act, 2013, received the assent of the President of India on September 10, 2013, and aimed to increase the institutional capacity of NHAI to help it execute the powers delegated to it. The National Highways Development Project ("**NHDP**") was launched in 1998 with the objective of developing roads to international standards that facilitate the smooth flow of traffic. The NHDP envisages the creation of roads with enhanced safety features, better riding surface, grade separator and other salient features.

As per the NHAI works manual, 2006, NHAI's mandate is the time and cost bound implementation of the NHDP. The sources of finance available to the NHAI include fund assistance from external funding agencies like the World Bank, International Bank of Reconstruction and Development and the Asian Development Bank. NHAI's role encompasses involving the private sector in the provision, maintenance, and operation of the national highways.

Financing of the NHDP

The GoI, under the Central Road and Infrastructure Fund Act, 2000 created a fund which is required to be utilized for the development and maintenance of national highways (the "**Central Road Fund**"). Section 18 of the NHAI Act also provides for the creation of a separate NHAI Fund. Any capital grant or aid received, loan taken, borrowing made, or any other sum received by the NHAI is credited to the NHAI Fund. Certain sources for financing of the NHDP are through dedicated accruals under the Central Road Fund by levy of cess on fuel as well as involving the private sector and encouraging public-private partnerships. The NHDP is also financed through long-term external loans from the International Bank of Reconstruction and Development, the Asian Development Bank and the Japan Bank for International Cooperation as well as through tolling of roads for different projects undertaken by the NHAI.

Private Participation in NHDP

In an effort to attract private sector participation in the NHDP, the NHAI has issued model concession agreements ("**MCAs**") which have been formulated by Planning Commission of India or NITI Aayog and other departments of Central Government where a private entity, being the concessionaire, is, through an international competitive bidding ("**ICB**") process, awarded a concession (in form of a bundle of licenses) to build, own, operate and collect toll on a road for a specified period of time. The concession to develop highway projects is given by the NHAI or other governmental authorities under various models of PPP like:

(i) Build, Operate, Transfer (BOT)/ Design, Build, Finance, Operate and Transfer (DBFOT) – In this model, the entire designing, financing and construction is undertaken by the concessionaire at its own cost. The concessionaire is entitled to collect toll or receive annuity payments from the NHAI, as the case may be, during the concession period after the construction of the highway project. The bid for the project may either be selected basis the lowest grant wanted by the private developer from the NHAI or the highest premium the private developer is willing to pay to NHAI, in the form of additional concession fee. The concessionaire at the end of the concession period transfers the highway project to the NHAI (free of charge and clear of all encumbrances). The concessionaire's investment in the highway project is recovered directly through user fees collected by way of tolls or annuity. Under the BOT model, the projects which are generally not viable based on toll revenue alone, the NHAI or the relevant governmental authority provides concessionaire with a capital grant upto certain percentage of the project cost to increase the viability of projects and the quantum of such grant is determined on a case to case basis. For certain projects with high traffic volumes, concessionaire also offers a negative grant (i.e., premium) to the NHAI.

(ii) Hybrid Annuity Model (HAM) – In this model, the NHAI or the relevant governmental authority invests 40% (forty percent) of the construction cost of the project in five equal instalments and the balance amount is infused by the concessionaire. The private developer recovers his investment in the form of annuity payments received by it over the concession life. Additionally, there is no traffic risk for the private developer under HAM model because the toll is collected by the NHAI or relevant governmental authorities unlike the BOT model where the private developer collects it.

(iii) Toll, Operate and Transfer (TOT) – In this model, the road projects which are in operational phase are awarded by the NHAI or relevant governmental authorities to the concessionaire. The NHAI passes on the toll collection rights and operation and maintenance obligations to the concessionaire against payment of upfront concession fees quoted by the concessionaire as a part of the bidding process.

The bidding for the projects takes place in two stages as per the process provided below:

1. in the pre-qualification (RFQ) stage, the NHAI selects certain applicants on the basis of technical and financial expertise, prior experience in implementing similar projects and previous track record; and

2. in the bidding (RFP) stage, the NHAI invites financial bids from the pre-qualified applicants at the RFQ-stage on the basis of which the concession is awarded to the successful bidder by the NHAI for implementation of the project.

The GoI, under the Central Road and Infrastructure Fund Act, 2000 created a fund which is required to be utilized for the development and maintenance of national highways (the "**Central Road Fund**"). Section 18 of the NHAI Act also provides for the creation of a separate NHAI Fund. Any capital grant or aid received, loan taken, borrowing made, or any other sum received by the NHAI is credited to the NHAI Fund. Certain sources for financing of the NHDP are through dedicated accruals under the Central Road Fund by levy of cess on fuel as well as involving the private sector and encouraging public private partnerships. The sources of finance available to the NHAI also include fund assistance from external funding agencies like the International Bank of Reconstruction and Development and the Asian Development Bank. NHAI's role encompasses involving the private sector in provision, maintenance, and operation of the national highways.

In accordance with the MCAs for projects above ₹1,000 million, the concessionaire meets the upfront cost and expenditure on annual maintenance and recovers the entire cost along with the interest from toll collections during the concession period. As per the 'Guidelines for Investment in Road Sector' issued by MoRTH in 2009, in order to increase the viability of projects, a capital grant of up to 40% of the project cost is provided by the NHAI or the GoI. The quantum of grant is determined on a case to case basis and typically constitutes the bid parameter in Build, Operate, Transfer ("**BOT**") projects which are generally not viable based on toll revenue alone. For certain projects with high traffic volumes, concessionaire also offers a negative grant (i.e., premium) to the NHAI. The concessionaire at the end of the concession period transfers the road back to the Government (free of charge and clear of all encumbrances). The concessionaire's investment in the road is recovered directly through user fees collected by way of tolls. As per the MCAs for annuity-based projects, the concessionaire is required to meet the entire upfront cost (no grant is paid by the NHAI or the GoI) and the expenditure on annual maintenance for annuity based projects. The concessionaire recovers the entire investment through pre- determined annuity payments to be made by the NHAI or the GoI. Furthermore, MoRTH approved certain amendments to the model concession agreement, inter-alia, in relation to deferment of premium payments.

Exit Policy

The CCEA in May 2015 approved a comprehensive exit policy framework with the objective to mobilize funds in the market. In pursuance thereto, NHAI, vide Circular No. NHAI/1103/CGM(FA)/4/2015 dated June 9, 2015 permitted divestment of 100% equity by concessionaires/developers after two years of completion of construction to facilitate unlocking of funds for new infrastructure projects. The equity divested is required to be invested by promoters in new projects. This comprehensive exit policy framework is expected to harmonize certain conditions across all concessions signed prior to 2009 with the policy framework for post 2009 contracts which permit divestment of equity up to 100%, two years after completion of construction. In line with the spirit of quoted circular, the NHAI issued another circular dated September 9, 2015 followed by the circular dated November 19, 2015, on the same subject, allowing the promoter to use the proceeds from the sale of divested equity of the concessionaire in one or more of the following:

(i) to reinvest in incomplete NHAI projects;

(ii) to reinvest any other highway projects;

(iii) any other power sector projects; or

(iv) to retire their debt to financial institutions in any other infrastructure projects.

Relaxation in the 'change in ownership' clause in Hybrid Annuity Model (HAM) projects

The MoRTH, *vide* circular dated November 10, 2020 and November 27, 2020, read along with the NHAI circular dated December 31, 2020, amended the MCAs in respect of project implemented under the HAM model, and permitted the selected bidder/consortium members, for the new as well as subsisting national highways project under the HAM-model, to transfer their equity six months after COD is achieved for the respective project.

Rationalized Compensation

The CCEA in November 2015 approved a policy for rationalized compensation to concessionaires for languishing national highway projects in BOT mode for delays that are not attributable to the concessionaires. Under the policy, the NHAI is authorized to allow an extension of the concession period for BOT (Toll) projects while keeping the original operation period unchanged. The NHAI has also been authorised to pay compensatory annuities to the concessionaire corresponding to the actual period of delay that is not attributable to the concessionaire upon successful completion of the project. In these cases, the construction period will be enhanced but the tenure of the concession will remain unchanged.

One Time Fund Infusion Scheme

The CCEA in October 2015 gave its approval to the NHAI for a one-time infusion of funds with the purpose of reviving and physically completing stalled projects in the advanced stages of completion. As per the policy, the amount of funds required in each case shall be approved by NHAI on a case to case basis.

Bidder Information

MoRTH has developed the Bidder Information Management System ("**BIMS**") to streamline the process of pre-qualification of bidders for EPC mode of contracts for all national highway works, with enhanced transparency and objectivity. BIMS works as a data base of bidder information that covers basic details, civil works experience, cash accruals and network, and annual turnover so that bidders' pre-qualification can be assessed based on evaluation parameters like threshold capacity and bid capacity from already stored data and the technical evaluation can be carried out in a faster manner.

Land Acquisition

While land is acquired for national highway projects under the NH Act, the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (the "**Land Acquisition Act**") must also be complied with. MoRTH has issued comprehensive guidelines on land acquisition for national highways taking into account the applicability of the Land Acquisition Act.

Arbitral Awards

Cabinet committee of economic affairs ("**CCEA**") on August 31, 2016 approved various measures to revive the construction sector. An office memorandum dated September 5, 2016 was issued by the National Institute for Transforming India with certain proposals. On November 20, 2019, the CCEA approved certain proposals in relation to the arbitrations by or against government entities, for the effective implementation of the CCEA's decision on August 31, 2016 on its initiatives to revive the construction sector. Initially, the CCEA had approved the proposal that government agencies will be required to pay 75% of the arbitral award to the concessionaire against a bank guarantee, in cases where the award already announced is challenged. However, pursuant to a press release dated November 20, 2019, the CCEA approved, *inter alia*, that where a government entity has challenged an arbitral award, resultant of which the amount of the arbitral award has not been paid, 75% of such award will be paid by the government entity to the contractor or the concessionaire against a bank guarantee only for the said 75% and not for its interest component. In relation to interest payable to the government entity, if a subsequent court order required the refund of 75% of the amount, the payment of such amounts will be required to be made as per the court orders.

The NHAI through policy circulars dated April 9, 2021 and May 26, 2021 and MoRTH through letter dated December 18, 2019 provide for expedited mechanism for settlement of claims arising out of projects via establishment of Conciliation of Independent Experts. The Department of Expenditure, Ministry of Finance has also launched the Vivad Se Vishwas II (Contractual Dispute) Scheme detailing a one-time settlement initiative for resolving pending contractual disputes involving the Government of India or its related entities. Disputes where the award by court/ arbitral tribunal is only for monetary value was eligible for settlement under this scheme.

Control of National Highways (Land and Traffic) Act, 2002

The Control of National Highways (Land and Traffic) Act, 2002 (the "**Control of NH Act**") provides for control of land within national highways, right of way and traffic moving on national highways and also for removal of unauthorised occupation thereon. In accordance with the provisions of the Control of NH Act, the Central Government has established highway administrations. Under the Control of NH Act, all land that forms part of a highway which vests in the Central Government, or that which does not already vest in the Central Government but has been acquired for the purpose of highways shall be deemed to be the property of the Central Government. The Control of NH Act prohibits any person from occupying any highway land or discharging any material through on such land without the permission of the highway administration. The Control of NH Act permits the grant of lease and license for use of highway land for temporary use.

Applicable Rules

As per the NH Act and the NHAI Act, the Central Government is empowered to make rules in order to further the objects of NH Act and NHAI Act. In exercise of such power, the Central Government has framed certain rules which are, amongst others, as follows:

- The National Highways Rules, 1957, as amended;
- National Highways Authority of India (Budget, Accounts Audit, Investment of Funds and Powers to enter Premises) Rules, 1990, as amended;
- The National Highways (Manner of Depositing the Amount by the Central Government with Competent Authority for Acquisition of Land) Rules, 1998;
- The National Highways Tribunal (Procedure for Appointment as Presiding Officer of the Tribunal) Rules, 2003, as amended;
- The National Highways Tribunal (Procedure) Rules 2003;
- National Highways Authority of India (The Term of Office and Other Conditions of Service of Members) Rules, 2003, as amended;

- The Central Road Fund (State Roads) Rules, 2007;
- The National Highways Tribunal (Financial and Administrative Powers) Rules, 2004;
- The National Highways Tribunal (Procedure for Investigation of Misbehaviour or Incapacity of Presiding Officer) Rules, 2003;
- The National Highways Fee (Determination of Rates and Collection) Rules, 2008, as amended;
- The Highway Administration Rules, 2004;
- The National Highways (Collection of Fees by any person for the use of Section of National Highways/Permanent Bridges/Temporary bridge on National Highways) Rules, 1997
- The National Highways (Fee for the use of National Highways and Permanent Bridge public Funded Project) Rules, 1997;
- The National Highways (Rate of Fee) Rules, 1997;
- C.E.A. (Measures Relating to Safety and Electric Supply) Regulations, 2010;
- Central Electricity Authority (Measures Relating to Safety and Electric Supply) Regulations, 2023;
- Indian Electricity Rules, 1956; and
- The Central Motor Vehicle Rules, 1989, as amended.

Other legislations relevant to the road sector

In addition to the above, there are also certain other legislations that are relevant to the road sector which include:

- the Road Transport Corporation Act, 1950;
- Central Road and Infrastructure Act, 2000;
- Central Road and Infrastructure Fund Act, 2000; and
- National Highways (Temporary Bridges) Rules, 1964.

Environmental Compliances and Regulations

Infrastructure projects must also ensure compliance with environmental legislations such as the Water (Prevention and Control of Pollution) Act, 1974 ("**Water Pollution Act**"), the Air (Prevention and Control of Pollution) Act, 1981 ("**Air Pollution Act**") and the Environment Protection Act, 1986, as amended ("**Environment Act**", together with the Water Pollution Act and the Air Pollution Act, the "**Environment Protection Acts**"). The Water Pollution Act aims to prevent and control water pollution. This legislation provides for the constitution of a central pollution control board ("**Central Pollution Control Board**" or "**CPCB**") at the Central level and state pollution control boards ("**State Pollution Control Boards**" or "**SPCBs**", together with the Central Pollution Control Board, the "**PCBs**") at the State levels. The functions of the CPCB includes, among other things, coordination of activities of the SPCBs, collecting data relating to water pollution and the measures devised for the prevention and control of water pollution and prescription of standards for streams or wells. The SPCBs are responsible for, among other things, the planning for programmes for prevention and control of pollution of streams and wells, collecting and disseminating information relating to water pollution and its prevention and control, inspection of sewage or trade effluents, works and plants for their treatment and to review the specifications and data relating to plants set up for treatment and purification of water, laying down or annulling the effluent standards for trade effluents and for the quality of the receiving waters, and laying down standards for treatment of trade effluents to be discharged. These authorities issue consent to establish and consent to operate which are to be required to be renewed periodically. These authorities also have the power of search, seizure and investigation if the authorities are aware of or suspect violation of such regulations. This legislation prohibits any person from establishing any industry, operation or process or any treatment and disposal system, which is likely to discharge trade effluent into a stream, well or sewer, or bring into use any new or altered outlet for discharge of sewage or begin to make any new discharge of sewage without taking prior consent of the SPCBs.

In context of the environmental compliances and regulations, the National Green Tribunal Act, 2010, as amended is an important legislation which provides for the establishment of a National Green Tribunal for the effective and expeditious disposal of cases relating to environmental protection and conservation of forests and other natural resources including enforcement of any legal right relating to environment and giving relief and compensation for damages to persons and property and for matters connected therewith or incidental thereto.

In accordance with the Forest (Conservation) Act, 1980, as amended, state governments are not permitted to make any order de-reserving any reserved forest or directing the use of forest land for a non-forest purpose, or assignment of any forest land through lease or otherwise to any private person or corporation without the approval of the GoI. The Ministry of Environment, Forest and Climate Change ("**MoEF**") mandates the Environment Impact Assessment ("**EIA**") must be conducted for specified projects. In the process, the MoEF receives proposals or the setting up of projects and assesses their impact on the environment before granting clearances to the projects.

The EIA Notification S.O. 1533, issued on September 14, 2006 (the "**EIA Notification**") as amended and amended from time to time, under the provisions of the Environment Protection Act, prescribes that new construction of specified projects require prior environmental clearance from the MoEF. The environment clearance must be obtained from MoEF according to the procedure specified in the EIA Notification. No construction work or preparation of land by the project management except for securing the land, relating to the setting up of a specified project can be undertaken until such clearance is obtained. Under the EIA Notification, the environmental clearance process for new projects consists of four stages – screening, scoping, public consultation and appraisal. After completion of public consultation, the applicant is required to make appropriate changes in the draft 'EIA Report' and the 'Environment Management Plan.' The final EIA Report has to be submitted to the concerned regulatory authority for appraisal. The regulatory authority is required to give its decision within 105 days of the receipt of the final EIA Report. The EIA Guidance Manual for Highways, 2010 explains the four stages of the environmental clearance process and the contents of the EIA Report required to be submitted by highway projects.

Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016, as amended, impose an obligation and duty on the owners and operators of any facility or industry with a capability to create hazardous materials to safely dispose of such material in transport and other means of collecting and storing. Each occupier and operator of any facility generating hazardous waste is required to obtain an approval from the relevant state pollution control board for collecting, storing and treating the hazardous waste.

Green Highways (Plantation, Transplantation, Beautification and Maintenance) Policy, 2015

In September 2015, MoRTH has launched Green Highways (Plantation, Transplantation, Beautification and Maintenance) Policy, 2015, which will require road developers to earmark 1% of a project's total cost for planting of trees and shrubs along the national highways. Under this policy, the maintenance of such plantations will be outsourced through a bidding process to plantation agencies. MoRTH/NHAI will appoint the authorized agency for empanelment of such plantation agencies.

Public Liability Insurance Act, 1991 read with Public Liability Insurance (Amendment) Rules, 2024

The Public Liability Insurance Act, 1991 (the "**Public Liability Act**"), imposes liability on the owner or controller of hazardous substances for any damage arising out of an accident involving such hazardous substances. A list of 'hazardous substances' covered by the legislation has been enumerated by the GoI by way of a notification. The owner or handler is also required to take out an insurance policy insuring against liability under the legislation. The Public Liability Insurance (Amendment) Rules, 2024 mandate the employer to contribute a sum equal to the premium paid on the insurance policies towards the Environmental Relief Fund.

Labour Laws and Other Regulations

The Government has consolidated 29 separate labour laws into four comprehensive labour codes: the Code on Wages, 2019, the Industrial Relations Code, 2020, the Code on Social Security, 2020, and the Occupational Safety, Health and Working Conditions Code, 2020 to modernize and streamline India's labour law framework. Its objectives include improving the ease of doing business, fostering job creation, and ensuring every worker's safety, health, and social and wage security. This key reform is the move toward single registration, single license, and single return, designed to reduce compliance burdens and support employment growth. The four Codes took effect on November 21, 2025. During the transition, relevant provisions of existing labour acts and their associated rules, regulations, notifications, standards, and schemes will continue to apply. Below are the details of the above-mentioned four labour codes:

(i) *The Code on Wages, 2019* (enacted by the parliament of India and assented to by the President of India on August 8, 2019) seeks to simplify, consolidate, and rationalize the provisions of four existing laws-the Payment of Wages Act, 1936; the Minimum Wages Act, 1948; the Payment of Bonus Act, 1965; and the Equal Remuneration Act, 1976. Under the Code, all workers to receive a statutory right minimum wage payment. Minimum wages and timely payment will ensure financial security. It aims to strengthen workers' rights while promoting simplicity and uniformity in wage-related compliance for employers.

(ii) *The Industrial Relations Code, 2020* (enacted by the Parliament of India and assented to by the President of India on September 28, 2020) has been prepared after amalgamating, simplifying and rationalizing the relevant provisions of the Trade Unions Act, 1926, the Industrial Employment (Standing Orders) Act, 1946 and the Industrial Disputes Act, 1947. The Code acknowledges the fact that survival of worker depends upon survival of industry. In this backdrop, it simplifies laws related to trade unions, conditions of employment in industrial establishment or undertaking, investigation and settlement of industrial disputes.

(iii) *The Code on Social Security, 2020* (enacted by the Parliament of India and assented to by the President of India on September 28, 2020) incorporates existing nine Social Security Acts which are; the Employee's Compensation Act, 1923; the Employees' State Insurance Act, 1948; the Employees' Provident Funds and Miscellaneous Provisions Act, 1952; the Employment Exchanges (Compulsory Notification of Vacancies) Act, 1959; the Maternity Benefit Act, 1961; the Payment of Gratuity Act, 1972; the Cine-Workers Welfare Fund Act, 1981; the Building and Other Construction Workers' Welfare Cess Act, 1996 and; the Unorganised Workers' Social Security Act, 2008. The Code extends social security to all workers-including unorganized, gig, and platform workers-covering life, health, maternity, and provident fund benefits, while introducing digital systems and facilitator-based compliance for greater efficiency.

(iv) *The Occupational Safety, health and Working Conditions Code, 2020* (enacted by the Parliament of India and assented to by the President of India on September 28, 2020) has been drafted after amalgamation, simplification and rationalization of the relevant provisions of the 13 Central Labour Acts- the Factories Act, 1948; the Plantations Labour Act, 1951; the Mines Act, 1952; the Working Journalists and other Newspaper Employees (Conditions of Service and Miscellaneous Provisions) Act, 1955; the Working Journalists (Fixation of Rates of Wages) Act, 1958; the Motor Transport Workers Act, 1961; the Beedi and Cigar Workers (Conditions of Employment) Act, 1966; the Contract Labour (Regulation and Abolition) Act, 1970; the Sales Promotion Employees (Conditions of Service) Act, 1976; the Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979; the Cine-Workers and Cinema Theatre Workers (Regulation of Employment) Act, 1981; the Dock Workers (Safety, Health and Welfare) Act, 1986 and; the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996. The Code balances the twin objectives of safeguarding worker rights and safe working conditions, and creating a business-friendly regulatory environment. This will spur economic growth and employment thereby, making India's labour market more efficient, fair, and future-ready.

In addition to the above, various state shops and commercial establishments acts are also applicable to the Portfolio Assets.

Other applicable law

Transfer of Property Act, 1882 ("TP Act")

The TP Act establishes the general principles relating to transfer of property in India. It forms a basis for identifying the categories of property that are capable of being transferred, the persons competent to transfer property, the validity of restrictions and conditions imposed on the transfer and the creation of contingent and vested interest in the property and mortgage of immovable property. It also provides for the rights and liabilities of the buyer and seller in a transaction of sale of immovable property. The TP Act also governs lease agreements, including the rights and liabilities of the lessor and the lessee

Registration Act, 1908 ("Registration Act")

The Registration Act requires for compulsory registration of certain documents, including documents relating to the conveyance of immovable property. A document must be registered within four months from the date of is execution and must be registered with the sub-registrar within whose sub-district the whole or some portion of the property is situated. A document will not affect the property comprised in it, or confer power to adopt or be treated as evidence of any transaction affecting such property (except as evidence of a contract in a suit for specific performance or as evidence of any collateral transaction not required to be affected by registered instrument

The Indian Stamp Act, 1899

Under the Indian Stamp Act, 1899, stamp duty is payable on instruments evidencing a transfer or creation or extinguishment of any right, title or interest in immovable property. Stamp duty must be paid on all instruments specified under the Stamp Act at the rates specified in the schedules to the Stamp Act. The applicable rates for stamp duty on instruments chargeable with duty vary from state to state.

Tax related legislations.

Income tax Act, 2025 ("**Income-tax Act**") is applicable to every company, whether domestic or foreign whose income is taxable under the provisions of this Act or Rules made there under depending upon its 'residential status' and 'type of income' involved. Every assessee, under the Income-tax Act, which includes a company, is required to comply with the provisions thereof, including those relating to tax deduction at source, advance tax, minimum alternative tax and like. The Income Tax Act is repealed effective April 1, 2026, and replaced by the Income Tax Act, 2025. The new Act aims to restructure all provisions of the Income Tax Act.

Central Goods and Service Tax Act, 2017 ("**GST Act**") Integrated Goods and Services Act, 2017, and various state GST legislations

The GST regime was introduced vide the Constitution (One Hundred and First Amendment) Act, 2016 and provides for imposition of tax on the supply of goods or services and is levied at two levels, central GST through the Central Goods and Service Tax Act, 2017, and state GST through the State Goods and Services Tax Act, 2017, along with the Integrated Goods and Services Tax Act, 2017, for inter-state supply of goods or services. GST replaces a majority of indirect taxes and duties

that are in place currently at the central and state levels and is applicable on all goods with the exclusion of alcohol for human consumption, electricity, sale of land, sale of buildings (subject to certain conditions) among others.

COMPANIES RELATED LEGISLATION

The Companies Act, *inter alia*, regulates the incorporation of companies, prescribes the roles and responsibilities of directors, shareholders and key managerial personnel and the procedure for undertaking various corporate actions by the company. Declaration of dividends by companies is regulated, among other sections, under Section 123 of the Companies Act. One of the conditions stated therein is that dividend can be declared by a company out of profits for the year or out of profits for the previous financial year, subject to compliance with the specified conditions, or out of money provided by the state or central government for the payment of dividend by the company. Also, dividend can be declared and paid only from the free reserves of the company. Similarly, a number of restrictions and conditions are set out in Section 68 of the Companies Act for undertaking a buy back by companies. For instance, a buy-back can be conducted by a company only from its free reserves, securities premium account or from proceeds of the issue of any shares or other specified securities subject to compliance with specified conditions. Further, a company is not permitted to undertake a buy-back of more than twenty five percent of the aggregate of paid-up capital and free reserves of the company in a particular financial year and no offer or buy-back can be made within a period of one year from the date of closure of the preceding offer or buy-back, if any.

The Competition Act, 2002

We are also required to comply with the Competition Act, 2002, as amended, which regulates practices having an appreciable adverse effect on competition in the relevant market in India and combinations (including mergers, amalgamations and acquisitions) in excess of certain thresholds.

The Electricity Act, 2003 (the "**Electricity Act**")

The Electricity Act is the central legislation which covers, amongst others, generation, transmission, distribution, trading and use of electricity and prescribes technical standards in relation to the connectivity of generating companies with the grid. Under the Electricity Act, the transmission, distribution and trade of electricity are licensed activities that require licenses from the Central Electricity Regulatory Commission (the "**CERC**"), concerned State Electricity Regulatory Commissions (the "**SERCs**") or a joint commission (constituted by an agreement entered into by two or more state governments or the central government in relation to one or more state governments, as the case may be).

As per provisions of the Electricity Act, generating companies are required to establish, operate and maintain generating stations, tie-lines, sub-stations and dedicated transmission lines. Further, the generating companies may supply electricity to any licensee, or even directly to consumers subject to availing open access to the transmission and distribution systems and payment of transmission charges, including wheeling charges and open access charges, as may be determined by the concerned electricity regulatory commission. In accordance with Section 7 of the Electricity Act, a generating company may establish, operate and maintain a generating station without obtaining a licence under the Electricity Act if it complies with the technical standards relating to connectivity with the grid prescribed under clause (b) of Section 73 of the Electricity Act. Under the Electricity Act, the SERCs are required to promote co-generation and generation of electricity from renewable sources of energy and sale of electricity to any person. The Electricity Act further requires the SERCs to specify, for the purchase of electricity from renewable sources, a percentage of the total consumption of electricity within the area of a distribution licensee. Additionally, Electricity Rules, 2005 (the "**Electricity Rules**") also prescribe a regulatory framework for developing captive generating plants. Pursuant to the Electricity Rules, a power plant shall qualify as a captive power plant only if not less than 26% of ownership is held by captive users and not less than 51%of the aggregate electricity generated in such plant, determined on an annual basis, is consumed for captive use. In case of a generating station owned by a company formed as a special purpose vehicle, the electricity required to be consumed by the captive user(s) are to be determined with reference to such unit or units in aggregate identified for captive use and not with reference to the generating station as a whole, and the equity shares to be held by the captive user(s) in the generating station must not be less than 26% of the proportionate equity of the company related to the generating unit or units identified as the captive generating plant. Additionally, the Electricity (Amendment) Rules, 2023 were notified on June 30, 2023.The amendment introduced rules pertaining to a person or entity functioning as a licensee under the previous act and continues to function as a licensee and where the duration of the license is not prescribed, in such cases the period of the license shall be 25 years from the date of the coming into force of the act. Further the license shall be renewed for a period of 25 years at a time or for a lesser period, if requested by the licensee.

National Logistics Policy, 2022 (the "National Logistics Policy" or "NLP")

The National Logistics Policy aims to create a seamless and integrated logistics systems in India, including improving efficiency and reducing costs in cargo delivery, increasing the share of logistics in the GDP, and creating employment opportunities in the sector. NLP includes the development of multi-modal transportation infrastructure, the creation of the National Logistics Portal for single-window access to all the logistics-related information, promoting e-commerce logistics solutions, and using technology for logistics operations. The multi-modal transportation system includes roads, railways, ports, airports, and inland waterways to improve the speed and efficiency of cargo delivery. The National Logistics Portal will provide a platform for all logistics related information, including tariffs ad regulations. The National Logistics Policy aims to transform the logistics sector in India into an efficient, and cost effective system that drives growth and creates new employment opportunities

PM Gati Shakti –National Master Plan for Multi-modal Connectivity

The 'PM Gati Shakti –National Master Plan for Multi-modal Connectivity' was introduced on October 13, 2021. This is proposed to be implemented as a digital platform to bring 16 ministries together for integrated planning and coordinated implementation of infrastructure connectivity projects. The approach shall be driven by seven engines, namely, roads, railways, airports, ports, mass transport, waterways, and logistics infrastructure for economic transformation, seamless multimodal connectivity, and logistics efficiency. The proposed policy aims to benefit the logistics industry by bringing the data exchange among all mode operators on a 'unified logistics interface platform' ("**ULIP**"), designed for 'application programming interface' ("**API**"). If implemented, this shall provide for efficient movement of goods through different modes, reducing logistics cost and time, assisting 'just-in-time' inventory management, and in eliminating tedious documentation. Further, this will provide real time information to all stakeholders and improve international competitiveness. Open-source mobility stack, for organizing seamless travel of passengers, will also be facilitated.

Bharatmala Pariyojana;

Bharatmala Pariyojana program aims to optimize the efficiency of freight and passenger movement across the country by bridging critical infrastructure gaps through development of Economic Corridors, Inter Corridors and Feeder Routes, National Corridor Efficiency Improvement, Border and International connectivity roads, Coastal and Port connectivity roads and Green-field expressways. The umbrella program of Bharatmala Pariyojana also focuses on enhancing effectiveness of already built infrastructure, multi–modal integration, bridging infrastructure gaps for seamless movement and integrating National and Economic Corridors. The program was conceptualized to attain optimal resource allocation for a holistic highway development/improvement initiative. Recently, the Government has extended the deadline of the first phase of the project to 2027-2028 and revised its estimated cost to nearly ₹ 11 trillion.

Intellectual Property Laws

Certain laws relating to intellectual property rights such as trademarks protection under the Trademarks Act, 1999 (the "**Trade Marks Act**") and the Designs Act, 2000 (the "**Designs Act**") are applicable to us.

The Trade Marks Act provides for the process for making an application and obtaining registration of trademarks, better protection of trademarks and prevention of the use of fraudulent marks in India. The purpose of the Trade Marks Act is to grant exclusive rights to marks such as a brand, label, and heading and to obtain relief in case of infringement for commercial purposes as a trade description.

The Designs Act aims to consolidate and amend the law relating to protection of designs. The Designs Act regulates and protects the originality of an article's design and prohibits the piracy of registered designs. The Central Government also drafted the Designs Rules, 2001, under the authority of the Designs Act for the purposes of specifying certain prescriptions regarding the practical aspects related to designs such as payment of fees, register of designs, classification of goods, restoration of designs, etc.

Data Protection Laws:

The Digital Personal Data Protection Act, 2023 (the "DPDP Act")

The DPDP Act received the assent of the President of India on August 11, 2023, and has been notified on November 13, 2025 by the Ministry of Electronics and Information Technology. It seeks to provide for the processing of digital personal data in a manner that recognizes both the right of individuals to protect their personal data and the need to process such personal data for lawful and other incidental purposes. It defines personal data to mean any data about an individual who is identifiable by or in relation to such data ("**Personal Data**"). It further defines a data fiduciary to mean any person who alone or in conjunction with other persons determines the purpose and means of processing of personal data ("**Data Fiduciary**"), and a data principal to mean an individual to whom the Personal Data relates ("**Data Principal**").

The DPDP Act applies to the processing of digital Personal Data within India where the Personal Data is collected in digital form or where it is collected in a non-digital form and is subsequently digitised. It also applies to processing of digital Personal Data outside of India, if such processing is in connection with any activity related to offering of goods or services to Data Principals within India. The DPDP Act does not apply to Personal Data processed by an individual for any personal or domestic purpose, and Personal Data that is made publicly available by the Data Principal to whom such personal data relates or any other person who is under an obligation under any law for the time being in force in India to make such Personal Data publicly available. As per the DPDP Act, a person may process the Personal Data of a Data Principal for a lawful purpose, for which the Data Principal has given her consent or for certain legitimate uses. It also provides for the establishment of a Data Protection Board of India for taking remedial actions and imposing penalties for breach of the provisions of the DPDP Act. It imposes restrictions and obligations on Data Fiduciaries in relation to dealing with personal data and levies penalties for breach of obligations prescribed under the DPDP Act.

The Motor Vehicles Act, 1988

The development, maintenance and management as well as control of the National Highways are regulated by the NH Act and the NHAI Act. Under the Motor Vehicles Act, 1988, some powers have been delegated to the Transport Department of the State Governments.

Section 138 of the Motor Vehicles Act, 1988 further empowers the State Governments to make rules for the control of traffic, including for the purpose of the removal and the safe custody of vehicles including their loads which have broken down or which have been left standing or have been abandoned on roads; the installation and use of weighing devices; the maintenance and management of wayside amenities complexes; the exemption from all or any of the provisions of relating to fire brigade vehicles, ambulances and other special classes or descriptions of vehicle, subject to such conditions as may be prescribed; the maintenance and management of parking places and stands and the fee, if any, which may be charged for their use; prohibiting the taking hold of or mounting of a motor vehicle in motion; prohibiting the use of foot-paths or pavements by motor vehicles, generally, the prevention of danger, injury or annoyance to the public or any person, or of danger or injury to property or of obstruction to traffic.

Motor Vehicles (Amendment) Act, 2019

The Motor Vehicles (Amendment) Act, 2019, is targeted towards bringing changes in the transport sector to encourage safer driving practices among Indian motor vehicle drivers. It proposes to create a National Road Safety Board, which has been notified by the MoRTH in September 2021. The National Road Safety Board shall be responsible for promoting road safety, innovation and adoption of new technology and for regulating traffic and motor vehicles.

Indian Trusts Act, 1882

The Indian Trusts Act, 1882, as amended ("**Trusts Act**") governs all private trusts in India.

The Trusts Act sets out the purpose for which private trusts can be established, the manner in which they may be created, executed and extinguished. The person creating a trust under the Trusts Act is the author of such trust, the person to whom the author grants the power and authority to regulate the trust is the trustee and the persons for whose benefit such trust has been created are the beneficiaries of such trust. The Trust Act sets out the rights, duties, liabilities and powers of the trustees and the beneficiaries vis-a-vis the trust. The Trust has been settled in accordance with the provisions of the Trusts Act. The Trust Act has been amended to expand the investment powers conferred upon trustees, thereby enabling more flexible investment strategies in the management of trust assets and to rationalise and improve the administrative and management processes relating to trust funds, with a view to enhancing efficiency and ensuring better governance of trust property.

Control of National Highways (Land and Traffic) Act, 2002

The Control of National Highways (Land and Traffic) Act, 2002 (the "**Control of NH Act**") provides for control of land within national highways, right of way and traffic moving on national highways and also for removal of unauthorised occupation thereon.

In accordance with the provisions of the Control of NH Act, the Central Government has established Highway Administrations. Under the Control of NH Act, all land that forms part of a highway which vests in the Central Government, or that which does not already vest in the Central Government but has been acquired for the purpose of highways shall be deemed to be the property of the Central Government. The Control of NH Act prohibits any person from occupying any highway land or discharging any material through on such land without the permission of the Highway Administration or any officer authorised by such administration. The Control of NH Act permits the grant of lease and license for use of highway land for temporary use.

Indian Tolls Act, 1851

In accordance with the Indian Tolls Act, 1851 (the "**Tolls Act**"), the state governments have been vested with the power to levy tolls at such rates as they deem fit, to be levied upon any road or bridge, made or repaired at the expense of the Central or any state government. The tolls levied under the Tolls Act, are deemed to be 'public revenue' and the collection of tolls can be placed under any person the State governments' deem fit. Such persons are enjoined with the same responsibilities as if they were employed in the collection of land revenue. Further, all police officers are bound to assist the toll collectors when required in the implementation of the Tolls Act. The Tolls Act further gives power for recovery of toll and exempts certain category of people from payment of toll.

National Highways Fee (Determination of Rates and Collection) Rules, 2008, as amended

The National Highways Fee (Determination of Rates and Collection) Rules, 2008 (the "**NH Fee Rules**"), regulates the collection of fee for the use of national highways. In accordance with the NH Fee Rules, the GoI may, by a notification, levy fee for use of any section of a national highway, permanent bridge, bypass or tunnel forming part of a national highway, as the case may be. However, the GoI may, by notification, exempt any section of a national highway, permanent bridge, bypass or tunnel constructed through a public funded project from levy of such fee.

The NH Fee Rules supersede the National Highways (Temporary Bridges) Rules, 1964, the National Highways (Collection of Fees by any Person for the Use of Section of National Highways/ Permanent Bridge/ Temporary Bridge on National Highways) Rules, 1997, the National Highways (Fees for the use of National Highways Section and Permanent Bridges Public Funded Project) Rules, 1997 and the National Highways (Rate of Fees) Rules, 1997 other than in respect of things done or omitted to be done under such rules prior to supersession. The NH Fee Rules do not apply to agreements and contracts executed or bids invited prior to the publication of such rules i.e. prior to December 5, 2008.

The collection of fee in case of a public funded project shall commence within 45 days from the date of completion of the project. The NH Fee Rules further provide for the base rate of fee applicable for the use of a section of the national highway for different categories of vehicles and the fees collected by the executing authority shall be remitted to the GoI. However, the GoI may, by notification, allow any or all of the executing authorities to appropriate the whole, or part of such fees for purposes as may be specified.

FASTag lanes on fee plazas is a policy initiative of the GoI in which there is an exclusive lane in the fee plaza for movement of vehicles fitted with FASTag. The FASTag is a device which is fitted on the front windscreen of vehicles to indicate online toll payment. The amended NH Fee Rules impose a penalty equivalent to two times the fee applicable if a vehicle not fitted with FASTag enters the exclusive FASTag lane. However, in case a user is unable to pay, due to malfunctioning electronic toll collection infrastructure, the user will be permitted to pass the fee plaza without payment. Further, the FASTag Rules, 2025 mandates that FASTag should be mandatory for all vehicles at toll plazas on national highways. However, in case of a non-compliance, a penalty is to be imposed.

The NH Fee rules were also amended to provide that the driver or owner of a mechanical vehicle which is loaded in excess of permissible load specified for its category, (i) shall not be permitted to use the national highway or cross the fee plaza until the excess load has been removed, and (ii) shall be liable to pay a fee to the toll collection agency equal to ten times of the fee applicable to such category of mechanical vehicle. However, in case no weighbridge has been installed at the toll plaza, no fee for overloading shall be levied. The Central Government, in exercise of its powers under the amended NH Fees Rules, 2008 has issued National Highways Fee (Determination of Rates and Collection) Amendment Rules, 2022, whereby the "closed user fee collection system" has been introduced. For this purpose, the executing authority may establish fee plazas on national highways.

The National Highways Fee (Determination of Rates and Collection) Rules, 2025, implemented from November 15, 2025, mandates that all vehicles must use FASTag or another notified digital method for toll payment. Vehicles entering a toll plaza without a valid FASTag will be subject to a higher fee like vehicles without a valid FASTag will be charged double the fee if paying in cash, and 1.25 times the fee if paying through Unified Payment Interface (UPI).

The National Highways Rules, 1957 (the "NH Rules")

The NH Rules provide that in situations where the estimate cost of the execution of any original work on a national highway exceeds ₹ 1,000,000, a detailed estimated of the cost is to be forwarded to the GoI. An application for allotment of funds for meeting expenditure on an original work on a national highway must also be made to the GoI. The executing agency of the highway is required to furnish monthly progress reports and a completion report on the conclusion of the work. The NH Rules also give the consulting engineer of the GoI the right to inspect the work while it is in progress or after completion.

National Monetisation Pipeline (NMP)

NITI Aayog has developed the pipeline, in consultation with infrastructure line ministries, based on the mandate for 'Asset Monetisation' for roads and highways, amongst others, under Union Budget 2021-22. The framework for monetisation of core asset monetisation has three key imperatives: (i) monetization of 'rights' not 'ownership' i.e. assets will be handed back to the government at the end of transaction life; (ii) brownfield de-risked assets and stable revenue streams; and (iii) structured partnerships under defined contractual frameworks with strict performance standards. This shall include selection of de-risked and brownfield assets with stable revenue generation profile with the overall transaction structured around revenue rights. The primary ownership of the assets under these structures shall be with the government.

Provisions under the Constitution of India and other legislations in relation to collection of toll

Entry 59, List II of Schedule VII read with Article 246 of the Constitution of India vests state governments with the power to levy tolls. Further, in accordance with the Tolls Act, state governments have been vested with the power to levy tolls at such rates as they deem fit.

Foreign Investment Regulations

Foreign investment in Indian securities is governed by the provisions of the FEMA, as amended, read with the applicable FEMA Rules, the FEMA (Mode of payment and Reporting of Non-Debt Instruments) Regulations, 2019 and the consolidated FDI Policy issued by the Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, Government. Foreign investment is permitted (except in the prohibited sectors) either through the automatic route or the approval route, depending upon the sector in which foreign investment is sought to be made. Under the FEMA Rules and the current consolidated FDI Policy, effective from October 15, 2020, an infrastructure investment trust registered and regulated by the SEBI under the InvIT Regulations, being an 'investment vehicle', is permitted to receive foreign investment from a

person resident outside India (subject to Press Note 3 (2020 series)), including an FPI or an NRI subject to the terms and conditions specified in the FEMA Rules.

Downstream investment by an infrastructure investment trust shall be regarded as indirect foreign investment if neither the sponsor nor the investment manager of such an infrastructure investment trust is Indian 'owned and controlled' as defined in FEMA Rules.

Downstream investment by an 'investment vehicle' shall have to conform to the sectoral caps and conditions/restrictions, if any, as applicable to the company in which the downstream investment is made as per the FDI Policy. Foreign investment of up to 100% through the automatic route is permitted in the infrastructure sector in India. An infrastructure investment trust that receives foreign investment shall be required to make such report and in such format to the RBI or to the SEBI as may be prescribed by them from time to time.

The payment for the units of an infrastructure investment trust acquired by a person resident or registered/ incorporated outside India shall be made by an inward remittance from abroad through banking channels or by way of swap of shares of an SPV, or out of funds held in a Non-resident External ("**NRE**") or Foreign Currency Non-resident Bank ("**FCNR(B)**") account maintained in accordance with the Foreign Exchange Management (Deposit) Regulations, 2016.

Further, any person who is a non-resident and holds units of an infrastructure investment trust in accordance with the FEMA Rules may pledge such units (i) in favour of a bank in India to secure the credit facilities being extended to the Indian company for bona fide purposes; (ii) in favour of an overseas bank to secure the credit facilities being extended to the person, or a person resident outside India who is the promoter of the Indian company or the overseas group company of the Indian company; (iii) in favour of a Non-Banking Financial Company registered with the RBI to secure credit facilities being extended to the Indian company for bona fide purposes; and (iv) subject to the authorized dealer bank satisfying itself of the compliance of the conditions stipulated by the RBI in this regard.

In addition to the above, compliance with the provisions of various tax-related legislations, intellectual-property related legislations and other applicable law for our day-to-day operations is also required.

REGULATORY APPROVALS

Provided below are the material consents, licenses, permissions, registrations and approvals from the Government, various governmental agencies and other statutory and/or regulatory authorities with which (i) the Trust and the Portfolio Assets can undertake the Offer, and the transactions contemplated in relation to the Offer; and (ii) the Trust and the Portfolio Assets can undertake their respective current business activities, as applicable. Unless otherwise stated, these approvals are valid as of the date of this Final Offer Document. In the event that any of the approvals and licenses that are required for the Portfolio Assets' business operations expire in the ordinary course of business, the Portfolio Assets will apply for such renewal from time to time. For details in connection with the regulatory and legal framework within which the Trust and the Portfolio Assets operate, please see the section entitled "Regulations and Policies" on page 385.

A. Approvals in relation to the Offer

1. Resolutions dated January 30, 2026, passed by the board of directors of the Investment Manager in relation to the Offer and other incidental matters.

2. Resolutions dated February 20, 2026, passed by the Unitholders in relation to the Offer and other incidental matters.

3. Consent letter dated March 17, 2026, read with resolution of the board of directors dated March 17, 2026, of Cube Highways and Infrastructure III Pte. Ltd. in relation to the Offer.

4. Consent letter dated March 17, 2026, read with resolution of the board of directors dated March 17, 2026, of Cube Mobility Investments Pte. Ltd. in relation to the Offer.

5. Consent letter dated March 17, 2026, read with resolution of the board of directors dated March 17, 2026, of Cube Highways and Infrastructure II Pte. Ltd. in relation to the Offer.

6. Consent letter dated March 17, 2026, read with resolution of the board of directors dated February 24, 2026, of BCI IRR India Holdings Inc. in relation to the Offer.

7. Consent letter dated March 17, 2026, read with resolution of the board of directors dated March 17, 2026, of Seventy Second Investment Company LLC in relation to the Offer.

8. Consent letter dated March 17, 2026, read with resolution of the board of directors dated February 24, 2026, of BCI IRR India Holdings Limited Partnership in relation to the Offer.

9. In-principle approval for the Offer from BSE dated May 7, 2026.

10. In-principle approval for the Offer from NSE dated May 7, 2026.

B. Approvals in relation to the Trust

1. Certificate of registration dated April 5, 2022, bearing registration number IN/InvIT/22-23/0022, issued by SEBI to the Trust pursuant to Regulation 3 of the InvIT Regulations, for registration of the Trust as an infrastructure investment trust.

2. The Trust has received final listing and trading approvals from BSE and NSE for the private listing of the Units pursuant to the letters dated April 18, 2023.

C. Material Business Approvals in relation to Portfolio Assets

I. *APEPL*

a. Certificate of Completion dated September 26, 2022, issued by Aarvee Associates Architects, Engineers and Consultants Private Limited, Independent Consultant for 4-laning of Kottakota-Kurnool section of NH-7 (km 135.469 to km 211.000) in the state of Andhra Pradesh on BOT (Annuity) basis.

b. Environment clearance dated May 19, 2006, issued by Ministry of Environment and Forest for upgrading existing 2 lane to 4 lane divided carriageway configuration of Kothakota to Kurnool section of NH-7 from existing km 135.469 to km 211.000 by NHAI.

c. Certificate of registration of establishment dated June 4, 2019, issued by Department of Labour, Government of National Capital Territory of Delhi.

d. Certificate of registration dated June 12, 2017, issued by Labour Department, Government of Telangana under Section 7(3) of Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996.

e. No-objection certificate granted by Government of Telangana Ground Water Department, dated March 21, 2025, for ground water extraction from existing borewell, at base Camp Pullur toll Plaza Pullur toll Plaza valid until March 20, 2030.

f. No-objection certificate granted by Government of Telangana Ground Water Department, dated March 21, 2025, for ground water extraction from existing borewell, at office area for Pullur toll Plaza valid until March 20, 2030.

g. No-objection certificate granted by Government of Telangana Ground Water Department, dated July 10, 2025, for ground water extraction, at Pebbair village valid until July 9, 2030.

II. ***DATRPL***

a. Provisional certificate dated May 20, 2022, issued by URS Scott Wilson India Pvt. Ltd for six laning of Delhi-Agra section of NH-2 from Km 20.500 to Km 200 (Length 179.5 Km) in the States of Haryana and Uttar Pradesh.

b. Environment clearance dated July 23, 2012, issued by Ministry of Environment & Forests for widening and improvement of six-laning of Delhi-Agra section of NH-2 from km 20.500 to km 199.000 in the state of Haryana and Uttar Pradesh.

c. No-objection certificate dated February 10, 2023, issued by Ground Water Department, Ministry of Jal Shakti, Government of Uttar Pradesh, for ground water extraction from existing borewell at toll plaza situated in Mahuvan Mathura, Uttar Pradesh, valid until January 31, 2028.

d. No-objection certificate dated September 14, 2023, issued by Ground Water Department, Ministry of Jal Shakti, Government of Uttar Pradesh, for ground water extraction from existing borewell at toll plaza situated in Karman Mathura, Uttar Pradesh, valid until August 20, 2028.

III. ***BWHPL***

a. Certificate of completion dated March 1, 2023, issued by Dhruv Consultancy Services Limited, for four laning of Sangli-Solapur (Package-II: Borgaon to Watambare of length 52.000km.) section of NH-166 from Existing Ch. Km. 219.956 to Ch. 272.394 (Design chainage km. 224.000 to 276.000) of Length 52.000 km. in state of Maharashtra on Hybrid Annuity Mode.

b. Certificate of Exemption valid from January 30, 2024, issued by Department of Water Resources, River Development & Ganga Rejuvenation, Central Ground Water Authority, Ministry of Jal Shakti for Ground Water Withdrawal.

IV. ***MSHPL***

a. Certificate of Completion dated March 1, 2023, issued by Dhruv Consultancy Services Limited, for four laning of Sangli-Solapur (Package-IV: Mangalwedha to Solapur of length 56.500 km.) section of NH-166 from Existing Km 314.969 Design Chainage km 321.600) to existing km 370.452 (Design chainage km. 378.100) of Length 56.500 km. in state of Maharashtra on Hybrid Annuity Mode.

b. No-objection certificate dated April 9, 2024, for ground water extraction from existing borewell issued by Central Ground Water Authority Department of Water Resources, River Development and Ganga Rejuvenation Ministry of Jal Shakti, Govt. of India, valid until April 8, 2029.

c. Re-financing approval dated March 28, 2023, issued by NHAI for re-financing of existing debt and additional debt, as outstanding.

V. ***FRHPL***

a. Certificate of completion dated May 3, 2021, issued by URS Scott Wilson India Pvt Ltd. for four-laning of Farakka-Raiganj Section of NH-34 from Km 295.00 to Km 398.00 in the State of West Bengal.

b. Environment clearance dated September 16, 2008, issued by Ministry of Environment & Forests for widening and strengthening of existing 2 lane to 4/6 lane from Farakka to Raiganj section from km 295 to km 398 of NH-34 in the State of West Bengal.

c. Renewed Labour License dated March 6, 2017, issued by Ministry of Labour and Employment under Section 12(1) of the Contract Labour (Regulation and Abolition) Act, 1970 valid until March, 5 2027.

d. Certificate of registration dated March 6, 2017, issued by Ministry of Labour and Employment under the Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996.

VI. ***GAEPL***

a. Certificate of completion dated December 20, 2023, issued by M/s Theme Engineering Services Pvt. Ltd. Jaipur, for 4/6 laning of Ghaziabad-Aligarh Section of NH-34 (NH-91) from km.23.600 to km. 149.900 in the state of Uttar Pradesh on DBFOT - (BOT) basis under NHDP phase-III.

b. Environmental clearance dated March 3, 2009, issued by Ministry of Environment and Forest for 4/6 laning of NH-91 from Ghaziabad to Aligarh (Km 23.600 to km 139.000) in state of Uttar Pradesh.

c. No-objection certificate dated September 9, 2023, granted by the Ground Water Authority, Ministry of Jal Shakti, Government of Uttar Pradesh for water abstraction at toll plaza situated in Luharli village Gautam Buddh Nagar, Uttar Pradesh valid until September 4, 2028.

d. No-objection certificate dated April 2, 2024, granted by the Ground Water Authority, Ministry of Jal Shakti, Government of Uttar Pradesh for water abstraction at toll plaza situated at LHS of Luharli village Gautam Buddh Nagar, Uttar Pradesh valid until March 17, 2029.

e. No-objection certificate dated April 2, 2024, granted by the Ground Water Authority, Ministry of Jal Shakti, Government of Uttar Pradesh for water abstraction at toll plaza situated at RHS of Luharli village Gautam Buddh Nagar, Uttar Pradesh valid until March 17, 2029.

VII. ***HTPL***

a. Environment clearance dated February 19, 2007, issued by Ministry of Environment & Forests for 4/6 laning of Hazarbagh to Ranchi section on NH-33 in the state of Jharkhand.

VIII. ***JLTPL***

a. Environment clearance dated January 17, 2007, issued by Ministry of Environment & Forests for widening of 4/6 lane of Jhansi to Lalitpur of existing 2 lane from km 0/0 to km 94/0 in state of Uttar Pradesh.

b. No-objection certificate dated June 4, 2025, granted by the Ground Water Authority, Ministry of Jal Shakti, Government of Uttar Pradesh for extraction of ground water.

IX. ***JMTPL***

a. Certificate of completion dated March 9, 2015 issued by LEA Associates South Asia Pvt. Ltd., Consulting Engineers & Planners for improvement, operation, maintenance, rehabilitation and strengthening of existing 2-lane road and widening to 4-lane of divided highway of Mahua-Jaipur section of NH-11 from km 120.000 to 228.000 in the state of Rajasthan on build, operate and transfer basis under NHDP Phase-IIIA.

b. Environmental clearance vide letter dated August 1, 2006, issued by Ministry of Environment & Forest for rehabilitation and strengthening of existing 2-lane road and widening to 4-lane of divided highway of Mahua-Jaipur section of NH-11 from km 120.000 to 228.000 in the state of Rajasthan.

c. Consent to Establish dated August 20, 2018, issued by the Rajasthan State Pollution Control Board under Section 25 and Section 26 of the Water (Prevention and Control of Pollution) Act, 1974 and Section 21(4) of the Air (Prevention and Control of Pollution) Act, 1981, for the Rajadhok Toll Plaza.

d. Consent to Establish dated 16 August 2018, issued by the Rajasthan State Pollution Control Board under Section 25 and Section 26 of the Water (Prevention and Control of Pollution) Act, 1974 and Section 21(4) of the Air (Prevention and Control of Pollution) Act, 1981, for the Sikandra Toll Plaza.

e. Renewed license dated August 11, 2017, issued by Regional Labour Commissioner (Central), Government of India under rule 25(1) of the Contract Labour (R&A) Act, 1970, valid up to August 10, 2026.

f. Registration certificate dated December 31, 2014, under Section 7(3) of the Buildings and Other Construction Workers (Regulation of Employment and Condition of Service) Act, 1996.

g. Exemption certificate dated October 14, 2025, issued by Central Ground Water Authority under the Department of Water Resources, River Development and Ganga Rejuvenation, Government of India for ground water abstraction at Village Atta Bijori, Tehsil Dausa, District Dausa, Rajasthan.

h. Exemption certificate dated October 14, 2025, issued by Central Ground Water Authority under the Department of Water Resources, River Development and Ganga Rejuvenation, Government of India for ground water abstraction at Village Khera Paharpur, Tehsil Sikrai, District Dausa, Rajasthan.

i. Exemption certificate dated October 14, 2025, issued by Central Ground Water Authority under the Department of Water Resources, River Development and Ganga Rejuvenation, Government of India for ground water abstraction at Village Reta, Tehsil Sikrai, District Dausa, Rajasthan.

j. Exemption certificate dated April 21, 2026, issued by Central Ground Water Authority under the Department of Water Resources, River Development and Ganga Rejuvenation, Government of India for ground water abstraction at Village and Tehsil Bassi, District Jaipur, Rajasthan.

k. Exemption certificate dated April 21, 2026, issued by Central Ground Water Authority under the Department of Water Resources, River Development and Ganga Rejuvenation, Government of India for ground water abstraction at Village Jhar, Tehsil Bassi, District Jaipur, Rajasthan.

l. Exemption certificate dated May 5, 2026, issued by Central Ground Water Authority under the Department of Water Resources, River Development and Ganga Rejuvenation, Government of India for ground water abstraction at Village Jirota, Tehsil Dausa, District Dausa, Rajasthan.

m. Exemption certificate dated April 17, 2026, issued by Central Ground Water Authority under the Department of Water Resources, River Development and Ganga Rejuvenation, Government of India for ground water abstraction at Village Khoontla, Tehsil Baswa, District Dausa, Rajasthan.

X. ***JVTPL***

a. Environment clearance dated January 17, 2007, issued by Ministry of Environment & Forests.

b. No objection certificate dated September 05, 2023, issued by Department of Water Resources, River Development & Ganga Rejuvenation Central Ground Water Authority for toll plaza situated in Bassi village for withdrawal of groundwater valid till August 28, 2028.

XI. ***KETPL***

No material consents, licenses, permissions, registrations and approvals have been obtained for this asset.

XII. ***SPPL***

a. Certificate of completion dated June 21, 2022, issued by, Centro de Estudious de Materials Control de Obra, SA in Association with Armenge Engineering and Management Consultants Pvt. Ltd**.** for supervision of four laning of NH - 161 from Ramsanpalle (Design Km 39.980 / Existing Km 44.757) to Mangloor (Design Km 86.788 / Existing Km 91.350) (Design Length = 46.808 Km) in the state of Telangana under Bharatmala Pariyojana on Hybrid Annuity Mode.

b. Registration certificate dated August 3, 2022, under Rule 24(1) of the Buildings and Other Construction Workers (Regulation of Employment and Condition of Service) Central Rules, 1998.

c. Renewed Labour License dated May 17, 2023, issued under Rule 25(1) of the Labour (Regulation and Abolition) Central Rules, 1971 valid until May 16, 2027.

d. No-objection certificates dated September 2, 2024, granted by the Ground Water Department, Government of Telangana for ground water abstraction valid till September 1, 2029.

XIII. ***SIPL***

a. Completion Certificate dated June 15, 2023, issued by MSV International. Inc, for Four laning of Tiruchirappalli (Km.0+000) to Kallagam (Km.38+700) section of NH-227 under Bharatmala Pariyojana on Hybrid Annuity Mode in the State of Tamil Nadu.

b. Renewed Labour License dated March 31, 2023, issued under Rule 25(1) of the Contract Labour (Regulation and Abolition) Central Rules, 1971.

XIV. ***THPL***

a. Completion Certificate dated June 8, 2023, issued by MSV International. Inc Consultancy Services for Six laning of NH-140 from Chittoor (Design km: 0.000/Existing km: 158.000 of NH-4) to Mallavaram (Design km: 61.128 / Existing km:41.80 of NH-140) (Design length = 61.128 km) in the state of Andhra Pradesh under Bharatmala Pariyojana on Hybrid Annuity Mode.

XV. ***KMTPL***

a. No-objection certificate dated March 20, 2025, issued Central Ground Water Authority under Department of Water Resources, River Development and Ganga Rejuvenation, Government of India, for ground water abstraction valid till September 27, 2026, for an existing well.

XVI. *LRTPL*

a. Environment clearance dated July 10, 2012, issued by Ministry of Environment & Forests for rehabilitation and up-gradation existing 2 lane to 4 lane with paved shoulders configuration of Lucknow-Raibareli Section of NH-24 B in the State of Uttar Pradesh.

b. No-objection certificate for ground water extraction from existing borewell dated February 8, 2023, issued by Ground Water Department, Ministry of Jal Shakti, Government of Uttar Pradesh.

XVII. *MBEL*

a. Completion Certificate dated September 13, 2009, issued by M/s. Aarvee Associates Architects Engineers and Consultants Pvt. Ltd., acting as Independent Consultant, for improvement, operation and maintenance, rehabilitation and strengthening of the existing 2-lane road and widening to 4-lane divided highway of Bharatpur–Mahua section of National Highway 11 (NH-11) from Km 63.00 to Km 120.00 in the State of Rajasthan, India, on BOT basis.

b. Environment clearance dated August 1, 2006, issued by Ministry of Environment & Forests rehabilitation and strengthening of the existing 2-lane road and widening to 4-lane divided highway of Bharatpur-Mahua section of National Highway 11 from km 63.00 to km 120.00 in the state of Rajasthan.

c. Consent issued by Rajasthan State Pollution Control Board under the Section 25 and Section 26 of the Water (Prevention and Control of Pollution) Act, 1974 and Section 21(4) of the Air (Prevention and Control of Pollution) Act, 1981 for the Amoli Toll Plaza established on the project highway.

d. Renewed certificate of registration issued by the Licensing Officer and Assistant Labour Commissioner, GOI *vide* its letter dated September 13, 2022, under the Contract Labour (Regulation and Abolition) Act, 1970 valid up to October 4, 2026.

e. Registration certificate dated July 12, 2016, under Section 7(3) of the Buildings and Other Construction Workers (Regulation of Employment and Condition of Service) Act, 1996.

f. Exemption certificate dated January 06, 2026, issued by Department of Water Resources, River Development & Ganga Rejuvenation Central Ground Water Authority for toll plaza situated in Amoli village Bharatpur, Rajasthan for abstraction of groundwater.

g. Exemption certificate dated January 02, 2026, issued by Department of Water Resources, River Development & Ganga Rejuvenation Central Ground Water Authority for toll plaza situated in Halena village Bharatpur, Rajasthan for abstraction of groundwater.

h. Exemption certificate dated December 29, 2025, issued by Department of Water Resources, River Development & Ganga Rejuvenation Central Ground Water Authority for toll plaza situated in Ludhawai village, Bharatpur, Rajasthan for abstraction of groundwater.

XVIII. *MKTPL*

No material consents, licenses, permissions, registrations and approvals have been obtained for this asset.

XIX. *MHPL*

a. Completion Certificate dated October 27, 2025, issued by MSV International Inc. in association with Armenge Engineering Pvt. Ltd., acting as Independent Engineer, for four laning of NH-161 from Mangloor (Design Km 86.788 / Existing Km 91.350) to Telangana/Maharashtra Border (Design Km 135.751 / Existing Km 140.873) (Design Length = 48.963 km) in the State of Telangana under Bharatmala Pariyojana on Hybrid Annuity Mode.

b. Renewed license dated September 11, 2023, issued by under Rule 25(1) of the Contract Labour (Regulation and Abolition) Central Rules, 1971 valid till September 10, 2026.

c. No-objection certificate dated October 7, 2024, granted by Ground Water Department, Government of Telangana to MHPL for groundwater abstraction valid till October 6, 2029.

d. No-objection certificate dated April 1, 2026, granted by Ground Water Department, Government of Telangana to MHPL for groundwater abstraction valid till April 1, 2031.

XX. ***NAMEPL***

a. Provisional Certificate dated September 27, 2024, issued by LEA Associates South Asia Pvt. Ltd for Operation and Maintenance of Narketpally - Addanki - Medarametla Road (SH-2) from Km.0.000 to Km 212.500 in the State of Telangana and Andhra Pradesh.

b. Renewed licence dated March 19, 2025, issued by the Registering/Licensing Officer, Government of Andhra Pradesh Labour Department under the Contract Labour (Regulation and Abolition) Act, 1970.

c. Certificate of registration of commercial establishment dated January 1, 2019, issued by Labour Department, Uttar Pradesh under U.P. Dookan Aur Vanijya Adhishthan Adhiniyam, 1962.

d. Consent dated August 2, 2017, for establishment issued under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974.

e. Consent dated September 2, 2017, issued under Section 25 and 26 of the Water (Prevention and Control of Pollution) Act, 1974 and under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981.

f. Consent to establish and operate dated April 8, 2019, issued for establishment and operation of 2 diesel generator sets of 180 KVA and 125 KVA capacities respectively at Thummalacheruvu Toll Plaza, Thummalacheruvu Village, Piduguralla Mandal, Guntur District, Andhra Pradesh,

g. Consent to establish and operate dated June 12, 2019, for establishment and operation of 2 diesel generator sets of 180 KVA and 125 KVA capacities respectively at Elchuru Toll Plaza, Santhamanagaluru Mandal, Prakasam District, Andhra Pradesh.

h. Certificate dated October 25, 2018, issued by the Tahsildar, Piduguralla Mandal, Guntur District, certifying utilization of ground water from the existing borewell at Survey No. 251, Thummalacheruvu, Piduguralla Mandal, Km. 110+200 LHS Thummalacheruvu Toll Plaza.

i. Certificate dated October 25, 2018, issued by the Tahsildar, Santhamaguluru Mandal, certifying utilization of ground water from the existing borewell at Survey No. ROW, Elchuru, Santhamaguluru Mandal, Km. 168+200 RHS at Elchuru Toll Plaza.

j. No-Objection Certificate dated May 9, 2025, issued by the District Ground Water Officer, Nalgonda, Ground Water Department, Government of Telangana, under the Telangana Ground Water (Regulation and Control of Development and Management) Act, 2004 (TGWALTA), for ground water extraction from an existing borewell at Modugulapally Toll Plaza.

XXI. ***NDEPL***

a. Completion Certificate dated May 11, 2024, issued by M/s. Feedback Infra Pvt. Ltd. in joint venture with M/s. Satra Services & Solutions Pvt. Ltd. in association with M/s. Saadhya Infra Solutions LLP, acting as Independent Consultant, , for design, construction, development, finance, operation and maintenance of the Nelamangala Junction on NH-4 with NH-48 to Devihalli Section of NH-48 (new NH-75) from Km 28.200 to Km 110.000, in the State of Karnataka, on BOT basis

b. Environment Clearance dated March 13, 2007, issued by Ministry of Environment & Forests for upgradation of existing 2 lane road from Nelamangala to Bommanhalli (28.200 km to 107.900 km) to 4/6 laning of NH-48 in the state of Karnataka under NHDP phase III by NHAI.

c. No objection certificate dated May 24, 2005, granted by Karnataka Ground Water Authority bearing number KGWAN1267136360 for extraction of groundwater at the toll plaza located at Nagamangala taluk, valid for a period of five years from December 31, 2030.

d. Approval dated May 24, 2022, issued by District Groundwater Directorate, Bengaluru Rural District to permit the utilization of borewell for drinking purposes.

XXII. ***NKTPL***

a. .

b. No objection certificate dated July 11, 2025, issued by Water Resource Department, Government of Tamil Nadu for withdrawal of groundwater valid for a period of three years.

XXIII. ***SMTPL***

a. Renewal of No objection certificate dated July 14, 2025, issued by Water Resource Department, Public Works Department, Government of Tamil Nadu for withdrawal of groundwater valid until November 22, 2027.

XXIV. ***WVEPL***

a. Completion Certificate dated October 31, 2015, issued by AECOM Asia Company Limited, for four laning of Varanasi-Aurangabad section of NH-2 from Km 285.411 to Km 378.500 (Length 93.089 km) in the State of Uttar Pradesh on Design, Build, Finance, Operate and Transfer (DBFOT)

b. Environment Clearance dated September 15, 2008, issued by Ministry of Environment and Forests for widening and strengthening of 4/6 laning of WVEPL from 182.250 km to 240.000 km in the State of Kerala by NHAI.

c. Renewed licence dated October 6, 2023, issued by Assistant Labour Commissioner (Central), Ernakulam under Section 12 of the Contract Labour (Regulation and Abolition) Act, 1970 valid up to October 5, 2026

d. No-objection certificate dated April 7, 2025, for ground water extraction from existing borewell issued by Central Ground Water Authority, Department of Water Resources, River Development and Ganga Rejuvenation, Ministry of Jal Shakti, Government of India.

XXV. ***WUPTPL***

The concession period for the WUPTPL Project ended on June 23, 2026, following which the asset was handed over to the NHAI. Accordingly, there are no material approvals in relation to WUPTPL. The Investment Manager shall fulfil its obligations in respect of WUPTPL in accordance with the SEBI circular dated May 15, 2026, bearing the reference number SEBI/HO/DDHS/DDHS-PoD-2/I/11698/2026, read with the InvIT Regulations, as amended.

XXVI. ***JUHPL***

a. Completion Certificate dated May 31, 2018, issued by TPF Getinsa Eurostodious S.L for four laned Jammu Udhampur Section from Km 15.000 (Jammu Bypass) to Km 67.000 on BOT (Annuity) in the state of Jammu and Kashmir.

b. Environment clearance dated August 31, 2010, issued by Ministry of Environment & Forests for rehabilitation and strengthening to 4/6-laning of Jammu-Udhampur Section including Nagrota Bypass and Udhampur Bypass of NH-1A from km 9.7 to km 72.750 in the State of Jammu & Kashmir.

c. Amendment to Environment clearance dated May 3, 2013, issued by Ministry of Environment & Forests for waiver of condition No. XVIII (prohibition of blasting of rocks) of the clearance dated August 31, 2010, for rehabilitation and strengthening to 4-laning of Jammu-Udhampur Section of NH-1A from km 15.000 (Jammu Bypass) to km 67.000 (Udhampur) in the State of Jammu & Kashmir.

d. Certificate of registration of employer dated April 20, 2023, issued by Registering Officer, Regional Labour Commissioner (Central), Jammu under Section 7(3) of the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996.

e. Licence dated April 28, 2023, issued by the Government of India, Office of the Licensing Officer, under Rule 25(1) of the Contract Labour (Regulation and Abolition) Central Rules, 1971 valid until April 27, 2027.

XXVII. ***QEPL***

a. Completion Certificate dated December 15, 2022, issued by ISAN Corporation in JV with Chaitanya Projects Consultancy Pvt. Ltd., for four laning of Quazigund to Banihal Section of NH-1A from Km 189.350 to Km 205.618, including one Tunnel (2-lane) of 8.45 kms and one Viaduct of 1.424 kms length on DBFOT (Annuity) basis in the Union Territory of Jammu & Kashmir.

b. Environment clearance dated July 13, 2007, issued by Ministry of Environment & Forests for 4/6 laning of Banihal to Quazigund from Km 188.000 to Km 220.700 section of NH-1A in the State of Jammu and Kashmir by National Highway Authority of India.

c. Certificate of registration dated April 6, 2021, issued by Assistant Labour Commissioner (Central), Jammu under Section 7 of the Contract Labour (Regulation and Abolition) Act, 1970 valid up to April 6, 2027.

d. Certificate of registration of employer dated July 14, 2020, issued by Registering Officer, Regional Labour Commissioner (Central), Jammu under Section 7(3) of the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 valid up to July 13, 2030.

e. Certificate of registration dated June 14, 2024, issued by Public Health Engineering Department, Jal Shakti Department, Government of Jammu and Kashmir for borewell connection at Qazigund Banihal tunnel near Control Room Building, Nowgam, Tehsil Banihal, District Ramban.

D. Approvals applied for, but not yet received

As on the date of this Final Offer Document, there are no approvals required to be obtained by the Trust and the Portfolio Assets, for which applications have been made, but approvals have not been received, other than as described below:

(i) Application for No-Objections certificates dated December 21, 2020, submitted by APEPL to the Mandal Revenue Officer, Jogulamba, Gadwal District and the Mandal Revenue Officer, Vanaparthi District for extraction of ground water.

(ii) Application dated April 15, 2018, submitted by APEPL to the Mandal Revenue Officer, Vanaparthi District for extraction of ground water.

(iii) Application dated July 4, 2026, submitted by MBEL to the Rajasthan State Pollution Control Board under the Section 25 and Section 26 of the Water (Prevention and Control of Pollution) Act, 1974 and Section 21(4) of the Air (Prevention and Control of Pollution) Act, 1981 for the Ludhawai Toll Plaza established on the project highway.

(iv) Application for No-Objections certificates dated March 24, 2023, submitted by WVEPL to the Ground Water Authority for abstraction of ground water.

(v) Application for No-Objections certificates dated March 24, 2023, submitted by WVEPL to the Ground Water Authority for abstraction of ground water.

(vi) Application for No-Objections certificates dated May 30, 2025, submitted by GAEPL to the Ground Water Authority for abstraction of ground water.

(vii) Application for No-Objections certificates dated May 30, 2025, submitted by GAEPL to the Ground Water Authority for abstraction of ground water.

(viii) Application for No-Objections certificates dated March 12, 2025, submitted by SIPL to the Ground Water Authority, Tamil Nadu for abstraction of ground water.

(ix) Application for No-Objections certificates dated September 23, 2024; submitted by SIPL to the Ground Water Authority, Tamil Nadu for abstraction of ground water.

(x) Application for No-Objections certificates dated October 16, 2024, submitted by QEPL to the Ground Water Authority for abstraction of ground water.

(xi) Application for No-Objections certificates April 15, 2026, submitted by MBEL to the Ground Water Authority for abstraction of ground water.

(xii) Application for No-Objections certificates July 25, 2026, submitted by NKTPL to the Ground Water Authority for abstraction of ground water.

In addition to the material approvals disclosed above, we may, from time to time, obtain certain other approvals, licenses, registrations, and clearances as may be required under applicable laws, rules, and regulations, including but not limited to shops and establishment registrations, forest clearances, and such other approvals and permissions as may be necessary.

E. Approvals for which applications are yet to be made

As on the date of this Final Offer Document, there are no material approvals required to be obtained by the Trust and the Portfolio Assets, for which applications are yet to be made.

Except as stated in this section, there is no material civil litigation, criminal litigation or actions by regulatory authorities, in each case involving the Portfolio Assets, the Trust, the Sponsor, the Investment Manager, the Project Manager, or any of their respective Associates (excluding certain investee companies that operate independently of Cube Group (operating in India)), the Sponsor Group and the Trustee, that are currently pending as on the date of this Final Offer Document.

For the purpose of this section, details of all criminal and regulatory actions involving the Trust (including the Portfolio Assets), the Sponsor, the Investment Manager, the Project Manager, or any of their respective Associates, the Sponsor Group and the Trustee, that are currently pending have been disclosed. All criminal matters involving the Trust (including the Portfolio Assets), the Sponsor, the Investment Manager, the Project Manager, or any of their respective Associates, the Sponsor Group and the Trustee, that are currently pending, if any, have been disclosed. Further, any civil matter involving an amount equivalent to, or more than, the amounts as disclosed below, in respect of the Trust (including the Portfolio Assets), the Sponsor, the Project Manager, the Investment Manager and each of their respective Associates, the Sponsor Group and the Trustee has also been disclosed. Details of proceedings related to direct and indirect taxes involving the Trust and its Associates, the Portfolio Assets, the Sponsor and its Associates, the Sponsor Group, the Investment Manager and its Associates, the Project Manager and its Associates, and the Trustee, have been disclosed in a consolidated manner, indicating the number of cases and the total amount.

For the Trust (including the Portfolio Assets), the total consolidated income of the Trust and the Portfolio Assets for the financial year ended March 31, 2026, was ₹ 43,590.26 million. Accordingly, in respect of the Trust, its Associates (apart from entities which are Associates of the Sponsor, Investment Manager or Project Manager) and each of the Portfolio Assets, all outstanding civil matters which involve an amount equal to or exceeding ₹ 2,179.51 million (being 5% of the total consolidated income as on March 31, 2026) have been considered material. Additionally, all cases where an adverse outcome would materially and adversely affect the business, operations or financial position or reputation of each of the Trust or the Portfolio Assets, irrespective of the amount involved, may also be identified as material litigation and disclosed.

Additionally, all outstanding claims and penalties involving the Portfolio Assets, as considered material by the board of the Investment Manager, have been disclosed individually, and all other outstanding non-material claims and penalties have been disclosed in a consolidated manner.

For the Sponsor, the total assets of the Sponsor for the Financial Year ended December 31, 2025, was ₹ 96,191.64 million. Accordingly, in respect of the Sponsor and its Associates (including common Associates of the Sponsor, Project Manager or Investment Manager) and the Sponsor Group, all outstanding civil matters which involve an amount equal to or exceeding ₹ 1,442.87 million (being approximately 1.5% of the total assets for the Financial Year ended December 31, 2025) have been considered material.

For the Investment Manager, the total consolidated net worth as on March 31, 2026, was ₹ 294.44 million. Accordingly, in respect of the Investment Manager and its Associates (excluding common Associates of the Sponsor, Project Manager or Investment Manager), all outstanding civil matters which involve an amount equal to or exceeding ₹ 14.74 million (being 5% of the total net worth as on March 31, 2026) have been considered material.*

For the Project Manager and its Associates (excluding common Associates of the Sponsor, Project Manager or Investment Manager), all outstanding civil matters which involve an amount equal to or exceeding 5% of the total consolidated income for Fiscal 2026 have been considered material. The Project Manager is a newly incorporated entity and did not have any income in Fiscal 2026. Further, there are no outstanding matters involving the Project Manager.

For the Trustee, the total profit after tax for Fiscal 2026 was ₹ 406.57 million. Accordingly, in respect of the Trustee, all outstanding civil matters which involve an amount equal to or exceeding ₹ 20.33 million (being 5% of the profit after tax for Fiscal 2026) have been considered material.

For entities which are common Associates of any of the Sponsor, the Investment Manager and the Project Manager, where the above-mentioned materiality thresholds in relation to the Sponsor, the Investment Manager and the Project Manager apply, all outstanding civil matters which involve an amount equal to or exceeding ₹ 1,442.87 million (being the higher of the thresholds (in terms of amount) applicable to the Sponsor, the Investment Manager and the Project Manager) have been considered material.

Additionally, all outstanding cases involving the Sponsor, Investment Manager, the Project Manager or any of their Associates or the Sponsor Group, where an adverse outcome would materially and adversely affect the business, operations or financial position or reputation of the Sponsor, its Associates, the Sponsor Group, the Investment Manager or the Project Manager, irrespective of the amount involved, have been considered as material and disclosed.

Further, in cases where outcome of one litigation impacts one or more other litigations, which individually are below materiality threshold, but collectively are above the threshold, such cases will also be disclosed.

**Net worth means the aggregate value of the paid-up share capital and all reserves created out of the profits (securities premium account and debit or credit balance of profit and loss account) after deducting the aggregate value of the accumulated losses, deferred expenditure and miscellaneous expenditure not written off as per the audited balance sheet but does not include reserves created out of revaluation of assets, write-back of depreciation and amalgamation*

I. Litigation and Regulatory Actions against the Trust and its Associates

As on the date of this Final Offer Document, there are no outstanding criminal litigation, non-ordinary course regulatory actions or material civil litigation against the Trust and its Associates (not being, the Portfolio Assets).

II. Litigation involving the Portfolio Assets

Material civil proceedings filed against the Portfolio Assets

DATRPL

(i). Karan Singh Dalal and others ("**Petitioners**") have filed a writ petition against DATRPL and NHAI ("**Respondents**") before the High Court of Punjab and Haryana ("**High Court**"), alleging illegal and wrongful grant of provisional certificate of completion of an establishment of a toll plaza at Gadpuri, Haryana. The Petitioners have sought the fulfilment of certain obligations under the concession agreement entered into between the Respondents pertaining to six-laning of DATRPL project highway and the shifting of the said toll plaza away from the Arohi Model School, Gadpuri, Haryana. The Hon'ble High Court *vide* order dated December 5, 2023, ordered to list the matter before Division Bench of the High Court. The division bench of the High Court ("**Division Bench**") on August 9, 2024, took on record the Petitioners' affidavit, treating the petition as a public interest litigation. The matter is currently pending before the Division Bench.

NKTPL and SMTPL

(i). V. Maharajan ("**Petitioner**") has filed a writ petition against NKTPL, SMTPL and NHAI and others ("**Respondents**") before the High Court of Madras alleging, amongst other things, improper road maintenance and repair works at the road stretch between Madurai and Kanyakumari and lack of adequate facilities and amenities. The Petitioner sought the issuance of directions for the repair and maintenance of the stretch between Madurai and Kanyakumari and suspension of collection of toll fees at the Salaidupur toll plaza and the Nanguneri toll plaza till such repair and maintenance works are ongoing. This matter has not been admitted yet.

Material civil proceedings filed by the Portfolio Assets

MHPL

(i) MHPL, MSHPL and BWHPL ("**Claimants**") have initiated arbitration proceedings before the Singapore International Arbitration Centre ("**SIAC**"). In these proceedings, MHPL has raised a claim for an amount of ₹ 1,926.38 million against Dilip Buildcon Limited ("**Respondent**"). The Claimants have alleged, *inter alia,* losses suffered by them due to the inability of the Respondent to finish balance works under the share purchase agreement and the engineering, procurement and construction agreement executed between the parties. Subsequently, in its statement of counterclaim, the Respondent raised certain contentions against the Claimant, alleging, *inter alia*, breach of obligation to pass on tax credit benefits and breach of confidentiality. The Respondent has filed the statement of reply to defence to counterclaim before the SIAC. The matter is currently pending before the SIAC.

MSHPL

(i) MSHPL and certain other SPVs ("**Claimants**") have initiated arbitration proceedings before the Singapore International Arbitration Centre. In these proceedings, MSHPL has raised a claim for an amount of ₹ 653.32 million against Dilip Buildcon Limited ("**Respondent**"). For details, please see the section entitled "*Legal and Other Information – Material civil proceedings filed by the Portfolio Assets – MHPL* ".

BWHPL

(i) BWHPL and certain other SPVs ("**Claimants**") have initiated arbitration proceedings before the Singapore International Arbitration Centre. In these proceedings, BWHPL has raised a claim for an amount of ₹ 264.92 million against Dilip Buildcon Limited ("**Respondent**"). For details, please see the section entitled "*Legal and Other Information – Material civil proceedings filed by the Portfolio Assets – MHPL* ".

Others

(i). Certain persons ("**Petitioners**") have filed separate cases against some of the Portfolio Assets before various civil courts, consumer courts and other authorities, *inter alia*, (i) alleging excess collection of toll; (ii) challenging acquisition of land used for the Portfolio Assets; and (iii) challenging certain encroachment notices served upon the Petitioners. These matters are currently pending.

(ii). Certain persons have filed separate labour cases against some of the Portfolio Assets before various civil and labour courts in relation to, amongst other things, wrongful termination of employment and increase in salaries. These matters are currently pending.

Criminal proceedings involving the Portfolio Assets

DATRPL

(i) The State of Haryana ("**Complainant**") has initiated criminal proceedings against Rajesh Madaan, the project manager of DATRPL ("**Respondent**"), amongst others, before the District Court, Faridabad ("**Court**"). A first information report was filed against the Respondent under sections 279, 337, 338 and 304A of the Indian Penal Code, 1860, as amended, in relation to the death of the son of Manoj Kumar Wadhwa in a road accident allegedly due to potholes on the road forming part of DATRPL's project. A petition for setting aside the chargesheet has been filed before the Court. Basis the said petition, the Court has granted a stay on any further proceedings against the Respondent. The matter is currently pending.

(ii) Giriraj Kishore ("**Complainant**") has filed a complaint against Rajesh Madaan ("**Accused 1**") and the concerned team leader of the independent engineer ("**Accused 2**") before the Court of Judicial Magistrate, Chhata, Mathura ("**Court**"), alleging commission of mischief in connection with the incomplete execution of drainage infrastructure works of the National Highway Delhi-Mathura Road. It is alleged that Accused 1 and Accused 2 intentionally diverted drainage water towards the Complainant's agricultural land, resulting in significant damage to both a boundary wall and standing crops. The Court, upon initial review, found *prima facie* evidence of malfeasance and mischief. Subsequently, the Court has issued summons to Accused 1 in this matter. The matter is currently pending.

MBEL

(i). The Labour Enforcement Officer ("**Plaintiff**") has filed two separate cases against MBEL (erstwhile Madhucon Agra Jaipur Expressway Limited) ("**Accused**") before the Civil Court, Bair District, Bharatpur ("**Civil Court**"), alleging non-compliance under Sections 23 and 24 of the Contract Labour (Regulation and Abolition) Act, 1970. The Plaintiff has also filed another case before the Civil Court under Section 22 of the Minimum Wages Act, 1948 for non-payment of minimum wage to a worker as stipulated under the aforesaid Act. The matters are currently pending.

(ii). Saroj Devi ("**Complainant**") has filed a criminal case against Brijendra Singh ("**Accused**") before the Court of Additional Chief Judicial Magistrate, Mahwa ("**CJM**"), alleging that the Accused has unlawfully constructed certain tanks in front of her property, thereby obstructing her right of way. It is further alleged by the Complainant that despite repeated representations, the officials of MBEL failed to take any action to remove the said encroachment and are purportedly acting in collusion with the Accused. The CJM refused to take cognizance of the matter. The Complainant has challenged the order of the CJM before the Court of Additional District and Sessions Judge, Mahwa, Dausa. The matter is currently pending.

(iii). Rajendra Singh ("**Complainant**") has lodged a first information report against employees of MBEL ("**Accused**") alleging physical altercation and misconduct on the part of the Accused. Upon completion of the investigation, the police filed a closure report. Aggrieved by the said closure report, the Complainant preferred a protest petition seeking cognizance of the alleged offences. The matter is currently pending.

(iv). Suresh Kumar ("**Complainant**") has filed a complaint against Anoop Singh, a member of the toll collection staff of MBEL ("**Accused**"), before the District Court, Bharatpur ("**Court**") alleging that the Accused has physically assaulted him and used derogatory language directed at his caste constituting an offence under the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989, read with the Indian Penal Code, 1860. The Accused has received a notice of appearance from the police for the aforesaid case. The matter is currently pending.

MHPL

(i) Ismail Shaik ("**Complainant**") has lodged a first information report ("**FIR**") against NH-161 Highway Officials ("**Accused**"), alleging the death of his father due to the negligence of the Accused. The Complainant has alleged that high mud mounds in the vicinity of NH-161 were not removed by the maintenance authorities due to which, the deceased while being on one of these mud mounds came into contact with a live electricity line due to the proximity of the mound to the said line, which resulted in his death by electrocution. A response to the FIR has been filed by the Accused. The matter is currently pending.

MSHPL

(i) MSHPL ("**Plaintiff**") has lodged a criminal complaint against Rohit Sharma ("**Accused**"), proprietor of M/s Rajdeep Enterprises before the Court of Chief Judicial Magistrate, Solapur ("**Court**"), under Section 138 read with Section 142 of the Negotiable Instruments Act, 1881, alleging dishonour of cheque in relation to an inadvertent error of credit of ₹ 318,544 by the Plaintiff in the bank account of the Accused. The Plaintiff has also filed a civil suit against the Accused before the Civil Court at Solapur for recovery of ₹ 318,544 along with costs, which is currently pending. The matter is currently awaiting listing before the Court.

NDEPL

(i) Venkatalakshmamma ("**Complainant**") has filed a first information report ("**FIR**") against Hari Babu, a toll supervisor employed by NDEPL ("**Accused**"), alleging negligence on the part of the Accused to ensure proper road maintenance due to which the Complainant's husband, a pedestrian, lost his life. Aggrieved by the said FIR, the Accused filed a writ petition before the High Court of Karnataka, Bangalore ("**Court**") for quashing of the FIR and the Court has granted a stay on the FIR. The matter is currently pending.

WUPTPL

(i) The State of Uttar Pradesh has filed a criminal case against Brijesh Singh, the manager of Sivaya Toll Plaza operated by WUPTPL ("**Applicant**"), before the High Court of Allahabad ("**Court**"). It was alleged that the Applicant negligently maintained the road infrastructure resulting in the complainant sustaining injuries. In response, the Applicant has filed an application before the Court stating that his role is strictly limited to the operation of the toll collection plaza under a contractual agreement, and that he bears no duty or responsibility for the maintenance of the road. The Court granted a stay on the proceedings thereby preventing any coercive action against the Applicant. The matter is currently pending.

SIPL

(i) Benita Mary ("**Complainant**") has filed a criminal complaint against Ramesh Vadivel ("**Accused**"), alleging that the Complainant, who was employed as a paramedic with SIPL, was sexually harassed by the Accused, her manager. The Accused filed a petition for anticipatory bail before the High Court of Madras ("**Court**"). The Court granted anticipatory bail to the Accused. The matter is currently pending.

GAEPL

(i). GAEPL has filed various FIRs in relation to damage to structures and assets on the project highway. These matters are currently pending.

Other matters considered material by the board of directors of the Investment Manager

APEPL

(i) APEPL ("**Claimant**") has initiated arbitration proceedings against NHAI ("**Respondent**") under the APEPL Concession Agreement. The Claimant has disputed the minimum thickness of bituminous concrete overlay requirement under the APEPL Concession Agreement, during the second and third periodic maintenance, respectively, and raised claims with respect to the costs incurred for the additional thickness of overlay work it has undertaken, as per the directions of the Respondent. The Claimant has claimed that the requirement to lay the increased thickness has resulted in additional costs aggregating to approximately ₹ 312.10 million, which it seeks to recover along with interest and costs. The Respondent has denied all claims, asserting that the overlay thickness it directed was technically sufficient and that the Claimant, having carried out the works in accordance with those directions in earlier maintenance periods without objection, is estopped from challenging such direction and seeking to recover additional costs for works in subsequent periods. The Respondent had also filed an application before the arbitral tribunal seeking to amend its statement of claims, which was subsequently dismissed by a majority interim award dated December 13, 2025. The Respondent has challenged this majority interim award before the Delhi High Court by way of a petition under the Arbitration and Conciliation Act, 1996, which is currently pending. The matter is currently pending before the arbitral tribunal.

BWHPL

(i) BWHPL ("**Claimant**") has initiated arbitration proceedings against NHAI ("**Respondent**") under the BWHPL Concession Agreement. The Claimant has raised claims against the Respondent for the release of balance annuity payments, delay in release of payments, additional expenditure incurred due to extension of construction period and reimbursement of costs for mobilisation of machinery, among others, for a claim amount of ₹ 3,367.95 million along with applicable interest and costs. The Respondent has filed a statement of defence and a statement of counter claim against the Claimant. The Respondent has raised counter claims against the Claimant for license fee for unauthorised use of NHAI land, toll revenue loss, and damages for breach of maintenance obligations, among others, for a counter claim amount of ₹ 3,618.38 million along with applicable interest and costs. The matter is currently pending before the arbitration tribunal.

FRHPL

(i) FRHPL ("**Claimant**") has issued a notice to NHAI ("**Respondent**") for initiation of arbitration proceedings under the FRHPL Concession Agreement. The Claimant has raised claims against the Respondent for the delay in the issuance of the provisional completion certificate for the additional Non-PCOD stretches by the Respondent, which although intended to be issued with effect from April 01, 2021, was actually received by

the Claimant on May 03, 2021, resulting in the Claimant incurring revenue loss for the period from April 01, 2021 to May 02, 2021. The Claimant claims a total revenue loss of ₹ 248.20 million, comprising of a principal revenue loss of ₹ 170.47 million and interest of ₹ 77.73 million calculated up to June 30, 2025. Subsequently, the Claimant proposed to resolve the matter through the CCIE mechanism, and the Respondent has consented to the same. The matter has been placed for resolution through conciliation before the Conciliation Committee of Independent Experts ("**CCIE**"). The matter is currently pending before the CCIE.

(ii) FRHPL ("**Claimant**") has issued a notice to NHAI ("**Respondent**") for initiation of conciliation proceedings under the FRHPL Concession Agreement. The Claimant has disputed the reduction of the concession period by the Respondent. The Respondent has stated that the actual traffic on the project highway being higher than the target traffic under the FRHPL Concession Agreement would warrant a reduction in the concession period by 10% i.e. 3 years. The Claimant has proposed limiting of such reduction in the concession period to 6.13%, and has requested a conciliation meeting with the Chairman of NHAI, failing which the Claimant reserves it's right to invoke arbitration under the provisions of the FRHPL Concession Agreement. The matter is currently pending.

MHPL

(i) MHPL ("**Claimant**") has initiated arbitration proceedings against NHAI ("**Respondent**"). The Claimant has disputed the recommendation made by the project director of NHAI for recovering an amount of ₹ 279.2 million paid by the Respondent to the Claimant as a part of the milestone payments (during the construction phase), from the crystalized annuity, operations and maintenance payment. The project director of the Respondent had alleged that the Claimant had adopted a wrong consumer price index due to which the amount paid to the Claimant was in excess of the amount which was actually due. The Claimant has refuted this and stated that the adopted index was as per the Respondent's policy. Further, the Claimant has also disputed a penalty of ₹ 1,347.84 million levied by the Respondent on the recommendation of the independent engineer for default in carrying out repair and rectification work as per the provisions of the MHPL Concession Agreement. The Claimant has refuted this and stated that the default in carrying out repair and rectification work is not attributable to the Claimant. The Respondent has filed a counterclaim for a total claim amount of ₹ 5,243.67 million (including interest as on 31.05.2024) in this matter. The matter is currently pending before the arbitration tribunal.

MSHPL

(i) MSHPL ("**Claimant**") has initiated arbitration proceedings against NHAI ("**Respondent**") under the MSHPL Concession Agreement. The Claimant has raised claims against the Respondent seeking compensation for the Respondent's delay in declaration of the 'appointed date', additional expenditure incurred by the Claimant due to extension of the construction period, compensation for the Respondent's failure to provide encumbrance-free right of way, and for payment of disputed amounts, among others, for a total claim amount of ₹ 4,122.74 million. The Respondent has refuted this and has filed a counterclaim against the Claimant seeking compensation for, among others, the licence fee for alleged unauthorised use of land by the Claimant, toll revenue loss, damages for breach of maintenance obligations under the concession agreement entered into between the Claimant and the Respondent ("**MSHPL Concession Agreement**"), and damages for Claimant's delay in fulfilling conditions precedent under the MSHPL Concession Agreement, for a total counterclaim amount of ₹ 28,908.27 million. The matter is currently pending before the arbitral tribunal.

SIPL

(i) SIPL ("**Claimant**") has issued a notice to NHAI ("**Respondent**") for initiation of arbitration proceedings under provisions of the SIPL Concession Agreement. The Claimant has raised claims against the Respondent for additional impact due to changes in excise duty rates on diesel up to December 2022 and the application of discount on change of scope works, for a total claim amount of ₹ 253.28 million. As part of its notice, the Claimant has appointed a nominee arbitrator who is not on the empanelled list of Society for Affordable Redressal of Disputes ("**SAROD**"), taking the position that whilst the arbitration is to be conducted under SAROD rules, the Claimant is under no contractual or legal obligation to nominate its arbitrator from SAROD's notified panel of arbitrators. The Respondent has raised an objection to this nomination on the ground that the SAROD rules are binding on both parties and mandate selection of arbitrators from SAROD's notified panel of arbitrators, and has reserved its right to challenge the appointment before an appropriate court. The matter is currently pending.

SPPL

(i) SPPL ("**Claimant**") has issued a notice to NHAI ("**Respondent**") for initiation of arbitration proceedings under provisions of the SPPL Concession Agreement. The Claimant has raised claims against the Respondent for additional impact due to change in rates of excise duty on diesel, application of discount on change of scope works, the adoption of centre-wise CPI(W) for Hyderabad circle in place of the All-India Average CPI(W), and labour cess deducted on change of scope bills. As part of its notice, the Claimant has appointed a nominee arbitrator who is not on the empanelled list of Society for Affordable Redressal of Disputes

("**SAROD**"), taking the position that whilst the arbitration is to be conducted under SAROD rules, the Claimant is under no contractual or legal obligation to nominate its arbitrator from SAROD's notified panel of arbitrators. The Respondent has raised an objection to this nomination on the ground that the SAROD rules are binding on both parties and mandate selection of arbitrators from SAROD's notified panel of arbitrators, and has called upon the Claimant to initiate arbitration in accordance with the SAROD Rules. The appointment of arbitrators is presently ongoing, and the matter is currently pending.

THPL

(i) THPL ("**Claimant**") has issued a notice to NHAI ("**Respondent**") for initiation of arbitration proceedings under provisions of the THPL Concession Agreement. The Claimant has raised claims against the Respondent for differential payment against CPI(W) of Central against CPI(W) of Andhra Pradesh, compensation on account of increase in royalty from February 2, 2020 to August 4, 2021, damage claim for delayed handing over of land, and claims for existing road maintenance after PCOD, among others, for a total claim amount of ₹ 1,965.63 million. The Claimant has also filed an arbitration petition before the High Court of Delhi ("**High Court**"), challenging the Respondent's directions concerning the appointment of the nominee arbitrator as per Society for Affordable Redressal of Disputes ("SAROD") rules in relation to this matter. The said petition was dismissed by the High Court, *vide* order dated August 29, 2025. Subsequently, the Claimant filed a Special Leave Petition ("**SLP**") before the Supreme Court of India ("**Supreme Court**") seeking grant of special leave to appeal against the order passed by the High Court. The Supreme Court disposed of the SLP *vide* its order dated March 12, 2026, declining to interfere with the High Court's order, and granted liberty to the Claimant to move a fresh application before the High Court seeking appointment of an independent arbitrator from the SAROD panel or otherwise, as per the High Court's discretion. In view of this Supreme Court order, the Claimant intimated the Respondent regarding commencement of arbitration under the SAROD Rules *vide* letter dated April 13, 2026, and subsequently initiated arbitration *vide* letter dated May 21, 2026. The matter is currently pending.

WVEPL

(i) WVEPL ("**Claimant**") has initiated arbitration proceedings against NHAI ("**Respondent**") for the extension of the concession agreement executed between the Claimant and Respondent, citing a shortfall in actual traffic vis-à-vis target traffic as per the provisions of the concession agreement. The Claimant claimed for an extension of the concession period by 1,423 days as against the Respondent's recommendation to reduce the concession period by 1.5 years. The matter is currently pending before the arbitration tribunal. The Respondent has filed a petition before the High Court of Delhi at New Delhi ("**High Court**") challenging the mandate of the arbitral tribunal and seeking appointment of a substitute arbitral tribunal. The Respondent has also sought an ad interim stay of the arbitral proceedings pending disposal of the petition. The matter is currently pending before the High Court.

WUPTPL

(i) NHAI has issued a letter dated July 6, 2026, to HDFC Bank Limited ("**Escrow Bank**") for the recovery of dues amounting to ₹ 1,187.93 million for inter alia non-execution of periodic renewal works and non-fulfilment of maintenance obligations by WUPTPL, and damages for O&M deficiencies under the terms of the WUPTPL Concession Agreement. NHAI has directed the Escrow Bank to freeze all debits from the escrow account of WUPTPL and to realise and remit the entire available balance to NHAI towards such dues. In response, WUPTPL has filed a petition dated July 14, 2026, before the High Court of Delhi at New Delhi ("**High Court**") under the Arbitration and Conciliation Act, 1996, seeking to restrain NHAI and the Escrow Bank from coercive recovery of the disputed dues from the escrow account, pending adjudication of the invocation of the arbitration mechanism provided under the WUPTPL Concession Agreement. The matter is yet to be admitted before the High Court.

Others

Certain Portfolio Assets have received certain claims, notices and penalties from regulatory authorities, including *inter alia* NHAI, MoRTH and other governmental authorities, as well as from certain third parties, in relation to matters such as interest claims, toll fee revisions, electricity charges for de-scoped road lengths, target traffic–related issues, and other similar matters. The relevant Portfolio Assets are contesting these non-material claims and penalties before the appropriate authorities, and these matters are currently pending.

Regulatory proceedings involving Portfolio Assets

(i). The office of the Registration and Stamps Department, Government of Telangana has issued notices to APEPL and KMC Constructions Limited ("**KMC**") in relation to the inadequate stamping of the EPC contract entered into between APEPL and KMC. APEPL is contesting the aforesaid notices.

(ii). The Collector, Aligarh ("**Collector**") issued a notice on February 15, 2016 to GAEPL under Sections 33/47 A of the Indian Stamp Act, 1899 ("**Notice**"), in relation to the stamp duty of the concession agreement entered

into between GAEPL and NHAI. Subsequently, the Collector, issued an *ex parte* recovery order against GAEPL on February 25, 2020. On October 13, 2020, the Collector passed the impugned order directing the payment of deficient stamp duty amounting to ₹ 456.39 million, along with a penalty of ₹ 4.56 million and applicable interest. In response, GAEPL challenged the Collector's order before the High Court of Allahabad ("**High Court**"). The High Court granted a stay on the Notice, thereby preventing any coercive action against GAEPL for the duration of the proceedings *vide* its order dated December 18, 2020. This matter is currently pending.

(iii). The Office of the Additional District Magistrate (Finance and Revenue), Meerut ("**ADM**") has issued notices on October 31, 2019 and December 13, 2019 to WUPTPL under sections 33 and 47A of the Indian Stamp Act, 1899 in relation to the deficit payment of stamp duty on the concession agreement executed between WUPTPL and NHAI. The notices have alleged transfer of immovable property *vide* the concession agreement and have imposed a stamp duty amounting to ₹ 251.3 million. In response thereto, WUPTPL has filed its written submissions and an application for deferment of adjudication in the present matter, considering that identical issues are sub-judice before the High Court at Allahabad and the High Court of Lucknow. This matter is currently pending.

(iv). The Assistant Inspector General (Registration), Lalitpur, Uttar Pradesh issued a notice to JVTPL under Section 47A of the Indian Stamp Act, 1899, and Section 7(3) of the Uttar Pradesh Stamp (Valuation of Property) Rules, 1997 ("**Notice**"), directing JVTPL to produce the original concession agreement executed between JVTPL and NHAI for the assessment of applicable stamp duty. JVTPL made a representation stating that the action was outside the jurisdiction of the Assistant Inspector General. Subsequently, JVTPL filed a writ petition before the High Court of Allahabad anticipating coercive action. The High Court of Allahabad granted a stay on the Notice thereby preventing any coercive action against JVTPL for the duration of the proceedings by its order dated March 15, 2024. This matter is currently pending.

(v). The Office of the District Registrar, Bengaluru (Stamps and Registration Department) ("**Registrar**") has issued notices dated November 8, 2024, and November 11, 2024 ("**Notices**"), to NDEPL directing NDEPL to produce the Agreement/Contract/Lease/License executed between NDEPL and NHAI for the assessment of applicable stamp duty. In response, NDEPL, has submitted formal responses requesting the withdrawal of the Notices on the grounds that the Notices were issued without jurisdiction and are alleged to be arbitrary. NDEPL has not received any further correspondence from the Registrar.

(vi). The Labour Department, Guntur, Andhra Pradesh ("**Labour Department**") has issued a notice dated March 29, 2025 to NAMEPL ("**Notice**") in relation to alleged failure of remittance of applicable labour cess. The Notice imposes a demand of ₹ 54.6 million, representing the alleged balance amount underpaid by NAMEPL pursuant to the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and the rules framed thereunder. NAMEPL has submitted comprehensive details of all labour cess payments previously made and sought the withdrawal of the Notice in response *vide* its correspondence dated June 6, 2025. NAMEPL has not received any further correspondence from the Labour Department.

(vii). An industrial dispute has been instituted against NHAI and Quess Corporation Limited (an erstwhile third-party contractor responsible for incident management), arising from the termination of several staff members by Quess Corporation Limited. In connection with this matter, NHAI forwarded multiple summons, each pertaining to a different claimant/staff member, to JUHPL, the principal employer under the Contract Labour (Regulation and Abolition) Act, 1970, on May 7, 2025. The summons required JUHPL's appearance before the Central Government Industrial Tribunal-cum-Labour Court-2, Chandigarh ("**Labour Court**"), on July 15, 2025, for adjudication of the dispute under Sub-section (2A) of Section 10 of the Industrial Disputes Act, 1947. JUHPL *vide* its correspondence dated May 27, 2025, confirmed its intention to accede to NHAI's request to implead itself as a party in the forthcoming hearing. JUHPL filed an application before the Labour Court seeking its impleadment on June 22, 2026. Simultaneously, JUHPL filed a written statement denying any employer-employee relationship with the claimant and requested dismissal of the claim. The matter is currently pending.

(viii). The Assistant Commissioner of Stamps (First) Lucknow ("**Assistant Commissioner**") has issued a notice dated October 30, 2025, to LRTPL ("**Notice**") alleging underpayment of the applicable stamp duty on the concession agreement executed with NHAI. The Notice imposes a demand of ₹ 999 million representing the alleged balance amount underpaid by LRTPL pursuant to the Indian Stamp Act, 1899, and the rules framed thereunder. LRTPL was notified to appear before the Assistant Commissioner and submit the original copy of the concession agreement for assessment. LRTPL has filed a writ petition dated December 12, 2025, before the High Court of Allahabad ("**High Court**") challenging the Notice. The High Court granted a stay on the Notice *vide* its order dated January 7, 2026. This matter is currently pending.

(ix). Certain Portfolio Assets have received notices from regulatory authorities, in relation to the stamp duty on the concession agreements entered into by such Portfolio Assets. The relevant Portfolio Assets are contesting the aforesaid notices and the order before various authorities and these matters are currently pending.

(x). Certain Portfolio Assets have received notices, requests for information and summons from regulatory authorities, including the Economic Offences Wing, Palwal (in relation to deposit of amounts in a bank account during demonetization) and the Directorate General of GST Intelligence (in relation to allegations of non-payment of goods and services tax), which have been responded to. No further communication has been received in these matters.

III. Litigation involving the Sponsor, its Associates and the Sponsor Group (including common Associates of the Sponsor, the Project Manager and the Investment Manager)

Material civil proceedings involving the Sponsor, its Associates and the Sponsor Group

Cube Highways and Infrastructure III Pte. Ltd.

(i) Cube Highways and Infrastructure III Pte. Ltd. ("**CH-III**") and certain other SPVs ("**Claimants**") have initiated arbitration proceedings before the Singapore International Arbitration Centre ("**SIAC**") against Dilip Buildcon Limited ("**Respondent**"). CH-III has raised a claim of ₹ 329 million. Claimants have alleged, inter alia, the losses suffered by them due to the inability of the Respondent to finish balance works under the share purchase agreement and the engineering procurement and construction agreement executed between the parties. Subsequently, in its statement of counter claim, the Respondent raised certain contentions against the Claimant alleging, inter alia, breach of obligation to pass on tax credit benefits and breach of confidentiality. All the pleadings in the matter have been filed. The matter is currently pending for final arguments before the SIAC.

WMPTL

(i) A certain individual named Paras Saklecha has filed a Public Interest Litigation ("**PIL**") against the State and Western MP Infrastructure & Toll Roads Private Limited ("**WMPTL**") before the MP High Court praying that the tolling be stopped on the highway being maintained by WMPTL. PIL alleges that WMPTL and another concessionaire operating the continuing stretch of the highway has already made profits and has gotten back the returns of the cost incurred to construct and operate the highway. The PIL also alleges that being a welfare state, the authorities cannot allow private parties to profit from the tolling mechanism for an extended period of time. WMPTL is in process of filing a comprehensive reply before the Court. The matter is currently pending.

Criminal proceedings involving the Sponsor, its Associates and the Sponsor Group

Cube Highways and Infrastructure III Pte. Ltd.

(i) Dilip Buildcon Limited ("**Complainant**") has lodged a complaint at Police Station Chuna Bhatti, Bhopal ("**Police Station**") against Cube Highways and Infrastructure III Pte. Ltd. ("**Respondent**"), alleging that the Respondent violated confidentiality and contractual provisions under a Share Purchase Agreement ("**SPA**") for acquisition of highway projects executed between the Complainant and the Respondent. The Complainant alleged that the Respondent issued a notice dated February 7, 2024, which was simultaneously shared with the National Stock Exchange, as well as with the Complainant's investors, business partners, and bankers This allegedly breached the confidentiality obligations under the SPA, resulting in a financial loss of approximately ₹ 1,915.41 million to the Complainant. In furtherance of the complaint, a notice under Section 91 of the Code of Criminal Procedure, 1973 dated October 21, 2024, was issued to the Respondent's representatives, George Crawford Curie, Deepan Hemant Kumar Shah, Puja Agarwal, and Richa Chawla. The Respondent has since submitted a response dated November 13, 2024, to the Investigating Officer. The matter is currently pending.

Cube Highways Technologies Private Limited

(i) Cube Highway Technologies Private Limited ("**Complainant**") initiated proceedings against Metro Infosys Private Limited & Ors. ("**Defendant**") due to dishonour of the cheques which were issued by the Defendant amounting to ₹ 1.50 million for the reason of "Payment stopped by Drawer." The proceedings are going on before the Additional Chief Judicial Magistrate (Court No. 3), Gautam Buddha Nagar, Uttar Pradesh.

Regulatory proceedings involving the Sponsor, its Associates and the Sponsor Group

*Delhi Hapur Meerut Expressway Private Limited ("**DHMEPL**")*

(i) The District Magistrate/Collector, Hapur ("**Collector**") issued a show cause notice on December 06, 2024 ("**Notice**") to DHMEPL as to why a stamp duty of ₹ 2,546.79 million along with penalty and interest should not be levied on the Concession Agreement. The Collector alleged that the Concession Agreement is a lease under the stamp duty and relied on the Judgement passed in the Matter of Rewa Tollway Private Ltd. Apprehending a demand notice and recovery and to quash the Notice, DHMEPL challenged the Notice before the High Court of Allahabad ("**High Court**"). The High Court *vide* Order dated January 23, 2025, granted a

stay on the Notice thereby preventing any coercive action against DHMEPL for the duration of the proceedings. In the High Court, the Collector has filed its reply to the writ petition. DHMEPL is in the process of filing the rejoinder. This matter is currently pending.

*Malayagiri Highways Private Limited ("**MHPL2**")*

(i) The Office of Additional District Magistrate (HQ), Collector of Stamps, New Delhi ("**Authority**") issued a notice on December 5, 2025, alleging that MHPL2 has issued shares but has not applied for adjudication of stamp duty payable thereon. The Authority has directed MHPL2 to share copies of all the relevant documents including PAS-3, Allotment letter of NSDL/CSDL etc, proof of stamp duty paid, and details of all instruments executed under Article 19. MHPL2 has already submitted its representation and has also made appeared before the Authority and made their submissions. The Authority has to make a final order on the same.

*Kokhraj Handia Expressway Private Limited ("**KHEPL**")*

(i) The Office of Additional District Magistrate (HQ), Collector of Stamps, New Delhi ("**Authority**") issued a notice on November 27, 2025, alleging that KHEPL has issued shares but has not applied for adjudication of stamp duty payable thereon. The Authority has directed KHEPL to pay the stamp duty at the prescribed rate of 0.1% as applicable in NCT of Delhi as per Schedule 1A of the Indian Stamp Act, 1899 on the value of shares issued, failing which recovery proceedings under the provisions of the Act shall be initiated by the Authority. KHEPL has already submitted its representation and has also made appeared before the Authority and made their submissions. The Authority has to make a final order on the same.

*Cube Highway Technologies Private Limited ("**Cube Tech**")*

(ii) The Office of Registration and Stamp Branch, Collector of Stamps, Revenue Dept, Govt of New Dehi ("**Authority**") issued a notice on February 2, 2026, alleging that Cube Tech has issued share certificates but had not paid the required stamp duty on the issuance of shares. The Authority has directed Cube Tech to show cause as to why the amount of stamp duty along with ten times penalty should not be recovered from Cube Tech. Cube Tech has already submitted its representation before the Authority. The Authority is yet to make any final order on the same.

IV. Litigation involving the Investment Manager and its Associates

Please see the section entitled "*Legal and Other Information - Litigation involving the Sponsor and their Associates and the Sponsor Group (including common Associates of the Sponsor, the Project Manager and the Investment Manager)*" on page 411.

V. Litigation involving the Project Manager and its Associates

Please see the section entitled "*Legal and Other Information - Litigation involving the Sponsor and their Associates and the Sponsor Group (including common Associates of the Sponsor, the Project Manager and the Investment Manager)*" on page 411.

VI. Litigation involving the Trustee

Material civil and regulatory proceedings involving the Trustee

There are "Nil" material civil/ commercial litigations against the Trustee, however there is an ongoing investigation before the Competition Commission of India against the Trustee in its former official capacity as one of the office bearers of the Trustees Association of India, for alleged cartelization. Further, the Trustee has invoked confidentiality in said matter.

Criminal proceedings involving the Trustee

There are no criminal litigations against the Trustee in its corporate capacity. However, a criminal application has been filed by Ganesh Benzoplast Limited, the security provider to certain NCDs praying for quashing of an FIR filed by the Axis Trustee Services Limited, on behalf of the debenture holders. The FIR was filed by the Trustee in its capacity as a debenture trustee, upon default and on instruction and on behalf debenture holders, before the DCP, Economic Offence Wing, New Delhi for alleged fraud and forgery by promoter, security provider and issuer of NCDs. The matter is currently pending.

Pending Criminal Litigation which are initiated by the Trustee

The Trustee in its various capacities acting as a trustee, debenture trustee, security trustee, among others, has initiated several proceedings against certain parties based on instructions received from its clients, as follows:

(i) Applications under Section 138 of Negotiable Instruments Act, 1881, based on the instructions of debenture holders/ lenders, in relation to dishonour of cheques. The matters are pending before various forums.

(ii) The Trustee, upon instructions of their client has filed an appeal under Section 26(1) of Prevention of Money Laundering Act, 2002 before the appellate tribunal against the order of the adjudicating authority in the matter OC No.2470 of 2024. The matter is currently pending.

VII. Taxation Proceedings

The details of all outstanding tax disputes involving the Portfolio Assets and against the Trust, Sponsor, the Sponsor Group, the Project Manager, the Investment Manager, their respective Associates and the Trustee are set forth below:

Name of the entity	Number of Proceedings	Amount Involved (in ₹ million)
Direct tax		
i. Trust	1	Nil
ii. Sponsor	Nil	Nil
iii. Investment Manager	Nil	Nil
iv. Project Manager	Nil	Nil
v. Sponsor Group and Associates of Sponsor / Project Manager / Investment Manager	15	15,996.42
vi. Portfolio Assets	114	33,058.22
vii. Trustee	1	0.47
Indirect tax		
i. Trust	Nil	Nil
ii. Sponsor	Nil	Nil
iii. Investment Manager	Nil	Nil
iv. Project Manager	Nil	Nil
v. Sponsor Group and Associates of Sponsor / Project Manager / Investment Manager	11	15,235.27
vi. Portfolio Assets	131	12,023.43
vii. Trustee	Nil	Nil

SECURITIES MARKET OF INDIA

The information in this section has been extracted from documents available on the website of SEBI and the Stock Exchanges and has not been prepared or independently verified by the Parties to the Trust or the Book Running Lead Managers or any of their respective affiliates or advisors. The information below is given for the benefit of investors in the Offer. Investors are advised to conduct their independent investigations and ensure that they are eligible to subscribe to, purchase or otherwise acquire the Units they Bid for under Indian laws or regulations.

The Indian Securities Market

India has a long history of organized securities trading. In 1875, the first stock exchange was established in Mumbai. The BSE and the NSE together, hold a dominant position among stock exchanges in terms of the number of listed companies, market capitalisation, and trading activity.

Stock Exchange Regulation

Indian stock exchanges are regulated primarily by SEBI, as well as by the Government acting through the Ministry of Finance, Capital Markets Division, under the Securities Contracts (Regulation) Act, 1956 ("**SCRA**") and the Securities Contracts (Regulation) Rules, 1957 ("**SCRR**"). SEBI, in exercise of its powers under the SCRA and the SEBI Act, notified the SCR (SECC) Regulations, which regulate *inter alia* the recognition, ownership and governance of stock exchanges and clearing corporations in India, and provide for minimum capitalisation requirements for stock exchanges. The SCRA, the SCRR and the SCR (SECC) Regulations, along with various rules, bye-laws and regulations of the respective stock exchanges, regulate the recognition of stock exchanges, the qualifications for membership thereof and the manner in which contracts are entered into, settled and enforced between members of the stock exchanges.

The SEBI Act empowers SEBI to regulate the Indian securities markets, including stock exchanges and intermediaries in the capital markets, to promote and monitor self-regulatory organisations, and to prohibit fraudulent and unfair trade practices. Regulations concerning minimum disclosure requirements by public companies, rules and regulations concerning investor protection, insider trading, substantial acquisitions of shares and takeover of companies, buy-backs of securities, employee stock option schemes, stockbrokers, merchant bankers, underwriters, mutual funds, foreign portfolio investors, credit rating agencies and other capital market participants have been notified by the relevant regulatory authority.

Listing and Delisting of Units

The InvIT Regulations provide for the listing and delisting of units of infrastructure investment trusts on the stock exchanges.

BSE

Established in 1875, it is the oldest stock exchange in India. In 1957, it became the first stock exchange in India to obtain permanent recognition from the Government under the SCRA. It has evolved over the years into its present status as one of the premier stock exchanges of India.

NSE

NSE was established by financial institutions and banks to provide nationwide online, satellite-linked, screen-based trading facilities with market-makers and electronic clearing and settlement for securities, including government securities, debentures, public sector bonds and units. It has evolved over the years into its present status as one of the premier stock exchanges of India. NSE was recognised as a stock exchange under the SCRA in April 1993 and commenced operations in the wholesale debt market segment in June 1994. The capital market (equities) segment commenced operations in November 1994 and operations in the derivatives segment commenced in June 2000.

Internet-based Securities Trading and Services

Internet trading takes place through order routing systems that route client orders to exchange trading systems for execution. Stockbrokers interested in providing this service are required to apply for permission from the relevant stock exchange and comply with the minimum conditions stipulated by SEBI. The NSE became the first exchange to grant approval to its members for providing internet-based trading services. Internet trading is possible on both the "equities" and the "derivatives" segments of the NSE.

Trading Hours

Trading on both the NSE and the BSE occurs from Monday to Friday, between 9:15 a.m. and 3:30 p.m. 1ST (excluding the 15 minutes pre-open session from 9:00 a.m. to 9:15 a.m. that has been introduced). The NSE and the BSE are closed on public holidays. The recognised stock exchanges have been permitted to set their own trading hours (in the cash and equity derivatives segments) subject to certain conditions.

Trading Procedure

In order to facilitate smooth transactions, the BSE replaced its open outcry system with BSE On-line Trading facility in 1995. This totally automated screen-based trading in securities and was put into practice nationwide. This has enhanced transparency in dealings and has assisted considerably in smoothening settlement cycles and improving efficiency in back-office work.

NSE has introduced a fully automated trading system called National Exchange for Automated Trading ("**NEAT**"), which operates on strict time/price priority, besides enabling efficient trade. NEAT has provided depth in the market by enabling large number of members all over India to trade simultaneously, narrowing the spreads.

Depositories

The Depositories Act provides a legal framework for the regulation of depositories in securities and for matters connected therewith or incidental thereto. Further, SEBI has framed regulations in relation to the registration of such depositories, the registration of participants as well as the rights and obligations of the depositories, participants, companies and beneficial owners.

SELLING RESTRICTIONS

The distribution of this Final Offer Document and the offer, sale or delivery of the Units is restricted by law in certain jurisdictions. Persons who may come into possession of this Final Offer Document are advised to consult with their own legal advisors as to what restrictions may be applicable to them and to observe such restrictions. This Final Offer Document may not be used for the purpose of an offer or invitation in any circumstances in which such offer or invitation is not authorized.

General

No action has been taken or will be taken that would permit a public offering of the Units to occur in any jurisdiction, or the possession, circulation or distribution of this Final Offer Document or any other material relating to the Cube Highways Trust or the Units in any jurisdiction where action for such purpose is required. Accordingly, the Units may not be offered or sold, directly or indirectly, and neither this Final Offer Document nor any offering materials or advertisements in connection with the Units may be distributed or published in or from any country or jurisdiction except under circumstances that will result in compliance with any applicable rules and regulations of any such country or jurisdiction. The Offer will be made in compliance with the applicable SEBI regulations. Each subscriber of the Units in the Offer will be required to make, or be deemed to have made, as applicable, the acknowledgments and agreements as described in "*Purchaser Representations and Warranties*" beginning on page 424.

India

This Final Offer Document may not be distributed directly or indirectly in India or to residents of India and any Units may not be offered or sold directly or indirectly in India to, or for the account or benefit of, any resident of India except as permitted by applicable Indian laws and regulations.

The Units may not be offered or sold, directly or indirectly, and this Final Offer Document, any offering materials and any advertisements in connection with the offering of the Units may be distributed or published in or from any country or jurisdiction except under circumstances that will result in compliance with any applicable rules and regulations of any such country or jurisdiction. The Offer will be made in compliance with the applicable InvIT Regulations.

Australia

No placement document, prospectus, product disclosure statement or other disclosure document (including as defined in the Corporations Act 2001 (Cth) ("**Corporations Act**")) has been or will be lodged with the Australian Securities and Investments Commission ("**ASIC**") or any other governmental agency, in relation to the offering. This Final Offer Document does not constitute a prospectus, product disclosure statement or other disclosure document for the purposes of Corporations Act, and does not purport to include the information required for a prospectus, product disclosure statement or other disclosure document under the Corporations Act. No action has been taken which would permit an offering of the Units in circumstances that would require disclosure under Parts 6D.2 or 7.9 of the Corporations Act.

The provision of this Final Offer Document to any person in Australia does not constitute an offer of the Units to that person or an invitation to that person to apply for the issue of any Units unless the recipient is a person to whom an offer of such Units may be made in Australia without the need for a disclosure statement under Chapter 6D or a product disclosure statement under Part 7.9 of the Corporations Act pursuant to the exemptions for offers to certain investors. This Final Offer Document is not intended to be distributed or passed on, directly or indirectly, to any other class of persons in Australia and is not, and under no circumstances is to be construed as, an advertisement or a public offering of the Units in Australia.

The Units may not be offered for sale, nor may application for the sale or purchase or any Units be invited in Australia (including an offer or invitation which is received by a person in Australia) and neither this Final Offer Document nor any other offering material or advertisement relating to the Units may be distributed or published in Australia unless, in each case:

(a) the aggregate consideration payable on acceptance of the offer or invitation by each offeree or invitee is at least A$500,000 (or its equivalent in another currency, in either case, disregarding moneys lent by the person offering the Units or making the invitation or its associates) or the offer or invitation otherwise does not require disclosure to investors in accordance with Part 6D.2 or 7.9 of the Corporations Act;

(b) the offer, invitation or distribution complied with the conditions of the Australian financial services license of the person making the offer, invitation or distribution or an applicable exemption from the requirement to hold such license;

(c) the offer, invitation or distribution complies with all applicable Australian laws, regulations and directives (including, without limitation, the licensing requirements set out in Chapter 7 of the Corporations Act);

(d) the offer or invitation does not constitute an offer or invitation to a person in Australia who is a "retail client" as defined for the purposes of Section 761G of the Corporations Act; and

(e) such action does not require any document to be lodged with ASIC or the Australian Securities Exchange.

The Final Offer Document has not been prepared specifically for Australian investors and investors are urged to consult their legal advisors with respect to the specific U.S. and Australian securities and tax laws applicable to the Units prior to investing in the Units. It:

- may contain references to dollar amounts which are not Australian dollars;
- may contain financial information which is not prepared in accordance with Australian law or practices;
- may not address risks associated with investment in foreign currency denominated investments; and
- does not address Australian tax issues and risks.

If the Units are to be on-sold to investors in Australia within 12 months of the issue of the Units, they may only be offered, issued, sold or distributed in Australia in circumstances where a disclosure statement under Chapter 6D or a product disclosure statement under Part 7.9 of the Corporations Act is not required to be given.

To the extent that any financial service is provided in Australia by the Lead Investment Managers, those services are provided on the basis that they are provided only to "wholesale clients", as defined in the Corporations Act.

The Lead Investment Managers are not in possession of an Australian Financial Services Licence.

Kingdom of Bahrain

Each Lead Investment Manager has represented and agreed that it has not offered or sold, and will not offer or sell any Units except on a private placement basis to persons in the Kingdom of Bahrain who are "accredited investors" for an offer outside Bahrain.

For this purpose, an "accredited investor" means:

(i) an individual holding financial assets (either singly or jointly with a spouse) of U.S.$1,000,000 or more excluding that person's principal place of residence;

(ii) a company, partnership, trust or other commercial undertaking which has financial assets available for investment of not less than U.S.$1,000,000; or

(iii) a government, supranational organisation, central bank or other national monetary authority or a state organisation whose main activity is to invest in financial instruments (such as a state pension fund).

British Virgin Islands

Each of the Lead Investment Managers has represented, warranted and agreed that no invitation has been made or will be made, directly or indirectly, to the public in the British Virgin Islands to subscribe for or purchase any of the units and the units are not being offered or sold and may not be offered or sold, directly or indirectly, in the British Virgin Islands, except as otherwise permitted by the British Virgin Islands laws.

Canada

The Units will not be qualified for sale under the securities laws of any province or territory of Canada. The Units may only be offered, sold or distributed, directly or indirectly, in or to or for the benefit of a resident of, the Provinces of British Columbia, Alberta, Ontario or Québec, which is purchasing, or deemed to be purchasing, as a principal that is: (i) an accredited investor, as defined in National Instrument 45-106 Prospectus Exemptions ("NI 45-106") or subsection 73.3(1) of the Securities Act (Ontario), and (ii) a permitted client, as defined in National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations and only through a dealer duly registered under the applicable securities laws of such provinces in circumstances where no exemption from the applicable registered dealer requirement is available. Any resale of the Units must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

This Final Offer Document or any other offering material in connection with the offer of the Units has not been and will not be distributed or delivered in Canada other than to a resident of the Provinces of British Columbia, Alberta, Ontario or Québec in compliance with applicable securities laws.

Prospective Canadian investors are advised that the information contained within this Final Offer Document in relation to the Units has not been prepared with regard to matters that may be of particular concern to Canadian investors. Accordingly, prospective Canadian investors should consult with their own legal, financial and tax advisers concerning the information contained within this Final Offer Document and any other offering material relating to the Units and as to the suitability of an investment in the Units in their particular circumstances.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this Final Offer Document or any other offering material constituting an "Offer Document" under applicable

Canadian securities laws (including any amendment to any such documents) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 of National Instrument 33-105 Underwriting Conflicts ("NI 33-105"), the parties to this Offer, including Cube Highways Trust, and the Lead Investment Managers, as the case may be, are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with an offering of the Units.

Upon receipt of this Final Offer Document, each Canadian purchaser hereby confirms that it has expressly requested that all documents evidencing or relating in any way to the sale of the Units described herein (including for greater certainty any purchase confirmation or any notice) be drawn up in the English language only.

Par la réception de la document d'offre, chaque acheteur canadien confirme par les présentes qu'il a expressément exigé que tous les documents faisant foi ou se rapportant de quelque manière que ce soit à la vente des valeurs mobilières décrites aux présentes (incluant, pour plus de certitude, toute confirmation d'achat ou tout avis) soient rédigés en anglais seulement.

Cayman Islands

No invitation has or will be made to the public in the Cayman Islands to subscribe for any of the Units. This Final Offer Document does not constitute an invitation or offer to the public in the Cayman Islands of the Units, whether by way of sale or subscription. The Units are not offered or sold, and will not be offered or sold, directly or indirectly, to the public in the Cayman Islands.

EEA public offer selling restrictions

In relation to each Member State of the European Economic Area (each a "**Relevant State**"), no Units have been offered or will be offered pursuant to the Offer to the public in that Relevant State prior to the publication of a prospectus in relation to the Units which has been approved by the competent authority in that Relevant State or, where appropriate, approved in another Relevant State and notified to the competent authority in that Relevant State, all in accordance with the Prospectus Regulation, except that Units may be offered to the public in that Relevant State at any time:

(a) to any legal entity which is a qualified investor as defined under Article 2 of the Prospectus Regulation;

(b) to fewer than 150 natural or legal persons (other than qualified investors as defined under Article 2 of the Prospectus Regulation), subject to obtaining the prior consent of the Lead Investment Managers for any such offer; or

(c) in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

provided that no such offer of Units shall require the Cube Highways Trust, the Investment Manager or any Lead Investment Manager to publish a prospectus pursuant to Article 3 of the Prospectus Regulation, supplement a prospectus pursuant to Article 23 of the Prospectus Regulation or publish an Annex IX document pursuant to Article 1(4) of the Prospectus Regulation.

For the purposes of this provision, the expression an "offer to the public" in relation to the Units in any Relevant State means the communication in any form and by any means of sufficient information on the terms of the offer and any Units to be offered so as to enable an investor to decide to purchase or subscribe for any Units, and the expression "Prospectus Regulation" means Regulation (EU) 2017/1129.

Hong Kong

Cube Highways Trust has not been authorized as collective investment scheme by Hong Kong's Securities and Futures Commission ("**SFC**") pursuant to section 104 of Hong Kong's Securities and Futures Ordinance ("**SFO**"), nor has this Final Offer Document been approved by the SFC pursuant to section 105(1) of SFO. Accordingly: (i) the Units may not be offered or sold in Hong Kong by means of any document other than to persons who are "professional investors" within the meaning of the SFO and the Securities and Futures (Professional Investor) Rules made thereunder or as otherwise permitted under the SFO; and (ii) no person may issue, circulate or distribute, or have in its possession for the purposes of issue, circulation or distribution, whether in Hong Kong or elsewhere, any invitation, advertisement or other document relating to the Units, which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to the Units which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" within the meaning of the SFO and the Securities and Futures (Professional Investor) Rules made thereunder.

WARNING: The content of this Final Offer Document has not been reviewed by any regulatory authority in Hong Kong. You are advised to exercise caution in relation to the offer. If you are in any doubt about any content of this Final Offer Document, you should obtain independent professional advice.

Kuwait

This Final Offer Document is not for general circulation to the public in Kuwait. The Units have not been licensed for offering in Kuwait by the Kuwait Capital Markets Authority or any other relevant Kuwaiti government agency. The offering of the Units in Kuwait on the basis a private placement or public offering is, therefore, restricted in accordance with Law No. 7 of 2010 and the bylaws thereto (as amended). No private or public offering of the Units is being made in Kuwait, and no agreement relating to the sale of the Units will be concluded in Kuwait. No marketing or solicitation or inducement activities are being used to offer or market the Units in Kuwait.

Malaysia

No recognition of the Securities Commission Malaysia has been granted for making available, offering for subscription or purchase, or issuing an invitation to subscribe for or purchase the Units in Malaysia. Accordingly, this Final Offer Document and any other document or material in connection with the Offer will not be circulated or distributed, nor will the Units be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Malaysia.

Mauritius

The Units are not being offered to the public in Mauritius and nothing in the Final Offer Document or any information contained herein may be treated as a prospectus for the purposes of the Securities Act 2005 of Mauritius. The Mauritius Financial Services Commission (FSC) has neither reviewed nor approved this document and Cube Highways Trust does not hold any licence issued by the FSC. Accordingly, this Final Offer Document has not been registered with the FSC. Units are being offered by way of private placement only to the person to whom such offer shall be made.

Only persons licensed by the FSC as investment dealers, investment advisers or investment bankers conducting activities as an investment dealer or investment adviser may market and carry out any form of solicitation in Mauritius with respect to the offer, distribution or sale of the Units. Where solicitation does not exist, a licensee as distributors of financial products may distribute the Units. The Units may not be offered, distributed or sold, directly or indirectly, in Mauritius, except as permitted by applicable Mauritius law, including but not limited to the Securities Act 2005 of Mauritius.

Cube Highways Trust has not been authorized (or recognized) and does not intend to seek authorization (or recognition) with the FSC, and the FSC expresses no opinion as to the matters contained in the Final Offer Document and as to the merits of an investment in the Trust. There is no statutory compensation scheme in Mauritius in the event of failure of Cube Highways Trust.

New Zealand

This document has not been registered, filed with or approved by any New Zealand regulatory authority under the Financial Markets Conduct Act 2013 (New Zealand) (the "**FMC Act**"). The units are not being offered or sold in New Zealand (or allotted with a view to being offered for sale in New Zealand) other than to a person who:

(a) is an investment business within the meaning of clause 37 of Schedule 1 of the FMC Act;

(b) meets the investment activity criteria specified in clause 38 of Schedule 1 of the FMC Act;

(c) is large within the meaning of clause 39 of Schedule 1 of the FMC Act;

(d) is a government agency within the meaning of clause 40 of Schedule 1 of the FMC Act;

(e) is an eligible investor within the meaning of clause 41 of Schedule 1 of the FMC Act;

(f) subscribes, or has subscribed, for securities that have a minimum amount payable of at least NZ$750,000; or

(g) in other circumstances where there is no contravention of the disclosure requirements of the FMC Act.

Oman

The information contained in this Final Offer Document does not constitute a public offer of Units in the Sultanate of Oman as contemplated by the Commercial Companies Law of Oman (Royal Decree 4/74) or the Capital Market Law of Oman (Royal Decree 80/98). Due to legal restrictions, imposed by the Executive Regulations of the Capital Market Law issued by the Capital Market Authority of the Sultanate of Oman (the "**CMA**"), this Final Offer Document is only available to individuals and corporate entities that fall within the description of "sophisticated investors" in Article 139 of the Executive Regulations to the Capital Market Law. The CMA is not liable for the correctness or adequacy of information provided in this Final Offer Document or for identifying whether or not the security being offered pursuant to this Final Offer Document is an appropriate investment for a potential investor. The CMA shall also not be liable for any damage or loss resulting from reliance placed on this Final Offer Document. The investor represents that he/ she is a sophisticated investor as described in Article 139 of the Executive Regulations to the Capital Markets Law and has such experience in business and financial matters that he/ she is capable of evaluating the merits and risks of an investment in Units.

The information contained in this Final Offer Document neither constitutes a public offer of Units in the Sultanate of Oman as contemplated by the Commercial Companies Law of Oman (Royal Decree 4/74) or the Capital Market Law of Oman (Royal Decree 80/98), nor does it constitute an offer to sell, or the solicitation of any offer to buy Non-Omani securities in the Sultanate of Oman as contemplated by Article 139 of the Executive Regulations to the Capital Market Law (issued by Decision No.1/2009). Additionally, this Final Offer Document is not intended to lead to the conclusion of any contract of whatsoever nature within the territory of the Sultanate of Oman.

Korea

The Units have not been and will not be registered under the financial investment services and capital markets act of Korea. The Units may not be offered, sold or delivered, directly or indirectly, in Korea or to, or for the account or benefit of, any resident (as defined under the Foreign Exchange Transaction Act of Korea and the rules and regulations promulgated thereunder) thereof, or to any person for reoffering or resale, directly or indirectly, in Korea or to, or for the account of or benefit of, any resident (as defined under the Foreign Exchange Transaction Act of Korea and the rules and regulations promulgated thereunder) thereof, except as otherwise permitted under applicable Korean laws and regulations.

Qatar

Each Lead Investment Manager has represented and agreed that it has not offered, delivered or sold, and will not offer, deliver or sell at any time, directly or indirectly, any Units in Qatar (including the Qatar Financial Centre), except: (i) in compliance with all applicable laws and regulations of Qatar, including the Qatar Financial Centre; and (ii) through persons or corporate entities authorised and licensed to provide investment advice and/or engage in brokerage activity and/or trade in respect of foreign securities in Qatar. This Final Offer Document has not been filed with, reviewed or approved by the Qatar Central Bank, the Qatar Financial Markets Authority, Qatar Financial Centre Regulatory Authority or any other relevant Qatar governmental body or securities exchange.

Saudi Arabia

This Final Offer Document may not be distributed in the Kingdom of Saudi Arabia except to such persons as are permitted under the Rules on the Offer of Securities and Continuing Obligations issued by the Capital Market Authority of the Kingdom of Saudi Arabia.

The Capital Market Authority does not make any representation as to the accuracy or completeness of this Final Offer Document, and expressly disclaims any liability whatsoever for any loss arising from, or incurred in reliance upon, any part of this Final Offer Document. Prospective purchasers of the Units offered hereby should conduct their own due diligence on the accuracy of the information relating to the Units. If you do not understand the contents of this Final Offer Document, you should consult an authorized financial advisor.

Singapore

This Final Offer Document has not been registered as a prospectus with the Monetary Authority of Singapore, and the offer of the Units is made in reliance on the institutional investor exemption under Section 304 of the Securities and Futures Act, 2001 of Singapore, as modified or amended from time to time ("**SFA**"). Accordingly, this Final Offer Document and any other document or material in connection with the offer or sale of the Cube Highways Trust may not be circulated or distributed, nor may the Units be offered or sold, whether directly or indirectly, to any person in Singapore other than (i) to an institutional investor (as defined in Section 4A of the SFA) pursuant to Section 304 of the SFA or (ii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA. First sales of the Units acquired pursuant to Section 304 of the SFA are subject to the requirements under Section 304A of the SFA.

South Africa

Due to restrictions under the securities laws of South Africa, no "offer to the public" (as such term is defined in the South African Companies Act, No. 71 of 2008 (as amended or re-enacted) (the "**South African Companies Act**")) is being made in connection with the issue of the Units in South Africa. Accordingly, this Final Offer Document does not, nor is it intended to, constitute a "registered prospectus" (as that term is defined in the South African Companies Act) prepared and registered under the South African Companies Act and has not been approved by, and/or filed with, the South African Companies and Intellectual Property Commission or any other regulatory authority in South Africa. The Units are not offered, and the offer shall not be transferred, sold, renounced or delivered, in South Africa or to a person with an address in South Africa, unless one of the exemptions stipulated in the South African Companies Act applies.

Information made available in this Final Offer Document should not be considered as "advice" as defined in the South African Financial Advisory and Intermediary Services Act, 2002.

Switzerland

This Final Offer Document may only be freely circulated and Units may only be freely offered, distributed or sold to regulated financial intermediaries such as banks, securities dealers, fund management companies, asset Investment Managers of collective investment schemes and central banks as well as to regulated insurance companies.

Circulating this Final Offer Document and offering, distributing or selling Units to other persons or entities including qualified investors as defined in the Federal Act on Collective Investment Schemes ("**CISA**") and its implementing Ordinance ("**CISO**") may trigger, in particular, (i) licensing/prudential supervision requirements for the distributor and/or Cube Highways Trust, (ii) a requirement to appoint a representative and paying agent in Switzerland and (iii) the necessity of a written distribution agreement between the representative in Switzerland and the distributor. Accordingly, legal advice should be sought before providing this Final Offer Document to and offering, distributing or selling/on-selling Units to any other persons or entities.

This Final Offer Document does not constitute an issuance prospectus pursuant to Articles 652a or 1156 of the Swiss Code of Obligations and may not comply with the information standards required thereunder. The Units will not be listed on the SIX Swiss Exchange nor on any other stock exchange or regulated trading venue in Switzerland, and consequently, the information presented in this document does not necessarily comply with the information and disclosure standards set out in the relevant listing rules. The documentation of Cube Highways Trust has not been and will not be filed and approved, and may not be able to be approved, by the Swiss Financial Market Supervisory Authority FINMA ("**FINMA**") under the Swiss Collective Investment Schemes Act (**CISA**). Therefore, investors do not benefit from protection under the CISA or supervision by FINMA. This Final Offer Document does not constitute investment advice. It may only be used by those persons to whom it has been handed out in connection with the Units and may neither be copied nor directly or indirectly distributed or made available to other persons.

If you (or any person for whom you are acquiring the Units) are in Switzerland, you (and any such person) represent and warrant that you are (i) a regulated financial intermediary such as a bank, securities dealer, fund management company, asset Investment Manager of collective investment schemes or a central bank, or (ii) a regulated insurance institution.

Taiwan

The Units have not been and will not be registered or filed with, or approved by, the Financial Supervisory Commission and/or any other regulatory authorities of the Republic of China (Taiwan) pursuant to relevant securities laws and regulations and may not be sold, issued or offered within the Republic of China (Taiwan) through a public offering or in circumstances which constitute an offer or a solicitation of an offer within the meaning of the Securities and Exchange Act or relevant laws and regulations of the Republic of China (Taiwan) that requires a registration or approval of the Financial Supervisory Commission and/or any other regulatory authorities of the Republic of China (Taiwan).

United Arab Emirates

United Arab Emirates (excluding DIFC)

In the United Arab Emirates (the "**UAE**") (outside of the financial free zones established pursuant to UAE Federal Law No. 8 of 2004 (the "Financial Free Zones")), the Units are not subject to regulation, under the laws or regulations of the UAE relating to the issue, offering and sale of securities, and will not be admitted to trading on an exchange in the UAE.

This Final Offer Document does not constitute or contain an offer of shares to the general public in the UAE and neither the Units nor this Final Offer Document have been approved by the Securities and Commodities Authority of the UAE (the "**SCA**"), the Central Bank of the UAE or any other regulatory authority in the UAE. In particular, this Final Offer Document has not been approved pursuant to Board Resolution No. 11 of 2016 on the Regulation of the Offering and Issuance of Stocks of Public Joint Stock Companies issued by the SCA (the Offer of Securities Regulation) and the SCA has no responsibility for it.

Accordingly, this Final Offer Document is not intended for circulation or distribution in or into the UAE (outside of the Financial Free Zones), other than to persons in the UAE to whom such circulation or distribution is permitted by, or is exempt from the requirements of, the Offer of Securities Regulation, the SCA's Board of Directors Decision No. 3 of 2017 Concerning the Organisation of Promotion and Introduction, and other applicable UAE laws and regulations.

*Dubai International Financial Centre ("**DIFC**")*

In the Dubai International Financial Centre, this Final Offer Document may only be provided to Professional Clients, as defined in the Dubai Financial Services Authority (the DFSA) Rulebook (Conduct of Business Module), who are not natural persons.

This Final Offer Document relates to an InvIT which is not subject to any form of regulation or approval by the DFSA. The DFSA has no responsibility for reviewing or verifying any Offer Document or other documents in connection with Cube Highways Trust. Accordingly, the DFSA has not approved this Final Offer Document or any other associated documents nor taken any steps to verify the information set out in this Final Offer Document, and has no responsibility for it.

The Units to which this Final Offer Document relates may be illiquid and/or subject to restrictions on their resale. Prospective purchasers should conduct their own due diligence on the Units. If you do not understand the contents of this document you should consult an authorized financial adviser.

United Kingdom public offer selling restrictions

No Units have been offered or will be offered pursuant to the Offer to the public in the United Kingdom, except that Units may be offered to the public in the United Kingdom at any time:

(a) where (i) the offer is conditional on the admission of the Units to trading on the London Stock Exchange plc's main market (in reliance on the exception in paragraph 6(a) of Schedule 1 of the POATR) or (ii) the Units being offered are at the time of the offer already admitted to trading on London Stock Exchange plc's main market (in reliance on the exception in paragraph 6(b) of Schedule 1 of the POATR);

(b) to any qualified investor as defined in paragraph 15 of Schedule 1 of the POATR;

(c) to fewer than 150 persons (other than qualified investors as defined in paragraph 15 of Schedule 1 of the POATR), subject to obtaining the prior consent of the Lead Investment Managers for any such offer; or

(d) in any other circumstances falling within Part 1 of Schedule 1 of the POATR.

For the purposes of this provision, the expression an "offer to the public" in relation to the Units in the United Kingdom means the communication to any person which presents sufficient information on: (a) the Units to be offered; and (b) the terms on which they are to be offered, to enable an investor to decide to buy or subscribe for the Units and the expression "POATR" means the Public Offers and Admissions to Trading Regulations 2024.

Selling Restrictions Addressing Additional United Kingdom Securities Laws

This document does not constitute an approved prospectus for the purposes of and as defined in section 85 of Financial Services and Markets Act 2000 ("**FSMA**"), has not been prepared in accordance with the prospectus rules issued by the Financial Conduct Authority ("**FCA**") pursuant to section 73A of the FSMA and has not been approved by or filed with the FCA or by any other authority which would be a competent authority for the purposes of the POATR. The Units may not be offered or sold and will not be offered or sold to the public in the United Kingdom (within the meaning of section 85 and 102B of the FSMA) save in the circumstances where it is lawful to do so without an approved prospectus (within the meaning of section 85 of the FSMA) being made available to the public before the offer is made.

This document is not to be distributed, delivered or passed on to any person resident in the United Kingdom, unless it is being made only to, or directed only at (a) persons falling within the categories of "investment professionals" as defined in Article 19(5) of the Financial Services and Markets Act (Financial Promotion) Order 2005 as amended (the "**Financial Promotion Order**"), (b) persons falling within any of the categories of persons described in Article 49(2) of the Financial Promotion Order (high net worth companies, unincorporated associations etc), or (c) any other person to whom it may otherwise lawfully be made (all such persons together being referred to as "**relevant persons**").

This document must not be acted on or relied on by persons who are not relevant persons. Any investment or investment activity to which this communication relates is available only to relevant persons and will be engaged in only with relevant persons. Persons of any other description in the United Kingdom may not receive and should not act or rely on this document or any other marketing materials relating to the Units.

Potential investors in the United Kingdom are advised that all, or most, of the protections afforded by the United Kingdom regulatory system will not apply to an investment in the Units and that compensation will not be available under the United Kingdom Financial Services Compensation Scheme.

If the recipient of this document is in any doubt about the investment to which this document relates, they should consult a person authorised under the FSMA who specializes in advising on investing in securities.

United States of America

The Units offered in the Offer have not been and will not be registered under the U.S. Securities Act or any state securities laws in the United States, and unless so registered may not be offered or sold within the United States, except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the U.S. Securities Act and applicable state securities laws. Accordingly, such Units are being offered and sold only outside the United States in reliance on Regulation S under the U.S. Securities Act and the applicable laws of the jurisdiction where those offers and sales occur.

PURCHASER REPRESENTATIONS AND WARRANTIES

Due to the following restrictions, Bidders are advised to consult legal counsel prior to Bidding for the Units or making any offer, resale, pledge or transfer of the Units.

The Units have not been and will not be registered under the U.S. Securities Act and may not be offered or sold within the United States or to, or for the account or benefit of, U.S. persons (as defined in Regulation S) except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the U.S. Securities Act and the applicable securities laws of all states and other jurisdictions of the United States.

Each purchaser of the Units is deemed to have represented, agreed and acknowledged as follows:

1. You are outside the United States and are purchasing the Units in an "offshore transaction" meeting the requirements of Regulation S under the U.S. Securities Act.

2. You and the person, if any, for whose account or benefit you are acquiring the Units offered pursuant to the Offer, was located outside the United States at the time (i) the offer for such Units was made to it and (ii) when the buy order for such Units was originated, and continues to be located outside the United States and has not purchased such Units for the account or benefit of any person in the United Sates or entered into any arrangement for the transfer of such Units or any economic interest therein to any person in the United States.

3. You are not an affiliate of the Cube Highways Trust or a person acting on behalf of an affiliate of the Cube Highways Trust.

4. You will base your investment decision on a copy of the Offer Document and the Final Offer Document. You acknowledge that neither the Cube Highways Trust nor any of its affiliates nor any other person (including the Book Running Lead Managers) or any of their respective affiliates have made or will make any representations, express or implied, to you with respect to the Cube Highways Trust, the Offer, the Units or the accuracy, completeness or adequacy of any financial or other information concerning the Cube Highways Trust, the Offer or the Units, other than (in the case of the Cube Highways Trust and its affiliates only) the information contained in the Offer Document and the Final Offer Document. You acknowledge that you have not relied on and will not rely on any investigation by, or on any information contained in any research reports prepared by the Book Running Lead Managers or any of their respective affiliates.

5. You acknowledge (or if acting for the account of another person, such person has confirmed that they acknowledge) that the Units have not been and will not be registered under the U.S. Securities Act or with any securities regulatory authority of any state or other jurisdiction of the United States and accordingly may not be offered, resold, pledged or transferred within the United States except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the U.S. Securities Act.

6. You agree, on your own behalf and on behalf of any accounts for which you are acting, that you will not reoffer, resell, pledge or otherwise transfer the Units, except in an offshore transaction on a recognized Indian stock exchange in compliance with Rule 903 of Regulation S.

7. None of you, any of your affiliates nor any person acting on behalf of you or any of your affiliates, has made or shall make any "directed selling efforts" (as defined in Regulation S), or any "general solicitation" or "general advertising" (as defined in Regulation D), with respect to the Units.

8. You agree that, prior to any sale of the Units, you shall notify the purchaser of such Units or the executing broker, as applicable, (a) of any transfer restrictions that are applicable to the Units being sold, and (b) that the Units have not been and will not be registered under the U.S. Securities Act.

9. You shall notify the executing broker and any other agent involved in any resale of the Units of the forgoing restrictions applicable to the Units and instruct such broker or agent to abide by such restrictions.

10. You agree to indemnify and hold the Cube Highways Trust and the Book Running Lead Managers and their respective affiliates harmless from any and all costs, claims, liabilities and expenses (including legal fees and expenses) arising out of or in connection with any breach of these representations, warranties or agreements. You agree that the indemnity set forth in this paragraph shall survive the resale of the Units.

11. You understand that the foregoing representations, warranties, agreements, undertakings and acknowledgements are required in connection with United States and other securities laws and that the Cube Highways Trust, Book Running Lead Managers and their respective affiliates and others are entitled to rely upon the truth and accuracy of the representations, warranties, agreements, undertakings or acknowledgements contained herein. You agree that if any of the representations, warranties, agreements, undertakings and acknowledgements made herein are no longer accurate, you shall promptly notify the Cube Highways Trust and the Book Running Lead Managers in writing. All representations, warranties, agreements, undertakings and acknowledgements you have made in this document shall survive the execution and delivery hereof.

Any resale or other transfer, or attempted resale or other transfer, of the Units made other than in compliance with the above-stated restrictions shall not be recognized by the Cube Highways Trust.

RIGHTS OF UNITHOLDERS

The rights and interests of Unitholders are included in this Final Offer Document and the InvIT Regulations. Under the Trust Deed and the Investment Management Agreement, these rights and interests are safeguarded by the Trustee and the Investment Manager, respectively. Any rights and interests of Unitholders as specified in this Final Offer Document would be deemed to be amended to the extent of any amendment to the InvIT Regulations.

Face Value

The Units will not have a face value.

Beneficial Interest

Each Unit represents an undivided beneficial interest in the Trust. A Unitholder has no equitable or proprietary interest in the Portfolio Assets of the Trust and is not entitled to transfer the Portfolio Assets (or any part thereof) or any interest in the Portfolio Assets (or any part thereof) of the Trust. A Unitholder's right is limited to the right to require due administration of the Trust in accordance with the provisions of the Trust Deed and the Investment Management Agreement. The beneficial interest of each Unitholder shall be equal and limited to the proportion of the number of Units held by that Unitholder to the total number of Units.

Ranking

No Unitholder of the Trust shall enjoy superior voting or any other rights over another Unitholder. Further, the Units shall not have multiple classes. For details in relation to the Units, please see the section entitled "*Information Concerning the Units*" on page 332. Each Unit Allotted to the Unitholders shall have one vote for any decisions requiring a vote of the Unitholders.

Redressal of grievances

The Trustee shall periodically review the status of Unitholders' complaints and their redressal undertaken by the Investment Manager. The Investment Manager shall maintain records of the Unitholders' grievances and the actions taken thereon, including copies of correspondences made with the Unitholders and SEBI. The Stakeholders' Relationship Committee of the Investment Manager shall monitor the status of complaints and their redressal. For details, please see the "*terms of reference of the Stakeholders' Relationship Committee*" in the section entitled "*Corporate Governance*" on page 176.

Distribution

The Unitholders holding Units shall have the right to receive distribution in accordance with the InvIT Regulations and in the manner provided in this Final Offer Document. For details, please see the section entitled "*Distribution*" on page 352.

Meeting of the Unitholders

Meetings of Unitholders will be conducted in accordance with the InvIT Regulations.

Passing of resolutions

1. With respect to any matter requiring approval of the Unitholders:

   (i) a resolution shall be considered as passed when the votes cast by Unitholders, so entitled and voting, in favour of the resolution exceed a certain percentage as specified in the InvIT Regulations, of total votes cast;

   (ii) the voting threshold specified under the InvIT Regulations shall be calculated on the basis of Unitholders present and voting, unless otherwise specified. Further, The Unitholders voting through the electronic voting facility and postal ballot shall be counted for the determination of Unitholders present and voting;

   (iii) the voting may be done by postal ballot or electronic mode;

   (iv) a notice of not less than 21 days shall be provided to the Unitholders. However, a meeting of Unitholders may be called after giving shorter notice than 21 days, if consent, in writing or by electronic mode, is accorded thereto, (a) in case of an annual meeting, by not less than 95% of the Unitholders entitled to vote thereat, and (b) in case of any other meeting, by majority of the Unitholders in number entitled to vote thereat and who represent not less than 95% of such part of the units by value as gives a right to vote at the meeting;

   (v) voting by any Unitholder (including, the Sponsor in its capacity as a Unitholder), who is a related party in such transaction, as well as associates of such Unitholder(s) shall not be considered on the specific issue;

   (vi) the Investment Manager shall be responsible for all the activities pertaining to conducting of meeting of the Unitholder, subject to oversight by the Trustee. However, for issues pertaining to the Investment Manager, including a change in the Investment Manager, removal of Investment Manager or change in control of Investment Manager; the Trustee shall convene and handle all activities pertaining to conduct of the meetings.

Additionally, for issues pertaining to the Trustee, including change in Trustee, the Trustee shall not be involved in any manner in the conduct of the meeting; and

(vii) for all Unitholder meetings, the investment manager shall provide an option to the Unitholders to attend the meeting through video conferencing or other audio visual means and the option of remote electronic voting in the manner as may be specified by SEBI.

2. For the Trust:

(i) an annual meeting of all Unitholders shall be held not less than once a year within 120 days from the end of each financial year and the time between two meetings shall not exceed 15 months;

(ii) with respect to the annual meeting of Unitholders,

- any information that is required to be disclosed to the Unitholders and any issue that, in the ordinary course of business, may require approval of the Unitholders may be taken up in the meeting including:
  - latest annual accounts and performance of the Trust;
  - approval of auditors and fee of such auditors, as may be required;
  - latest valuation reports;
  - appointment of valuer, as may be required; and
  - any other issue; and
- for any issue taken up in such meetings which require approval from the Unitholders, votes cast in favour of the resolution shall be more than 50% of the total votes cast for the resolution unless otherwise specified under the InvIT Regulations.

3. Notwithstanding generally of the foregoing, in case of the following, approval from the Unitholders shall be required where the votes cast in favour of the resolution shall be more than 50% of the total votes cast for the resolution:

(i) any approval from the Unitholders required in terms of Regulation 18 (*Investment conditions and dividend policy)*, Regulation 19 (*Related Party Transactions*) and Regulation 21 *(Valuation of assets*) of the InvIT Regulations to the extent applicable;

(ii) any borrowings, in excess of the limits specified under Regulation 20(3) of the InvIT Regulations;

(iii) any transaction, other than any borrowing, the value of which is equal to or greater than 25% of the Portfolio Assets;

(iv) increasing period for compliance with investment conditions to one year in accordance with Regulation 18(5)(c) of the InvIT Regulations;

(v) any issue, in the ordinary course of business, which in the opinion of the Sponsor or the Trust or the Investment Manager, is material and requires approval of the Unitholders, if any; and

(vi) any issue for which SEBI or the designated stock exchange requires approval.

4. In case of the following, approval from the Unitholders shall be required where the votes cast in favour of the resolution shall be at least 60% of total votes cast for the resolution:

(i) any change in the Investment Manager including removal of the investment manager or change in control of the investment manager;

(ii) any material change in investment strategy or any change in the management fees of the Trust;

(iii) the Trustee and Investment Manager proposing to seek delisting of units of the Trust as per the InvIT Regulations;

(iv) any issue, not in the ordinary course of business, which in the opinion of the Sponsor or Investment Manager or the Trustee of the Trust requires approval of the Unitholders;

(v) any issue for which SEBI or the designated stock exchange requires approval;

(vi) any issue taken up on request of the Unitholders including:

a) removal of the Investment Manager and appointment of another investment manager to the Trust;

b) removal of the Auditors and appointment of another auditor to the Trust;

c) removal of the Valuer and appointment of another valuer to the Trust;

d) delisting of the Trust, if the Unitholders have sufficient reason to believe that such delisting would act in the interest of the Unitholders;

e) any issue which the Unitholders have sufficient reason to believe that is detrimental to the interest of the Unitholders; and

f) change in the Trustee, if Unitholders have sufficient reason to believe that acts of the Trustee are detrimental to the interest of Unitholders.

(vii) introduction of unit based employee benefit scheme after an initial offer in the manner and form set out under the InvIT Regulations.

(viii) with respect to the rights of the Unitholders under clause 4(vi) above:

(i) save as set out in (iii) below, not less than 25% of the Unitholders by value, other than any party related to the transactions and its associates, shall apply, in writing, to the Trustee for the purpose;

(ii) on receipt of such application, the Trustee shall require, with the Investment Manager to place the issue for voting in the manner as specified in the InvIT Regulations; and

(iii) with respect to clause 4(vi)(f) above, not less than 60% of the Unitholders by value shall apply, in writing, to the Trustee for the purpose.

5. In case of the following, approval from the Unitholders shall be required where approval from 75% of the Unit holders by value is required to be obtained:

(i) in case of any borrowing by an InvIT in terms of the limit specified in Regulation 20(3)(b) of the InvIT Regulations;

(ii) no person, other than sponsor(s), its related parties and its associates, shall acquire units of an InvIT which taken together with units held by such person and by persons acting in concert with such person in such InvIT, exceeds 25% of the value of outstanding InvIT units unless approval from 75%. of the unitholders by value excluding the value of units held by parties related to the transaction, is obtained. If the required approval is not received, the person acquiring the units shall provide an exit option to the dissenting unit holders to the extent and in the manner as may be specified by SEBI;

(iii) in case of any change in sponsor or inducted sponsor or change in control of sponsor or inducted sponsor or conversion to self-sponsored investment manager (calculation of 75% voting will exclude the value of units held by parties related to the transaction); and

(iv) conversion of privately listed InvIT to public InvIT.

Information rights

The Investment Manager, on behalf of the Trust, shall also submit such information to the Stock Exchanges and the Unitholders, on a periodical basis as may be required under the InvIT Regulations and the Listing Agreements with the Stock Exchanges. The Investment Manager (on behalf of the Trust) shall disclose to the Stock Exchanges, the Unitholders and SEBI, all such information and in such manner as specified under the InvIT Regulations and such other requirements as may be specified by SEBI. The Investment Manager, on behalf of the Trust, shall also provide disclosures or reports specific to the sector or sub-sector in which the Trust has invested or proposes to invest, in the manner as may be specified by SEBI.

Nomination Rights

Unitholder(s), holding not less than 10% of the total outstanding Units, either individually or collectively, shall be entitled to nominate one director on the IM Board.

Buyback and Delisting of Units

Any buyback or delisting of Units, shall be in accordance with the Trust Deed and the InvIT Regulations.

DILUTION

Dilution is the amount by which the Offer Price exceeds the NAV per Unit. NAV per Unit is determined by subtracting the total liabilities of the Trust from the total assets of the Trust and dividing by the number of Units issued and outstanding immediately before this Offer.

The Trust has undertaken an Offer of 328,947,365* Units at an Offer Price of ₹ 152 for each Unit. The aggregate outstanding Units pursuant to the Offer will be 1,344,069,762 Units.

**Subject to finalisation of Basis of Allotment.*

OFFER STRUCTURE

This Offer was made through the Book Building Process and comprises an Offer for Sale of 328,947,365 Units^ of the Trust by the Selling Unitholders for cash at a price of ₹ 152 per Unit aggregating to approximately ₹ 50,000 million. This Offer shall constitute at least 24.47 % of the total outstanding Units on a post-Offer basis.

Particulars	Institutional Investors	Non-Institutional Investors	Strategic Investors[6]
Number of Units available for Allotment/Allocation [2]	185,032,893 Units^	61,677,632 Units^	82,236,840 Units^ aggregating to approximately ₹12,500 million
Percentage of Offer Size available for Allotment/Allocation	Not more than 75% of the Offer Size (excluding the Strategic Investor Portion)[1]	Not less than 25% of the Offer Size (excluding the Strategic Investor Portion)	Not less than 5% of the Offer and not more than 25% of the Offer Size
Basis of Allotment/ Allocation if respective category is oversubscribed	Proportionate	Proportionate	Discretionary
Minimum Bid	95 Units and in multiples of 95 Units thereafter	95 Units and in multiples of 95 Units thereafter	82,236,840 Units, either jointly or severally with other Strategic Investors, being not less than 5% of the Offer Size
Maximum Bid	Such a number of Units (in multiples of 95 Units) not exceeding the size of the Offer, subject to applicable limits (excluding the Strategic Investor Portion)	Such a number of Units (in multiples of 95 Units) not exceeding the size of the Offer, subject to applicable limits (excluding the Strategic Investor Portion)	Such a number of Units (in multiples of 95 Units) not exceeding 25% of the Offer Size
Mode of Allotment	Compulsorily in dematerialised form	Compulsorily in dematerialised form	Compulsorily in dematerialised form
Bid Lot	95 Units and in multiples of 95 Units thereafter	95 Units and in multiples of 95 Units thereafter	Participation was in accordance with the Strategic Investor Unit Subscription Agreements
Allotment Lot	95 Units and in multiples of one Unit thereafter	95 Units and in multiples of one Unit thereafter	95 Units and in multiples of one Unit thereafter
Trading Lot	One Unit	One Unit	One Unit
Who can apply[3]	(i) QIBs; or (ii) family trusts or systematically important NBFCs registered with RBI or intermediaries registered with SEBI, with a net-worth of more than ₹ 5,000 million, as per their last audited financial statements	Bidders other than Institutional Investors are eligible to apply in this Offer	(i) an institutional investor; or (ii) a foreign portfolio investor not covered under sub-clause (a); or (iii) a middle layer, upper layer and top layer non-banking finance company registered with the RBI; or (iv) such entities as SEBI may specify from time to time, who invest, either jointly or severally, not less than 5% of the total offer size of the InvIT or such amount as may be specified by the SEBI from time to time, subject to compliance with the applicable provisions, if any, of the Foreign Exchange Management Act, 1999 and the rules or regulations or

Particulars	Institutional Investors	Non-Institutional Investors	Strategic Investors[6]
			guidelines made thereunder.
Terms of Payment	Full Bid Amount shall be blocked by the SCSBs in the bank account of the ASBA Bidder that is specified in the Bid cum Application Form [4] [5]	For individual Non-Institutional Investors Bidding with a Bid Amount of up to ₹ 0.50 million or less and Bidding through the UPI Mechanism: Full Bid Amount shall be blocked by the Sponsor Banks in the bank account of the Non-Institutional Investor that is specified in the Bid cum Application Form; -Full Bid Amount shall be blocked by the SCSBs in the bank account of the ASBA Bidder that is specified in the Bid cum Application Form	Subscription price per Unit, payable by the Strategic Investors shall be set out in the Strategic Investor Unit Subscription Agreement and the entire subscription price shall be deposited in a special escrow account prior to opening of the Offer. See "*Offer Information*" on page 433 [5]

[1] *The Investment Manager, in consultation with the Book Running Lead Managers has allocated up to 60% of the Institutional Investor Portion to Anchor Investors on a discretionary basis.*

[2] *Subject to valid Bids being received at or above the Offer Price. This Offer was made through the Book Building Process wherein not more than 75% of the Offer Size (excluding the Strategic Investor Portion) will be available for allocation on a proportionate basis to Institutional Investors, provided that the Investment Manager, in consultation with the Book Running Lead Managers may allocate up to 60% of the Institutional Investor Portion to Anchor Investors on a discretionary basis.*

[3] *In case of joint Bids, the Bid cum Application Form should contain only the name of the First Bidder whose name should also appear as the first holder of the beneficiary account held in joint names. The signature of only the First Bidder was required in the Bid cum Application Form and such First Bidder was deemed to have signed on behalf of the joint holders. Bidders were advised to consult their own advisors with respect to any restrictions or limitations that may be applicable to them, including any restrictions or limitations in relation to their ability to invest in the Units. By making a Bid (including any revision thereof), the Bidder would be deemed to have represented to the Investment Manager, the Trustee, the Book Running Lead Managers and the Syndicate Members that it is eligible to participate in the Offer and be Allotted Units under applicable law.*

[4] *Bid Amount was payable by the Anchor Investors at the time of submission of the Bid cum Application Forms.*

[5] *In case of ASBA Investors, the SCSBs were authorized to block such funds in the bank account of the Investor that are specified in the Bid cum Application Form*

[6] *Each Strategic Investor proposing to invest in the Offer has entered into a Strategic Investor Unit Subscription Agreement with the Investment Manager (acting on behalf of the Trust) as on the date of filing the Offer Document with the SEBI and the Stock Exchanges. The price at which the Strategic Investors agree to purchase the Units shall not be less than the Offer Price.*

^ *Subject to finalisation of Basis of Allotment*

In case of under-subscription in any investor category, the unsubscribed portion in either the Institutional Investor Portion or the Non-Institutional Investor Portion may be Allotted to Applicants in the other category at the discretion of the Investment Manager, in consultation with the Book Running Lead Managers and the Designated Stock Exchange.

Indicative Offer Timeline

Event	Indicative Date
Bid/ Offer Opening Date	Wednesday, July 22, 2026[1]
Bid/ Offer Closing Date	Friday, July 24, 2026
Finalisation of the Basis of Allotment	On or about Wednesday, July 29, 2026
Closing Date	On or about Thursday, July 30, 2026
Designated Date	On or about Thursday, July 30, 2026
Initiation of refunds	On or about Thursday, July 30, 2026
Public Listing Date	On or about Monday, August 3, 2026

[1] *The Anchor Investor Bidding Date was Tuesday, July 21, 2026.*

The above timetable is indicative and does not constitute any obligation or liability on the Trust, the Investment Manager, the Trustee or the Book Running Lead Managers.

The Selling Unitholders confirm that they shall extend reasonable co-operation required by the Trust, the Investment Manager and the Book Running Lead Managers for the completion of the necessary formalities for listing and commencement of trading of the Units offered by the Selling Unitholders in the Offer on the Stock Exchanges within stipulated timeframe from the Bid/Offer Closing Date.

While the Investment Manager shall ensure that all steps for the completion of the necessary formalities for the commencement of trading of the Units on the Stock Exchanges are taken within 6 Working Days of the Bid/ Offer Closing Date, the timetable may change due to various factors, including any delay in receiving the final listing and trading approval from the Stock Exchanges. The commencement of trading of the Units will be entirely at the discretion of the Stock Exchanges and in accordance with the applicable laws.

Except in relation to the Bids received from the Anchor Investors and Strategic Investors, Bids and any revision in Bids could be accepted only between 10.00 a.m. and 5.00 p.m. (Indian Standard Time) during the Bid/ Offer Period (except the Bid/ Offer Closing Date) at the Bidding Centres and the Designated Branches mentioned on the Bid cum Application Form. Investors were not allowed to withdraw or lower their Bid (in terms of number of Units or the Bid Amount) at any stage. Bidders could make upward revisions in their Bids, subject to applicable law. It is clarified that Bids not uploaded on the electronic bidding system were rejected. Due to limitation of the time available for uploading the Bids on the Bid/ Offer Closing Date, Investors were advised to submit their Bids one day prior to the Bid/ Offer Closing Date and, in any case, no later than 1.00 p.m. IST on the Bid/ Offer Closing Date. Any time mentioned in this Final Offer Document is IST. Investors were cautioned that, in the event a large number of Bids are received on the Bid/ Offer Closing Date, some Bids may not get uploaded due to lack of sufficient time. Such Bids that could be uploaded were not considered for allocation under the Offer. Bids were accepted only on business days i.e. Monday to Friday (excluding any public holiday). None among the Trust, the Investment Manager, the Trustee, the Selling Unitholders or any member of the Syndicate is liable for any failure in uploading the Bids due to faults in any software/hardware system or otherwise.

In case of any discrepancy in the data entered in the electronic book *vis-à-vis* the data contained in the physical Bid cum Application Form, for a particular Investor, the details as per the Bid file received from the Stock Exchanges may be taken as the final data for the purpose of Allotment.

OFFER INFORMATION

Below is a summary, intended to provide a general outline of procedures for bidding, application, payment, Allocation and Allotment of Units in this Offer. The procedure followed in this Offer may differ from the process provided below, and Bidders are presumed to have apprised themselves of the same from the Investment Manager and/or the Book Running Lead Managers.

Bidders were advised to inform themselves of any restrictions or limitations that could have been applicable to them and were required to consult their respective advisers in this regard. Bidders that applied in the Offer were required to confirm and were deemed to have represented to the Trustee, the Investment Manager, the Book Running Lead Managers and their respective directors, officers, agents, affiliates and representatives that they were eligible under all applicable laws, rules, regulations, guidelines and approvals to acquire the Units. Bidders were also advised to make their independent investigations submitted in accordance with applicable laws and to not exceed the investment limits or maximum number of Units that can be held by them under applicable law or as specified herein. The Investment Manager, the Trustee, the Book Running Lead Managers, the Syndicate Member and their respective directors, officers, agents, affiliates and representatives accept no responsibility or liability towards any Bidder on whether such Bidder is eligible to acquire the Units. The Investment Manager, the Trustee, the Book Running Lead Managers and Syndicate Member do not accept any responsibility for the completeness and accuracy of the information stated in this chapter and are not liable for any amendment, modification or change in the applicable law which may occur after the date hereof.

Authority for the Offer

The Trust is eligible for the Offer in accordance with Regulation 14(6) read with Regulation 14(4) of the InvIT Regulations, as amended, Chapter 14 of the InvIT Master Circular, as amended from time to time. The Offer was authorised and approved by the IM Board's resolution dated January 30, 2026 and approved by the Unitholders by way of the resolution dated February 20, 2026.

The Offer for Sale has been authorized by the respective board of directors of each of the Selling Unitholders as mentioned below. Further, with respect to the Units offered by the Selling Unitholders in the Offer for Sale, each of the Selling Unitholders has held such Units for a period of at least one year immediately preceding the date of the Draft Offer Document provided that such Units shall be free from any encumbrance or lock-in on the date of filing of Draft Offer Document.

Name of the Selling Unitholder	Number of Offered Units and amount raised pursuant to the Offer	Date of consent letter	Date of corporate action / board resolution
BCI IRR India Holdings Inc.	52,073,815 Units^, aggregating to ₹ 7,915.22 million	July 6, 2026	July 3, 2026
BCI IRR India Holdings Limited Partnership	1,335,197 Units^, aggregating to ₹ 202.95 million	July 6, 2026	July 3, 2026
Cube Highways and Infrastructure II Pte. Ltd.	103,443,815 Units^, aggregating to ₹ 15,723.46 million	July 6, 2026	March 17, 2026
Cube Highways and Infrastructure III Pte. Ltd.	50,658,881 Units^, aggregating to ₹ 7,700.15 million	July 6, 2026	March 17, 2026
Cube Mobility Investments Pte. Ltd.	85,766,973 Units^, aggregating to ₹ 13,036.58 million	July 6, 2026	March 17, 2026
Seventy Second Investment Company LLC	35,668,684 Units^, aggregating to ₹ 5,421.64 million	July 6, 2026	July 6, 2026

^ *Subject to finalisation of Basis of Allotment*

The Investment Manager has received the in-principle approval of BSE and NSE for the Offer dated May 7, 2026, from the BSE and NSE, respectively. The Investment Manager has filed a copy of the Offer Document and this Final Offer Document with SEBI and the Stock Exchanges.

The Units have not been and will not be registered, listed or otherwise qualified in any other jurisdiction outside India and may not be offered or sold, and Bids may not be made by persons in any such jurisdiction, except in compliance with the applicable laws of such jurisdiction. The Units shall not be offered or sold where such offer or sale would require registration, qualification or listing.

Bidders should note that Allotment to successful Bidders will only be in the dematerialized form. Application Forms which do not have the details of the Bidders' demat accounts including DP ID, PAN and Client ID will be treated as incomplete and rejected. Bidders will not have the option of receiving Units in physical form. The Units have been traded only on the dematerialized segment of BSE and NSE.

Offer Procedure

This section applies to all Bidders. All Bidders other than Anchor Investors and Strategic Investors were required to mandatorily participate in the Offer through the ASBA process. Individual Non-Institutional Investors with a Bid Amount of ₹ 0.50 million or less could Bid using the UPI Mechanism. Bidders applying in this Offer were required to carefully read the provisions applicable to them before submitting a Bid through the ASBA process. All Bidders (other than Anchor Investors or Strategic Investors) were required to pay the full Bid Amount at the time of Bidding, by way of instructing the relevant SCSB or Sponsor

Banks (in case of Bids through the UPI mechanism) to block the full Bid Amount at the time of Bidding. Anchor Investors were required to pay the full Bid Amount at the time of Bidding by making payment by electronic mode or in the case of Strategic Investors, in accordance with the terms of the applicable unit subscription agreement.

By making a Bid (including any revision thereof), the Bidder was deemed to have represented to the Investment Manager, the Trustee, the Book Running Lead Managers and the Syndicate Member that it was eligible to participate in the Offer and be Allotted Units under applicable law. Bidders were also advised to make their independent investigations and ensure that their Bids are submitted in accordance with applicable laws and do not exceed the investment limits or maximum number of Units that could be held by them under applicable law or as specified herein.

Book Building Procedure

This Offer was made through the Book Building Process, wherein not more than 75% of the Offer Size (excluding the Strategic Investor Portion) was made available for allocation to Institutional Investors on a proportionate basis. The Investment Manager has, in consultation with the Book Running Lead Managers, allocated up to 60% of the Institutional Investor Portion to Anchor Investors on a discretionary basis, in accordance with the InvIT Regulations and the InvIT Master Circular. Further, not less than 25% of the Offer Size (excluding the Strategic Investor Portion) was made available for allocation on a proportionate basis to Non-Institutional Investors, subject to valid Bids being received at or above the Offer Price. In case of under-subscription in any category, the unsubscribed portion in any category could be Allotted to Bidders in the other category at the discretion of the Investment Manager in consultation with the Book Running Lead Managers and the Designated Stock Exchange.

The Offer included participation by Strategic Investors in accordance with the InvIT Regulations and InvIT Master Circular. The size of the Offer has been adjusted to the extent of participation by Strategic Investors.

ASBA Bidders, were required to submit their Bids through the Designated Intermediaries including the SCSBs with whom the ASBA Account is maintained. Individual Non-Institutional Investors who were bidding with a Bid Amount of ₹ 0.50 million or less had the option to Bid using the UPI Mechanism.

Bidders did not have the right to withdraw or lower their Bid (in terms of number of Units or the Bid Amount) at any stage. Bidders were allowed to only make upward revisions in their Bids, subject to applicable law.

Bidders should note that Allotment to successful Bidders will be only in the dematerialized form. Bid cum Application Forms which do not have the details of the Bidders' depository accounts including DP ID, PAN, UPI ID (for individual Non-Institutional Investors Bidding for a Bid Amount of ₹ 0.50 million or less using the UPI Mechanism) and Client ID will be treated as incomplete and rejected. Bidders will not have the option of receiving Allotment in physical form. On Allotment, the Units will be traded on the dematerialized segment of the Stock Exchanges only.

Bid cum Application Form

Copies of the Bid cum Application Form and the abridged Offer Document were made available at the offices of the Book Running Lead Managers, the Syndicate Members, if any, the principal place of business of the Trust and the Designated Intermediaries at the Bidding Centres. An electronic copy of the Bid cum Application Form was also available on the websites of the SCSBs, NSE (www.nseindia.com) and BSE (www.bseindia.com). The Anchor Investor Application Forms were made available at the principal place of business of the Trust and the registered offices of each of the Investment Manager and the Book Running Lead Managers.

Bidders could use only the specified Bid cum Application Form bearing the stamp of a Designated Intermediary submitted at Bidding Centres (except in case of electronic Bid cum Application Forms), for the purpose of making a Bid in terms of this Final Offer Document. Bid cum Application Forms (other than electronic Bid Application Forms) not bearing such specified stamp were liable to be rejected. Prior to being issued to Bidders, such Bid cum Application Form were serially numbered.

All Bidders (other than Anchor Investors and Strategic Investors) were required to mandatorily participate in the Offer only through the ASBA process. Anchor Investors and Strategic Investors were not permitted to participate in the Offer through the ASBA process. All Bidders (other than Anchor Investors and Strategic Investors) were required to provide bank account details and authorization to block funds in the relevant space provided in the Bid cum Application Form and Bid cum Application Forms that did not contain such details were rejected. ASBA Bidders, were required to submit their Bids through the Designated Intermediaries including the SCSBs with whom the ASBA Account is maintained.

UPI Bidders using the UPI Mechanism were required to provide the UPI ID in the relevant space provided in the ASBA Form. ASBA Forms for such UPI Bidders, that did not contain the UPI ID were liable to be rejected. UPI Bidders using the UPI Mechanism could also apply through the SCSBs and mobile applications using the UPI handles as provided on the website of SEBI. UPI Bidders using the UPI Mechanism could submit the Bid cum Application with SCSBs, Syndicate Member, Registered Stock Brokers, RTAs and Depository Participants along with details of their bank account for blocking of funds. The relevant intermediary was required to the upload the Bid on the Stock Exchange bidding platform and forward the Bid cum application Form to an SCSB for blocking of funds.

An ASBA Bidder was required to use the ASBA Form obtained from the Designated Intermediaries for the purpose of making a Bid. In case an ASBA Bidder made an application in physical form, the ASBA Bidder was required to submit the ASBA

Form with the relevant Designated Intermediary. In case an ASBA Bidder made an application in electronic form, the ASBA Bidder was required to submit the ASBA Form either through the internet banking facility available with the SCSB, or such other electronically enabled mechanism for bidding and blocking funds in the ASBA Account held with SCSB, and accordingly registering such Bids. The SCSB was required to block an amount in the ASBA Account equal to the Bid Amount specified in the ASBA Form.

For individual Non-Institutional Investors using UPI Mechanism, the Stock Exchanges were required to share the bid details (including UPI ID) with Sponsor Bank(s) on a continuous basis to enable the Sponsor Bank(s) to initiate UPI Mandate Request to individual Non-Institutional Investors for blocking of funds. The Sponsor Bank(s) were required to initiate request for blocking of funds through NPCI to individual Non-Institutional Investors, who were required to accept the UPI Mandate Request for blocking of funds on their respective mobile applications associated with UPI ID linked bank account. The NPCI was required to maintain an audit trail for every Bid entered in the Stock Exchanges bidding platform, and the liability to compensate the individual Non-Institutional Investors (Bidding through UPI Mechanism) in case of failed transactions shall be with the concerned entity (i.e., the Sponsor Banks, NPCI or the issuer bank) at whose end the lifecycle of the transaction has come to a halt. The NPCI was required to share the audit trail of all disputed transactions/investor complaints to the Sponsor Bank(s) and the issuer bank. The Sponsor Bank(s) were required to provide the audit trail to the Book Running Lead Managers to analyze the same and fix liability. To ensure that timely information is disseminated to investors, SCSBs were required to send SMS alerts for mandate block and unblock.

The Sponsor Bank(s) undertook a reconciliation of Bid responses received from Stock Exchanges and sent to NPCI and also ensured that all the responses received from NPCI were sent to the Stock Exchanges platform with detailed error code and description, if any. Further, the Sponsor Bank(s) undertook reconciliation of all Bid requests and responses throughout their lifecycle on daily basis and shared reports with the Book Running Lead Managers. Sponsor Bank(s) and issuer banks were required to download UPI settlement files and raw data files from the NPCI portal after every settlement cycle and do a three-way reconciliation with UPI switch data and UPI raw data. NPCI was required to coordinate with issuer banks and Sponsor Bank(s) on a continuous basis.

The Bid cum Application form contained information about the Bidder and the price and number of Units that the Bidder wished to Bid for. Bidders had the option to make a maximum of three Bids in the Bid cum Application Form and such options were not considered multiple Bids.

On filing of this Final Offer Document with SEBI and the Stock Exchanges, the Bid cum Application Form will be treated as a valid application form for Allotment of the Units. On submission of the completed Bid cum Application Form to a Designated Intermediary or the Book Running Lead Managers (in case of Anchor Investors) or participation pursuant to Strategic Investor Unit Subscription Agreements, the Bidder (including any Strategic Investor and Anchor Investor), is deemed to have authorized the Investment Manager to make the necessary changes in this Final Offer Document as may be required under the InvIT Regulations, and other applicable laws, for filing this Final Offer Document with SEBI and the Stock Exchanges without prior or subsequent notice of such changes to the Bidder.

The prescribed colour of the Bid cum Application Forms for various categories is as follows:

Category	Colour of Bid cum Application Form including Bid cum Application Form*
Resident Indians	White
Non-Residents, including Eligible NRIs and FPIs and multilateral and bilateral development financial institutions, excluding Strategic Investors and Anchor Investors, applying on a repatriation basis	Blue
Anchor Investors and Strategic Investors*	White

* *Bid cum Application Forms for Anchor Investors were made available at the principal place of business of the Trust, the respective registered office of the Investment Manager and each of the Book Running Lead Managers.*

Designated Intermediaries were required to submit/deliver the Bid cum Application Forms of Bidders (other than Anchor Investors) to the respective SCSBs where the Bidder has a bank account and were not allowed to submit it to any non-SCSB Bank or Escrow Collection Bank (unless such Escrow Collection Bank is also an SCSB). For UPI Bidders using the UPI Mechanism, the Stock Exchanges were required to share the Bid details (including UPI ID) with the Sponsor Bank(s) on a continuous basis to enable the Sponsor Bank(s) to initiate a UPI Mandate Request to such UPI Bidders for blocking of funds. Designated Intermediaries (other than SCSBs) were not allowed to accept any ASBA Form from a UPI Bidder who is not Bidding using the UPI Mechanism.

Who can Bid?

Each Bidder was advised to check if it is eligible to Bid under applicable law. Furthermore, certain categories of Bidders were not permitted to Bid in the Offer or hold Units in excess of the limits specified under applicable law. Each Bidder (other than Anchor Investor and Strategic Investors) was required to Bid for a Minimum Bid Size in the range of ₹10,000 and ₹15,000.

The maximum subscription in the Offer from any investor other than the Sponsor, its related parties and its associates could not exceed 25% of the total post-Offer outstanding Units.

The Parties to the Trust, and the Book Running Lead Managers are not liable for any amendment or modification or change to applicable laws, which may occur after the date of this Final Offer Document. Bidders were advised to make their independent investigations and satisfy themselves that they are eligible to apply. Bidders were advised to ensure that any single application from them did not exceed the investment limits or maximum number of Units that can be held by them under applicable law.

The Trustee, the Valuer and the employees of the Valuer who were involved in the valuation of the Portfolio Assets were not permitted to Bid in this Offer.

The Units have not been and will not be registered under the U.S. Securities Act of 1933, as amended (the "U.S. Securities Act") or any state securities laws in the United States and, unless so registered, may not be offered or sold within the United States, except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the U.S. Securities Act and applicable state securities laws in the United States. Accordingly, the Units are only being offered and sold outside the United States in "offshore transactions", as defined in, and in reliance upon, Regulation S under the U.S. Securities Act and the applicable laws of the jurisdictions where those offers and sales occur. The Units have not been and will not be registered, listed or otherwise qualified in any other jurisdiction outside India and may not be offered or sold, and bids may not be made by persons in any such jurisdiction, except in compliance with the applicable laws of such jurisdiction. There will be no public offering of the Units in the United States.

Further, it is clarified that the Bidders shall not be liable for any claim or default with respect to any tax, including withholding obligation with respect to consideration payable to each of the Selling Unitholders in relation to the sale of Units forming part of the Offer for Sale and the each of the Selling Unitholders/ Trust will be solely liable for payment of securities transaction tax, withholding taxes and other applicable taxes payable in connection with the sale of Units forming part of the Selling Unitholder's respective portion of the Offer for Sale.

Units Offered and Sold in this Offer

Each purchaser that acquires the Units offered pursuant to this Offer, by its acceptance of this Final Offer Document and of the Units offered pursuant to this Offer, will be deemed to have acknowledged, represented to and agreed with the Trust, Investment Manager, Sponsor and the Book Running Lead Managers that it has received a copy of the Offer Document and a copy of this Final Offer Document and such other information as it deems necessary to make an informed investment decision and that:

1. the purchaser is authorized to consummate the purchase of the Units offered pursuant to this Offer in compliance with all applicable laws and regulations;

2. the purchaser is not an affiliate of the Trust or a person acting on behalf of an affiliate;

3. the Trust will not recognize any offer, sale, pledge or other transfer of such Units made other than in compliance with the above-stated restriction; and

4. the purchaser acknowledges that the Trust, Sponsor, the Book Running Lead Managers, their respective affiliates and others will rely upon the truth and accuracy of the foregoing acknowledgements, representations and agreements and agrees that, if any of such acknowledgements, representations and agreements deemed to have been made by virtue of its purchase of such Units are no longer accurate, it will promptly notify the Trust, and if it is acquiring any of such Units as a fiduciary or agent for one or more accounts, it represents that it has sole investment discretion with respect to each such account and that it has full power to make the foregoing acknowledgements, representations and agreements on behalf of such account.

Units offered and sold outside the United States in "offshore transactions" as defined in, and in reliance on, Regulation S

Participation by Associates and affiliates of the Book Running Lead Managers and Syndicate Members

The Book Running Lead Managers and the Syndicate Members were not entitled to Bid for Units in this Offer in any manner except towards fulfilling their underwriting obligations. However, associates and affiliates of the Book Running Lead Managers and Syndicate Members could Bid for Units in the Offer, either in the Institutional Investor Portion (excluding the Anchor Investor Portion and Strategic Investor Portion) or in the Non-Institutional Investor Portion, where allocation will be on a proportionate basis, either on their own account or on behalf of their clients. All categories of Bidders, including associates or affiliates of the Book Running Lead Managers, shall be treated equally for the purpose of allocation to be made on a proportionate basis. Neither the Book Running Lead Managers nor any associate of the Book Running Lead Managers and Syndicate Members (other than mutual funds sponsored by entities which are associate of the Book Running Lead Managers or insurance companies promoted by entities which are associate of the Book Running Lead Managers or pension funds of entities which are associate of the Book Running Lead Managers or Alternate Investment Funds (AIFs) sponsored by the entities which are associates of the Book Running Lead Managers or FPIs other than Category III FPIs sponsored by the entities which are associates of the Book Running Lead Managers) could apply in the Offer under the Anchor Investor Portion.

Bids by Anchor Investors

The Investment Manager, in consultation with the Book Running Lead Managers, has allocated up to 60% of the Institutional Investor Portion on a discretionary basis to the Anchor Investors, in accordance with the InvIT Regulations. The Strategic Investors could apply under the Anchor Investor Portion. The Institutional Investor Portion was reduced in proportion to the allocation under the Anchor Investor Portion. Only Institutional Investors and Strategic Investors were eligible to invest in the Anchor Investor Portion. In the event of under-subscription in the Anchor Investor Portion, the balance Units will be added to the Institutional Investor Portion. In accordance with the InvIT Regulations and InvIT Master Circular, the key terms for participation in the Anchor Investor Portion are provided below:

(i) Anchor Investors were not permitted to participate in the Offer through the ASBA process. Anchor Investor Application Forms were made available for the Anchor Investor Portion at the principal place of business of the Trust, and the registered offices of the Investment Manager and the Book Running Lead Managers.

(ii) A Bid by an Anchor Investor was required to be for a minimum of such number of Units so that the Bid Amount is at least ₹100 million. A Bid could not be submitted for more than 60% of the Institutional Investor Portion.

(iii) The Bidding for Anchor Investors opened one day before the Bid/ Offer Opening Date and Allocation to Anchor Investors was completed on the same day.

(iv) The Investment Manager, in consultation with the Book Running Lead Managers, finalized the allocation to the Anchor Investors on a discretionary basis, provided that the minimum number of Allottees in the Anchor Investor Portion will not be less than:

- two, where the allocation under Anchor Investor Portion is up to ₹ 2,500 million; and
- five, where the allocation under Anchor Investor Portion is over ₹ 2,500 million.

(v) Allocation to Anchor Investors was completed on the same day as Anchor Investor Bid / Offer Period. The number of Units allocated to Anchor Investors and the Anchor Investor Allocation Price, were made available on the websites of the Stock Exchanges, the Sponsor, the Investment Manager and the Book Running Lead Managers, prior to the Bid/Offer Opening Date.

(vi) If the Offer Price was higher than the Anchor Investor Allocation Price, the additional amount being the difference between the Offer Price and the Anchor Investor Allocation Price was required to be payable by the Anchor Investors within two days of the Bid/ Offer Closing Date. If the Offer Price was lower than the Anchor Investor Allocation Price, Allotment to successful Anchor Investors was required to be at the higher price, i.e., the Anchor Investor Allocation Price and the amount in excess of the Offer Price paid by Anchor Investors will not be refunded to them.

(vii) The Units Allotted in the Anchor Investor Portion will be locked in for a period of 30 days from the date of Allotment. However, the Units Allotted to the Strategic Investors will be locked in for a period of one year from the date of Allotment.

(viii) Bids made by Institutional Investors and Strategic Investors (where such Strategic Investors are Institutional Investors) Bidding under both the Anchor Investor Portion and the Institutional Investor Portion were not considered as multiple Bids.

(ix) The Investment Manager, in consultation with the Book Running Lead Managers, reserves the right to reject any Bid received from Anchor Investors without assigning any reasons in accordance with the InvIT Regulations and InvIT Master Circular.

(x) Neither the Book Running Lead Managers nor any of their associates, other than mutual funds sponsored by entities which are associates of the Book Running Lead Managers, insurance companies promoted by entities which are associates of the Book Running Lead Managers or pension funds of entities which are associates of the Book Running Lead Managers or AIFs sponsored by the entities which are associates of the Book Running Lead Managers or FPIs other than category III sponsored by the entities which are associates of the Book Running Lead Managers, could apply under the Anchor Investors Portion. The parameters for selection of Anchor Investors was clearly identified by the Book Running Lead Managers.

All Non-Resident Investors including Eligible NRIs and FPIs, should note that refunds, dividends and other distributions, if any, will be payable in Indian Rupees only and net of bank charges and / or commission. **There is no reservation for NRIs, FPIs and FVCIs and all Bidders will be treated on the same basis as other categories for the purpose of allocation.**

Anchor Investors could not withdraw or lower the size of their Bids (in terms of number of Units or the Bid Amount) at any stage after submission of the Bid.

Bids by Strategic Investors

In accordance with the InvIT Regulations, the key terms for participation by Strategic Investors are provided below:

(i) The Strategic Investor(s) shall, either jointly or severally, invest not less than 5% and not more than 25% of the total Offer Size.

(ii) The Investment Manager, on behalf of the Trust, and the Trustee have entered into a binding unit subscription agreement with the Strategic Investor(s) which propose(s) to invest in the Offer prior to the filing of the Offer Document.

(iii) Subscription price per Unit, payable by the Strategic Investor(s) is set out in the Strategic Investor Unit Subscription Agreement, and the entire subscription price has been deposited in a special escrow account prior to opening of Offer in accordance with the terms of the unit subscription agreement.

(iv) The Strategic Investor Offer Price was not less than the Offer Price. In the event that the Offer Price was higher than the Strategic Investor Allocation Price, the Strategic Investor(s) were required to bring in the additional amount within two Working Days of the determination of the Offer Price.

(v) If the Offer Price was lower than the Strategic Investor Allocation Price, the excess amount was not refunded to the Strategic Investor, and the Strategic Investor would be required to take Allotment at the price at which allocation was agreed to be made to it in the unit subscription agreement.

(vi) The commitment received from Strategic Investors and details of the unit subscription agreement, including the name of each Strategic Investor, the number of Units proposed to be subscribed by it or the investment amount, proposed subscription price per Unit have been disclosed in this Final Offer Document.

(vii) The unit subscription agreement shall not be terminated except in the event the Offer fails to collect minimum subscription or as per the terms prescribed in the said agreement.

(viii) The Investment Manager, in consultation with the Book Running Lead Managers, in their absolute discretion, have decided the list of Strategic Investors to whom the provisional CAN or CAN was sent pursuant to which the details of the Units allocated to them in their respective names have been notified to such Strategic Investors. The payment instruments for payment into the Escrow Account(s) were required be drawn in favour of:

In case of resident Strategic Investors: "Cube Highways Trust- Strategic R Account"

In case of non-resident Strategic Investors: "Cube Highways Trust- Strategic NR Account"

(ix) In accordance with the InvIT Regulations, the Units Allotted to Strategic Investors will be locked-in for a period of 180 days from the date of listing of the Units.

(x) Bids made by Strategic Investors (where such Strategic Investors are Institutional Investors) under both the Anchor Investor Portion and the Institutional Investor Portion were not considered as multiple Bids; and

(xi) Bids by Strategic Investors (where such Strategic Investors are Non -Institutional Investors) under both the Anchor Investor Portion and Non-Institutional Investor Portion were not considered as multiple Bids, subject to applicable limits

Bids by SEBI registered VCFs and AIFs

The SEBI VCF Regulations prescribe, amongst others, the investment restrictions on VCFs registered with SEBI under the said regulations. Further, the SEBI AIF Regulations prescribe, amongst others, the investment restrictions on AIFs. Further, VCFs which have not re-registered as an AIF under the SEBI AIF Regulations shall continue to be regulated by the SEBI VCF Regulations until the existing fund or scheme managed by the fund is wound up and such funds shall not launch any new scheme after the notification of the SEBI AIF Regulations. Additionally, VCFs and AIFs are subject to certain investment restrictions, including with respect to the percentage of investible funds held in each investee entity. Under the SEBI AIF Regulations, Category I and II AIFs are permitted to invest not more than 25% of the investable funds in one "investee company" (which includes the Trust) and Category III AIFs are permitted to invest not more than 10% of the investable funds in one "Investee company". Allotments made to VCFs and AIFs in the Offer are subject to the rules and regulations that are applicable to each of them respectively. There was no reservation for NRIs, FPIs and FVCIs and all Bidders were treated on the same basis with other categories for the purpose of allocation.

Bids by Banking Companies

Bids could be made by banks as permitted by the RBI and were subject to conditions specified in the Master Direction- Reserve Bank of India (Financial Services provided by Banks) Directions, 2016 as amended from time to time. In case of Bids made by banking companies registered with the RBI, certified copies of (i) the certificate of registration issued by the RBI, and (ii) the approval of such banking company's investment committee were required to be attached to the Application Form. Banks may participate in public issuances by Trusts within the overall ceiling of 20% of their net worth permitted for direct investments in shares, convertible bonds/ debentures, units of equity-oriented mutual funds and exposures to VCFs, subject to the following conditions: (i) Banks should put in place a board approved policy on exposures to the Trust which lays down an internal limit on such investments within the overall exposure limits in respect of the real estate sector and infrastructure sector; (ii) Banks

shall not invest more than 10% of the unit capital of the Trust; (iii) Banks should ensure adherence to the prudential guidelines issued by RBI from time to time on Equity investments by Banks, Classification and Valuation of Investment Portfolio, Basel III Capital requirements for Commercial Real Estate Exposures and Large Exposure Framework, as applicable. Failing this, the Investment Manager, in consultation with the Book Running Lead Managers, reserved the right to reject the Bid.

Bids by LLPs

In case of Bids made by limited liability partnerships registered under the Limited Liability Partnership Act, 2008, a certified copy of the certificate of registration issued under the Limited Liability Partnership Act, 2008, was required to be attached to the Bid cum Application Form. Failing this, the Bid(s) may be rejected.

Bids by Provident Funds/Pension Funds/NPS Schemes

On March 2, 2015, the Ministry of Finance issued a notification allowing investments by non-government provident funds, superannuation funds and gratuity funds up to 5% in infrastructure investment trusts, as specified. On May 29, 2015, the Ministry of Labour and Employment issued a notification allowing investments by provident funds up to 5% in infrastructure investment trusts, as specified. The Pension Fund Regulatory and Development Authority issued circulars dated June 3, 2015 and September 2, 2015, May 4, 2017 (as amended by the circular dated May 8, 2018), master circular dated August 18, 2023 on investment guidelines for National Pension System ("**NPS**")/Atal Pension Yojna ("**APY**") schemes-central government, state government, corporate—central government ("**Corporate—CG**"), NPS lite, APY and APY fund scheme, and master circular dated September 22, 2023, on investment guidelines for NPS tier-I and tier-II (other than central/state government, Corporate—CG, NPS lite and APY) respectively, allowing investments by national pension funds up to respectively, allowing investments by national pension funds up to 5% in infrastructure investment trusts, as specified. However, such investments by provident funds and pension funds will be subject to, amongst others, the sponsor having a minimum of AA or equivalent rating from at least two credit rating agencies registered with SEBI. In case of Bids made by provident funds/ pension funds (registered with the Pension Fund Regulatory and Development Authority established under section 3(1) of the Pension Fund Regulatory and Development Authority Act, 2013), subject to applicable laws, with minimum corpus of ₹ 250 million, a certified copy of certificate from a chartered accountant certifying the corpus of the provident fund/pension fund was required to be attached to the Bid cum Application Form. Failing this, the Bid(s) may be rejected.

Bids by Insurance Companies

Bids could be made by insurance companies as permitted by the Insurance Regulatory and Development Authority of India in terms of Master Circular on Investments dated October 27, 2022, circular dated March 14, 2017 titled Investment in Units of Real Estate Investment Trusts (REIT) & Infrastructure Investment Trusts (InvIT) and circular dated April 22, 2021 titled Investments in Debt Securities of InvITs and REITs. In case of Bids made by insurance companies registered with the IRDAI, a certified copy of the certificate of registration issued by IRDAI was required to be attached to the Bid cum Application Form. Failing this, the Investment Manager, in consultation with the Book Running Lead Managers, reserves the right to reject the Bid. An insurer can invest not more than 3% of respective fund size of the insurer or not more than 5% of the units issued by a single InvIT, whichever is lower.

Bids by Mutual Funds

Bids could be made by mutual funds under all its schemes, existing and future, subject to the investment conditions and other restrictions prescribed under the Securities and Exchange Board of India (Mutual Funds) Regulations, 2026 (including, the master circular for mutual funds dated March 20, 2026 issued by SEBI, as amended from time to time, and any other circulars, notifications and guidelines issued thereunder).

A mutual fund could invest in the Units subject to the following:

(a) No mutual fund under all its schemes shall own more than 10% of the units; and

(b) A mutual fund scheme shall not invest:

  (i) more than 10% of its net asset value in the units issued by InvIT; and

  (ii) More than 5% of its net asset value in the units,

provided that the limits mentioned in sub-clauses (i) and (ii) above shall not be applicable for investments in case of index fund or sector or industry specific scheme pertaining to Trusts.

In case of a Mutual Fund, a separate Bid could be made in respect of each scheme of the Mutual Fund registered with SEBI and such Bids in respect of more than one scheme of the Mutual Fund were not treated as multiple Bids provided that the Bids clearly indicated the scheme concerned for which the Bid had been made.

Bids by Eligible NRIs

In accordance with Schedule IV of the FEMA Rules, Eligible NRIs, including companies, trusts and partnership firms incorporated outside India which are owned and controlled by NRIs, are permitted to purchase units issued by an 'investment

vehicle' without any limit, either on the stock exchange or outside it. The FEMA Rules define an 'investment vehicle' to mean an entity registered and regulated under the regulations framed by the SEBI or any other authority designated for that purpose, including an InvIT governed by the SEBI.

Investments by Eligible NRIs in the Units shall be on a non-repatriation basis and shall be deemed to be domestic investment at par with investments made by residents of India.

(a). Bid cum Application Forms for Eligible NRIs applying will be available at the office of the Trust, the registered office of the Investment Manager and with the Designated Intermediaries, as the case may be;

(b). Only Bids accompanied by payment in freely convertible foreign exchange will be considered for Allotment;

Eligible NRIs bidding on a repatriation basis by using the Bid cum Application Form for Non-Residents could authorize their respective SCSB (if they are Bidding directly through the SCSB) or confirm or accept the UPI Mandate Request (in case of Bidding through the UPI Mechanism) to block their Non-Resident External ("**NRE**") accounts, or Foreign Currency Non-Resident ("**FCNR**") accounts, and eligible NRIs bidding on a non-repatriation basis by using the Bid cum Application Form for residents could authorize their respective SCSB (if they are Bidding directly through SCSB) or confirm or accept the UPI Mandate Request (in case of Bidding through the UPI Mechanism) to block their Non-Resident Ordinary ("**NRO**") accounts for the full Bid Amount, at the time of the submission of the Bid cum Application Form.

Bids by FPIs

Foreign Portfolio Investors were permitted to participate in the Offer subject to compliance with Schedule II and Schedule VIII of the FEMA Rules read with the applicable provisions of the Foreign Exchange Management (Mode of Payment and Reporting of Non-Debt Instruments) Regulations, 2019, as amended and such other terms and conditions as may be prescribed by SEBI from time to time. In accordance with the SEBI FPI Regulations, a FPI means, a person who has been registered under Chapter II of the SEBI FPI Regulations and shall be deemed to be an intermediary in terms of the provisions of the SEBI Act.

In case of Bids by FPIs the payment was required to be paid out of funds held in a Special Non-Resident Rupee Account as inward remittance from abroad through normal banking channels or out of funds held in NRE, or FCNR(B) account maintained in accordance with the Foreign Exchange Management (Deposit) Regulations, 2016, along with documentary evidence in support of the remittance. In case of Bids made by FPIs, a verified true copy of the certificate of registration issued by the designated depository participant under the SEBI FPI Regulations was required to be attached along with the Bid cum Application Form, failing which the Investment Manager, in consultation with the Book Running Lead Managers, reserved the right to reject the Bid without assigning any reasons thereof.

It is hereby clarified that bids received from FPIs bearing the same PAN were treated as multiple Bids and were liable to be rejected, except for Bids from FPIs that utilize the multiple investment manager structure in accordance with the operational guidelines for FPIs and designated Depository Participants issued to facilitate implementation of SEBI FPI Regulations (such structure referred to as "**MIM Structure**"), provided such Bids have been made with different beneficiary account numbers, Client IDs and DP IDs. Accordingly, it should be noted that multiple Bids received from FPIs, who did not utilize the MIM Structure, and bear the same PAN, were liable to be rejected. In order to ensure valid Bids, FPIs making multiple Bids using the same PAN, and with different beneficiary account numbers, Client IDs and DP IDs, were required to provide a confirmation in the Bid cum Application Forms that the relevant FPIs making multiple Bids utilize the MIM Structure. In the absence of such confirmation from the relevant FPIs, such multiple Bids were rejected.

Please note that, the maximum Bid by any Bidder including a QIB Bidder could not exceed the investment limits prescribed for them under applicable laws. Further, multiple Bids by a FPI Bidder utilising the MIM Structure was aggregated for determining the permissible maximum Bid. Further, please note that, Bid cum Application Forms were liable to be rejected in the event that the Bid in the Bid cum Application Form "exceeds the Offer size and/or investment limit or maximum number of Units that can be held under applicable laws or regulations or maximum amount permissible under applicable laws or regulations, or under the terms of the Final Offer Document".

Bids by SCSBs

SCSBs participating in the Offer were required to comply with the terms of the SEBI circulars dated September 13, 2012 (CIR/CFD/DIL/12/2012) and January 2, 2013 (CIR/CFD/DIL/1/2013). Such SCSBs were required to ensure that for making applications on their own account using ASBA, they were required to have a separate account in their own name with any other SCSBs. Further, such account was to be used solely for the purpose of making application in public issues and clear demarcated funds were required to be available in such account for such applications.

Bids under Power of Attorney

In case of Bids made pursuant to a power of attorney by Institutional Investors or bodies corporate, registered societies, Eligible FPIs, insurance companies, mutual funds, AIFs, insurance funds set up by the army, navy or air force of India, insurance funds set up by the Department of Posts, India or the National Investment Fund and provident funds with a minimum corpus of ₹ 250 million (subject to Applicable Law) and pension funds with a minimum corpus of ₹ 250 million registered with the Pension Fund Regulatory and Development Authority established under sub-section (1) of section 3 of the Pension Fund Regulatory

and Development Authority Act, 2013 (subject to applicable law), a certified copy of the power of attorney or the relevant resolution or authority, as the case may be, along with a certified copy of the memorandum of association and articles of association and/or bye laws were required to be submitted along with the Bid cum Application Form. Failing this, the Investment Manager, in consultation with the Book Running Lead Managers, reserved the right to accept or reject any Bid in whole or in part, in either case, without assigning any reason thereof. The Investment Manager, in consultation with the Book Running Lead Managers, in its absolute discretion, reserved the right to relax the above condition of simultaneous lodging of the power of attorney along with the Bid cum Application Form.

Allotments, if any, made to FVCIs in the Offer are subject to the respective rules and regulations that are applicable to each of them.

The above information is given for the benefit of the Bidders. Each Bidder was required to check whether it is eligible to apply under applicable law and ensure that any prospective Allotment to it in the Offer is in compliance with the investment restrictions under applicable law. Certain categories of Bidders may not be allowed to Bid in the Offer or hold Units exceeding certain limits specified under applicable law.

The Parties to the Trust, and the Book Running Lead Managers are not liable for any amendments or modification or changes in applicable laws or regulations, which may occur after the date of this Final Offer Document. Bidders are advised to make their independent investigations and ensure that any single Bid from them does not exceed the applicable investment limits or maximum number of the Units that can be held by them under applicable law or regulation or as specified herein.

Maximum and Minimum Bid Size

Each Bidder (other than an Anchor Investor and Strategic Investor) was required to Bid for a Minimum Bid Size in the range of ₹10,000 and ₹15,000 and in multiples of 95 Units thereafter.

(i) No Bidder could Bid for such number of Units which exceeded the Offer Size, subject to applicable investment limits or maximum number of Units that may be held by them under applicable laws.

(ii) The maximum Bid by any Bidder including Institutional Investors could not exceed the investment limits prescribed for them under the applicable law.

The price and quantity options submitted by a Bidder in the Bid cum Application Form may be treated as optional bids from the Bidder and may not be cumulated. After determination of the Offer Price, the highest number of Units Bid for by a Bidder at or above the Offer Price may be considered for Allotment and the rest of the Bid(s), irrespective of the Bid Amount may automatically become invalid.

Information for the Bidders:

(i) The Offer Document was filed by the Investment Manager with SEBI and the Stock Exchanges at least five Working Days before the Bid/Offer Opening Date.

(ii) After the filing of the Offer Document with SEBI and the Stock Exchanges, the Book Running Lead Managers/ Investment Manager have made a Pre-Offer advertisement on the websites of the Trust, the Sponsor, the Investment Manager and the Stock Exchanges. Further, such a Pre-Offer advertisement was advertised in all editions of Financial Express (a widely circulated English national daily newspaper) and in all editions of Jansatta (a widely circulated Hindi national daily newspaper, Hindi also being the regional language of Delhi, where the registered office of the Investment Manager is located).

(iii) Any Bidder (who was eligible to invest in the Units) could obtain the Bid cum Application Form or both from the principal place of business of the Trust, the registered office of the Investment Manager or from any Designated Intermediary at the Bidding Centres. Anchor Investor Application Forms were made available at the principal place of business of the Trust, and the respective registered offices of the Investment Manager, and the Book Running Lead Managers.

(iv) The Bid/Offer Period was for a minimum of three Working Days.

(v) The Designated Intermediaries accepted Bids during the Bid/Offer Period in accordance with the terms of the Offer Document, provided that the Book Running Lead Managers could accept the Bids from Anchor Investors only on the Anchor Investor / Offer Period.

(vi) The Bids were required to be submitted on the prescribed Bid cum Application Form only. Bids by ASBA Bidders were accepted by the Designated Intermediaries at the Bidding Centres in accordance with applicable law and any circulars issued by SEBI in this regard. Bid cum Application Forms were required bear the stamp of a Designated Intermediary. Bid cum Application Forms (except electronic Bid cum Application Forms) which did not bear the stamp of a Designated Intermediary were liable to be rejected.

(vii) The Bidding Centres acknowledged the receipt of the Bid cum Application Forms by stamping and returning to the Bidder the Acknowledgement Slip. This Acknowledgement Slip will serve as the duplicate of the Bid cum Application Form for the records of the Bidder.

Instructions for completing the Bid Cum Application Form

Bidders were required to note that Bid cum Application Forms not filled completely or correctly as per instructions provided in the Offer Document and the Bid cum Application Form are liable to be rejected.

Bids were required to be:

(i) made only in the prescribed Bid cum Application Form or Revision Form, as applicable;

(ii) completed in full, in BLOCK LETTERS in ENGLISH and in accordance with the instructions contained here and in the Bid cum Application Form. Incomplete Bid cum Application Forms or Revision Forms were liable to be rejected. Bidders had to provide details of valid and active DP ID, Client ID, PAN, and UPI ID (for individual Non-Institutional Investors Bidding for a Bid Amount of ₹ 0.50 million or less using the UPI Mechanism clearly and without error. Invalid accounts, suspended accounts or where such account is classified as invalid or suspended shall not be considered for Allotment. Bidders should note that the Members of the Syndicate and/or the SCSBs (as appropriate) will not be liable for errors in data entry due to incomplete or illegible Bid cum Application Forms; and

(iii) in a single name or in joint names (not more than three, and in the same order as their Depository Participant details).

Bidders were also required to note that:

(i) information provided by Bidders would be uploaded in the online system by the Designated Intermediaries and the electronic data will be used to make allocation/Allotment. Bidders were advised to ensure that the details are correct and legible;

(ii) only the First Bidder was required to sign the Bid cum Application Form. Bidders should have ensured that thumb impressions and signatures other than in the languages specified in the Eighth Schedule to the Constitution of India are attested by a Magistrate or a Notary Public or a Special Executive Magistrate under official seal; and

(iii) if the ASBA Account holder was different from the ASBA Bidder, the Bid cum Application Form should also have been signed by the account holder as provided in the Bid cum Application Form.

General Instructions

Dos:

(i) Check if you are eligible to apply as per the terms of the Offer Document and under Applicable Laws and approvals. Bidders shall be required to be qualified to invest or hold interest in highway projects of NHAI and/or state concessioning authorities in India in respect of applicable laws, including FEMA and FDI Policy, and as prescribed under the relevant clauses of the respective concession agreements of the Portfolio Assets and the InvIT Regulations;

(ii) Ensure that you have a Bid within the Price Band;

(iii) Read all the instructions carefully and complete the relevant Bid cum Application Form;

(iv) Ensure that the details about the PAN, DP ID, Client ID and UPI ID (where applicable) are correct, and the Beneficiary Account is activated, as Allotment will be in dematerialized form only;

(v) Ensure that the Bids are submitted at the Bidding Centres only on the Bid cum Application Forms bearing the stamp of a Designated Intermediary;

(vi) Ensure that if you are the Bidder, you have mentioned the correct ASBA Account number in the Bid cum Application Form (other than in the case of Anchor Investors and Strategic Investors);

(vii) Individual Non-Institutional Investors Bidding for a Bid Amount of ₹ 0.50 million or less using the UPI Mechanism must provide bank account details and the authorization to block funds in their respective ASBA Accounts in the relevant space provided in the ASBA Form and the ASBA Forms that do not contain these details are liable to be rejected or the UPI ID, as applicable in the relevant space provided in the ASBA Form;

(viii) Individual Non-Institutional Investors Bidding for a Bid Amount of ₹ 0.50 million or less using the UPI Mechanism through the SCSBs and mobile applications shall ensure that the name of the bank appears in the list of SCSBs which are live on UPI, as displayed on the SEBI website.

(ix) Individual Non-Institutional Investors Bidding for a Bid Amount of ₹ 0.50 million or less using the UPI Mechanism to ensure that they shall use only their own ASBA Account or only their own bank account linked UPI ID to make an application in the Offer and not the ASBA Account or bank account linked UPI ID of any third party.

(x) UPI Bidders shall ensure that the name of the app and the UPI handle which is used for making the application appears on the list displayed on the SEBI website. An application made using incorrect UPI handle or using a bank account of an SCSB or bank which is not mentioned on the SEBI website is liable to be rejected;

(xi) Ensure that your Bid is submitted at a Bidding Centre of a Designated Intermediary. Further, ensure that the Bid cum Application Form is signed by the ASBA Account holder if the Bidder is not the ASBA Account holder;

(xii) Ensure that the full Bid Amount is paid for Bids submitted by Anchor Investors and Strategic Investors and funds equivalent to the Bid Amount are blocked by the SCSBs in case of Bids submitted through the ASBA process;

(xiii) Ensure that you have correctly checked the authorization/undertaking box in the Bid cum Application Form, or have otherwise provided an authorization to the SCSB via the electronic mode for the Designated Branch to block funds in the ASBA Account equivalent to the Bid Amount mentioned in the Bid cum Application Form at the time of submission of the Bid;

(xiv) Instruct your respective banks to not release the funds other than in relation to the Offer, blocked in the ASBA Accounts;

(xv) Ensure that you request for and have received an Acknowledgement Slip for all your Bid options;

(xvi) Ensure that you receive an Acknowledgement Slip from the Designated Intermediary for the submission of your Bid cum Application Form;

(xvii) Submit revised Bids at the same Bidding Centre of a Designated Intermediary, through which the original Bid was placed and obtain a revised Acknowledgement Slip, as the case may be;

(xviii) Except for Bids (i) on behalf of the Central or State Governments and the officials appointed by the courts, who, in terms of the SEBI circular dated June 30, 2008, may be exempt from specifying their PAN for transacting in the securities market, and (ii) Bids by persons resident in Sikkim, who, in terms of a SEBI circular dated July 20, 2006, may be exempted from specifying their PAN for transacting in the securities market, all Bidders should mention their PAN allotted under the IT Act. The exemption for the Central or the State Government and officials appointed by the courts and for Bidders residing in Sikkim is subject to (a) the Demographic Details received from the respective depositories confirming the exemption granted to the beneficiary owner by a suitable description in the PAN field and the beneficiary account remaining in "active status"; and (b) in the case of residents of Sikkim, the address as per the Demographic Details evidencing the same. All other applications in which the PAN is not mentioned will be rejected;

(xix) In cases where the PAN is same, such Bids will be treated as multiple applications. Bidders should not submit the GIR number instead of the PAN as the Bid is liable to be rejected on this ground. With effect from August 16, 2010, the demat accounts of Bidders for whom PAN details have not been verified shall be "suspended for credit" and no credit of Units pursuant to the Offer will be made into the accounts of such Bidders;

(xx) Ensure that your PAN is linked with Aadhaar and are in compliance with Central Board of Direct Taxes notification dated February 13, 2020 and press release dated March 29, 2022;

(xxi) Ensure that the Demographic Details (as defined below) are updated, true and correct in all respects;

(xxii) Ensure that thumb impressions and signatures other than in the languages specified in the Eighth Schedule to the Constitution of India are attested by a Magistrate or a Notary Public or a Special Executive Magistrate under official seal;

(xxiii) In case of joint Bids, the Bid cum Application Form should contain the name of only the First Bidder whose name should also appear as the first holder of the beneficiary account held in joint names. Ensure that the signature of the First Bidder in case of joint Bids, is included in the Bid cum Application Forms;

(xxiv) Ensure that the name(s) given in the Bid cum Application Form is exactly the same as the name(s) in which the beneficiary account is held with the Depository Participant;

(xxv) Ensure that the category and the Bidder status is indicated;

(xxvi) Bidders (except UPI Bidders using the UPI Mechanism) should instruct their respective banks to release the funds blocked in the ASBA Account under the ASBA process. UPI Bidders using the UPI Mechanism, should ensure that they approve the UPI Mandate Request generated by the Sponsor Bank(s) to authorise blocking of funds equivalent to Bid Amount and subsequent debit of funds in case of Allotment, in a timely manner;

(xxvii) Ensure that in case of Bids under power of attorney or by limited companies, corporates, trusts, etc., relevant documents are submitted;

(xxviii) UPI Bidders using the UPI Mechanism shall ensure that details of the Bid are reviewed and verified by opening the attachment in the UPI Mandate Request and then proceed to authorize the UPI Mandate Request using his/her UPI PIN. Upon the authorization of the mandate using his/her UPI PIN, the UPI Bidders may be deemed to have verified the attachment containing the application details of the UPI Bidders using the UPI Mechanism in the UPI Mandate Request and have agreed to block the entire Bid Amount and authorized the Sponsor Bank(s) to offer a request to block the Bid Amount mentioned in the ASBA Form in his/her ASBA Account;

(xxix) UPI Bidders using the UPI Mechanism should mention valid UPI ID of only the Bidder (in case of single account) and of the first Bidder (in case of joint account) in the ASBA Form;

(xxx) UPI Bidders using the UPI Mechanism, who have revised their Bids subsequent to making the initial Bid, should also approve the revised UPI Mandate Request generated by the Sponsor Bank(s) to authorise blocking of funds equivalent to the revised Bid Amount in their account and subsequent debit of funds in case of allotment in a timely manner;

(xxxi) Ensure that Bids submitted by any person outside India are in compliance with applicable foreign and Indian laws; and

(xxxii) With respect to Bids by SCSBs, ensure that you have a separate account in your own name with any other SCSB having clear demarcated funds for applying under the ASBA process and that such separate account (with any other SCSB) is used as the ASBA Account with respect to your Bid.

The Bid cum Application Form was liable to be rejected if the above instructions, as applicable, were not complied with.

Dont's:

(i) Do not Bid for lower than the Minimum Bid Size;

(ii) Do not submit a Bid without payment of the entire Bid Amount;

(iii) Do not Bid less than the Floor Price or higher than the Cap Price;

(iv) Do not Bid on another Bid cum Application Form after you have submitted a Bid;

(v) Do not pay the Bid Amount in cash, by money order or postal order and in relation to ABSA Bidders, in any other

(vi) mode other than blocked amounts in the ASBA Accounts;

(vii) Do not send Bid cum Application Forms by post and only submit the same to a Designated Intermediary at a Bidding Centre;

(viii) Do not fill up the Bid cum Application Form such that the Units Bid for exceed, the Offer Size or investment limits, or the maximum number of Units that can be held or the maximum amount permissible under applicable laws or under the terms of the Offer Document;

(ix) Do not submit more than five Bid cum Application Forms per ASBA Account;

(x) Do not submit the GIR number instead of the PAN as the Bid is liable to be rejected on this ground;

(xi) Do not submit incorrect details of DP ID, Client ID and PAN or give details for which demat account is suspended or for which such details cannot be verified by the Registrar;

(xii) Do not instruct your respective banks to release the funds blocked in the ASBA Account under the ASBA process, other than in relation to the Offer;

(xiii) Do not submit the Bid for an amount more than funds available in your ASBA Account;

(xiv) Do not submit Bids on plain paper or on incomplete or illegible Bid cum Application Forms or on Bid cum Application Forms in a colour prescribed for another category of Bidders;

(xv) Do not submit a Bid in case you are not eligible to acquire Units under applicable law or your relevant constitutional documents or otherwise;

(xvi) Do not Bid if you are not competent to contract under the Indian Contract Act, 1872 (other than minors having valid depository accounts as per demographic details provided by the Depository);

(xvii) Do not submit the Bid cum Application Form to any non-SCSB bank;

(xviii) Do not submit your Bid after the Bid/ Offer Closing Date;

(xix) Anchor Investors and Strategic Investors should not Bid through the ASBA process; and

(xx) Do not withdraw your Bid or lower the size of your Bid (in terms of quantity of the Units or the Bid Amount) at any stage.

Method and Process of Bidding

(i) The Investment Manager and the Book Running Lead Managers had declared the Bid/Offer Opening Date and Bid/Offer Closing Date at the time of filing the Offer Document with SEBI and the Stock Exchanges.

(ii) Post filing of the Offer Document with SEBI and the Stock Exchanges, the Book Running Lead Managers/ Investment Manager had made a pre-Offer advertisement on the websites of the Sponsor, the Investment Manager and the Stock Exchanges. Further, such pre-Offer advertisement was advertised in all editions of Financial Express (a widely circulated English national daily newspaper), in all editions of Jansatta (a widely circulated Hindi national daily newspaper, Hindi also being the regional language of Delhi, where the registered office of the Investment Manager is located).

(iii) The Price Band and the Minimum Bid Size (as determined by the Investment Manager in consultation with the Book Running Lead Managers) was announced on the websites of the Trust, the Sponsor, the Investment Manager, and the Stock Exchanges, as well as advertised in all editions of Financial Express (a widely circulated English national daily newspaper), in all editions of Jansatta (a widely circulated Hindi national daily newspaper, Hindi also being the regional language of Delhi, where the registered office of the Investment Manager is located) at least two Working Days prior to the Bid/Offer Opening Date. The announcement/ advertisement contained relevant financial ratios computed for both the upper and lower end of the Price Band.

(iv) The Book Running Lead Managers could accept Bids from the Anchor Investors on the Anchor Investor Bidding Date, *i.e.* one Working Day prior to the Bid/Offer Opening Date. Bidders, except Anchor Investors, who were interested in subscribing to the Units were required to approach any of the Designated Intermediaries at Bidding Centres to register their Bids during the Bid/Offer Period. The Designated Intermediaries could accept Bids from all Bidders and had the right to vet the Bids during the Bid/Offer Period in accordance with the terms of the Syndicate Agreement and/or the Offer Document. The Bid/Offer Period was for at least three Working Days

(v) UPI Bidders could submit the Bid cum Application form with the Designated Intermediaries and use their bank account linked with UPI ID for the purpose of blocking funds. The Designated Intermediaries were required to upload the Bid on the Stock Exchange bidding platform and the application amount would be blocked through the UPI Mechanism.

(vi) Each Bid cum Application Form gave the Bidder the choice to Bid for up to three optional prices within the Price Band and specify the demand (*i.e.*, the number of Units Bid for) in each option. The price and demand options submitted by the Bidder in the Bid cum Application Form were treated as optional demands from the Bidder and were not to be cumulated. In case of an upward revision in the Price Band, in the event the Bidder did not either revise the Bid or make additional payment and the Offer Price was higher than the Cap Price prior to revision, the number of Units Bid for were adjusted downwards for the purpose of Allotment, such that no additional payment was required from the Bidder and the Bidder was deemed to have approved such revised Bid. The Bidder could Bid at any price within the Price Band. The Bidder had to Bid for the desired number of Units at a specific price.

(vii) No Bidder was allowed to either withdraw or lower its Bid at any stage.

(viii) After determination of the Offer Price, the maximum number of Units Bid for by a Bidder at or above the Offer Price was considered for allocation/Allotment and the rest of the Bid(s), irrespective of the Bid Amount, would become automatically invalid.

(ix) Except in relation to the Bids received from the Anchor Investors and Strategic Investors, the Designated Intermediary were required to enter each Bid option into the electronic bidding system as a separate Bid and generate an Acknowledgement Slip, and SCSBs were required to generate an Acknowledgement Slip for each price and demand option and were required to, on demand, give the same to the Bidder. Therefore, a Bidder could receive up to three Acknowledgement Slips for each Bid cum Application Form.

(x) On receipt of the Bid cum Application Form (whether in physical or electronic mode) the Designated Branch of the SCSB was required to verify if sufficient funds equal to the Bid Amount were available in the ASBA Account, as mentioned in the ASBA Bid cum Application Form, prior to uploading such Bids with the Stock Exchanges. If sufficient funds were not available in the ASBA Account, the Designated Branch of the SCSB were required to reject such Bids and not upload such Bids with the Stock Exchanges. If sufficient funds were available in the ASBA Account, the SCSB blocked an amount equivalent to the Bid Amount mentioned in the ASBA Bid cum Application Form and entered each Bid option into the electronic bidding system as a separate Bid.

(xi) Along with the Bid cum Application Form, all Bidders were required to make payment in the manner described under the paragraph titled "– *Payment Instructions*" on page 446 in this section.

Bidders' Depository Account and Bank Account Details

Bidders were required to note that on the basis of Bidders' PAN, DP ID and Client ID provided by them in the Bid cum Application Form and as entered into the electronic bidding system of the Stock Exchanges by the Members of the Syndicate and the SCSBs as the case may be, the Registrar was required to obtain from the Depository the demographic details including the Bidders' address, occupation and bank account details (including the nine-digit Magnetic Ink Character Recognition ("**MICR**") code as appearing on a cheque leaf (the "**Demographic Details**")), from the Depository. The Demographic Details will be used for giving refunds and allocation advice (including through physical refund warrants, direct credit, NACH, NEFT and RTGS) to Anchor Investors. Hence, Bidders were advised to immediately update their bank account details, PAN and Demographic Details as appearing on the records of the Depository Participant and ensure that they were true and correct. Failure to do so could result in delays in dispatch/credit of refunds to Bidders at the Bidders sole risk and none of the Book Running Lead Managers, the Registrar, the Escrow Collection Bank, the Sponsor Bank(s), the SCSBs, the Investment Manager or the Trustee had any responsibility or undertook any liability for this. Accordingly, Bidders were required to carefully fill in their depository account details in the Bid cum Application Form.

By signing the Bid cum Application Form, the Bidder was deemed to have authorized the Depositories to provide to the Registrar, on request, the required Demographic Details as available in their records.

Bids with no corresponding record available with the Depositories matching the three parameters (namely, PAN (in case of joint Bids, PAN of First Bidder), the DP ID and Client ID), were liable to be rejected.

Payment mechanism for ASBA Bidders

The ASBA Bidders were required to specify the ASBA Account in the Bid cum Application Form and the SCSB (or the Sponsor Bank in case of individual Non-Institutional Investors using the UPI Mechanism) could block an amount equivalent to the Bid Amount in the ASBA Account so specified. The SCSB will keep the Bid Amount in the relevant ASBA Account blocked until finalization of the Basis of Allotment and consequent transfer of the Bid Amount to the Public Offer Account, or until withdrawal/failure of the Offer or until rejection of the Bid, as the case may be.

In the event of rejection of the Bid cum Application Form, failure of the Offer or for unsuccessful Bid cum Application Forms, the Registrar will give instructions to the SCSB to unblock the Bid Amount in the relevant ASBA Account and the SCSBs will unblock the Bid Amount on receipt of such instruction.

Payment Instructions

The Investment Manager in consultation with the Trustee and BRLMs and the Syndicate opened Escrow Accounts with one or more Escrow Collection Bank(s) in whose favour Anchor Investors and Strategic Investors offered payment instruments. The payment instruments for payment into the Escrow Accounts were drawn in favour of:

In case of resident Anchor Investors: "Cube Highways Trust- Anchor R Account"

In case of non-resident Anchor Investors: "Cube Highways Trust- Anchor NR Account"

In case of resident Strategic Investors: "Cube Highways Trust- Strategic R Account"

In case of non-resident Strategic Investors: "Cube Highways Trust- Strategic NR Account"

The Bidders were required to note that the escrow mechanism is not prescribed by SEBI and has been established as an arrangement amongst the Investment Manager, the Trustee (acting on behalf of the Trust), the Syndicate, the Escrow Collection Bank and the Registrar to facilitate collections from Bidders.

The Escrow Collection Bank will act in terms of the Offer Document and the Escrow Agreement. The monies deposited in the Escrow Accounts will be held for the benefit of the Anchor Investors and Strategic Investors until the Designated Date. On the Designated Date, the Escrow Collection Bank will transfer the funds from the Escrow Accounts as per the terms of the Escrow Agreement into the Public Offer Account with the Escrow Collection Bank and the Refund Account. The Escrow Collection Bank will not exercise any lien whatsoever over the monies deposited therein and will hold the monies therein in trust for the Anchor Investors. The balance amount after transfer to the Public Offer Account will be transferred to the Refund Account. Payments of refund to the Anchor Investors will be made from the Refund Account as per the terms of the Escrow Agreement and the Offer Document. Payments were required to be made by Anchor Investors only in electronic mode through direct credit/NEFT/NACH/RTGS. Cheques or bank drafts, cash, money orders or postal orders were not accepted and were liable to be rejected.

Payment Mechanism for UPI Bidders

In relation to UPI Bidders, the Sponsor Banks were required to initiate a UPI Mandate Request on the UPI Bidder, i.e., request the UPI Bidder to authorize blocking of funds equivalent to application amount and subsequent debit of funds in case of Allotment. The request raised by the Sponsor Banks was required to be electronically received by the UPI Bidder as an SMS /

intimation on their mobile number / mobile application associated with the UPI ID linked bank account. The UPI Bidder was required to be able to view the details of the request in their UPI application and authorize the transaction. In UPI, the SCSBs / UPI applications eligible for public issues was required to send SMS alerts to UPI Bidders for all ASBA applications and could also provide invoices in the inbox as an additional feature to verify the UPI mandate details. After reviewing the details properly, the UPI Bidder was required to authorize the mandate, which was a one-time mandate for each application in the Offer. The payment accompanied with any upward revision of the Bid was adjusted against the payment made at the time of the original Bid or previously revised Bid.

Other Instructions

Joint Bids in case of Individuals

Bids could be made in single or joint names (not more than three). In the case of joint Bids, all payments will be made out in favour of the Bidder whose name appears first in the Bid cum Application Form or Revision Form. All communications will be addressed to the First Bidder and will be dispatched to his or her address as per the Demographic Details received from the Depository.

Multiple Bids

A Bidder could submit only one Bid for the total number of the Units required. Two or more Bids were deemed to be multiple Bids if the sole or First Bidder was the same. However, a Bidder could revise the Bid through the Revision Form.

In case of a mutual fund, subject to investment conditions as per applicable law, a separate Bid could be made in respect of each scheme of the mutual fund registered with SEBI and such Bids in respect of more than one scheme of the mutual fund were not treated as multiple Bids, provided that the Bids clearly indicate the scheme concerned for which the Bid was made. Bids by Strategic Investors and QIBs under the Anchor Investor Portion and Institutional Investor Portion (excluding Anchor Investor Portion) were not considered as multiple Bids.

After Bidding on an ASBA Form either in physical or electronic mode, where such ASBA Bid was submitted to the Designated Intermediaries and uploaded with the Stock Exchanges, an ASBA Bidder could not Bid, either in physical or electronic mode, on another ASBA Form or a non-ASBA Form. Submission of a second Bid cum Application Form, whether an ASBA Form, to either the same or to another Designated Intermediary, or a non-ASBA Form, was treated as multiple Bids and was liable to be rejected either before entering the Bid into the electronic bidding system, or at any point of time prior to the allocation or Allotment of Units in this Offer. However, the ASBA Bidder could revise the Bid through the Revision Form.

More than one ASBA Bidder could Bid for Units using the same ASBA Account, provided that the SCSBs could not accept a total of more than five Bid cum Application Forms from ASBA Bidders with respect to any single ASBA Account.

The Investment Manager, in consultation with the Book Running Lead Managers, reserved the right to reject, in its absolute discretion, all or any multiple Bids in any or all categories. A check was carried out for the same PAN. In cases where the PAN was the same, such Bids were treated as multiple applications.

Right to Reject Bids

In case of QIBs Bidding in the Institutional Investor Portion and Anchor Investors, the members of the Syndicate could reject Bids provided that such rejection was made at the time of acceptance of the Bid and the reasons for rejecting such Bids was provided to such Bidder in writing. The Members of the Syndicate could also reject Bids if all information required was not provided and the Bid cum Application Form was incomplete in any respect.

Grounds for Technical Rejections

Bidders were advised that incomplete or illegible Bid cum Application Forms would be rejected by Designated Intermediaries. Bidders were advised to note that Bids were liable to be rejected on technical grounds including the following:

(i) The amounts mentioned in the Bid cum Application Form did not tally with the amount payable for the value of the Units Bid for;

(ii) The Application was made on plain paper;

(iii) In case of partnership firms (excluding LLPs), Units may be registered in the names of the individual partners and no firm as such will be entitled to apply;

(iv) Bid by persons not competent to contract under the Indian Contract Act, 1872, as amended, including minors.However, minors can Bid through their guardians;

(v) PAN not stated (except for Bids on behalf of the Central or State Government, residents of Sikkim and the officials appointed by the courts);

(vi) GIR number furnished instead of PAN;

(vii) Where PAN details were not verified by demat accounts, i.e. where the demat account is "suspended for credit";

(viii) Bids for lower value of Units than specified for that category of Bidders;

(ix) Bids at a price less than the Floor Price;

(x) Bids at a price over the Cap Price;

(xi) Submission of more than five Bid cum Application Forms per ASBA Account;

(xii) Bids by UPI Bidders for a value of more than ₹ 0.50 million;

(xiii) Individual Non-Institutional Investors Bidding for a Bid Amount of ₹ 0.50 million or less using the UPI Mechanism had not provided the valid UPI ID in the relevant space provided in the Bid cum Application Form;

(xiv) Bids for a value of less than the Minimum Bid Size;

(xv) Bidder category not specified;

(xvi) Multiple Bids as described in the Offer Document;

(xvii) In case of Bids under power of attorney or by limited companies, corporate, trust etc., relevant documents not being submitted;

(xviii) Bids accompanied by cash, stock invest, money order or postal order;

(xix) Signature of sole and/or the First Bidder (in case of joint Bids) was missing;

(xx) The Bid cum Application form not being signed by the ASBA Account holder, if the ASBA Account holder is different from the Bidder;

(xxi) Bid cum Application Form did not have the stamp of a Designated Intermediary (except for electronic ASBA Bids), as the case may be;

(xxii) Bid cum Application Forms were not submitted within the time prescribed as per the Bid cum Application Form, Bid/Offer Opening Date advertisement and the Offer Document and as per the instructions in the Offer Document and the Bid cum Application Forms;

(xxiii) Inadequate funds in the ASBA Account to block the Bid Amount specified in the Bid cum Application Form at the time of blocking such Bid Amount in the ASBA Account;

(xxiv) Authorisation for blocking funds in the ASBA Account not provided;

(xxv) Bids for amounts greater than the maximum permissible amounts prescribed by Applicable Law;

(xxvi) Bids by overseas corporate bodies;

(xxvii) Bank account details for the refund not given, as applicable;

(xxviii) Bids by persons prohibited from buying, selling or dealing in the Units directly or indirectly by SEBI or any other regulatory authority;

(xxix) Bids by persons who are not eligible to acquire Units under applicable law or their relevant constitutional documents or otherwise; and

(xxx) Bids that do not comply with the securities laws of their respective jurisdictions.

IN CASE THE DP ID, CLIENT ID, PAN AND UPI ID (WHERE APPLICABLE) MENTIONED IN THE BID CUM APPLICATION FORM AND ENTERED INTO THE ELECTRONIC BIDDING SYSTEM OF THE STOCK EXCHANGES BY THE BOOK RUNNING LEAD MANAGERS/THE DESIGNATED INTERMEDIARIES DO NOT MATCH WITH THE DP ID, CLIENT ID, UPI ID (FOR INDIVIDUAL NON-INSTITUTIONAL INVESTORS BIDDING FOR A BID AMOUNT OF ₹ 0.50 MILLION OR LESS USING THE UPI MECHANISM) AND PAN AVAILABLE IN THE RECORDS WITH THE DEPOSITORIES THE APPLICATION IS LIABLE TO BE REJECTED.

Electronic Registration of Bids

(i) The Designated Intermediaries were required to register the Bids received, except Bids received from Anchor Bidders, using the online facilities of the Stock Exchanges. Details of Bids in the Strategic Investor Portion and Anchor Investor Portion were not registered on the online facilities of the Stock Exchanges. The Book Running Lead Managers, the

Investment Manager and the Registrar are not responsible for any acts, mistakes or errors or omission and commissions in relation to (i) the Bids accepted by Designated Intermediaries, (ii) the Bids uploaded by Designated Intermediaries, (iii) the Bids accepted but not uploaded by the Designated Intermediaries or (iv) Bids accepted and uploaded without blocking funds in the ASBA Accounts. It was presumed that for the Bids uploaded by the SCSBs, the Bid Amount had been blocked in the relevant ASBA Account.

(ii) The Stock Exchanges were required to offer a screen-based facility for registering such Bids for the Offer. This facility was available on the terminals of the Designated Intermediaries during the Bid/Offer Period. The Designated Intermediaries could also set up facilities for offline electronic registration of Bids subject to the condition that it will upload the offline data file into the on-line facilities for book building on a regular basis.

(iii) On the Bid/Offer Closing Date, the Designated Intermediaries were required to upload the Bids until such time as was permitted by the Stock Exchanges. This information was required to be made available with the Book Running Lead Managers on a regular basis. In order to ensure that the data uploaded was accurate, the Syndicate or Designated Intermediaries were permitted one Working Day after the Bid/Offer Closing Date to amend some of the data fields (currently DP ID, Client ID, UPI ID (as applicable) and PAN) entered by them in the electronic bidding system, after which the Registrar proceeded with the Allotment of the Units. Bidders were cautioned that a high inflow of Bids is typically experienced on the last Working Day of the Bidding, which may lead to some Bids received on the last Working Day not being uploaded due to a lack of sufficient uploading time. Such Bids that could not be uploaded were not considered for allocation. Bids were only accepted on Working Days (excluding any public holiday).

(iv) Based on the aggregate demand and price for Bids registered on the electronic facilities of the Stock Exchanges a graphical representation of consolidated demand and price was required to be made available at the Bidding Centres and on the websites of each of the Stock Exchanges during the Bid/Offer Period on regular at regular intervals as per applicable law.

(v) At the time of registering each Bid, the Designated Intermediaries were required to enter the following details of the Bidder in the electronic system:

- Name of the infrastructure investment trust;
- Bid cum Application Form number/ ASBA Form number ;
- Bidder Category – QIB, Eligible NRI, FPI, etc;
- PAN of the first applicant;
- DP ID;
- UPI ID (for UPI Bidders);
- Client ID;
- Number of Units Bid for; and
- Price option.

(vi) A system-generated Acknowledgement Slip was required to be given to the Bidder (only on demand) as proof of the registration of each of the Bidding options. It was the Bidders' responsibility to obtain the Acknowledgement Slip from Designated Intermediaries. The registration of the Bid by Designated Intermediaries does not guarantee that the Units will be allocated/Allotted. Such Acknowledgement Slip was non-negotiable and by itself will not create any obligation of any kind.

(vii) In relation to Bids by UPI Bidders, once the Bid details were entered on the Stock Exchange platform, the Stock Exchange was required to validate the PAN and demat account combination details of the Bidder with the Depository. The Depository was required to validate the PAN and demat account details on a near real-time basis and send responses to the Stock Exchanges which were shared by the Stock Exchanges with the Designated Intermediaries through its platforms for corrections, if any. Once the Bid details were uploaded on the platforms of the Stock Exchanges, the Stock Exchanges were required to send an SMS to the UPI Bidder on the mobile number associated with their demat account regarding the submission of their Bid cum Application Form at the end of the day during the Bidding period. For the last day of Bidding, the SMS could be sent the next Working Day.

(viii) The permission given by the Stock Exchanges to use their network and software of the online IPO system should not in any way be deemed or construed to mean that the compliance with various statutory and other requirements by the Investment Manager and/or the Book Running Lead Managers are cleared or approved by the Stock Exchanges; nor does it in any manner warrant, certify or endorse the correctness or completeness of any of the compliance with the statutory and other requirements nor does it take any responsibility for the financial or other soundness of the Trust, the management of the Investment Manager or the Trustee or any project of the Trust nor does it in any manner warrant, certify or endorse the correctness or completeness of any of the contents of this Final Offer Document; nor does it warrant that the Units will be listed or will continue to be listed on the Stock Exchanges.

Build-up of the book and revision of Bids

(i) Bids received from various Bidders through the Designated Intermediaries were electronically uploaded to the Stock Exchange's mainframe on a regular basis.

(ii) The book gets built up at various price levels. This information was available with the Book Running Lead Managers at the end of the Bid/Offer Period.

(iii) During the Bid/Offer Period, any Bidder who had registered his or her interest in the Units at a particular price level was free to revise the Bid upwards within the Price Band using the printed Revision Form, which was a part of the Bid cum Application Form.

(iv) Upward revisions could be made in both the desired number of Units and the Bid Amount by using the Revision Form. Apart from mentioning the revised options in the Revision Form, the Bidder was also required to mention the details of all the options in his or her Bid cum Application Form or its previous Revision Form. For example, if a Bidder had Bid for three options in the Bid cum Application Form and such Bidder changed only one of the options in the Revision Form, he was still required to fill in the details of the other two options that were not being revised, in the Revision Form. The Members of the Syndicate and the Designated Branches did not accept incomplete or inaccurate Revision Forms.

(v) The Bidder could make this upward revision any number of times during the Bid/Offer Period. However, for any revision(s) in the Bid, the Bidders were required to use the services of the same Designated Intermediary through which such Bidder had placed the original Bid. Bidders were advised to retain copies of the blank Revision Form, and the revised Bid must be made only in such Revision Form or in copies thereof.

(vi) If revision of the Bids resulted in an incremental amount, the relevant SCSB was required to block the additional Bid Amount. The Registrar reconciled the Bid data and considered the revised Bid data for preparing the Basis of Allotment.

(vii) When a Bidder revised his or her Bid, he or she was required to surrender the earlier Acknowledgement Slip and could, on demand, receive a revised Acknowledgement Slip from the Designated Intermediary. It was the responsibility of the Bidder to request for and obtain the revised Acknowledgement Slip, which could act as proof of his or her having revised the previous Bid.

Price Discovery and Allocation

(i) Based on the Bids received and demand generated at various price levels, the Investment Manager, in consultation with the Book Running Lead Managers, have finalized the Offer Price and the Anchor Investor Offer Price.

(ii) Allocation to Anchor Investors will be at the discretion of the Investment Manager in consultation with the Book Running Lead Managers, subject to compliance with the InvIT Regulations, and other Applicable Laws. In the event of under-subscription in the Anchor Investor Portion, the balance Units will be added to the Institutional Investor Portion. The number of Units allocated to Anchor Investors and the Anchor Investor Allocation Price will be made available in the public domain by the Book Running Lead Managers before the Bid/Offer Opening Date.

(iii) In case of under-subscription in any category, the unsubscribed portion in either the Institutional Investor category or the Non-Institutional Investor Portion may be allotted to applicants in the other categories.

(iv) Allocation to Strategic Investors will be at the discretion of the Manager, in consultation with the Book Running Lead Managers, subject to compliance with the InvIT Regulations, the InvIT Master Circular and other applicable laws.

(v) Allocation to Non-Residents, including Eligible NRIs and FPIs, will be subject to applicable law.

(vi) The Investment Manager in consultation with the Book Running Lead Managers reserves the right to withdraw the Offer at any time after the Bid/Offer Opening Date but before the Allotment, without assigning any reasons whatsoever.

(vii) No Bidder can withdraw or lower their Bid at any time.

Signing of Underwriting Agreement

The Trust (acting through the Trustee), the Sponsor, the Investment Manager, the Book Running Lead Managers and the Syndicate Members have entered into an Underwriting Agreement.

After signing the Underwriting Agreement, the Investment Manager and the Sponsor has updated and filed the Final Offer Document with SEBI and the Stock Exchanges in terms of the InvIT Regulations. This Final Offer Document will contain details of the Offer Price and Offer Size if any, underwriting arrangements and will be complete in all material respects.

The Underwriters have indicated their intention to underwrite the following number of Units:

Name, address, telephone number and e-mail address of the Underwriters	Indicative number of the Units to be underwritten	Amount underwritten (₹ in million)
Kotak Mahindra Capital Company Limited 1st Floor, 27 BKC, Plot No. 27, G Block Bandra Kurla Complex, Bandra (East) Mumbai 400 051, Maharashtra, India **Tel:** +91 22 4336 0000 **E-mail:** CHT.invIT@kotak.com	82,236,747	12,499.99
HDFC Bank Limited Investment Banking Group Unit no. 701, 702 and 702-A, 7th floor, Tower 2 and 3, One International Centre, Senapati Bapat Marg, Prabhadevi Mumbai 400 013, Maharashtra, India **Tel:** +91 22 3395 8233 **E-mail:** cubehighways.invit@hdfcbank.com	82,236,746	12,499.99
HSBC Securities and Capital Markets (India) Private Limited 52/60, Mahatma Gandhi Road Fort, Mumbai 400 001 Maharashtra, India **Tel:** +91 22 6864 1289 **E-mail:** chtinvit@hsbc.co.in	82,236,841	12,500.00
JM Financial Limited 7th Floor, Cnergy, Appasaheb Marathe Marg Prabhadevi, Mumbai – 400 025 Maharashtra, India **Tel:** +91 22 6630 3030 **E-mail:** cubehighways.invit@jmfl.com	82,236,746	12,499.99
Kotak Securities Limited 4th floor, 12 BKC, G Block, Bandra Kurla Complex Bandra (East), Mumbai 400 051 Maharashtra, India **Tel:** +91 22 4285 8484 **E-mail:** umesh.gupta@kotak.com	95	0.01
HDFC Securities Limited I Think Techno Campus Building-B, 'Alpha', 8th floor, Opp. Crompton Greaves, Near Kanjurmarg Station, Kanjurmarg (East), Mumbai - 400 042, Maharashtra, India **Tel:** +91 22 3075 3400 **E-mail:** customercare@hdfcsec.com	95	0.01
JM Financial Services Limited Ground Floor, 2, 3 & 4 Kamanwala Chambers, Sir P.M. Road, Fort Mumbai - 400 001, Maharashtra, India **Tel:** +91 22 6136 3400 **E-mail:** Tejas.agrawal@jmfl.com/ Sona.verghese@jmfl.com	95	0.01

Advertisement regarding Offer Price

The Investment Manager will publish an advertisement after the filing of this Final Offer Document with SEBI and the Stock Exchanges. This advertisement will indicate the Offer Price.

Issuance of Allotment Advice

(i) Upon approval of the Basis of Allotment by the Designated Stock Exchange, the Registrar shall send to the Syndicate a list of the Bidders who have been Allotted Units in the Offer.

(ii) The Registrar will then dispatch an Allotment Advice to the Bidders who have been Allotted Units in the Offer. The dispatch of an Allotment Advice shall be deemed a valid, binding and irrevocable contract for the Bidder.

(iii) The issuance of Allotment Advice is subject to "Notice to Anchor Investors: Allotment Reconciliation and Confirmation of Allocation Note" below.

Notice to Strategic Investors and Anchor Investors: Allotment Reconciliation and Confirmation of Allocation Note ("CAN")

(i) A physical book will be prepared by the Registrar on the basis of the Bid cum Application Forms received from Anchor Investors and Strategic Investors. Based on the physical book and at the discretion of the Investment Manager in

consultation with the Book Running Lead Managers, selected Strategic Investors and Anchor Investors will be sent a CAN or, if required, the revised CAN.

(ii) **In the event that the Offer Price is higher than the Strategic Investor Allocation Price or Anchor Investor Allocation Price**: Strategic Investors and Anchor Investors will be sent a revised CAN within one day of the Pricing Date indicating the number of Units allocated to such Anchor Investor or Strategic Investor and the Pay-In Date for payment of the balance amount. Anchor Investors and Strategic Investors are then required to pay any additional amounts, being the difference between the Offer Price and the Anchor Investor Allocation Price or the Strategic Investor Allocation Price, as applicable, as indicated in the revised CAN within the Pay-In Date referred to in the revised CAN. Thereafter, the Allotment Advice will be issued to such Anchor Investors and Strategic Investors.

(iii) **In the event the Offer Price is lower than the Anchor Investor Allocation Price and Strategic Investor Allocation Price**: Strategic Investors and Anchor Investors who have been Allotted Units will directly receive Allotment Advice and will not receive a refund for the difference between the Offer Price and the Anchor Investor Allocation Price or Strategic Investor Allocation Price, as applicable.

Designated Date and Allotment

On the Designated Date, the Registrar to the Offer shall instruct the SCSBs or Sponsor Banks for individual Non-Institutional Investors using the UPI Mechanism to transfer funds represented by the allocation of Units from ASBA Accounts into the Public Offer Account. The balance amount after transfer to the Public Offer Account shall be unblocked by the relevant SCSB or Sponsor Banks. Whilst the Investment Manager shall ensure all steps for the completion of the necessary formalities for the listing and the commencement of trading of the Units on the Stock Exchanges are completed within 6 Working Days of the Bid/Offer Closing Date, the timetable may be extended due to various factors, such as extension of the Bid/Offer Period by the Investment Manager, revision of the Price Band or any delay in receiving the final listing and trading approval from the Stock Exchanges. The commencement of trading of the Units will be entirely at the discretion of the Stock Exchanges and in accordance with the Applicable Laws.

Bidders are advised to instruct their Depository Participant to accept the Units that may be allotted to them in this Offer.

Basis of Allotment

For other than Anchor Investors and Strategic Investors

(i) The Allotment to Bidders other than Strategic Investors and Anchor Investors shall be on a proportionate basis within the specified investor categories, and the number of Units Allotted shall be rounded off to the nearest integer, subject to a minimum Allotment per successful Bidder in case of oversubscription as per the InvIT Regulations and InvIT Master Circular.

(ii) In case of under-subscription in any investor category, the unsubscribed portion in either the Institutional Investor category or the Non-Institutional Investor category may be allotted to applicants in the other category.

(iii) The aggregate allocation to Institutional Investors will not be more than 75% of the Offer Size.

(iv) The aggregate allocation to Non-Institutional Investors shall not be less than 25% of the Offer Size.

(v) The identity of Institutional Investors and Strategic Investors shall not be made public.

(vi) In relation to UPI Bidders, the RTA shall prepare the basis of Allotment based on information of Bidding and blocking received from the Stock Exchange and after undertaking reconciliation of the Bid data and block confirmations corresponding to the Bids by all Investor category applications (with and without the use of UPI). Upon approval of the basis of Allotment, the RTA shall share the 'debit' file with the Sponsor Banks and SCSBs, as applicable, for credit of funds in the Public Offer Account and unblocking of excess funds in the UPI Bidder's account. The Sponsor Banks, based on the mandate approved by the Bidder at the time of blocking of funds, shall raise the debit / collect request from the Bidder's bank account, whereupon funds will be transferred from the investor's account to the public offer account and remaining funds, if any, will be unblocked without any manual intervention by the investor or their bank.

For Anchor Investor Portion

Allocation to Anchor Investors at the Anchor Investor Allocation Price will be at the discretion of the Investment Manager, in consultation with the Book Running Lead Managers, subject to compliance with the following requirements:

- not more than 60% of the Institutional Investor Portion will be available for allocation to Anchor Investors;
- allocation to Anchor Investors will be on a discretionary basis and subject to a minimum number of two Anchor Investors for allocation up to ₹ 2,500 million and a minimum number of five Anchor Investors for allocation more than ₹ 2,500 million. The identity of the Anchor Investors shall be made public.

The number of Units Allocated to Anchor Investors and the Anchor Investor Allocation Price will be made available on the websites of the Stock Exchanges, the Sponsor, the Investment Manager and the Book Running Lead Managers, prior to the Bid/Offer Opening Date.

For Strategic Investor Portion

Allocation of Units to Strategic Investors at the Strategic Investor Allocation Price will be at the discretion of the Investment Manager, in consultation with the Book Running Lead Managers, subject to compliance with the following requirements:

- Strategic Investor(s) shall, jointly or severally, invest not less than 5% and not more than 25% of the total Offer; and
- allocation to Strategic Investors will be on a discretionary basis, as per applicable law.

The details of Allocation to Strategic Investors will be made available on the websites of the Stock Exchanges, the Manager, the Sponsor and the Book Running Lead Managers, prior to the Bid/Offer Opening Date, subject to applicable law.

Method of Proportionate Basis of Allotment in the Offer

Except in relation to Anchor Investors and Strategic Investors, in the event of the Offer being over-subscribed, the Investment Manager and the Book Running Lead Managers will finalize the Basis of Allotment in consultation with the Designated Stock Exchange. The Designated Stock Exchange along with the Book Running Lead Managers and the Registrar will be responsible for ensuring that the Basis of Allotment is finalized as per InvIT Regulations and the InvIT Master Circular in a fair and proper manner.

Except in relation to Anchor Investors and Strategic Investors, the Allotment will be made on a proportionate basis as explained below, subject to minimum Allotment per successful Bidder in case of oversubscription in accordance with the InvIT Regulations:

Bidders will be categorized according to the number of Units applied for:

The total number of Units to be allotted to each category as a whole will be arrived at on a proportionate basis, which is the total number of Units applied for in that category (number of Investors in the category multiplied by the number of Units applied for) multiplied by the inverse of the over-subscription ratio.

The number of Units to be allotted to the successful Bidders will be arrived at on a proportionate basis, which is the total number of Units applied for by each Bidder in that category multiplied by the inverse of the over-subscription ratio.

Units in Dematerialized Form with NSDL or CDSL

As per the InvIT Regulations, the Allotment will be only in dematerialized form.

In this context, the following agreements have been signed amongst the Trustee (on behalf of the Trust), the respective Depositories and the Registrar:

(i) Agreement dated July 8, 2022, between NSDL, the Trust (acting through Investment Manager) and the Registrar.

(ii) Agreement dated September 28, 2022, between CDSL, the Trust (acting through Investment Manager) and the Registrar.

(iii) Bids from any Bidder without relevant details of his or her depository account are liable to be rejected.

(iv) A Bidder applying for Units must have at least one valid beneficiary account with either of the Depository Participants of either NSDL or CDSL prior to making the Bid.

(v) Allotment to a successful Bidder will be credited in electronic form directly to the beneficiary account (with the Depository Participant) of the Bidder.

(vi) Bid cum Application Forms or Revision Forms containing incomplete or incorrect details under the heading "Bidder's Depository Account Details" are liable to be rejected.

(vii) Units in electronic form can be traded only on the stock exchanges having electronic connectivity with NSDL and CDSL. The Stock Exchanges where the Units are proposed to be listed have electronic connectivity with CDSL and NSDL.

Communications

All future communications in connection with Bids made in this Offer should be addressed to the Registrar quoting the full name of the sole or First Bidder, Bid cum Application Form number, PAN, Bidders depository account details, number of Units applied for, date of Bid cum Application Form, name and address of the member of the Syndicate where the Bid was submitted and cheque or draft number and issuing bank thereof or with respect to ASBA Bids, the bank account number in which an amount equivalent to the Bid Amount was blocked.

Bidders can contact the Compliance Officer or the Registrar in case of any Pre-Offer or post-Offer related problems such as non-receipt of letters of allotment, credit of allotted Units in the respective beneficiary accounts, refund orders etc. In case of ASBA Bids submitted with the Designated Intermediaries, Bidders can contact the relevant Designated Intermediary.

We estimate that the average time required by the Registrar to the Offer, the SCSBs or us for redressal of routine investor grievances shall be 10 Working Days from the date of receipt of the complaint. In case of non-routine complaints and complaints where external agencies are involved, we will seek to redress complaints as expeditiously as possible. The Trust has obtained authentication on the SCORES and shall comply with the SEBI Circular (SEBI/HO/OIAE/IGRD/CIR/P/2023/156) dated September 20, 2023 and with the SEBI circular (SEBI/HO/OIAE/IGRD/CIR/P/2023/183) dated December 1, 2023 in relation to redressal of investor grievances through SCORES.

Payment of Refunds

In the case of Bidders other than ASBA Bidders, the Registrar will obtain from the Depositories the Bidders' bank account details, including the MICR code, on the basis of the DP ID and the Client ID provided by the Bidders in their Bid cum Application Forms.

In the case of Bids from Eligible NRIs and FPIs, any refunds, and other distributions, will normally be payable in Indian Rupees only and net of bank charges and/or commission. Where desired, such payments in Indian Rupees will be converted into US Dollars or any other freely convertible currency as may be permitted by the RBI at the rate of exchange prevailing at the time of remittance and will be dispatched by registered post. Neither the Manager nor the Trustee will be responsible for any loss incurred by Bidders on account of conversion of foreign currency. Payment of refunds will be made in the manner described below.

Mode of Refunds

For Strategic Investors and Anchor Investors

For Strategic Investors and Anchor Investors, any payment of refund will be made electronically through and of the following modes:

(i) NACH - National Automated Clearing House which is a consolidated system of ECS. Payment of refund would be done through NACH for Applicants having an account at one of the centers specified by the RBI, where such facility has been made available. This would be subject to the availability of complete bank account details including MICR code wherever applicable from the depository. The payment of refund through NACH is mandatory for Applicants having a bank account at any of the centers where the NACH facility has been made available by the RBI (subject to the availability of all information for crediting the refund through NACH from the depositories), except where applicant is otherwise disclosed as eligible to get refunds through NEFT, or direct credit or RTGS

(ii) Direct Credit - Bidders having bank accounts with the Refund Bank, as per the Demographic Details received from the Depositories, will be eligible to receive refunds through direct credit. Any bank charges levied by the Refund Bank will be borne by the Trust.

(iii) RTGS - Bidders having a bank account at any of the centers notified by SEBI where clearing houses are managed by the RBI, may have the option to receive refunds, if any, through RTGS.

(iv) NEFT- Payment of refund will be undertaken through NEFT wherever the Bidders bank branches are NEFT enabled and have been assigned the Indian Financial System Code ("IFSC"), which can be linked to an MICR code of that particular bank branch. The IFSC will be obtained from the website of the RBI as on a date prior to the date of payment of refund, duly mapped to an MICR code. Wherever the Bidders have registered their MICR code and bank account number while opening and operating the demat account, these will be duly mapped with the IFSC of that particular bank branch, and payment of refund will be paid to the Bidders through NEFT. In the event NEFT is not operationally feasible, the payment of refunds will be made through any one of the other modes discussed in this section.

Please note that refunds through the abovementioned modes shall be credited only to the bank account from which the Bid Amount was remitted.

Refunds for ASBA Bidders

In the case of ASBA Bidders, the Registrar will instruct the relevant SCSBs or Sponsor Banks (in case of individual Non-Institutional Investors using UPI Mechanism) to unblock the funds in the relevant ASBA Accounts to the extent of the Bid Amounts specified in the Bid cum Application Forms for withdrawn, rejected or unsuccessful or partially successful ASBA Bids, within 6 Working Days of the Bid/Offer Closing Date.

Refunds for UPI Bidders

For UPI Bidders, Units would be credited to the Bidder's account after confirmation of receipt of funds in the Public Offer Account. The Bidder will be notified for full / partial Allotment. For partial Allotment, the remaining funds shall be unblocked. For no Allotment, the UPI mandate would be revoked and application amount would be unblocked for the Bidder. The Registrar shall ensure refund of application amount or excess application amount in the bank account of the Bidder as stated in its demat account.

Disposal of Applications and Application Moneys

With respect to Bidders other than ASBA Bidders, the Investment Manager will ensure dispatch of Allotment Advice, refund orders (except for Strategic Investors and Anchor Investors who receive refunds through electronic transfer of funds) and give benefit to the beneficiary account with Depository Participants and submit the documents pertaining to the Allotment to the Stock Exchanges after the Allotment.

In case of Bidders who receive refunds through NACH, NEFT, direct credit or RTGS, the refund instructions will be provided to the clearing system within six Working Days from the Bid/Offer Closing Date. A suitable communication will be sent to the Anchor Investors receiving refunds through this mode within six Working Days from the Bid/Offer Closing Date, giving details of the bank where refunds will be credited, along with the amount and the expected date of electronic credit of the refund.

Refund Orders or instructions to the SCSBs

With respect to Strategic Investors and Anchor Investors, the Investment Manager will ensure dispatch of Allotment Advice and refund orders (except for Anchor Investors and Strategic Investors who receive refunds through electronic transfer of funds), give benefits to the beneficiary account with the Depository Participants and submit documents pertaining to the Allotment to the Stock Exchanges after the Allotment.

In the case of ASBA Bidders, the Registrar will instruct the relevant SCSBs and in case of Non-Institutional Investors Bidding through the UPI Mechanism, the Registrar will instruct the Sponsor Banks to unblock the funds in the relevant ASBA Accounts to the extent of the Bid Amounts specified in the Bid cum Application Forms for withdrawn, rejected or unsuccessful or partially successful ASBA Bids, within six Working Days of the Bid/Offer Closing Date.

Interest in case of delay in dispatch of Allotment Letters or Refund Orders/instruction to SCSB by the Registrar

Allotment, including the credit of Allotted Units to the beneficiary accounts of the Depository Participants, will be made not later than six Working Days of the Bid/Offer Closing Date. If Allotment letters/refund orders have not been dispatched to the Bidders or if, in a case where the refund or portion thereof is made in electronic manner through direct credit, NEFT, RTGS or NACH, or unblocking of ASBA Accounts or the refund instructions have not been issued to the clearing system in the disclosed manner and/or demat credits are not made to Bidders within six Working Days from the Bid/ Offer Closing Date, the Investment Manager will be liable to pay interest at 15% per annum, as prescribed under the InvIT Regulations and other applicable law.

The Trustee and the Investment Manager shall not have recourse to the Offer Proceeds until the final approval for listing and trading of the Offered Units from all the Stock Exchanges where listing is sought has been received.

Withdrawal of the Offer

The Investment Manager in consultation with the Trustee and the Book Running Lead Managers, reserves the right not to proceed with the Offer at any time after the Bid/Offer Opening Date but before Allotment. If the Investment Manager, in consultation with the Book Running Lead Managers, withdraws the Offer, they will issue a public notice within two days or such other time as may be prescribed by SEBI in this regard, providing reasons for not proceeding with the Offer. The Book Running Lead Managers, through the Registrar, will notify the SCSBs and Sponsor Banks (in case of Bids from Non Institutional Investors through the UPI mechanism) to unblock the ASBA Accounts within one Working Day or such other time as may be prescribed by SEBI, from the day of receipt of such notification. The notice of withdrawal will be made available on the websites of the Stock Exchanges, the Trust, the Sponsor, the Investment Manager and will also be issued in the same newspapers where the Pre-Offer advertisements have appeared.

If the Investment Manager withdraws the Offer after the Bid/Offer Closing Date and thereafter determines that it will proceed with a public offering of Units, they will file a fresh draft Offer Document with and/SEBI or the Stock Exchanges, as the case may be.

Notwithstanding the foregoing, the Offer is also subject to (i) the approvals of the Stock Exchanges, which the Investment Manager will apply for only after Allotment for commencement of trading; and (ii) the final approval of this Final Offer Document after it has been filed with SEBI and the Stock Exchanges.

In the event the Trust does not receive relevant permissions from the Stock Exchanges or in the event of withdrawal of the observation letter issued by SEBI, the Units shall not be eligible for listing and the Trust shall be liable to refund the subscription monies, if any, to the respective Bidders immediately, along with interest at the rate of 15% per annum, from the date of Allotment.

Minimum Subscription and Minimum Allotment

In case the Trust does not receive subscription for at least such number of units by public unitholders in accordance with Regulation 14(1A) of the InvIT Regulations; or if the number of prospective Allottees (other than the Sponsor, its related parties and Associates) is less than 200, the entire subscription money shall be refunded.

Undertakings of Investment Manager

The Investment Manager hereby undertakes on behalf of the Trust that at any given time, there shall be only one denomination for the Units and that it shall comply with such disclosure and accounting norms specified by the SEBI from time to time.

The Investment Manager further undertakes that no person connected with this Offer, including a person connected with the distribution of this Offer, shall offer any incentive, whether direct or indirect, in any manner, whether in cash or kind or services or otherwise to any person for making an application for allotment of Units, except for any fees or commission for services rendered in relation to this Offer.

STATEMENT OF POSSIBLE DIRECT TAX BENEFITS

July 2, 2026

To

The Board of Directors
Cube Highways Fund Advisors Private Limited (the "Investment Manager") in its capacity as an Investment Manager of the Cube Highways Trust (the "Trust" or the "InvIT")

Dear Sirs,

We refer to the proposed public offer of the ordinary units of Cube Highways Trust, ('the trust' or 'the InvIT'). We enclose herewith the statement showing the current position of special/general tax benefits available to the InvIT, and its unitholders as per the provisions of the Income-tax Act 1961 ("Act"), as applicable on as date, for inclusion in the draft offer document, the offer document and the final offer document for the proposed offer of ordinary units of the InvIT.

Several of these benefits are dependent on the InvIT or its unitholders fulfilling the conditions prescribed under the relevant provisions of the Act. Hence the ability of the InvIT or its unitholders to derive these direct tax benefits is dependent upon their fulfilling such conditions, which based on the business imperatives, the InvIT or its unitholders may or may not choose to fulfil.

The benefits discussed in the enclosed statement are neither exhaustive nor conclusive. The contents stated in the Annexure are based on the information and explanations obtained from the Investment Manager. This statement is only intended to provide general information to guide investors and is neither designed nor intended to be a substitute for professional tax advice. In view of the individual nature of the tax consequences and the changing tax laws, each investor is advised to consult their own tax consultant with respect to the specific tax implications arising out of their participation in the offering. We are neither suggesting nor are we advising the investor to invest money or not to invest money based on this statement.

We do not express any opinion or provide any assurance whether:

- The InvIT or its unitholders will continue to obtain these benefits in future;
- The conditions prescribed for availing the benefits have been/would be met;

We hereby give our consent to include enclosed statement regarding the tax benefits available to the InvIT and its unitholders in the draft placement memorandum, the placement memorandum and final placement memorandum for the proposed public offer of ordinary units, which the Investment Manager (on behalf of the InvIT) intends to submit to the Securities and Exchange Board of India, BSE, NSE and any other authority, provided that the below statement of limitation is included in the draft placement memorandum, the placement memorandum and final placement memorandum.

LIMITATIONS

Our views expressed in the statement enclosed are based on the facts and assumptions indicated above. No assurance is given that the revenue authorities/courts will concur with the views expressed herein. Our views are based on the existing provisions of law and its interpretation, which are subject to change from time to time. We do not assume responsibility to update the views consequent to such changes. Reliance on the statement is on the express understanding that we do not assume responsibility towards the investors who may or may not invest in the proposed public offer relying on the statement.

This statement has been prepared solely in connection with the offering of units by the InvIT under the Securities and Exchange Board of India ("SEBI") (Infrastructure Investment Trusts) Regulations, 2014 and the notifications, guidelines and circulars issued thereunder, as amended.

For **S. B. Billimoria & Co LLP**
Chartered Accountants
(Firm's Registration No. 101496W/W100774)

Pramod B. Shukla
(Partner)
(Membership No. 104337)
UDIN: 26104337EIRYVS1090

Place: Mumbai
Date: July 2, 2026

STATEMENT OF POSSIBLE DIRECT TAX BENEFITS

The information provided below sets out the possible direct tax benefits available to the unitholders of the InvIT / the Trust in a summary manner only based on the provisions of Income-tax Act, 2025 ('IT Act 2025') as amended by Finance Act 2026 and is not a complete analysis or listing of all potential tax consequences of the subscription, ownership and disposal of the units, under the tax laws currently in force in India. Several of these benefits are dependent on the unitholders fulfilling the conditions prescribed under IT Act 2025 and the Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014 as amended (the "SEBI InvIT Regulations"). Hence, the ability of the unitholders to derive the tax benefits is dependent upon fulfilling such conditions, which, based on the commercial imperatives, a unitholder may or may not choose to fulfill. The following overview is not exhaustive or comprehensive and is not intended to be a substitute for professional advice. Investors are advised to consult their own tax consultants with respect to the tax implications of an investment in the units particularly in view of the fact that certain recently enacted provisions under IT Act 2025 may not have a direct legal precedent or may have a different interpretation on the benefits, which an investor can avail.

Further, the tax rates specified in this document are applicable for the Tax Year 2026-27 as per the Finance Act, 2026. The rates given in this statement are excluding surcharge and health and education cess, if any, as leviable. The rate of surcharge and health and education cess along with other key considerations are given in the Notes to this Statement.

INVESTORS ARE ADVISED TO CONSULT THEIR OWN TAX CONSULTANT WITH RESPECT TO THE INDIAN TAX IMPLICATIONS AND CONSEQUENCES OF PURCHASING, OWNING AND DISPOSING OFF UNITS IN THEIR PARTICULAR SITUATION.

STATEMENT OF POSSIBLE INCOME TAX BENEFITS AVAILABLE TO CUBE HIGHWAYS INVIT ('TRUST') AND ITS UNITHOLDERS

I. ***Tax Implications and benefits in relation to InvITs***

Cube Highways InvIT ('the Trust') has been constituted as an irrevocable determinate trust under the Indian Trusts Act, 1882. Further, the Trust is registered with the Securities and Exchange Board of India ('SEBI') as Infrastructure Investment Trust under the SEBI (Infrastructure Investment Trusts) Regulations, 2014, as amended ('SEBI InvIT Regulations').

The following implications/benefits under IT Act 2025 are applicable/available to the Trust after fulfilling conditions as per the applicable provisions of IT Act 2025 and the SEBI InvIT Regulations.

1. Taxability of interest and dividend income in the hands of trust from Special Purpose Vehicle(s)

As per the provisions of section 11 read with Schedule V (Table S. No. 3) of the IT Act, 2025, any income of a trust by way of interest and dividend received or receivable from a special purpose vehicle (SPV) would be exempt from tax. For this purpose, SPV means a domestic company in which the business trust holds controlling interest and any specific percentage of shareholding or interest, as may be required by the SEBI InvIT Regulations under which such trust is granted registration.

It is pertinent to note here that as per the provisions of section 14 of the IT Act 2025, any expenditure incurred in relation to earning the above exempt income shall not be tax deductible. The provision of Rule 14 of Income-tax Rules, 2026 read with section 14 of the IT Act 2025 shall be followed for calculating the quantum of disallowance.

2. Taxability of income of trust in general unless exempted / specified otherwise under the provisions of the IT Act, 2025

As per section 223 of the IT Act, 2025 read with Schedule V (Table S. No. 3) of the IT Act 2025, the taxable total income of a business trust would be charged to tax at the maximum marginal rate ('MMR') [i.e. the rates of income-tax (including surcharge and Cess on income-tax, if any) applicable in relation to the highest slab of income as specified in the relevant Finance Act] in force except for the income chargeable to tax on transfer of short term capital assets as per section 196 of the IT Act, 2025 and long term capital assets as per section 197 and 198 of the IT Act, 2025 and income referred to in Schedule V (Table S. No. 3) of the IT Act 2025.

Further, dividend and interest income earned by Trust from an entity other than SPV, shall be taxable at MMR.

As per section 93 of the IT Act, 2025, no deduction shall be allowable against the dividend income (which is taxable in the hands of the Trust).

3. Taxability of Capital Gains in the hands of the Trust

a. Period of Holding

Capital assets are classified as long-term capital assets ('LTCA') or short-term capital assets ('STCA'), based on the period of holding of these assets. Depending on the period of holding for which the shares and securities

are held, the gains should be taxable as short-term capital gains or long-term capital gains. As per the provisions of section 2(101) of the IT Act, 2025, a capital asset is regarded as short-term capital asset ("STCA"), if:

Sr. no.	Nature of asset	Period of holding before the date of sale
(i)	Securities listed in a recognised stock exchange in India or a unit of an equity-oriented fund or unit of the Unit Trust of India or Zero- coupon bond	12 months or less
(ii)	Capital asset other than covered in (i)	24 months or less

As per the provisions of section 2(67) of the IT Act, 2025, LTCA means a capital asset which is not a STCA.

b. Short-term capital gains

As per the provisions of section 196 of the IT Act, 2025, any income arising from transfer of STCA being an equity share in a company or a unit of an equity oriented fund or a unit of a business trust pursuant to a transaction acted through a recognized stock exchange and subject to Securities transaction tax ('STT'), will be taxable in the hands of the Trust at a concessional rate of 20% (plus applicable surcharge and cess):

However, the condition of STT is not required if the transaction is undertaken on a recognised stock exchange located in any International Financial Services Centre and where the consideration for such transaction is paid or payable in foreign currency.

Short-term capital gains arising from transfer of STCA other than the shares and securities covered under section 196 of the IT Act, 2025, will be taxed at the maximum marginal rates in force.

c. Long-term capital gains

As per the provisions of section 197 of the IT Act, 2025, gains arising on the transfer of LTCA shall be chargeable to tax in the hands of the Trust at a concessional rate of 12.5% (plus applicable surcharge and cess) without any benefit of indexation.

Further, as per section 198 of the IT Act, 2025, gains exceeding INR 125,000 arising on the transfer of LTCA, being an equity share in a company or a unit of an equity-oriented fund or a unit of a business trust, through a recognized stock exchange and subject to STT, shall be chargeable to tax in the hands of the Trust at a concessional rate of 12.5% (plus applicable surcharge and cess) without any benefit of indexation.

d. Cost of Acquisition

Section 72 of the IT Act, 2025, prescribes the mode of computation of capital gains and provides for deduction of cost of acquisition/ improvement and expenses incurred in connection with the transfer of a capital asset, from the sale consideration to arrive at the amount of capital gains.

e. Deemed sales consideration

As per section 79 of the IT Act, 2025, where the consideration on transfer of unquoted shares of a company, is less than the fair market value of such share determined in such manner as may be prescribed, the value so determined shall for the purpose of section 72 of the IT Act, 2025, be deemed to the full value of consideration.

4. Income from buy back of shares by SPV

As per section 69 of the Act, where any consideration is received by a shareholder from a company upon the purchase of its own shares by such company, then, subject to the provisions of section 72, the difference between the cost of acquisition of such shares and the consideration so received shall be deemed to be 'capital gains' arising to the shareholder in the year in which the company purchases such shares.

Accordingly, in the event of a buyback of shares allotted to the Trust by the SPVs, the excess of the consideration received on such buyback over the cost of acquisition of the shares shall be chargeable to tax as income from capital gains in the hands of the Trust.

The nature of capital gains and the rate of taxation shall be based on the period of holding of shares by the Trust before the buyback by SPVs.

Further, as per the provisions of section 69(2) of the Act where a company purchases its own shares in accordance with the provision of section 68 of the Companies Act, 2013 and the shareholder is a promoter of company, such promoter shall be liable to pay additional income- tax as under:

Type of capital gain	Additional income tax rate for promoter domestic company	Additional income tax rate for promoter other than domestic company
Long Term Capital Gain	9.5%*	17.5%*

plus applicable surcharge and cess

5. Set off and carry forward of capital losses

As per section 108 read with section 111 of the IT Act, 2025, long-term capital loss, if any arising during the year can be set-off only against long-term capital gain and shall be allowed to be carried forward up to eight assessment years immediately succeeding the assessment year for which the loss was first computed. The brought forward long-term capital loss can be set off only against long-term capital gains.

As per section 108 read with section 111 of the IT Act, 2025, short-term capital loss, if any arising during the year can be set-off against short-term capital gain as well as against the long-term capital gains and shall be allowed to be carried forward up to eight assessment years immediately succeeding the assessment year for which the loss was first computed. The brought forward short-term capital loss can be set off against capital gains (both long-term and short-term capital gains).

It may be noted that as per the provisions of Section 109 of the Act, short term/ long term capital loss for any tax year cannot be set-off against income under any other head.

II. ***Tax Implications and benefits in relation to all unitholders***

Following tax benefit is specifically available to the unitholders of the Trust subject to the fulfillment of the conditions specified in the IT Act 2025 and the SEBI Regulations:

a) Tax exemption in respect of income distributed by Trust

As per the provisions of section 223(1) of the IT Act, 2025, the income distributed by the Trust shall be deemed to be of the same nature and in the same proportion in the hands of the unitholders as if such income was received by or accrued to the Trust.

As per the Schedule V (Table S. No. 5) of the IT Act, 2025, any income referred to in section 223(1) of the IT Act, 2025 and distributed by the Trust shall not be included in the total income of the unitholders except for the following income:

- Interest referred to in Schedule V (Table S. No. 3) of the IT Act, 2025; and
- Specified dividend i.e., dividend income received in cases where SPV has exercised the option under section 200 of the IT Act, 2025.

SPVs have the option, subject to certain condition, to choose a concessional tax rate of 22 percent (plus 10% surcharge and 4% cess) under section 200 of the IT Act, 2025. In case, SPV has exercised the option under section 200 of the IT Act, 2025, any dividend distributed by the Trust out of the dividend paid by such SPV shall be taxable in the hands of unitholder. In other cases, the dividend distributed by Trust out of the dividend paid by SPV which has not exercised the option under section 200 of the IT Act, 2025, shall be exempt in the hands of unitholders under section 11 read with Schedule V (Table S. No. 5) of the IT Act, 2025.

As per section 92(2)(k) of the IT Act, 2025, any distribution received by unitholders that is not covered under Schedule V (Table S. No. 3 and 4) of the IT Act, 2025 and that which is not chargeable to tax under section 223(2) of the IT Act, 2025, shall be charged to tax as 'income from other sources' provided such amount received (including similar distributions in earlier years to the same unitholder or any other unitholder) is in excess of the amount at which units are issued by the InvIT, as reduced by the amount which would have been charged to tax earlier under this provision. Such income shall be chargeable to tax at the rates applicable based on the status of the unitholder.

b) Implications on transfer of shares held by Sponsor in Project SPVs to trust

According to section 70(1)(zi) of the IT Act, 2025, any transfer of a capital asset, being shares of an SPV to a business trust in exchange of units allotted by that trust to the transferor shall not be regarded as transfer and accordingly not be liable to capital gains tax.

According to section 73 (Table: Sl.No. 7.C) of the IT Act, 2025, the cost of units acquired in lieu of shares in SPV shall be deemed to be cost of acquisition of shares in SPV.

The amount of distribution received to the extent not chargeable to tax under section 92(2)(k) of the IT Act, 2025 and not covered under Schedule V (Table S. No. 3) or Section 223(2) of the IT Act, 2025, shall be reduced from the cost of units.

As per section 2(101)(c)(B)(VI) of the IT Act, 2025, for ascertaining the period of holding of such units, the period of holding of shares in SPV shall also be included.

III. ***Tax Implications and benefits in relation to Resident unitholders***

As stated in Part II above, income distributed by the Business Trust being in the nature of dividend from SPVs which is not exempt as per Schedule V (Table S. No. 5) of the IT Act, 2025, interest from SPVs, and income chargeable to tax under section 92(2)(k) of the IT Act, 2025, shall be taxable in the hands of resident unitholders as under:

Status of unitholder	Tax rate (exclusive of surcharge and education cess)
Resident companies (Refer Note 1,2 and 3)	30%
Firms / LLPs	30%
Others (Refer Note 4)	As per applicable rates, for instance in case of individuals income has to be taxed as per applicable slab rates, maximum being 30%

Note 1: As per the Finance Act, 2026, the tax rate is 25% (plus applicable surcharge and health and education cess) shall be applicable to a domestic company for Financial year 2026-27 if the total turnover or gross receipts of such company are not exceeding INR 4,000 million in the Tax Year 2024-25.

Note 2: Further, the tax rates for resident companies exercising the option under Section 200 and section 201 of the IT Act, 2025 shall be chargeable to concessional tax rate of 22% and 15% respectively (plus surcharge at the rate of 10% and health and education cess at the rate of 4%), subject to fulfilment of conditions prescribed in the said sections.

Note 3: Section 148 of the IT Act, 2025, eliminates the cascading tax effect in case of intercorporate dividends by providing a deduction in respect of dividends received from a company (including foreign company) and business trust to the extent such dividend is distributed before the specified time.

Note 4:

As per the Finance Act, 2026, section 202 of the IT Act, 2025, provides that the Individual, Hindu Undivided Family ('HUF'), Association of Persons ('AOP') (other than a co-operative society), Body of Individuals ('BOI') and Artificial Juridical Person ('AJP') will be taxed on its total income at the reduced tax rates ('New Regime'). The income would however have to be computed without claiming prescribed deductions or exemptions. However, such person will have the option to be taxed on its total income as per the tax rates under the old regime. The option is required to be exercised – (i) on or before the due date specified under section 263(1) of the IT Act, 2025, for furnishing the return of income for such Tax Year, in case of a person having income from business or profession and such option once exercised shall apply to subsequent assessment years; or (ii) along with the return of income to be furnished under section 263(1) of the IT Act, 2025 for such assessment year in case of a person not having income referred to in clause (i). A person having income from business or profession who has exercised the above option of shifting out of the New Regime shall be able to exercise the option of opting back to the New Regime only once. However, a person not having income from business or profession shall be able to exercise this option every year.

a) Income in nature of Capital gains on sale of units of the Trust

Period of holding: Capital assets are classified as LTCA or STCA, based on the period of holding of these assets. The determinative period of holding for units of the Trust held by the unitholders to qualify as LTCA is more than 12 months. The units held for less than 12 months would be STCA.

Taxation of capital gains on sale of units of the Trust:

Nature of capital gains	Tax rate (exclusive of surcharge and education cess)		
	Unitholders being resident companies	Unitholders being resident Firms / LLPs	Other unitholders
Short-term capital gains on sale of units of the Trust being a listed InvIT, subject to STT	20%	20%	20%
Long-term capital gains on sale of units of the Trust being a listed InvIT, subject to STT	12.5% (on capital gains exceeding INR 1,25,000)	12.5% (on capital gains exceeding INR 1,25,000)	12.5% (on capital gains exceeding INR 1,25,000

The amount of distribution to the extent not chargeable to tax under section 92(2)(k) of the IT Act, 2025 and not covered under Schedule V (Table S. No. 3 or 4) or Section 223(2) of the IT Act, 2025 shall be reduced from the cost of units, for computing capital gains.

b) Set off of Losses: Please refer point 5 under *'Tax implications and benefits in relation to InvITs'*

c) Applicability of Minimum Alternate tax (MAT)/ Alternate Minimum Tax (AMT)

In case of domestic companies that are liable to pay MAT under provisions of Section 206 of the IT Act, 2025, the gains arising, if any, on sale of units of trust are to be included as part of book profits for the purpose of computing MAT liability. MAT paid by such companies should be available as credit for set-off against future tax liability, provided such companies do not opt to be governed by the concessional tax rates under section 200 and section 201 of the IT Act, 2025. Companies exercising the option to be taxed as per section 200 and section 201 of the IT Act, 2025 have been excluded from the applicability of MAT.

Finance Act 2026 has amended the provisions of section 206 of Income tax Act, 2025 w.e.f. April 01, 2026 to provide that the tax paid under provisions of MAT be made as final tax in the old regime (i.e., for companies which do not opt to be governed by the concessional tax rates under the Act) and no new MAT credit may be allowed. However, the tax rate of MAT has been reduced to 14% of book profit from the existing 15%.

Further, set-off of MAT credit will be allowed only in the new tax regime (i.e., for companies who opt to be governed by the concessional tax rates under the Act) for domestic companies to the extent of 25% of the tax liability. Life of the existing MAT credit continues to be of 15 years.

However, as per section 206(1)(d)(iii) of the IT Act, 2025, the following shall not be considered while computing book profits for levy of MAT:

- notional gain/loss on transfer of shares of SPV in exchange of units allotted by the business trust referred to in section 70(1)(zi) of the IT Act, 2025; or
- notional gain/loss resulting from any change in carrying amount of said units; or
- gain/loss on transfer of units allotted by the business trust referred to in clause (xvii) of section 47/ section 70(1)(zi) of the IT Act, 2025.

Further, as per section 206(1)(d)(iv) of the IT Act, 2025, any gain/loss on transfer of units referred to in section 70(1)(zi) of the IT Act, 2025 shall be considered while computing the book profit for levy of MAT by taking into account the cost of the shares exchanged with units referred to in the said clause or the carrying amount of the shares at the time of exchange where such shares are carried at a value other than the cost through statement of profit and loss, as the case may be.

In case of unitholders, other than companies, that are liable to Alternate Minimum Tax (AMT) under provisions of section 206 of the IT Act, 2025, the gains arising, if any, on sale of units of InvIT are to be included as part of adjusted total income for the purpose of computing AMT liability. AMT paid by such unitholders should be available as credit for set-off against future tax liability, provided they do not opt to be governed by the concessional tax rates under section 202 or 203 of the IT Act, 2025.

d) Other income (income other than interest or dividend income or income chargeable to tax under section 92(2)(k) of the IT Act, 2025) received from Trust

Other income (income other than interest or dividend income or income chargeable to tax under section 92(2)(k) of the IT Act, 2025) such as treasury income earned by Trust and distributed to unitholder shall be exempt in hands of unitholders as the same shall be taxable in the hands of Trust. Further, there shall be no withholding on distribution of such other income by the Trust to the unitholders.

IV. ***Tax benefits/ provisions applicable to Non-resident Unitholders***

1. As per section 2(72) of the IT Act, 2025, non-resident is defined to mean a person who is not a "resident".

A non-resident unit holder should be subject to taxation in India only if:

- it is regarded a tax resident of India; or
- being a non-resident in India, it derives: (a) if any income is received / deemed to be received in India; or (b) if any income has accrued or arisen / deemed to have accrued or arisen in India in terms of the provisions of the Act.

Section 6 of the IT Act, 2025 provides that a foreign company should be treated as a tax resident in India if its place of effective management ('POEM') is in India in that year. POEM has been defined to mean a place where key management and commercial decisions that are necessary for the conduct of the business of an entity as a whole are, in substance made.

2. As per section 159(4) of the IT Act, 2025, the provisions of IT Act 2025 should apply to the extent they are more beneficial than the provisions of the Double Taxation Avoidance Agreement ('tax treaty' or 'DTAA') between India and the country of residence of the offshore unit holder to the extent of availability of tax treaty benefits to the offshore

unit holders. However, no assurance can be provided that the treaty benefits should be available to the offshore unit holder or the terms of the tax treaty will not be subject to amendment or reinterpretation in the future.

3. The taxability of income of non-resident unit holders on different income streams, should be as per the provisions of IT Act 2025 or tax treaty (whichever is beneficial) as discussed below. However, for claiming the tax treaty benefit, the non-resident would have to provide relevant documents/declarations viz. tax residency certificate ('TRC'), etc. as per the requirements of the IT Act, 2025/tax treaty.

a) Dividend which is not exempt under Schedule V (Table S. No. 5) of the IT Act, 2025 (where dividend received by the Trust from the SPV who has exercised the option under section 200 of the IT Act, 2025)

The dividend income will be taxable at the rate of 20% (plus applicable surcharge and cess) under the IT Act, 2025. This is subject to benefits, if any, under the applicable tax treaty.

b) Interest income distributed by the Trust earned from the SPV

Interest income earned from the SPV and distributed by Trust to non-resident unitholder is not exempt under Schedule V (Table S. No. 5) of the IT Act, 2025 in the hands of unit holder and would be taxable at 5% (plus applicable surcharge and cess). This is subject to benefits, if any, under the applicable tax treaty.

c) Other distribution by the Trust not covered under section 223 of the IT Act, 2025

As per section 92(2)(k) of the IT Act, 2025 , any distribution received by unitholders that is not covered under Schedule V (Table S. No. 3 and 4) of the IT Act, 2025 and that which is not chargeable to tax under Section 223 of the IT Act, 2025 shall be charged to tax as 'income from other sources' provided such amount received (including similar distributions in earlier years to the same unitholder or any other unitholder) is in excess of the amount at which units are issued by the InvIT, as reduced by the amount which would have been charged to tax earlier under this provision. This is subject to benefits, if any, under the applicable tax treaty.

Such income shall be chargeable to tax at the rates applicable based on the status of the unitholder.

Status of unitholder	Tax rate (exclusive of surcharge and education cess)
Non-resident companies	35%
Firms / LLPs	30%
Others	As per applicable rates, for instance in case of individuals income has to be taxed as per applicable slab rates

d) Capital gains on sale of units of the Trust

Period of holding: Capital assets are classified as LTCA or STCA, based on the period of holding of these assets. The determinative period of holding for units of the Trust (being a business trust) held by the unitholders to qualify as LTCA is more than 12 months. The units held for less than 12 months would be STCA. While determining the period of holding for units of business trust allotted pursuant to exchange of shares of SPV as per section 2(1010(c)(B)(VI) of the IT Act, 2025, the period of holding for the units shall include the period for which the shares were held in the SPV.

Depending on the classification of capital gains, the non-resident unit holders should be chargeable to tax under IT Act 2025 as under. This is subject to benefits, if any, under the applicable tax treaty.

Nature of capital gains	Tax rate under IT Act 2025 (excluding surcharge and cess)
Short-term capital gains on sale of units of the Trust being a listed InvIT, subject to STT	20%
Long-term capital gains on sale of units of the Trust being a listed InvIT, subject to STT	12.5%(on capital gains exceeding INR 1,25,000)

The amount of distribution to the extent not chargeable to tax under section 92(2)(k) of the IT Act, 2025 and not covered under Schedule V (Table S. No. 3 and 4) or section 223(2) of the IT Act, 2025, shall be reduced from the cost of units, for computing capital gains.

For non-resident unitholders who are Foreign Portfolio Investors ("FPIs") / Foreign Institutional Investors ("FIIs"))

As per section 2(22) of the IT Act, 2025, any securities held by an FIIs, which were invested in accordance with the regulations made under the Securities and Exchange Board of India Act, 1992 shall be deemed to be capital assets. Hence the income from the transfer of such securities shall be deemed to be treated as capital gains.

As per section 210 read with section 196 of the IT Act, 2025, any income from transfer of short term capital asset being listed unit of Invit and subject to STT shall be taxable at the rate of 20% plus applicable surcharge and cess in the hands of FIIs and in case of transfer of the long term capital asset being listed unit of Invit and subject to STT, the income from such transfer shall be taxable in the hands of FIIs at the rate of 12.5% plus applicable surcharge and cess as per section 210 read with section 198 of IT Act, 2025. Short-term capital gains on transfer of units of the Trust, not transacted through a recognized stock exchange and not subject to STT shall be taxable at 30%++ under section 210 of the Act. The condition of payment of STT is not required to be followed if the transaction is undertaken on a recognised stock exchange located in IFSC and where the consideration for such transaction is received or receivable in foreign currency.

Where the gains on sale of units are included in the business income of unitholder

Where the gains arising on the transfer of units of the Trust by the unitholder are included in the business income of an assessee assessable under the head 'Profits and Gains from Business or Profession' and on which STT has been charged, such STT may be claimed as a deductible expense from business income as per the provisions of section 32(k) of the IT Act, 2025. The characterization of gains/ losses, arising from sale of units, as capital gains or business income would depend on the nature of holding in the hands of the unitholder and various other factors, which unitholders will be required to analyse independently.

e) Set off of Losses: Please refer point 5 under 'Tax implications and benefits in relation to InvITs'

4. Applicability of Minimum Alternate tax (MAT)

While computing book profits to determine the applicability of MAT, any income accruing or arising to a foreign company from (i) capital gains earned from sale of shares or other instruments that qualify as "securities" (as per the securities Contract (Regulation) Act, 1956) or (ii) interest, royalties or fees for technical services, and which are credited by the foreign company to its profit and loss account should be excluded.

Finance Act 2026 has amended the provisions of section 206 of IT Act, 2025 w.e.f. April 01, 2026 to provide that the tax paid under provisions of MAT be made as final tax and no new MAT credit may be allowed. However, the tax rate of MAT has been reduced to 14% of book profit from the existing 15%.

In the case of foreign companies, MAT Credit set off is proposed to be allowed to the extent of the difference between the tax on the total income and the minimum alternate tax, for the tax year in which normal tax is more than MAT.

The MAT provisions should not be applicable in case of foreign company:

- if such foreign company is a resident of a country with which India has entered into a tax treaty and such foreign company does not have a permanent establishment in India in terms of provisions of applicable tax treaty; or

- if such foreign company is a resident of a country with which India does not have an agreement of the nature referred to in above clause and such foreign company is not required to seek registration under any law for the time being in force relating to companies.

V. ***Specific provisions relating to Tax deduction at Source ('TDS') Tax benefits/ provisions applicable for unitholders who are notified Sovereign Wealth Fund and notified Pension Funds:***

As per Schedule V (Table: Sl.No. 7) of the Act, any income by way of dividend, interest, any sum referred to in section 92(2)(k), or long-term capital gain arising from investment made in units of the Trust on or after 1 April 2020 and before 31 March 2030 and held for at least three years shall be exempt for notified Sovereign Wealth Fund, wholly owned subsidiary of Abu Dhabi Investment Authority (ADIA), Public Investment fund of the Government of the Kingdom of Saudi Arabia (PIFSA), wholly owned subsidiary of PIFSA ; and notified Pension Funds, subject to satisfaction of stipulated conditions.

Investors are advised to consult their tax advisor for computation of capital gains including cost of acquisition of units as per Indian tax laws in each case.

In this regard, please note that there are no withholding tax provisions under the Act which provide for exemption from withholding taxes on above mentioned income accruing to the specified persons as defined under section Schedule V (Table: Sl.No. 7) of the Act of the Act.

VI. ***Tax benefits/ provisions applicable for unitholders who are Alternative Investment Fund (AIF) (Category I and II)***

As per Schedule V (Table: Sl.No. 1) of the Act, any income of an investment fund other than the income chargeable under the head "Profits and gains of business or profession" is exempt from income tax.

Further, as per section 224(6) of the Act, income of the investment fund chargeable under the head 'Profits and gains of business or profession' is taxable as follows:

- at the rate or rates as specified in the Finance Act of the relevant year, where such fund is a company or a firm; or

- at maximum marginal rate in any other case

The losses incurred by AIF shall be treated in accordance with the provisions of section 224(2) and 224(3) of the Act.

VII. ***Tax benefits/ provisions applicable for unitholders who are mutual funds***

As per schedule VII (Table: Sl.No. 20 and 21) of the Act, any income earned by a Mutual Fund registered under the Securities and Exchange Board of India Act, 1992, or a Mutual Fund set up by a public sector bank or a public financial institution, or authorised by the Reserve Bank of India would be exempt from income-tax, subject to such conditions as the Central Government may by notification in the Official Gazette specify in this behalf.

In light with the provisions of section 393(5) of the Act, no deduction of tax shall be made on any sum payable to a Mutual Fund specified under schedule VII (Table: Sl.No. 20 and 21) of the Act. Accordingly, the Trust is not required to withhold tax on any sum payable to Mutual Fund set up under schedule VII (Table: Sl.No. 20 and 21) of the Act of the Act.

VIII. ***Specific provisions relating to Tax deduction at Source ('TDS')***

1. Withholding of tax by SPVs

The interest payable by SPV to the trust will not be subject to withholding tax as per section 393 of the IT Act, 2025..

As per Section 393 of the IT Act, 2025, the SPVs will not be required to withhold taxes when they make payment of dividend to the Trust.

2. Withholding of tax by trust

As per the provisions of section 223 of the IT Act, 2025, the income distributed by the Trust shall be deemed to be of the same nature and in the same proportion in the hands of the unitholder as if such income was received by or accrued to the Trust.

The distribution of income, in the nature of interest or dividend, by the Trust to the unit holders, would be subject to withholding tax under section 393 of the IT Act, 2025 at the time of credit of such payment to the account of the unitholder or at the time of payment thereof, whichever is earlier. The rate of withholding as per section 393 of the IT Act, 2025 shall be as under

- On interest income:
  - 10% in case of resident unitholder; and
  - 5% (plus applicable surcharge and education cess) in case of non-resident unitholder
- On dividend income, being that proportion of dividend earned from an SPV which has exercised the option of beneficial tax regime under Section 200 of the IT Act, 2025:
  - 10% in case of resident unitholder; and
  - 10% (plus applicable surcharge and education cess) in case of non-resident unitholder
- On dividend income, being that proportion of dividend earned from an SPV which has not exercised the option of beneficial tax regime under section 200 of the IT Act, 2025, no withholding tax is required.
- On certain distributions proposed to be considered as income for the unitholders, there is no specific withholding tax provisions. Accordingly, the Trust maybe required to withhold tax under section 393 of the IT Act, 2025. The withholding tax rate applicable on such distributions shall be determined on the basis of the tax status of the unitholder and applicable treaty benefits, if any

3. Withholding of tax in case of transfer of shares/securities

No income tax is deductible at source from income by way of capital gains arising to a resident unitholder under the present provisions of the Act.

However, as per the provisions of section 393(2)[Table S. No. 17] of the IT Act, 2025, any income on transfer of unit of the Trust by non-residents may be subject to withholding of tax at the rate under the domestic tax laws or under the DTAA, whichever is beneficial to the assessee (other than FPIs/ FIIs which are subject to provisions of section 393(4) of the IT Act, 2025).

However, the non-resident investor will have to furnish a certificate of his being a tax resident in a country outside India and a suitable declaration for not having a fixed base/ permanent establishment in India, to get the benefit of the applicable DTAA and such other document as may be prescribed as per the provisions of section 159 of the IT Act, 2025.

Buyer and seller of unlisted shares/securities also need to check the applicability of TDS under section 393(1) (Table: Sl.No.8.B(ii)) of the IT Act, 2025. As per the clarification issued by Central Board of Direct taxes ('CBDT'), the transaction in shares not taken place through recognized stock exchange/ recognised clearing corporations may also fall under the ambit of section 393(1) (Table: Sl.No.8.B(ii)) of the IT Act, 2025 since CBDT has clarified that the said provisions of section 393(1) (Table: Sl.No.8.B(ii)) of the IT Act, 2025 are not applicable to transactions in securities and commodities transacted through recognised stock exchanges/ recognised clearing corporations, including those located in International Financial Service Centre.

4. Withholding at higher rate where PAN details are not furnished- section 397(2) of the IT Act, 2025

As per section 397(2)(b)(i) of the IT Act, 2025, where a taxpayer does not possess a PAN, taxes have to be withheld on payment of income to the taxpayer (where chargeable to tax) at higher of the following:

- at the rate specified in the Act; or
- at the rate or rates in force; or
- at the rate of 20%

Further, the provisions of clause (b)(i) shall not apply to a non-resident, not being a company or a foreign company, in respect of— (i) payment of interest on long-term bonds as specified in section 393(2) (Table: Sl. Nos. 2, 3 and 4); and (ii) any other payment subject to such conditions, as may be prescribed;

Further, CBDT has issued a notification no. 53/2016 for relaxation from deduction of tax at a higher rate under section 397(2)(b)(i) of the IT Act, 2025 in the case of non-resident investor or a foreign company and not having PAN by Rule 217 of Income-tax Rules, 2026. The provisions of section 397(2)(b)(i) of the IT Act, 2025 shall not apply in respect of payments in the nature of interest, royalty, fees for technical services and payments on transfer of any capital asset, if the deductee furnishes certain details and specified documents to the deductor.

Please note that similar provisions are there under section 397(2)(b)(ii) of the IT Act, 2025 in relation to TCS.

IX. ***Applicability of other provisions of the IT Act, 2025***

1. Section 175(8) of the Act (commonly known as dividend stripping)

Section 175(8) of the Act (commonly known as dividend stripping) is applicable for any securities or the units of Trust and provides that where:

a) any person buys or acquires any securities or unit within a period of three months prior to the record date*;

b) such person sells or transfers such securities within three months after such record date or such units within a period of nine months after such record date;

c) the dividend or income on such securities or unit received or receivable by such person is exempt

then, the loss, if any, arising from the sale and purchase of securities and units to the extent of dividend or income received or receivable on such securities or unit, shall be ignored for computing income chargeable to tax.

** Record date means a date fixed to entitles the holder of such securities or units to receive dividend, income, or additional securities or unit without consideration, as the case may be.*

2. Section 175(9) of the Act (commonly known as bonus stripping)

Section 175(9) of the Act (commonly known as bonus stripping) is applicable for any securities or the units of Trust and provides that where:

a) any person buys or acquires any units within a period of three months prior to the record date**;

b) such person is allotted additional units without any payment on the basis of holding of such units on such record date;

c) such person sells or transfers all or any of the units within a period of nine months after the record date, while continuing to hold all or any of the additional securities or units referred in clause (b) above

then, the loss, if any, arising from the sale and purchase of all or any of the units shall be ignored for computing income chargeable to tax and irrespective of any other provision of this Act, the amount of loss so ignored shall be deemed to be the cost of purchase or acquisition of such additional units referred to in clause (b) above as are held on the date of such sale or transfer.

** *Record date means a date fixed to entitles the holder of such securities or units to receive dividend, income, or additional securities or unit without consideration, as the case may be.*

Notes to statement:

General tax rates and provisions:

1. The income-tax rates specified in this note are as applicable for the financial year 2026-27, and are exclusive of surcharge and education cess, if any. Rate of surcharge and cess are provided below:

Rate of Surcharge:

Domestic companies other than companies covered under section section 200 and 201 of the IT Act, 2025, surcharge rates are as below:

a) If the total income does not exceed INR 10 million – Nil

b) If the total income exceeds INR 10 million but does not exceed INR 100 million - 7 %

c) If the total income exceeds INR 100 million - 12 %

In case of domestic companies having income chargeable under Section 200 and 201 of the IT Act, 2025, surcharge of 10% is applicable irrespective of taxable income.

Foreign companies:

a) If the total income does not exceed INR 10 million - Nil

b) If the total income exceeds INR 10 million but does not exceed INR 100 million – 2%

c) If the total income exceeds INR 100 million – 5%

For individuals, Hindu Undivided Family, association of person, body of individuals (including non-resident)

a) If the total income does not exceed INR 5 million - Nil

b) If the total income (including dividend income or capital gains on specified securities)

exceeds INR 5 million but does not exceed INR 10 million – 10%

c) If the total income (including dividend income or capital gains on specified securities)

exceeds INR 10 million but does not exceed INR 20 million – 15%

d) If the total income (excluding dividend income or capital gains on specified securities)

exceeds INR 20 million but does not exceed INR 50 million – 25%

e) If the total income (excluding dividend income or capital gains on specified securities)

exceeds INR 50 million – 37%

However, *in case total income includes any income by way of dividend or income referred to in section 196 or 197 or 198 of IT Act, 2025, surcharge on such income shall not exceed 15%.*

The above surcharge is subject to marginal tax benefit as per the Act.

As per the Finance Act, 2026, in case of the Individual/HUF/AOP (other than co-operative)/ BOI/Artificial Juridical Person ('AJP') taxable under the New Regime prescribed under the Act, the surcharge on the amount of income-tax shall not exceed 25% where taxable income exceeds INR 20 million.

In the case of an AOP, and consisting of only companies as its members, surcharge shall be calculated at the rate of 10%, where the aggregate income exceeds INR 5 million but does not exceed INR 10 million; at the rate of 15%, where the aggregate income exceeds INR 10 million.

For Partnership or LLPs:

a) If the total income does not exceed INR 10 million – NIL

b) If the total income exceeds INR 10 million - 12 %

The above surcharge is subject to marginal tax benefit as per the Act

Health and Education cess:

In all cases, Health and education cess will be levied at the rate of 4 per cent of income-tax and surcharge.

2. The stated benefits will be available only to the sole/ first named holder in case the units are held by joint holders.

3. Please note that the TDS rates mentioned in the given document may be subject to any concessions introduced/ allowed by the Government under any policy, press release, etc. Also, the same may also be subject to lower/ nil withholding tax certificates which may be furnished by the unit holders.

4. In respect of non-residents, the tax rates and the consequent taxation mentioned above shall be further subject to any benefits available under the applicable DTAA, if any, between India and the country in which the non-resident has fiscal domicile. Further, it is pertinent to meet the terms and condition viz. Principal purpose test, beneficial ownership test etc. as enacted in DTAAs entered into by India with various countries based on Multilateral Convention to implement tax treaty related measures to prevent Base Erosion and Profit Shifting ('MLI').

5. The tax implications/ benefits stated in this document are subject to General Anti Avoidance Rules (GAAR) provisions under the Act. GAAR may be invoked by the Indian income-tax authorities in case arrangements are found to be impermissible avoidance arrangements. Further, in case GAAR provisions are invoked, the onus to prove that the main purpose of an arrangement was not to obtain any tax benefit is on the taxpayer. Also, any resident or non-resident may approach the Board for Advance Rulings to determine whether an arrangement can be regarded as an impermissible avoidance arrangement.

6. This statement does not discuss any tax consequences in the country outside India of an investment in the units of trust. The unit holders / investors in the country outside India are advised to consult their own professional advisors regarding possible Income tax consequences that apply to them.

7. This statement is intended only to provide general information to the investors and is neither designed nor intended to be substituted for professional tax advice. In view of the individual nature of tax consequences, each investor is advised to consult his/her own tax advisor with respect to specific tax consequences of his/her participation in the scheme.

8. No assurance is given that the revenue authorities/courts will concur with the views expressed herein. Our views are based on the existing provisions of law and its interpretation, which are subject to changes from time to time. We do not assume responsibility to update the views consequent to such changes.

9. This statement of possible direct tax benefits enumerated above is as per the Act as amended by the Finance Act, 2025. The above statement of possible Direct-tax Benefits sets out the possible tax benefits available to the Trust and its unitholders under the current tax laws presently in force in India. Several of these benefits available are dependent on the Trust or its unitholders fulfilling the conditions prescribed under the relevant tax laws.

10. The information provided above sets out the possible tax benefits available to the unit holders in a summary manner only and is not a complete analysis or listing of all potential tax consequences of the purchase, ownership, transfer and disposal of equity shares and units, under the current tax laws presently in force in India. It is not exhaustive or comprehensive and is not intended to be a substitute for professional advice. Investors are advised to consult their own tax consultant with respect to the tax implications arising on account of any investment in equity shares or units (including tax implications on account of any distributions by/ receipts from the Trust), particularly in view of the fact that certain recently enacted legislation may not have a direct legal precedent or may have a different interpretation impacting the benefits, which an investor can avail.

LEGAL MATTERS

Each of Cyril Amarchand Mangaldas, AZB & Partners, and Sidley Austin Singapore Pte. Ltd., do not make, or purport to make, any statement in this Final Offer Document and is not aware of any statement in this Final Offer Document which purports to be based on a statement made by any of them, and each of them makes no representation, express or implied, regarding, and to the extent permitted by law takes no responsibility for, any statement in or omission from this Final Offer Document.

INDEPENDENT ACCOUNTANTS

The Audited Consolidated Financial have been prepared in accordance with Ind AS, read with the InvIT Regulations. The Audited Consolidated Financial Statements included in this Final Offer Document have been prepared by the Investment Manager and audited by S.B. Billimoria & Co. LLP, the statutory auditors of the Trust, as stated in their audit reports dated July 2, 2026, included in this Final Offer Document.

MATERIAL CONTRACTS AND DOCUMENTS FOR INSPECTION

The following contracts, which are or may be deemed material have been entered or are to be entered into in due course. The copies of contracts and the documents for inspection referred to hereunder, were available for inspection at the principal place of business of the Trust, from 10:00 A.M. to 5:00 P.M., on all Working Days from the date of filing the Offer Document until the date of Bid/Offer Closing Date. Any of the contracts or documents mentioned in the Offer Document may be amended or modified at any time if so required in the interest of the Trust or if required by the other parties, without reference to the Unitholder, subject to compliance with applicable law and InvIT Documents.

1. Amended and Restated Trust Deed entered into between the Settlor, erstwhile sponsors and the Trustee dated March 11, 2024. Further, pursuant to the Deed of Adherence dated February 20, 2026, CH-V has been inducted as the Sponsor.

2. The amended and restated investment management agreement dated July 24, 2024, entered into between the Trustee, the Investment Manager and the Portfolio Assets.

3. SEBI registration certificate for the Trust bearing number IN/InvIT/22-23/0022 dated April 5, 2022, as an infrastructure investment trust.

4. The project implementation and management agreement dated June 26, 2026, entered into amongst the Trustee, the Project Manager, the Investment Manager and the relevant Portfolio Assets.

5. Deed of adherence to the investment management agreement entered into among the Trustee, BWHPL, JUHPL, SIPL, SPPL, THPL, MHPL, MSHPL, NAMEPL, QEPL and the Investment Manager.

6. SEBI observation letter bearing number HO/17/22/11(4)2026-DDHS-RAC I/12721/2026 dated May 29, 2026.

7. In-principle listing approvals dated May 7, 2026, issued by BSE and NSE.

8. Resolution dated February 20, 2026, passed by the Unitholders for approving the Offer.

9. Resolution dated January 30, 2026, passed by the IM Board and the Unitholders resolution dated February 19, 2026, for declassifying CH-I and CH-III as the sponsors of the Trust and inducting CH-V as the new Sponsor.

10. Certified copies of the updated Memorandum and Articles of Association of the Investment Manager as amended from time to time.

11. Due diligence certificate dated March 17, 2026, addressed to SEBI from the Book Running Lead Managers.

12. Cash Escrow and Sponsor Agreement entered into among the Investment Manager, the Trustee (acting on behalf of, and in its capacity as a trustee to, the Trust), the Selling Unitholders, Book Running Lead Managers, Syndicate Members, the Escrow Collection Bank, the Public Offer Account Bank, the Refund Bank, the Sponsor Banks and Registrar to the Offer, dated July 13, 2026.

13. Unit Escrow Agreement dated July 8, 2026, entered into among the Investment Manager, the Trustee (acting on behalf of, and in its capacity as a trustee to, the Trust), the Selling Unitholders and the Unit Escrow Agent, in relation to, inter alia, the deposit of our Units issued pursuant to the Offer.

14. Registrar Agreement entered into between KFin Technologies Limited, Trustee and the Investment Manager and Selling Unitholders dated March 17, 2026.

15. Corporate governance policies adopted by the Investment Manager on behalf of the Trust.

16. Consents from the (i) Valuer; (ii) Registrar; (iii) Technical Consultants; (iv) Traffic Consultant; (v) Industry Expert.

17. Industry Report dated June 2026 titled “Assessment of the Indian Road Sector” prepared by the Industry Expert.

18. Audited Consolidated Financial Statements for the Trust.

19. The statement of possible direct tax benefits dated July 2, 2026, from the Auditors.

20. Agreement dated July 8, 2022, between NSDL, the Investment Manager (on behalf of the Trust) and the Registrar

21. Agreement dated September 28, 2022, between CDSL, the Investment Manager (on behalf of the Trust) and the Registrar.

22. Right of first offer agreement dated March 17, 2026, entered into amongst the Investment Manager and Sponsor.

23. The Offer Agreement dated March 17, 2026 read with the amendment dated July 6, 2026, entered into among the Trustee (acting on behalf of, and in its capacity as a trustee to, the Trust), the Investment Manager, the Sponsor, the Erstwhile Project Manager, the Project Manager, the Selling Unitholders and the Book Running Lead Managers.

24. The Underwriting Agreement dated July 27, 2026 entered into between the Trustee (on behalf of the Trust), the Underwriters, the Investment Manager, the Selling Unitholders, the Project Manager, the Erstwhile Project Manager and the Sponsor.

25. Syndicate Agreement dated July 13, 2026 entered into between the Trustee (on behalf of the Trust), the Investment Manager, the Book Running Lead Managers, the Syndicate Members, the Registrar to the Offer and the Selling Unitholders in relation to collection of Bid cum Application Forms by the Syndicate.

26. The Strategic Investor Unit Subscription Agreements dated July 13, 2026 entered into with the Investment Manager, the Trustee, the Selling Unitholders and each of (i) Prazim Trading And Investment Company Private Limited; (ii) HDFC Life Insurance Company Limited; (iii) HDFC Pension Fund Management Limited; (iv) Axis Max Life Insurance Limited; and (v) WhiteOak Capital REIT & InvIT Alternatives Fund I.

27. The shared services agreement dated September 7, 2022, as amended on January 18, 2023, and September 26, 2023, entered into between the Investment Manager and the Project Manager.

28. The shared services agreement dated July 3, 2026, entered into by the Project Manager and the Project SPVs.

29. Share Purchase Agreement dated July 13, 2026, entered into between Cube Highways and Infrastructure V Pte. Ltd., the Trustee, the Investment Manager and BFHL, in relation to the sale and purchase of 100% of the issued, paid-up and subscribed share capital of BFHL on a fully diluted basis.

30. Share Purchase Agreement dated July 13, 2026, entered into between Cube Highways and Infrastructure V Pte. Ltd., the Trustee, the Investment Manager and DTPL, in relation to the sale and purchase of 100% of the issued, paid-up and subscribed share capital of DTPL on a fully diluted basis.

31. Share Purchase Agreement dated July 13, 2026, entered into between Cube Highways and Infrastructure V Pte. Ltd., the Trustee, the Investment Manager and WMTPL, in relation to the sale and purchase of at least 95% of the issued, paid-up and subscribed share capital of WMTPL on a fully diluted basis.

32. Share Purchase Agreement dated July 13, 2026, entered into between Cube Highways and Infrastructure II Pte. Ltd., the Trustee, the Investment Manager and CNTL, in relation to the sale and purchase of 100% of the issued, paid-up and subscribed share capital of CNTL on a fully diluted basis.

33. Reimbursement Agreement dated September 9, 2024, entered into between the Sponsor with Hazaribagh Tollway Private Limited, Jhansi–Vigakhet Tollway Private Limited, Kanyakumari-Etturavattam Tollway Private Limited, Lucknow-Raebareli Tollway Private Limited, Madurai-Kanyakumari Tollway Private Limited, Nanguneri-Kanyakumari Tollway Private Limited, Salaipudhur-Madurai Tollway Private Limited, Kotwa-Muzaffarpur Tollway Private Limited, Jhansi-Lalitpur Tollway Private Limited, DA Toll Road Private Limited, Walayar Vadakkencherry Expressways Private Limited, Andhra Pradesh Expressway Private Limited, Farakka Raiganj Highways Private Limited, Jaipur-Mahua Tollway Private Limited, Mahua Bharatpur Expressways Limited, Western UP Tollway Private Limited, Nelamangala Devihalli Expressway Private Limited and Ghaziabad Aligarh Expressway Private.

34. Reimbursement Agreement dated March 28, 2025, entered into amongst the Investment Manager and Erstwhile Project Manager.

35. Expert Services Agreement dated July 3, 2026, entered amongst Cube Highways Technologies Private Limited, the Trust (acting through its Investment Manager), Project Manager and Portfolio Assets.

36. Concession agreements executed between LRTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement.

37. Concession agreement executed between JLTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement.

38. Concession agreement executed between JVTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement.

39. Concession agreement executed between KMTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement.

40. Concession agreement executed between HTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement.

41. Concession agreement executed between MKTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement.

42. Concession agreement executed between KETPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement.

43. Concession agreement executed between SMTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement.

44. Concession agreement executed between NKTPL and NHAI dated December 27, 2019, as amended from time to time, read with the relevant supplementary agreement.

45. Concession agreement executed between JMTPL and NHAI dated September 23, 2005, as amended from time to time, read with the relevant supplementary agreement.

46. Concession agreement executed between MBEL and NHAI dated October 13, 2005, as amended from time to time, read with the relevant supplementary agreement.

47. Concession agreement executed between DATRPL and NHAI dated July 16, 2010, as amended from time to time, read with the relevant supplementary agreement.

48. Concession agreement executed between Lanco Devihalli Highways Limited and NHAI dated July 9, 2007, and endorsed in favour of NDEPL pursuant to the endorsement agreement dated January 11, 2021, entered into between NDEPL and NHAI, as amended from time to time, read with the relevant supplementary agreement.

49. Concession agreement executed between FRHPL and NHAI dated July 19, 2010, as amended from time to time, read with the relevant supplementary agreement.

50. Concession agreement executed between WVEPL and NHAI dated September 17, 2012, as amended from time to time, read with the relevant supplementary agreement.

51. Concession agreement executed between GAEPL and NHAI dated May 20, 2010, as amended from time to time, read with the relevant supplementary agreement.

52. Concession agreement executed between NAMEPL and the relevant state authorities in Andhra Pradesh and Telangana dated July 23, 2010, as amended from time to time.

53. Concession agreement executed between SIPL and NHAI dated April 11, 2018, as amended from time to time, read with the relevant supplementary agreement.

54. Concession agreement executed between MHPL and NHAI dated May 9, 2018, as amended from time to time, read with the relevant supplementary agreement.

55. Concession agreement executed between BWHPL and NHAI dated May 10, 2018, as amended from time to time, read with the relevant supplementary agreement.

56. Concession agreement executed between MSHPL and NHAI dated May 10, 2018, as amended from time to time, read with the relevant supplementary agreement.

57. Concession agreement executed between SPPL and NHAI dated May 9, 2018, as amended from time to time, read with the relevant supplementary agreement.

58. Concession agreement executed between THPL and NHAI dated May 9, 2018, as amended from time to time, read with the relevant supplementary agreement.

59. Concession agreement executed between APEPL and NHAI dated March 20, 2006, as amended from time to time, read with the relevant supplementary agreement.

60. Concession agreement executed between JUHPL and NHAI dated July 19, 2010, as amended from time to time, read with the relevant supplementary agreement.

61. Concession agreement executed between QEPL and NHAI dated July 13, 2010, as amended from time to time, read with the relevant supplementary agreement.

DECLARATION

The Investment Manager hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). The Investment Manager further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways Fund Advisors Private Limited**

Jayesh Ramniklal Desai
Independent Director

Date: July 27, 2026
Place: Mahabaleshwar, India

DECLARATION

The Investment Manager hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). The Investment Manager further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways Fund Advisors Private Limited**

Upendra Kumar Sinha
Chairman and Independent Director

Date: July 27, 2026
Place: New Delhi, India

DECLARATION

The Investment Manager hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). The Investment Manager further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways Fund Advisors Private Limited**

Surinder Chawla
Independent Director

Date: July 27, 2026
Place: Delhi, India

DECLARATION

The Investment Manager hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). The Investment Manager further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways Fund Advisors Private Limited**

Sandeep Lakhanpal
Non - Executive Director

Date: July 27, 2026
Place: Delhi, India

DECLARATION

The Investment Manager hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). The Investment Manager further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways Fund Advisors Private Limited**

Raviraj Vipul Acharya
Non - Executive Director

Date: July 27, 2026
Place: Abu Dhabi, United Arab Emirates

DECLARATION

The Investment Manager hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). The Investment Manager further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways Fund Advisors Private Limited**

Fereshte Dhunjishaw Sethna
Independent Director

Date: July 27, 2026
Place: Mumbai, India

DECLARATION

The Investment Manager hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). The Investment Manager further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways Fund Advisors Private Limited**

Helly Bharat Ajmera
Non Executive Director

Date: July 27, 2026
Place: Karzok, Ladakh

DECLARATION

Cube Highways and Infrastructure V Pte. Ltd ("**CH-V**") hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). CH-V further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways and Infrastructure V Pte. Ltd.**

Ashutosh Goyal
Director

Date: July 27, 2026
Place: Singapore

DECLARATION

Cube Highways and Infrastructure V Pte. Ltd ("**CH-V**") hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). CH-V further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways and Infrastructure V Pte. Ltd.**

Raviraj Vipul Acharya
Director

Date: July 27, 2026
Place: Abu Dhabi, United Arab Emirates

DECLARATION

Cube Highways and Infrastructure V Pte. Ltd ("**CH-V**") hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). CH-V further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways and Infrastructure V Pte. Ltd.**

Lin Le
Director

Date: July 27, 2026
Place: Singapore

DECLARATION

Cube Highways and Infrastructure V Pte. Ltd ("**CH-V**") hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). CH-V further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways and Infrastructure V Pte. Ltd.**

Zaman Velji
Director

Date: July 27, 2026
Place: Canada

DECLARATION

Cube Highways and Infrastructure V Pte. Ltd ("**CH-V**") hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). CH-V further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways and Infrastructure V Pte. Ltd.**

Angela Mary Bouzanis
Alternate Director

Date: July 27, 2026
Place: Canada

DECLARATION

Cube Highways and Infrastructure V Pte. Ltd ("**CH-V**") hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). CH-V further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways and Infrastructure V Pte. Ltd.**

Kunal Agarwal
Director

Date: July 27, 2026
Place: Singapore

DECLARATION

The Trustee hereby declares and certifies that all relevant provisions of the InvIT Regulations, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Final Offer Document is contrary to the applicable provisions of the InvIT Regulations, the SCRA, SEBI Act and all rules, regulations and guidelines issued by the GoI or SEBI (as the case may be). The Trustee further certifies that all the statements and disclosures in this Final Offer Document are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

SIGNED BY THE TRUSTEE

For **AXIS TRUSTEE SERVICES LIMITED**
Date: July 27, 2026
Place: Mumbai, India

DECLARATION

Cube Highways and Infrastructure III Pte. Ltd., in its capacity as a Selling Unitholder hereby declares and certifies that all the statements and disclosures in this Final Offer Document in relation to itself and the Units offered by it in the Offer for Sale are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways and Infrastructure III Pte. Ltd.**

Lin Le
Director

Date: July 27, 2026
Place: Singapore

DECLARATION

Cube Mobility Investments Pte. Ltd., in its capacity as a Selling Unitholder hereby declares and certifies that all the statements and disclosures in this Final Offer Document in relation to itself and the Units offered by it in the Offer for Sale are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Mobility Investments Pte. Ltd.**

Lin Le
Director

Date: July 27, 2026
Place: Singapore

DECLARATION

Cube Highways and Infrastructure II Pte. Ltd., in its capacity as a Selling Unitholder hereby declares and certifies that all the statements and disclosures in this Final Offer Document in relation to itself and the Units offered by it in the Offer for Sale are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Cube Highways and Infrastructure II Pte. Ltd.**

Lin Le
Director

Date: July 27, 2026
Place: Singapore

DECLARATION

BCI IRR India Holdings Inc., in its capacity as a Selling Unitholder hereby declares and certifies that all the statements and disclosures in this Final Offer Document in relation to itself and the Units offered by it in the Offer for Sale are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **BCI IRR India Holdings Inc.**

Zaman Velji
Vice-President

Date: July 27, 2026
Place: Canada

DECLARATION

Seventy Second Investment Company LLC, in its capacity as a Selling Unitholder hereby declares and certifies that all the statements and disclosures in this Final Offer Document in relation to itself and the Units offered by it in the Offer for Sale are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **Seventy Second Investment Company LLC**

Kevin Taylaur
Director

Date: July 27, 2026
Place: United Kingdom

Sridhar Iyengar
Director

Date: July 27, 2026
Place: Abu Dhabi, United Arab Emirates

DECLARATION

BCI IRR India Holdings Limited Partnership, in its capacity as a Selling Unitholder hereby declares and certifies that all the statements and disclosures in this Final Offer Document in relation to itself and the Units offered by it in the Offer for Sale are material, true, correct, not misleading and adequate in order to enable the Bidders to make an informed decision.

For **BCI IRR India Holdings Limited Partnership**

Zaman Velji
Vice-President of BCI IRR India Holdings GP Inc., in its capacity as general partner of BCI IRR India Holdings Limited Partnership

Date: July 27, 2026
Place: Canada

ANNEXURE A –VALUATION REPORTS

(*The remainder of this page is intentionally kept blank*)

Ernst & Young Merchant Banking Services LLP
Registered Valuer
Registration No. IBBI/RV-E/05/2021/155
14th Floor, The Ruby,
29 Senapati Bapat Marg,
Dadar West,
Mumbai - 400 028, India

Tel: +91 22 61920000
Fax: +91 22 61920000
ey.com

22 May 2026

To,

Cube Highways Trust
B-376, Nirman Vihar, Upper Ground Floor,
New Delhi, 110092

Cube Highways Fund Advisors Private Limited
B-376, Nirman Vihar, Upper Ground Floor,
New Delhi, 110092

Re: Report on Enterprise Valuation of Specified Assets as per SEBI (Infrastructure Investment Trusts) Regulations, 2014, as amended ("SEBI InvIT Regulations") as on 31 March 2026

Dear Sir/Madam,

In accordance with instructions of Cube Highways Trust ("Client" or "you" or "CHT" or "InvIT" or "Trust"), Ernst & Young Merchant Banking Services LLP ("EYMBSLLP") have performed the work set out in our Engagement Agreement dated 21 July 2025 ("Engagement Agreement"). We are pleased to present the following report ("Report") in connection with the Enterprise Valuation of Specified Assets of Cube Highways Trust as at 31 March 2026 ("Valuation Date").

It may be noted that for carrying out the valuation, we have relied upon information provided by the Management of CHT ("Management"). We have been given to understand that the information provided is correct and accurate and that the Management was duly authorized to provide us the same.

Purpose of our Report and restrictions on its use

EYMBSLLP has been appointed by Cube Highways Trust as an independent valuer as per Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014, as amended and the circulars, notifications and guidelines issued thereunder ("SEBI InvIT Regulations"), to undertake an independent Enterprise Valuation of Specified Assets (defined later) ("Specified Assets" or "InvIT Assets" or "SPVs") as on 31 March 2026 for internal management analysis, disclosure to unit holders and regulatory filings under Chapter V Regulation 21(5A) of the SEBI InvIT Regulations ("Purpose"). This Report was prepared solely for the above Purpose and should not be used or relied upon for any other purpose.

We accept no responsibility or liability to any person other than to the Client, or to such party to whom we have agreed in writing to accept a duty of care in respect of the Report, and accordingly if such other persons choose to rely upon any of the contents of the Report, they do so at their own risk.

Nature and scope of the services

The nature and scope of the services, including the basis and limitations, are detailed in the Engagement Agreement. The contents of our Report have been reviewed by the Client, who have confirmed to us the factual accuracy of the Report.

Whilst each part of our Report may address different aspects of the work we have agreed to perform, the entire Report should be read for a full understanding of our findings and advice.

Please note that the Report must be read in conjunction with the Statement of limiting conditions contained in Section 4 of this Report. This letter, the Report and the summary of valuation included herein can be provided to Trust's advisors and may be made available for the inspection to the public and with the SEBI, the stock exchanges and any other regulatory and supervisory authority, as may be required. The valuation analysis should not be construed as investment advice; specifically, EYMBSLLP does not express any opinion on the suitability or otherwise of entering into any financial or other transaction with the Trust.

The valuation conclusion included here-in and the Report complies with the SEBI InvIT Regulations and guidelines, circular, notification, clarifications or guidance issued by the Securities and Exchange Board of India ("SEBI") thereunder.

This letter should be read in conjunction with the attached Report.

Yours faithfully,

Nilesh Jain
Partner
Membership No. IBBI/RV/05/2024/15540
Ernst & Young Merchant Banking Services LLP
Registration No. IBBI/RV-E/05/2021/155
LLPIN: AAO-2287

Date: 22 May 2026
Report No. EYMBS/RV/2025-26/036

Shape the future with confidence

Table of Contents

I. Executive Summary 4

II. Valuation Analysis 8

III. Sources of Information 10

IV. Statement of Limiting Conditions 11

V. Industry Overview 13

VI. Background of the SPVs 19

VII. Procedures Adopted 55

VIII. Valuation Methodology 56

IX. Valuation Assumptions 62

X. Basis and Premise of Valuation 64

XI. Valuation Conclusion 65

Shape the future with confidence

I. Executive Summary

Cube Highways Trust is registered as an infrastructure investment trust with Securities and Exchange Board of India ("SEBI") pursuant to the SEBI (Infrastructure Investment Trusts) Regulations, 2014, as amended ("the SEBI InvIT Regulations"). It was registered on April 05, 2022 [Registration No.: IN/InvIT/22-23/0022].

The InvIT owns and operates a portfolio of 27 road SPVs; which are involved in operating and managing road assets under concession agreements with NHAI and or respective NHAI/state authorities. The InvIT Assets have an aggregate length of ~2,005 kms (8,754 lane kms) spread across 13 states / UTs. The following is the list of InvIT Assets owned by the Trust:

1. Jaipur-Mahua Tollway Private Limited (“JMTPL”)
2. Mahua Bharatpur Expressways Limited (“MBEL”)
3. Western UP Tollway Private Limited (“WUPTPL”)
4. Nelamangala Devihalli Expressway Private Limited (“NDEPL”)
5. Farakka-Raiganj Highways Private Limited (“FRHPL”)
6. Walayar Vadakkencherry Expressways Private Limited (“WVEPL”)
7. DA Toll Road Private Limited (“DATRPL”)
8. Ghaziabad Aligarh Expressway Private Limited ("GAEPL")
9. N. A. M. Expressway Private Limited (“NAMEPL”)
10. Hazaribagh Tollway Private Limited (“HTPL”)
11. Jhansi-Lalitpur Tollway Private Limited (“JLTPL”)
12. Jhansi-Vigakhet Tollway Private Limited (“JVTPL”)
13. Kotwa-Muzaffarpur Tollway Private Limited (“KMTPL”)
14. Lucknow-Raebareli Tollway Private Limited (“LRTPL”)
15. Madurai-Kanyakumari Tollway Private Limited (“MKTPL”)
16. Kanyakumari-Etturavattam Tollway Private Limited (“KETPL”)
17. Salaipudhpur-Madurai Tollway Private Limited (“SMTPL”)
18. Nanguneri-Kanyakumari Tollway Private Limited (“NKTPL”)
19. Jammu Udhampur Highway Private Ltd. ("JU" or “JUHPL”)
20. Quazigund Expressway Private Ltd. (“QB” or “QEPL”)
21. Andhra Pradesh Expressway Private Limited (“APEPL” or “APEL”)
22. Borgaon Watambare Highways Private Limited (“BWHPL”)
23. Mangalwedha Solapur Highways Private Limited (“MSHPL”)
24. Mangloor Highways Private Limited (“MHPL")
25. Srirangam Infra Private Limited (“SIPL”)
26. Shankarampet Projects Private Limited (“SPPL”)
27. Tirumala Highways Private Limited (“THPL”)

Assets from Sr. No 1 – 9 operate under the Design, Build, Finance, Operate and Transfer model and are hereinafter referred to as “BOT Assets”. Assets from Sr No 10 – 18 operate under the Toll, Operate and Transfer model and are hereinafter referred to as “TOT Assets”. Assets from Sr No 19 – 21 operate under Annuity Model and are hereinafter referred to as “BOT Annuity Assets”. Assets from Sr. No 22 – 27 operate under the Hybrid Annuity model and are hereinafter referred to as “HAM Assets”.

BOT Assets, TOT Assets, BOT Annuity Assets and HAM Assets are collectively referred to as “InvIT Assets”

Cube Highways and Infrastructure Pte. Ltd. (“CHIPL”) and Cube Highways and Infrastructure III Pte. Ltd. (“CH-III) are the Sponsors (hereinafter collectively referred to as “Sponsors”) to Cube Highways Trust.

Cube Highways Fund Advisors Private Limited (“Investment Manager” or “CHFAPL”) is acting as an investment manager of the Trust. CHFAPL is a private limited company incorporated on April 12, 2021 at New Delhi under the Companies Act, 2013.

Axis Trustee Services Limited (“Trustee” or “ATSL”) is acting as a Trustee to the InvIT. Axis Trustee Services Limited is a public company incorporated on May 16, 2008, at Mumbai under the Companies Act, 2013. The Trustee is a trusteeship company, which has been registered with SEBI on January 31, 2014, and has been promoted by and is a wholly owned subsidiary of Axis Bank for providing corporate and other trusteeship services.

Cube Highways and Transportation Assets Advisors Private Limited (“Project Manager” or “CHTAAPL”) is acting as the Project Manager to the InvIT. CHTAAPL is a private company incorporated on January 1, 2015 under the Companies Act, 2013. CHTAAPL is engaged in management of routine operations and maintenance of the InvIT Assets.

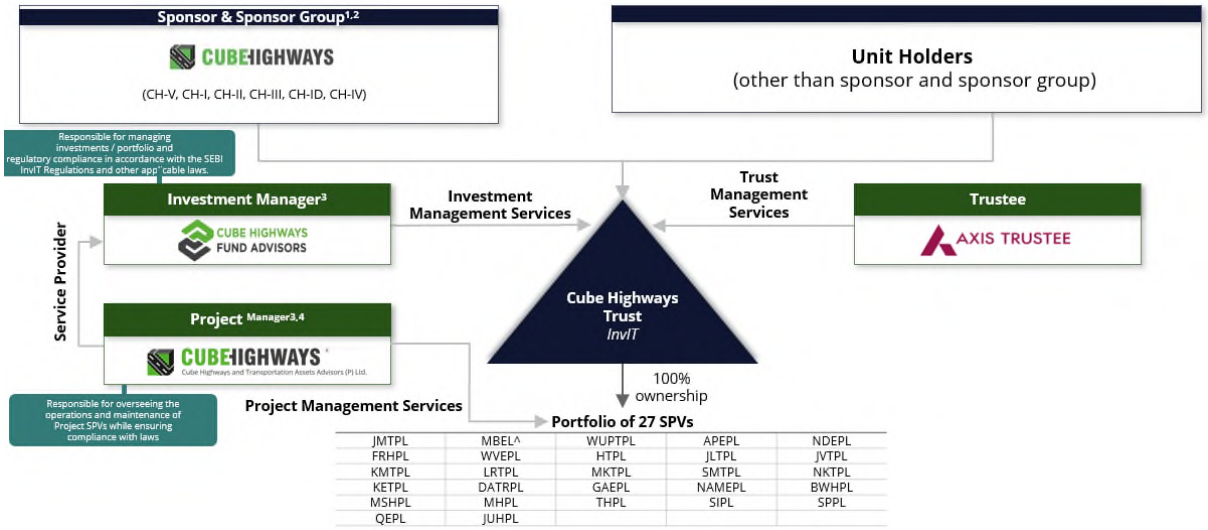
Related Party Transactions

Cube Highways Trust made an initial offer of 522,582,727 Ordinary Units through a private placement at a price of INR 100 per Ordinary Unit (the “Offer Price”) in April 2023 and raised INR 52,258.27 Million (“Offer”). On April 17, 2023, the Trust, acting through the Trustee, acquired the entire equity shareholding of the BOT assets, TOT assets and APEPL (except for 0.03% of the equity share capital of MBEL) from the Sponsors and its group companies. The Trust got its Ordinary Units listed on the BSE Limited (BSE) and National Stock Exchange of India Limited (NSE) on April 19, 2023.

On June 04, 2024, the Trust acquired 51% shareholding of the HAM assets from the Sponsors for a purchase consideration of INR 5,395 Million, in line with the Share Purchase Agreement executed between the parties on May 31, 2024. Further, on December 03, 2024, the Trust acquired remaining 49% shareholding of the HAM assets from the Sponsors for a purchase consideration of INR 5,332.25 Million, in line with the Share Purchase Agreement executed between the parties on May 31, 2024.

On February 12, 2025, the Trust acquired 100% equity shareholding of M/s N.A.M. Expressway Private Limited from the Sponsors for a purchase consideration of INR 7,176 Million, in line with the Share Purchase Agreement executed between the parties on June 04, 2024.

The following chart represents the Structure of the Trust:



^0.03% of the equity shares of MBEL are held by Madhucon Infra Limited (Source: https://cubehighwaystrust.com/)

EYMBSLLP has been appointed as an independent valuer to undertake Enterprise Valuation of InvIT Assets as on 31 March 2026, in accordance with Regulation 21(5A) of the SEBI InvIT Regulations.

EYMBSLLP is appointed to undertake financial valuation only. We are placing reliance on other consultants appointed by the Clients for traffic and other technical inputs. This report is our deliverable for the aforementioned purpose.

EYMBSLLP is duly registered, as a Limited Liability Partnership under the Limited Liability Partnership Act, 2008, with the Ministry of Corporate Affairs (identified with a unique LLPIN: AAO-2287) and as a Registered Valuer with Insolvency and Bankruptcy Board of India ("IBBI") for securities or financial assets under Section 247 of the Companies Act, 2013 bearing registration number IBBI/RV-E/05/2021/155.

Identity of the Valuer

Name of entity registered	Ernst & Young Merchant Banking Services LLP
LLPIN	AAO-2287
Registration Number (for Registered Valuer)	IBBI/RV-E/05/2021/155
Registration (for Registered Valuer) valid from	01 November 2021
Website	https://www.ey.com/en_in/services/strategy-transactions/valuation-modeling-economics

- EY has experience to perform valuation service relating to business valuation, real estate valuation, complex security valuation and tangible assets valuation. EY has performed valuation service across various sectors including infrastructure (such as roads, power plants, airports, ports, and logistics etc), consumer goods and retail, pharma/healthcare, financial services and media & entertainment, metals and mining, manufacturing, automotive and real estate.
- Nilesh Jain is a partner at EY and is based out of Mumbai. He has more than 18 years of valuation experience across sectors. He is a merit ranker Chartered Accountant from ICAI and has also cleared CFA exams conducted by CFA Institute, USA.
- Nilesh has over 18 years of experience in Valuations of Infrastructure assets, he has been involved in more than 300 valuation engagements with more than 200 valuations in the infrastructure sector. He has worked on assignments involving business valuation, brand valuation, purchase price allocation, valuation for the purposes of merger, business restructuring and regulatory approvals.

Disclosure of Valuer's Interest or Conflict

EYMBSLLP, Nilesh Jain and the team working on the valuation of InvIT Assets do not have any present or planned future interest in the Trust, the InvIT Assets or the Investment Manager. EYMBSLLP is neither associated with nor carrying out any relationship with the Client, except carrying out valuation service. Accordingly, there is no conflict of interest for carrying out the valuation.
The information provided by the Management have been appropriately reviewed in carrying out the valuation. Sufficient time and information was provided to us to carry out the valuation.

Declaration

- We hereby confirm on behalf of EYMBSLLP that EYMBSLLP is competent to undertake this valuation in terms of SEBI InvIT Regulations.
- We further confirm that EYMBSLLP is independent in terms of the SEBI InvIT Regulations and that this report has been prepared on a fair and unbiased basis in compliance with Regulation 13(1) and Regulation 21 of the SEBI InvIT Regulations.
- We have at least two partners/ directors having experience of 5 years each in the valuation of infrastructure assets.

This Report covers all the disclosures required as per the SEBI InvIT Regulations and the Valuation of the SPVs is impartial, true and fair and in compliance with the SEBI InvIT Regulations.

<<Intentionally Left Blank>>

Shape the future with confidence

II. Valuation Analysis

Income approach, specifically Discounted Cash Flow (DCF) method has been considered for arriving at fair value of InvIT Assets as on 31 March 2026. The valuation exercise has been carried out basis the financial projections of each of the InvIT Assets provided to us by the management of the Client ("Management"). Free Cash Flow to Firm approach under DCF method has been considered to determine the Enterprise Value of InvIT Assets. The Enterprise Value has been computed by discounting the free cash flows to the firm (InvIT Assets) from 01 April 2026 until the end of the concession period, using an appropriate Weighted Average Cost of Capital ("WACC").

The Investment Manager has appointed independent consultants to carry out traffic study for estimation of toll revenue and technical study for estimation of operating and maintenance expenses and major maintenance expenses, for each of the InvIT Assets over the concession period. The traffic study reports dated April 2026 have been provided to us by the Management. These reports presented an update of the traffic and revenue forecasts based on the data available through February 2026 and other macro-economic assumptions. We have relied upon financial projections, traffic study reports, technical reports provided by independent consultants and other information provided to us for carrying out the valuation of each of the InvIT Assets.

The valuation is based on various assumptions with respect to the InvIT Assets, including their respective present and future financial condition, business strategies and the environment in which they will operate in the future. These assumptions are based on the information that we have been provided with and our discussions with the Management, and reflect current expectations and views regarding future events, and therefore necessarily involve known and unknown risks and uncertainties.

The summary of valuation of each of the InvIT Assets as on 31 March 2026 is presented below:

SPV (Currency: INR mn)	Enterprise Value (excluding other financial assets)	Other financial assets[1]	Enterprise Value (including other financial assets)
JMTPL	6,895	446	7,341
MBEL	3,295	824	4,119
WUPTPL	(88)	1,065	977
NDEPL	4,597	70	4,667
FRHPL	26,471	-	26,471
WVEPL	9,101	-	9,101
DATRPL	77,737	49	77,786
GAEPL	38,273	566	38,839
NAMEPL	27,666	-	27,666
HTPL	19,929	227	20,156
JLTPL	12,820	131	12,951
JVTPL	8,014	-	8,014
LRTPL	7,756	790	8,546
KMTPL	13,992	-	13,992
MKTPL	16,583	25	16,608
KETPL	10,671	114	10,785
SMTPL	11,755	23	11,778
NKTPL	11,293	2,962	14,255
JU	11,934	306	12,240
QB	18,735	516	19,251
APEPL	341	475	816
BWHPL	3,180	36	3,216
MSHPL	3,626	108	3,733
MHPL	2,641	105	2,747
SIPL	3,413	53	3,466
SPPL	4,118	78	4,197
THPL	4,625	76	4,701
Total	**3,59,372**	**9,046**	**3,68,418**

Table above represents the 100% enterprise value for all SPVs including MBEL (0.03% of the equity shares of MBEL are held by Madhucon Infra Limited).

Shape the future with confidence

Notes:

1. According to IND AS 7, cash & cash equivalents are held for the purpose of meeting short term cash commitments rather than for investments or other purposes. Accordingly, cash & cash equivalents held by the respective SPVs, having maturity of more than 3 months have been considered as other financial assets.

2. WUPTPL reflects a negative Enterprise Value primarily due to projected negative cash flows arising from outstanding maintenance expenditure associated with the asset nearing the end of its useful life. Notwithstanding this, the Management has represented to us that WUPTPL maintains sufficient cash and liquid resources to fund its operating requirements and the outstanding maintenance expenditure.

   Our views are based on the current economic, market, industry, regulatory, monetary and other conditions and on the information made available to us, as of the date of this Report. Such conditions may change significantly over a relatively short period of time, and we assume no responsibility and are not required to update, revise or reaffirm our conclusion set out in this Report to reflect events or developments subsequent to the date of the Report.

Shape the future with confidence

III. Sources of Information

The following sources of information have been utilized in conducting the valuation exercise:

- **SPV specific information** – The following information, as provided by the Management, have inter-alia been used in the Enterprise Valuation of InvIT Assets:
  - Audited financials (balance sheet and profit and loss account along with schedules and notes to accounts including auditors' report but excluding director's report) of BOT Assets, TOT Assets and BOT Annuity Assets from FY18 to FY25 (FY19 to FY25 for NAMEPL; FY23 to FY25 for JU and QB).
  - Audited financials (balance sheet and profit and loss account along with schedules and notes to accounts including auditors' report but excluding director's report) of HAM Assets from FY22 to FY25.
  - Provisional financials (balance sheet and profit and loss account along with schedules and notes to accounts) of InvIT Assets for the year ended 31 March 2026.
  - Financial projections of each of the InvIT Assets from 01 April 2026 till the end of concession period including underlying assumptions (It includes forecasts of profit and loss statements, major maintenance expenditures, working capital requirements and respective underlying assumptions).
  - Concession Agreements entered into between the respective InvIT Assets and NHAI/State authorities, along with extension letters, if any.
  - Traffic assessment reports dated April 2026 (except WUPTL Traffic assessment report dated October 2025) and draft technical assessment reports dated between 17 March 2026 - 30 April 2026, by independent consultants for each of the InvIT Assets.
  - Latest Annuity letters for all the HAM Assets and BOT Annuity Assets.
  - Supplementary agreement to the respective Concession Agreement with NHAI ("Supplementary Agreement") pursuant to the introduction of the Annual Pass Scheme for BOT Assets and TOT Assets.
  - Detail of carry forward losses, unabsorbed depreciation, applicable tax/ tax benefits of the InvIT Assets as of 31 March 2026.
  - Background information regarding the InvIT Assets provided through emails or during discussions.

- Besides the above listing, there may be other information provided by the Management which may not have been perused by EYMBSLLP in any detail, if not considered relevant for the defined scope.

- **Industry and economy information**: EYMBSLLP has relied on publicly available information, proprietary databases subscribed to by EYMBSLLP or its member firms, and discussions with the Management for analysing the industry and the competitors.

- In addition to the above, EYMBSLLP has also obtained such other information and explanations from the Management as were considered relevant for the purpose of the valuation.

It may be mentioned that the Client has been provided an opportunity to review factual information in our draft report as part of our standard practice to make sure that factual inaccuracies/omissions/etc. are avoided in our final report.

Shape the future with confidence

IV. Statement of Limiting Conditions

- Provision of valuation opinions and consideration of the issues described herein are areas of our regular valuation practice. The services do not represent accounting, assurance, accounting / tax due diligence, consulting or tax related services that may otherwise be provided by us or our affiliates.
- The estimate of value contained herein are not intended to represent value of the respective InvIT Assets at any time other than the Valuation Date, as per the agreed scope of our engagement and as required under the SEBI InvIT Regulations. Changes in market/industry conditions could result in opinions of value substantially different than those presented.
- The valuation report was prepared for the purpose of internal management analysis, disclosure to unitholders, any corporate action and/or regulatory filings as required under Regulation 21(5A) of the SEBI InvIT Regulations. Its suitability and applicability of any other use has not been checked by us.
- The user to which this valuation is addressed should read the basis upon which the valuation has been done and be aware of the potential for later variations in value due to factors that are unforeseen at the valuation date. Due to possible changes in market forces and circumstances, this valuation report can only be regarded as relevant as at the Valuation Date.
- This Report has been prepared for the purposes stated herein and should not be relied upon for any other purpose. Our Client is the only authorized user of this report and is restricted for the purpose indicated in the engagement letter. This restriction does not preclude the Client from providing a copy of the report to third-party advisors whose review would be consistent with the intended use. We do not take any responsibility for the unauthorized use of this report.
- While our work has involved an analysis of financial information and accounting records, our engagement does not include an audit in accordance with generally accepted auditing standards of the client existing business records. Accordingly, we express no audit opinion or any other form of assurance on this information.
- The valuation has been performed based on the provisional financial statements provided by Management for the year ended 31 March 2026 and audited financials for earlier years.
- In no event shall we be liable for any loss, damages, cost or expenses arising in any way from fraudulent acts, misrepresentations or wilful default on part of the client or companies, their directors, employees or agents.
- The Client and its Management/representatives warranted to us that the information they supplied was complete, accurate, true and correct to the best of their knowledge. We have relied upon the representations of the clients, their Management and other third parties, if any, concerning the financial data, operational data and other information, except as specifically stated to the contrary in the report. We shall not be liable for any loss, damages, cost or expenses arising from fraudulent acts, misrepresentations, or wilful default on part of the companies, their directors, employee or agents.
- EYMBSLLP is not aware of any contingency, commitment or material issue which could materially affect the economic environment and future performance of the InvIT Assets and therefore, the fair value of the InvIT Assets.
- In the course of the valuation, we were provided with both written and verbal information. We have however, evaluated the information provided to us by the Management through broad inquiry, analysis and review but have not carried out a due diligence or audit of the information provided for the purpose of this engagement. Our conclusions are based on the assumptions, forecasts and other information given by the Management.
- We do not provide assurance on the achievability of the results forecast by the Management as events and circumstances do not occur as expected; differences between actual and expected results may be material. We express no opinion as to how closely the actual results will

correspond to those projected/forecast as the achievement of the forecast results is dependent on actions, plans and assumptions of Management. However, the information provided, and assumptions used by the Management in developing projections have been appropriately reviewed, enquiries have been made regarding basis of key assumptions in context of business being valued and the industry/economy.

- The Report assumes that the InvIT Assets complies fully with relevant laws and regulations applicable in its area of operations and usage unless otherwise stated, and that the InvIT Assets will be managed in a competent and responsible manner. Further, as specifically stated to the contrary, this report has given no consideration to matters of a legal nature, including issues of legal title and compliance with local laws, and litigations and other contingent liabilities that are not recorded/reflected in the balance sheet/fixed assets register provided to us.
- The valuation analysis and result are governed by concept of materiality.
- It has been assumed that the required and relevant policies and practices have been adopted by Company and would be continued in the future.
- The fee for the Report is not contingent upon the results reported.
- The figures in the tables in this report may not sum or cross cast, due to rounding differences.
- We owe responsibility to only to the Client that has appointed us under the terms of the Engagement Agreement. We will not be liable for any losses, claims, damages or liabilities arising out of the actions taken, omissions or advice given by any other person.
- The actual transacted value achieved may be higher or lower than our estimate of value (or value range of value) depending upon the circumstances of the transaction (for example the competitive bidding environment), the nature of the business (for example the purchaser's perception of potential synergies). The knowledge, negotiating ability and motivation of the buyers and sellers will also affect the transaction value achieved.
- We have also relied on data from external sources to conclude the valuation. These sources are believed to be reliable and therefore, we assume no liability for the truth or accuracy of any data, opinions or estimates furnished by others that have been used in this analysis. Where we have relied on data, opinions or estimates from external sources, reasonable care has been taken to ensure that such data has been correctly extracted from those sources and /or reproduced in its proper form and context.
- This Report is subject to the laws of India.
- Any person/ party intending to provide finance/ invest in the units/ businesses of the Trust/ their holding companies/ SPVs, if any, shall do so after seeking their own professional advice and after carrying out their own due diligence procedures to ensure that they are making an informed decision. If any person/ party (other than the Client) chooses to place reliance upon any matters included in the Report, they shall do so at their own risk and without recourse to us.

V. Industry Overview

1. Road Network in India

The road network plays a pivotal role in India's infrastructure as it facilitates the transportation of 70% of all goods within the country, while 85% of India's total passenger traffic relies on roads for commuting.

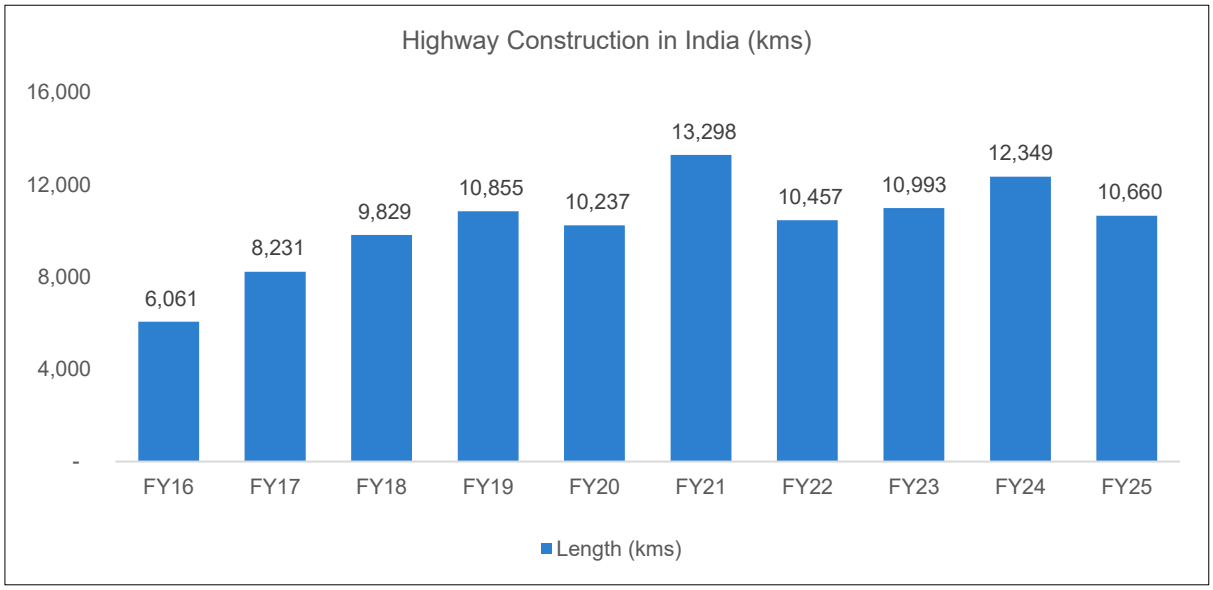
(Source: IBEF Roads Report - November 2025)

India has the world's second-largest road network, with:

I. National Highways spanning 146,560 km as of December 2025.
II. Operational access-controlled High-Speed Corridors/Expressways spanning 3,052 km as of December 2025.
III. 4-lane and above National Highways, including access-controlled corridors spanning 43,512 km as of December 2025

(Source: Year End Review 2025 – Ministry of Road Transport & Highways, Government of India)

Annual highway construction in India has increased at a CAGR of 6.5% over the period FY16-FY25 as depicted below:



Source: IBEF Roads Report, November 2025

2. Growth Drivers

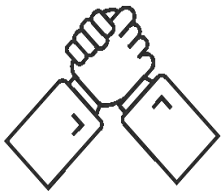
Growing Vehicular Demand

Growing domestic trade flows have led to rise in commercial vehicles and freight movement; supported by rise in production of commercial vehicles. This increase in commercial and freight vehicles will lead to strong tourist and trade flows between states, increasing the traffic and revenue.

Government Initiatives

Pradhan Mantri Gram Sadak Yojana (PMGSY): The PMGSY has significantly enhanced rural road connectivity. Under this scheme, 825,114 km of road length was sanctioned, out of which 787,520 km (95%) has been constructed as of December 2025.

For the financial year 2025–26, the programme received INR 1.9 Bn, underscoring sustained support to improve rural infrastructure, ensure all-weather road connectivity, and boost economic opportunities in villages.
(Source: Report on Transforming Rural Connectivity in India by Research unit of Press Information Bureau, Government of India)



Bharatmala Pariyojana: Under the Bharatmala Pariyojana, projects are executed in categories such as Economic Corridors Development, Inter-corridor and Feeder Routes Development, National Corridors Efficiency Improvement, Border and International Connectivity Roads, Coastal and Port Connectivity Roads, and Expressways.

Under Phase-I of Bharatmala Pariyojana, the Ministry has sanctioned the development of 34,800 km of national highways over a period of 5 years, with a budget allocation of INR 5.4 Tn (US$ 76.55 Bn).

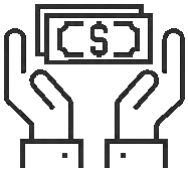
Since its launch in October 2017, this programme has awarded projects for 26,425 km, of which 21,597 km of roads were constructed until November 2025.
(Source: Year End Review 2025 – Ministry of Road Transport & Highways, Government of India, Sansad*)*

Central Road Infrastructure Fund (CRIF): The Ministry of Road Transport and Highways allocates CRIF to State Governments and Union Territories for the development and maintenance of State Roads.

Currently, 1,209 State Road projects, spanning approximately 14,369 km with total budget of INR 371 Bn are underway, with expected completion in phases by FY 2027.
(Source: Maintenance of Roads under CRIF – Ministry of Road Transport & Highways, Government of India)

Budget allocation under Union Budget 2025-26: The Government of India has allocated INR 2.9 Tn (USD 33.1 Bn) to the Ministry of Road Transport and Highways, highlighting the prioritization of infrastructure development.
(Source: Union Budget 2025-26)

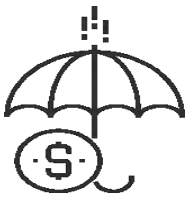
Growth in Private Participation
The government has successfully rolled out more than 400 road projects in India since 2016, worth over USD 10 Bn based on the Hybrid Annuity Model (HAM). As per the Union Budget 2025-26, MoRTH has identified a PPP project pipeline of 13,400 km, with an estimated cost of INR 8.3 Tn, to be developed over the next three years.
(Source: Year End Review 2025 – Ministry of Road Transport & Highways, Government of India, NHAI)



Further, 100% Foreign Direct Investment (FDI) is allowed under the automatic route in the road and highways sector, subject to applicable laws and regulation.

Accordingly, the private sector participation has shown high growth during the recent years. As of November 2025, there were 826 roads projects under the PPP model out of 1,883 total road projects in India.
(Source: IBEF Roads Report, November 2025)

Lower tax burdens
Companies enjoy 100% tax exemption in road projects for the first 10 consecutive years within the first 20 years from the year of commencement of operations.



From FY24 onwards, Interest payment on external commercial borrowings for infrastructure are now subject to a lower withholding tax of 5% vis-a-vis 20% earlier.

Further, from FY26 onwards, GST on construction equipment has been reduced to 18% from 28%. Additionally, GST on two-wheelers under 350cc was reduced from 28% to 18%, small cars from 28% to 18%, large cars from 28% (plus cess of 15-20%) to a flat 40%, tractors from 12% to 5%, and buses with more than 10 seats from 28% to 18%. These reductions provide cost relief, boost demand, support fleet expansion, and lower freight costs, benefiting companies and MSMEs in the road and automobile sectors.
(Source: Union Budget 2025-2026)

3. E-Initiatives

a. Land Acquisition

The primary hurdle facing the sector involves land acquisition issues, prompting MoRTH to introduce the Bhoomi Raashi initiative to address this concern. The Bhoomi Rashi portal is an online platform launched by the Ministry of Road Transport and Highways (MoRTH) in India. It serves as a centralized database for land acquisition-related information for highway projects across the country.

The portal provides various functionalities related to land acquisition, including land records, ownership details, compensation disbursement, and project status updates. It aims to streamline the land acquisition process, enhance transparency, and facilitate efficient decision-making for highway development projects. The Bhoomi Rashi portal plays a crucial role in ensuring smooth implementation of infrastructure projects while addressing land acquisition-related challenges and avoid parking of public funds with the Competent Authority for Land Acquisition (CALA).

Currently, the Bhoomi Rashi Portal has incorporated 3,725 projects of the National Highways Authority of India (NHAI). Further, ~155,326 hectare of land has been acquired through Bhoomi Rashi Portal from April 2018 to December 2025.
(Source: BhoomiRashi, Year End Review 2025 – Ministry of Road Transport & Highways, Government of India)

b. Toll collection and Revenue Leakages

Before the introduction of FASTag, toll collection processes typically involved manual cash payments at toll booths, which often resulted in long queues, delays, and traffic congestion, especially during peak hours and busy travel periods.

To ensure seamless movement of traffic through fee plazas and increase transparency in collection of user fee using FASTag, the National Electronic Toll Collection (NETC) programme, the flagship initiative of Ministry of Road Transport and Highways, has been implemented on pan-India basis.

With FASTag, vehicles are equipped with a prepaid RFID tag that is linked to the vehicle's registration and a prepaid account. As vehicles approach the toll plaza, the RFID tag is automatically scanned, and the toll amount is deducted from the prepaid account, allowing for seamless and hassle-free passage through toll booths.

Fastag collections on national highways during FY26 (up to November 2025) reached at ~ INR 442 Bn as compared to FY25 collections of INR 614.1 Bn. This growth was driven by increased traffic volumes, a modest annual hike in toll rates, and the expansion of tollable highway lengths.
(Source: Year End Review 2025 – Ministry of Road Transport & Highways, Government of India)

The constant growth and adoption of FASTag by highway users is very encouraging and has helped increase efficiency in toll operations as it not only addresses the challenge of long queues and delays but also promotes digital payments, transparency, and accountability in toll collection operations.

Further, the industry offers abundant prospects for expansion and advancement, especially with the advent of technologies such as smart transportation systems, intelligent traffic management,

and sustainable construction methods. Efforts are also underway to tackle environmental and safety issues, with a heightened emphasis on enhancing road safety protocols, mitigating traffic congestion, and advocating for the adoption of eco-friendly materials in road infrastructure development.

4. Future Outlook

The Roads sector in India is continually expanding, driven by numerous factors including urbanization, population growth, and the escalating demand for efficient transportation infrastructure. The surge in domestic trade flows has led to an increase in commercial vehicles and freight movement, further bolstering the sector's prospects.

The government's unwavering support, coupled with strategic investments and the adoption of advanced technologies, is expected to propel the sector forward, contributing to India's economic development and global competitiveness.

- Ministry of Road Transport and Highways has been allocated INR 2.9 Tn (USD 33.07 Bn) during FY 2025-26 Budget. *(Source: Union Budget 2025-26)*
- As of November 2025, the National Highways Authority of India (NHAI) has awarded 510 Wayside Amenities (WSAs) along national highways and expressways, with 110 of these WSAs already operational. The government plans to develop over 700 WSAs by FY 2029. *(Source: Year End Review 2025 – Ministry of Road Transport & Highways, Government of India)*
- NHAI has made significant progress in developing Digital Highways with Optic Fibre Cable (OFC) infrastructure. Two pilot projects along the Delhi-Mumbai Expressway (1,367 km) and Hyderabad-Bangalore corridor (512 km) have been awarded, and the laying of OFC is underway. This infrastructure supports internet connectivity expansion in remote areas and enables next generation telecom technologies like 5G and 6G. *(Source: IBEF Roads Report, November 2025)*
- Additionally, in a significant step towards supporting electric mobility, a total of 5,293 Electric Vehicle (EV) charging stations have been established along National Highways. This includes 4,729 stations set up by the Ministry of Petroleum and Natural Gas at an investment of INR 1.8 Bn. Additionally, the Ministry of Heavy Industries has targeted the establishment of 5,833 EV charging stations as part of a broader plan to deploy 7,432 stations. *(Source: Report on Electric Vehicle Charging Stations on National Highways – Ministry of Road Transport & Highways, Government of India)*
- PM Gati Shakti has evolved into a nationwide, GIS-based digital backbone integrating 44 Central Ministries and all States/UTs with 1,600+ data layers, enabling coordinated appraisal of 200+ large projects (Rs. 15+ lakh crore), faster clearances, and integrated planning across transport, logistics, utilities, and social infrastructure. *(Source: Report on Transforming India's Infrastructure and Connectivity by Research unit of Press Information Bureau, Government of India)*
- The plan will also bring together departments such as railways, roads & highways and others and implementation will be done with the help of geo-satellite imaging and Big Data, land and logistics. *(Source: Report on Transforming India's Infrastructure and Connectivity by Research unit of Press Information Bureau, Government of India)*
- The Government has engaged a consultant to provide guidance on the integration of innovative technologies such as GNSS for toll collection without barriers. A pilot program for GNSS-based Electronic Toll Collection will be conducted in conjunction with FASTag on specific National Highways. *(Source: IBEF Roads Report, November 2025)*
- The Ministry of Environment, Forests, and Climate Change (MoEF & CC) has directed the National Highways Authority of India (NHAI) and other relevant agencies to utilize fly ash in road construction projects located within a 300-kilometer radius of coal or lignite-based thermal power plants. This

directive aims to encourage sustainable practices in road construction. *(Source: Report on implementation of action plan to achieve 100% fly ash utilisation by the Thermal Power Plants by National Green Tribunal)*

With ongoing projects and initiatives aimed at transforming the infrastructure landscape, the future outlook for the roads sector in India appears promising, poised to meet the evolving needs of the nation's growing economy and population.

VI. Background of the SPVs

1. Jaipur-Mahua Tollway Private Limited ("JMTPL")

JMTPL is situated in the state of Rajasthan, connecting Jaipur to Mahua on the east, near the edge of the south-western Uttar Pradesh. It is a 109.09 km toll road which forms a part of the NH 21 in Rajasthan. This is a four-lane road with two toll plazas, namely, Sikandra (TP1) at Km 156.6 (closer to Mahua) and Rajadhok (TP2) at Km 204.7 (closer to Jaipur).

It caters to following types of strategic movements:

- **Short-distance trips** including tourism and leisure trips between some of the most attractive tourist destinations in India. Such trips are mostly comprising of CJVs which are either local or run between key tourist locations of Agra and Bharatpur at one end and Jaipur on the other.
- **Medium-distance trips** between Rajasthan and Uttar Pradesh connect marble-processing sites of Rajasthan to its consumption sites in Uttar Pradesh. It also transports significant number of manufactured products across the states of UP and Rajasthan.
- **Long-distance trips** between Gujarat and southern Rajasthan, and UP/East India connects ports and industries of western India to major consumption and production centres in North India.

The toll plazas have been operational since May 2008 (TP1) and September (TP2) 2009. The following table presents a summary of the concession:

Particulars	Details
State	Rajasthan
Employer	NHAI
Project type	Design, Build, Finance, Operate and Transfer ("DBFOT")
Purchase price for the InvIT at an EV level	INR 8,717 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 21 four lane
Toll Plazas	TP1: Sikandra TP2: Rajadhok
Length of the asset	TP1: 54.73 km TP2: 54.36 km
Commencement of operations	TP1: May 2008 TP2: September 2009
Concession period	25 years
Concession end	FY32

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 26 February 2026

2. Mahua Bharatpur Expressways Limited ("MBEL")

MBEL is situated in the state of Rajasthan, connecting Mahua to Bharatpur on the east, near the edge of the south-western Uttar Pradesh. It is a 57.3 km toll road which forms a part of the NH 21 in Rajasthan. This is a four-lane road with two toll plazas, namely, Amoli (TP1) at Km 98.5 (closer to Mahua) and Ludhawai (TP2) at Km 64.5 (closer to Bharatpur).

MBEL caters to following types of strategic movements:

- **Short-distance trips** including tourism and leisure trips between some of the most attractive tourist destinations in India. Such trips are mostly comprising of CJVs which are either local or run between key tourist locations of Agra and Bharatpur at one end and Jaipur on the other.
- **Medium-distance trips** between Rajasthan and Uttar Pradesh connect marble-processing sites of Rajasthan to its consumption sites in Uttar Pradesh. It also transports significant number of manufactured products across the states of UP and Rajasthan.
- **Long-distance trips** between Gujarat and southern Rajasthan, and UP/East India connects ports and industries of western India to major consumption and production centres in North India.

The toll plazas have been operational since May 2009. The following table presents a summary of the concession:

Particulars	Details
State	Rajasthan
Employer	NHAI
Project type	Design, Build, Finance, Operate and Transfer ("DBFOT")
Purchase price for the InvIT at an EV level	INR 3,241 Mn
InvIT Holding in the SPV	99.97%
Highway and lane configuration	NH 21 four lane
Toll Plazas	TP1: Amoli TP2: Ludhawai
Length of the asset	TP1: 38.65 Km TP2: 18.65 Km
Commencement of operations	May 2009
Concession period	25 years
Concession end	FY32

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 26 February 2026

3. Western UP Tollway Private Limited ("WUPTPL")

WUPTPL is situated in western Uttar Pradesh (UP), connecting the cities of Meerut and Muzaffarnagar. It is a 78.1-Km four-lane tolled road which forms a part of the NH 334 in Uttar Pradesh. It has one toll plaza, namely, Siwaya (TP1) at Km 76.0, which lies close to Meerut (approximately 10 km from the city).

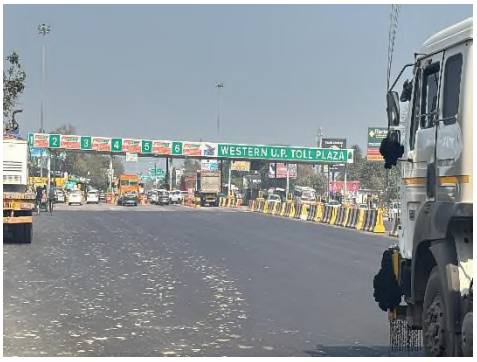
WUPTPL primarily caters to two different types of strategic movements:

- **Short-distance trips** by locals travelling within the National Capital Region (NCR) for work, leisure or short trips. This region is made up of contiguous urban settlements which are largely co-dependent on each other for exchanging goods and services.
- **Medium-distance trips** on WUPTPL which mostly have one end of their trip in Uttarakhand. This is because it is the primary route connecting Delhi NCR to the popular tourist destinations of Uttarakhand. Increased traffic volumes can be observed closer to weekends, as people from Delhi and nearby areas travel to Uttarakhand for leisure, tourism and business purposes.

The toll plaza on WUPTPL has been operational since April 2011. The following table presents a summary of the concession:

Particulars	Details
State	Uttar Pradesh
Employer	NHAI
Project type	Design, Build, Finance, Operate and Transfer ("DBFOT")
Purchase price for the InvIT at an EV level	INR 1,728 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 334 four lane
Toll Plazas	TP1: Siwaya
Length of the asset	78.1 Km
Commencement of operations	TP1: April 2011
Concession period	20 years
Concession end	FY27

The pictures of the Asset are shown below:



Note: Site visit conducted by EYMBSLLP personnel on 20 February 2026

4. Nelamangala Devihalli Expressway Private Limited ("NDEPL")

NDEPL is situated in the southern state of Karnataka, connecting the city of Bangalore to Mangalore via NH75. It is one of the three sections making the corridor, the other two being Devihalli-Hassan Tollway Limited (DHTPL) and Hassan-Mangalore highway. This project is an 80.26-km toll road which forms a part of NH75 in Karnataka. This is a four-lane road with two toll plazas, namely, Doddakarenahalli/Nelamangala (TP1 closer to Bangalore) and Karbylu (TP2 closer to Devihalli).

NDEPL primarily caters to the following different types of movements, by virtue of its strategic location on various corridors:

- **Medium-distance** movements between Bangalore and Mangalore primarily for leisure and tourism. The CJVs contribute around 70% to the total traffic on the project. This is driven by the large number of tourist destinations along the Asset and close to the Asset which drives the car growth.
- **Work and leisure trips** between local cities, towns and villages like Nelamangala, Hassan, tourist spots, and Bangalore city.
- **Petroleum-related traffic**:
  - Between ports and refineries in Mangalore and Kochi, and bottling plants lying on the project, viz HPCL plant at Yediyur and BPCL plant at Solur.
  - Between bottling plants and neighbouring consumption centres like Bangalore.

The toll plazas have been operational since June 2012. The following table presents a summary of the concession:

Particulars	Details
State	Karnataka
Employer	NHAI
Project type	Design, Build, Finance, Operate and Transfer ("DBFOT")
Purchase price for the InvIT at an EV level	INR 5,936 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 75 4-lane
Toll Plazas	TP1: Doddakarenahalli TP2: Karbylu
Length of the asset	TP1: 40.13 km TP2: 40.13 km
Commencement of operations	TP1: June 2012 TP2: June 2012
Concession period	25 years
Concession end	FY33

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 24 February 2026

5. Farakka-Raiganj Highways Private Limited ("FRHPL")

FRHPL is situated in the state of West Bengal, connecting the cities of Farakka and Raiganj where it also passes through another city – Malda - and is located very close to the international border with Bangladesh. It is a 100.1 km toll road which forms a part of NH 12 in West Bengal. It is a four-lane road with two toll plazas, namely, Lakshmipur (TP1) at Km 297.9 (closer to Farakka in the south) and Gazole (TP2) at Km 351.4 (closer to Malda).

FRHPL primarily caters to three different types of strategic movements:

- **Short-distance trips** between Malda and other towns in Malda and Murshidabad districts.
- **Medium-distance trips** between southern and northern parts of West Bengal, including movements between Pakur region, Malda and Bangladesh.
- **Long-distance trips** between South and East India including Kolkata, and Northeast India. Kolkata is the largest urban agglomeration and one of the four older metropolitan cities of India and is both a large attractor and generator of consumption-linked commodities in East and Northeast India.

The toll plazas on Farakka Raiganj Highway Private Limited Road have been operational since October 2016. The following table presents a summary of the concession:

Particulars	Details
State	West Bengal
Employer	NHAI
Project type	Design, Build, Finance, Operate and Transfer ("DBFOT")
Purchase price for the InvIT at an EV level	INR 29,204 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH12 four-lane
Toll Plazas	TP1: Lakshmipur TP2: Gazole
Length of the asset	TP1: 47.67 km TP2: 43.38 km Malda Bypass: 9.05 km
Commencement of operations	October 2016
Concession period	30 years
Concession end*	FY42

** The average actual traffic volumes were higher than the target traffic volumes during the period FY20 – FY22. Accordingly, as per the Concession Agreement, the Concessionaire may elect to either reduce the concession period or pay an additional premium of 25% of the Realisable Fee (i.e. toll revenue) for the period of reduction in concession period, in lieu of the reduction in the concession period*

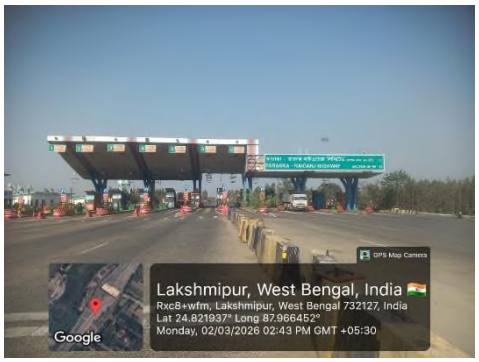
FRHPL has made its estimates based on contractual terms and third-party traffic studies. However, NHAI and the Independent Engineer (IE) have applied different methodologies, resulting in varying outcomes. As per the information provided by the Management, litigation on this matter will be initiated soon.

Based on the FRHPL's computation of PCUs, the concession period is proposed to be reduced by 671 days, whereas NHAI's computation indicates a reduction of 1,095 days.

FRHPL has opted to pay the additional premium instead of reducing the concession period. Hence, the concession end date has been considered to remain unchanged. However, an additional premium of 25% of the Realisable Fee (i.e. toll revenue) has been considered for the last 671 days of concession period.

Based on independent legal and accounting opinions obtained by the SPV, it believes that the estimates used are reasonable, evidence-based, and compliant with applicable accounting standards. We have relied on the same for our valuation exercise.

The pictures of the Asset are shown below:



Note: Virtual site visit conducted by EYMBSLLP personnel on 2 March 2026

6. Walayar Vadakkencherry Expressways Private Limited ("WVEPL")

WVEPL is situated in the state of Kerala, connecting Walayar, a town located on the Tamil Nadu-Kerala border and Vadakkencherry, a town in the Palakkad district of Kerala. It is a section of the strategic NH 47 which serves as a key entry point to the State from its eastern end. It is a 53.5 km toll road which forms a part of the NH 47, a key highway connecting the city Salem in Tamil Nadu to Kochi in Kerala. It is a four-lane road with one toll plaza, namely, Chullimada Hamlet (Pampampallam) at km 189.4 (closer to Walayar).

WVEPL primarily caters to three different types of strategic movements:

- **Short-distance trips** undertaken largely by passenger vehicles for work/business trips wherein the movement is predominantly local between Walayar and other areas in the Palakkad district.
- **Medium-distance trips** made by both passenger and goods vehicles covering places such as Ernakulam and Kochi in Kerala, to Erode and Salem in Tamil Nadu.
- **Long-distance trips** predominantly by MAVs catering to Kerala's high demand for consumption goods and cement, from areas lying outside the state such as Chennai, Bangalore, Vijaywada etc.

The toll plaza has been operational since May 2015. The following table presents a summary of the concession:

Particulars	Details
State	Kerela
Employer	NHAI
Project type	Design, Build, Finance, Operate and Transfer ("DBFOT")
Purchase price for the InvIT at an EV level	INR 8,792 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 544 four lane
Toll Plazas	TP1: Pampampallam
Length of the asset	TP1: 53.5 km
Commencement of operations	May 2015
Concession period	20 years
Concession end	FY34
Revised concession end (due to variation in traffic) *	FY38

**The Concessionaire is in arbitration with NHAI over adjustments to the concession period due to discrepancies between actual and target traffic volumes as per the Concession Agreement.*

The Concession Agreement allows for changes in the concession period based on actual traffic compared to target benchmarks, with specific multipliers for adjustments. WVEPL has made its estimates based on contracts and third-party traffic studies, but NHAI and the Independent Engineer (IE) have used different methodologies, leading to varied results. The issue is currently under arbitration.

Based on independent legal and accounting opinions obtained by WVEPL, it believes that the estimates used are reasonable, evidence-based, and compliant with applicable accounting standards. However, the matter remains under arbitration currently.

The pictures of the Asset are shown below:

Note: Virtual site visit conducted by EYMBSLLP personnel on 2 March 2026

7. DA Toll Road Private Limited ("DATRPL")

DATRPL is situated in the state of Haryana and Uttar Pradesh connecting the Central National Capital Region (NCR; comprising Delhi state) to Agra in the south, via Palwal and Mathura. It is a 179.5-km toll road which forms a part of the NH 19 in Haryana and Uttar Pradesh. This was a four-lane road with two toll plazas - TP1 Srinagar (km74 closer to Delhi) and Mahuvan (km164 closer to Agra). DATRPL achieved provisional commercial operations date (PCOD) in May 2022 and the toll plaza at km74 (Srinagar) split into two toll plazas TP1 Prithala (km46) and Kotwan (km94) which became operational in July'22.

DATRPL primarily caters to three different types of strategic movements:

- **East-West long-distance movement** from Kashmir in North India to the India-Bangladesh border. This route originally connected Kabul in Afghanistan to Chittagong in Bangladesh.
- **North-south long-distance movement** connecting the Srinagar in Kashmir (northernmost state) to Kanyakumari in Tamil Nadu (southernmost state in mainland India).
- **Medium-distance movement** as part of being located one of the primary corridors connecting Delhi and Lucknow via Agra.
- **Short-distance inter-urban movement** between towns and cities in and around Delhi, Palwal, Mathura and Agra.

The following table presents a summary of the concession:

Particulars	Details
State	Haryana and Uttar Pradesh
Employer	NHAI
Project type	Design, Build, Finance, Operate and Transfer ("DBFOT")
Purchase price for the InvIT at an EV level	INR 68,172 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 19 / NH 44 Six-lane divided
Toll Plazas	KM46: Gadpuri KM94: Karman KM196: Mahuvan
Length of the asset	KM46: 45.88 KM KM94: 63.22 KM KM164: 69.00 KM
Commencement of operations	Mahuvan: October 2012 Gadpuri: July 2022 Karman: July 2022
Concession period	26 years
Concession end	FY39
Revised concession end (due to variation in traffic) *	FY44

**The Concession Agreement allows for changes in the concession period based on actual traffic volumes compared to target benchmarks, with specific multipliers for adjustments. DATRPL has made estimates based on contracts and third-party traffic studies.*

While the Management has submitted its proposal for extension in the concession period based upon its computation of the PCUs achieved during FY22-FY24, a response from NHAI is awaited.

Management has also considered extension of concession period on account of suspension or less toll collection fee at toll plazas due to lockdowns imposed by Government of India as remedial measure to Covid-19. While the extension letters are yet to be received from the Concessioning Authority, based

upon the extension letters received for the other SPVs, the Management is confident of receiving these extension letters as well.

Based on independent legal and accounting opinions obtained by DATRPL, it believes that the estimates used are reasonable, evidence-based, and compliant with applicable accounting standards. We have relied on the same for our valuation exercise.

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 21 February 2026

8. Ghaziabad Aligarh Expressway Private Limited ("GAEPL")

GAEPL is situated in western Uttar Pradesh (UP), connecting the cities of Ghaziabad and Aligarh via Khurja and Bulandshahr. It is a 125.3-km toll road which forms a part of NH 91 in Uttar Pradesh. This is a six-lane road with two toll plazas, namely, Luharli (TP1 closer to Ghaziabad) and Somna (TP2 closer to Aligarh).

GAEPL primarily caters to three different types of strategic movements:

- Local traffic between cities in western UP, Delhi Central NCR (consisting of Delhi state) and Ghaziabad.
- Trips to the industrial area of Sikandrabad which is located on the Asset and serves as a major attractor/generator of traffic.
- Heavy vehicle traffic originating from the states of Haryana, Punjab and Jammu and Kashmir in the north travelling to states in the east of India including West Bengal, Orissa and the north-eastern states. The asset is part of strategic north – east movement and majority of this traffic appears on Somna toll plaza

The toll plazas on the Asset have been operational since June 2015. The following table presents a summary of the concession:

Particulars	Details
State	Uttar Pradesh
Employer	NHAI
Project type	Design, Build, Finance, Operate and Transfer ("DBFOT")
Purchase price for the InvIT at an EV level	INR 24,606 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 91 six lane
Toll Plazas	TP1: Luharli TP2: Somna
Length of the asset	TP1: 63.15 Km TP2: 63.15 Km
Commencement of operations	June 2015
Concession period	24 years
Concession end	FY35
Revised concession end (due to variation in traffic)*	FY40

**As per the settlement agreement dated 08th April 2022 an extension of 4.32 years has been granted and agreed upon by National highways Authority of India (NHAI) based on the concession agreement. Hence, the Management has considered the revised concession end to be FY40.*

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 21 February 2026

Shape the future with confidence

9. N. A. M. Expressway Private Limited ("NAMEPL")

N.A.M. Expressway Private Limited ("NAMEPL") is a company limited by shares, domiciled in India and was incorporated under the provisions of the erstwhile companies Act 1956 on June 15, 2010 as a Special Purpose Vehicle. It is an interstate route connecting southeastern Telangana with northern Andhra Pradesh. It connects the towns of Narketpally (Nalagonda district, Telangana) and Medarametla (Bapatla district, Andhra Pradesh). It is a 212.9-km four-lane toll road which forms a part of the state highway SH-2 (New SH36 in Andhra Pradesh (AP)). There are three toll plazas, namely, Madgulapally (TP1), Tummalacheruvu (TP2), and Elchuru (TP3) in the increasing order of their distance from Hyderabad.

The toll plazas on the Asset have been operational since June 2015. The following table presents a summary of the concession:

Particulars	Details
State	Telangana & Andhra Pradesh
Concessioning authority	Government of Andhra Pradesh
Project type	Design, Build, Finance, Operate and Transfer (DBFOT)
Purchase price for the InvIT at an EV level	INR 24,013 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	SH-2 (New SH36) four lane
Toll plazas	TP1: Madgulapally TP2: Tummalacheruvu TP3: Elchuru
Length (km)	TP1: 71.62 Km TP2: 70.62 Km TP3: 70.62 Km
Commencement of operations	January 2011
Concession period	24 years
Concession end	FY35
Revised Concession end (due to variation in traffic) *	FY40

**The Concession Agreement allows for changes in the concession period based on actual traffic/ revenue compared to target benchmarks, with specific multipliers for adjustments.*

As per the concession agreement, the target date for traffic for modification in concession period for NAMEPL is 01 Oct 2025. The actual traffic computation as on the target date shall be derived by computing average of the traffic, as on the date that falls one year prior to the target date, on the target date and the first anniversary of the target date (i.e. "Measurement Period").

NAMEPL has made estimates based on contracts and third-party traffic studies. Accordingly, an extension of 1,775 days has been considered in the model. Since the Measurement Period is in the projected period, there has been no discussions initiated by the Management with the concessioning authority on the same.

Based on independent legal and accounting opinions obtained by NAMEPL, it believes that the estimates used are reasonable, evidence-based, and compliant with applicable accounting standards. We have relied on the same for our valuation exercise.

The pictures of the Asset are shown below:

Note: Virtual site visit conducted by EYMBSLLP personnel on 14 July 2025

10. Hazaribagh Tollway Private Limited ("HTPL")

HTPL is situated in the state of Jharkhand connecting the Ranchi, the capital of Jharkhand, and Hazaribagh, on the NH20. It is a 73.5 km long toll road which forms a part of the NH 20 in Jharkhand. This is a four-lane road with one toll plazas, namely, Pundag (TP1) at Km 100.4.

HTPL primarily caters to three different types of strategic movements:

- **Short-distance trips** including tourism and leisure travel trips between some of the key tourist destinations in Jharkhand. Many CJV users are either local or travel between Ramgarh and Patratu at one end and Ranchi at the other.
- **Medium-distance trips** between Bihar/rest of Jharkhand connecting the mines situated close to the Asset, to industries in Jharkhand. The Asset also transports a significant number of minerals, steel, and related products across the states of Bihar, West Bengal, and Odisha.
- **Long-distance trips** between Bihar/southern West Bengal and southern as well as central states of India.

The following table presents a summary of the concession:

Particulars	Details
State	Jharkhand
Employer	NHAI
Project type	Toll, Operate and Transfer ("TOT")
Purchase price for the InvIT at an EV level	INR 13,247 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 33, 4-lane divided
Toll Plazas	TP1: Pundag
Length of the asset	TP1: 73.5 km
Commencement of operations	October 2020
Concession period	30 years
Concession end	FY51

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 27 January 2026

11. Jhansi-Lalitpur Tollway Private Limited ("JLTPL")

JLTPL is situated in the state of Uttar Pradesh, connecting Jhansi and Lalitpur, on the NH 44. NH44 caters to the North South movement between Jammu and Kashmir, and Kanyakumari, connecting major centres of economic activity such as Delhi, Nagpur, Hyderabad, Bangalore and Chennai.

JLTPL primarily caters to three different types of strategic movements:

- **Short-distance trips** including leisure and business travel trips between some of the key tourist towns/cities around the Asset. Many CJV trips are either local or run between Jhansi, Orchha, Talbehat, and Lalitpur.
- **Medium-distance trips and long distance trips** connecting Gwalior, Delhi-NCR as well as northern regions with Nagpur, Hyderabad, Bangalore, and further southern regions.

JLTPL and JVTPL form a 100.0 Km long toll road which is a part of NH 44 in Uttar Pradesh. It is a four-lane divided road with two toll plazas. Babina (JLTPL) is at km 49.7. JLTPL is near Jhansi end of the Asset. The following table presents a summary of the concession:

Particulars	Details
State	Uttar Pradesh
Employer	NHAI
Project type	Toll, Operate and Transfer ("TOT")
Purchase price for the InvIT at an EV level	INR 7,723 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 44, 4-lane divided
Toll Plazas	Babina
Length of the asset	49.70 km
Commencement of operations	October 2020
Concession period	30 years
Concession end	FY51
Revised concession end (due to variation in traffic) *	FY46

**The Concession Agreement allows for changes in the concession period based on actual revenue compared to target benchmarks.*

As per the concession agreement, the target date for toll collection for modification in concession period for JLTPL is 31 March 2030 and 31 March 2040. The actual toll collection computation as on the target date shall be derived from the average of the toll collection as determined using traffic sampling in the month that falls one year prior to the target points 1 or 2, during the month of the target points 1 or 2, and on the first anniversary of the target points 1 or 2 (i.e. "Measurement Periods").

JLTPL has made its estimates based on contracts and third-party traffic studies. Accordingly, a reduction of 1,826 days has been considered in the model. Since the Measurement Periods is in the projected period, there has been no discussions initiated by the Management with the concessioning authority on the same.

Based on independent legal and accounting opinions obtained by JLTPL, it believes that the estimates used are reasonable, evidence-based, and compliant with applicable accounting standards.

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 13 February 2026

12. Jhansi-Vigakhet Tollway Private Limited ("JVTPL")

JVTPL is situated in the state of Uttar Pradesh, connecting Jhansi and Lalitpur, on the NH 44. NH44 caters to the North South movement between Jammu and Kashmir, and Kanyakumari, connecting major centres of economic activity such as Delhi, Nagpur, Hyderabad, Bangalore and Chennai.

JVTPL primarily caters to three different types of strategic movements:

- **Short-distance trips** including leisure and business travel trips between some of the key tourist towns/cities around the Asset. Many CJV trips are either local or run between Jhansi, Orchha, Talbehat, and Lalitpur.
- **Medium-distance trips and Long distance trips** connecting Gwalior, Delhi-NCR as well as northern regions with Nagpur, Hyderabad, Bangalore, and further southern regions.

JLTPL and JVTPL form a 100.0 Km long toll road which is a part of NH 44 in Uttar Pradesh. It is a four-lane divided road with two toll plazas. Vigakhet (JVTPL) at km 49.3. JVTPL is near Lalitpur end of the asset.

The following table presents a summary of the concession:

Particulars	Details
State	Uttar Pradesh
Employer	NHAI
Project type	Toll, Operate and Transfer ("TOT")
Purchase price for the InvIT at an EV level	INR 4,735 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 44, 4-lane divided
Toll Plazas	Vigakhet
Length of the asset	49.3 km
Commencement of operations	October 2020
Concession period	30 years
Concession end	FY51
Revised concession end (due to variation in traffic) *	FY46

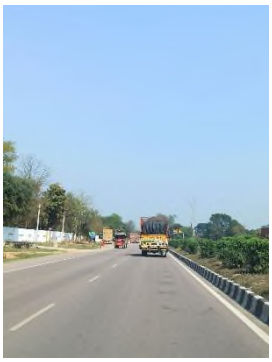
**The Concession Agreement allows for changes in the concession period based on actual revenue compared to target benchmarks.*

As per the concession agreement, the target date for toll collection for modification in concession period for JVTPL is 31 March 2030 and 31 March 2040. The actual toll collection computation as on the target date shall be derived from the average of the toll collection as determined using traffic sampling in the month that falls one year prior to the target points 1 or 2, during the month of the target points 1 or 2, and on the first anniversary of the target points 1 or 2 (i.e. "Measurement Periods").

JLTPL has made estimates based on contracts and third-party traffic studies. Accordingly, a reduction of 1,826 days has been considered in the model. Since the Measurement Periods is in the projected period, there has been no discussions initiated by the Management with the concessioning authority on the same.

Based on independent legal and accounting opinions obtained by JVTPL, it believes that the estimates used are reasonable, evidence-based, and compliant with applicable accounting standards.

The pictures of the Asset are shown below:



Note: Site visit conducted by EYMBSLLP personnel on 13 February 2026

13. Kotwa-Muzaffarpur Tollway Private Limited ("KMTPL")

KMTPL is situated in the state of Bihar, connecting the two cities of Muzaffarpur and Kotwa in the northwestern part of Bihar. This Asset is an 80 km toll road which forms part of the NH 27 in Bihar. It is a four-lane road with one toll plaza, namely, Parsoni Khem (TP1) at Km 467+700 (closer to Kotwa).

KMTPL primarily caters to three different types of strategic movements:

- **Short-distance trips** made by cars for local movement between places such as Motihari, Chakia, Motipur and other local destinations mostly for work related purpose.
- **Medium-distance trips** made by light and heavy goods vehicles covering places such as Patna in the southern part of the state and Raxaul near the India-Nepal border thereby catering to the heavy movement of trucks between the two countries for trade purpose.
- **Long-distance trips** made by heavy goods vehicles to provide the east-west connectivity between states such as Uttar Pradesh, Uttarakhand and Delhi, and West Bengal and North-eastern states. The Asset also caters to movement of trucks to countries such as Bangladesh and Bhutan.

The following table presents a summary of the concession:

Particulars	Details
State	Bihar
Employer	NHAI
Project type	Toll, Operate and Transfer ("TOT")
Purchase price for the InvIT at an EV level	INR 11,142 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 27 four-lane
Toll Plazas	Parsoni Khem
Length of the asset	80 km
Commencement of operations	October 2020
Concession period	30 years
Concession end	FY51
Revised concession end (due to variation in traffic) *	FY46

**The Concession Agreement allows for changes in the concession period based on actual revenue compared to target benchmarks.*

As per the concession agreement, the target date for toll collection for modification in concession period for KMTPL is 31 March 2030 and 31 March 2040. The actual toll collection computation as on the target date shall be derived from the average of the toll collection as determined using traffic sampling in the month that falls one year prior to the target points 1 or 2, during the month of the target points 1 or 2, and on the first anniversary of the target points 1 or 2 (i.e. "Measurement Periods").

KMTPL has made estimates based on contracts and third-party traffic studies. Accordingly, a reduction of 1,826 days has been considered in the model. Since the Measurement Periods is in the projected period, there has been no discussions initiated by the Management with the concessioning authority on the same.

Based on independent legal and accounting opinions obtained by KMTPL, it believes that the estimates used are reasonable, evidence-based, and compliant with applicable accounting standards.

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 21 November 2025

14. Lucknow-Raebareli Tollway Private Limited ("LRTPL")

LRTPL is situated in the state of Uttar Pradesh, connecting the state capital Lucknow to Raebareli in the southern-central part of Lucknow. This Asset is a 70 km toll road which forms part of the NH 30 in Uttar Pradesh. It is a four-lane road with one toll plaza, namely, Dakhina Sekhpur (TP1) at Km 42.65 (closer to Lucknow).

LRTPL primarily caters to two different types of strategic movements:

- **Short-distance trips** undertaken majorly by passenger vehicles such as cars for work/business and tourism purpose wherein the movement is predominantly local between Lucknow, Raebareli, Prayagraj, Varanasi and Mirzapur. Further, LCVs cater to the local demand generated by two large consumption centres – Lucknow and Raebareli. Short distance trips made by MAVs feeds into the local consumption demand and also carries significant amount of Cement due to the presence of cement factories (Birla Cement, Dalla Cement) in the vicinity.
- **Long-distance trips** undertaken by heavy trucks between Punjab, Haryana, Uttar Pradesh, West Bengal, and Jharkhand carrying a mix of commodities such as agriculture/grocery items, metal, cement, petroleum and manufacturing items.

The following table presents a summary of the concession:

Particulars	Details
State	Uttar Pradesh
Employer	NHAI
Project type	Toll, Operate and Transfer ("TOT")
Purchase price for the InvIT at an EV level	INR 7,678 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 30 four-lane
Toll Plazas	Dakhina Sekhpur
Length of the asset	70.0 km
Commencement of operations	October 2020
Concession period	30 years
Concession end	FY51

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 17 November 2025

15. Madurai-Kanyakumari Tollway Private Limited ("MKTPL")

MKTPL is situated in the state of Tamil Nadu, connecting Madurai, northern Tamil Nadu and states north of Tamil Nadu with cities and towns in southern Tamil Nadu and Thiruvananthapuram in Kerala. The Asset is a 52.3-km toll road which lies on NH 44 in Tamil Nadu. It is a four-lane road with one toll plaza.

MKTPL primarily caters to three different types of strategic movements:

- **Short-distance trips** between cities and towns in southern Tamil Nadu including Madurai, Thirumangalam, Virudhunagar, Sivakasi, Kovilpatti, Tirunelveli and Thiruvananthapuram.
- **Medium-distance trips** between northern Tamil Nadu including Chennai and southern Karnataka including Bangalore at one end and southern parts of Tamil Nadu and Thiruvananthapuram.
- **Long-distance trips** between North India and Southern states like Andhra Pradesh, Telangana and Karnataka at one end and southern Tamil Nadu and Thiruvananthapuram at the other end.

The following table presents a summary of the concession:

Particulars	Details
State	Tamil Nadu
Employer	NHAI
Project type	Toll, Operate and Transfer ("TOT")
Purchase price for the InvIT at an EV level	INR 11,113 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 44 four-lane
Toll Plazas	Kappalur
Length of the asset	52.3 km
Commencement of operations	October 2020
Concession period	30 years
Concession end	FY51
Revised concession end (due to variation in traffic) *	FY46

**The Concession Agreement allows for changes in the concession period based on actual traffic/ revenue compared to target benchmarks.*

As per the concession agreement, the target date for toll collection for modification in concession period for MKTPL is 31 March 2030 and 31 March 2040. The actual toll collection computation as on the target date shall be derived from the average of the toll collection as determined using traffic sampling in the month that falls one year prior to the target points 1 or 2, during the month of the target points 1 or 2, and on the first anniversary of the target points 1 or 2 (i.e., "Measurement Periods")

MKTPL has made estimates based on contracts and third-party traffic studies. Accordingly, a reduction of 1,826 days has been considered in the model. Since the Measurement Periods is in the projected period, there has been no discussions initiated by the Management with the concessioning authority on the same.

Based on independent legal and accounting opinions obtained by MKTPL, it believes that the estimates used are reasonable, evidence-based, and compliant with applicable accounting standards.

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 5 February 2026

16. Kanyakumari-Etturavattam Tollway Private Limited ("KETPL")

KETPL is situated in the state of Tamil Nadu, connecting Madurai, northern Tamil Nadu and states north of Tamil Nadu with cities and towns in southern Tamil Nadu and Thiruvananthapuram in Kerala. The Asset is a 64.2-km toll road which lies on NH 44 in Tamil Nadu. It is a four-lane road with one toll plaza.

KETPL primarily caters to three different types of strategic movements:

- **Short-distance trips** between cities and towns in southern Tamil Nadu including Madurai, Thirumangalam, Virudhunagar, Sivakasi, Kovilpatti, Tirunelveli and Thiruvananthapuram.
- **Medium-distance trips** between northern Tamil Nadu including Chennai and southern Karnataka including Bangalore at one end and southern parts of Tamil Nadu and Thiruvananthapuram.
- **Long-distance trips** between North India and Southern states like Andhra Pradesh, Telangana and Karnataka at one end and southern Tamil Nadu and Thiruvananthapuram at the other end.

The following table presents a summary of the concession:

Particulars	Details
State	Tamil Nadu
Employer	NHAI
Project type	Toll, Operate and Transfer ("TOT")
Purchase price for the InvIT at an EV level	INR 6,611 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 44 four-lane
Toll Plazas	Etturvattam
Length of the asset	64.2 km
Commencement of operations	October 2020
Concession period	30 years
Concession end	FY51

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 5 February 2026

17. Salaipudhpur-Madurai Tollway Private Limited ("SMTPL")

SMTPL is situated in the state of Tamil Nadu, connecting Madurai, northern Tamil Nadu and states north of Tamil Nadu with cities and towns in southern Tamil Nadu and Thiruvananthapuram in Kerala. The Asset is a 63.5-km toll road which lies on NH 44 in Tamil Nadu. It is a four-lane road with one toll plaza.

SMTPL primarily caters to three different types of strategic movements:

- **Short-distance trips** between cities and towns in southern Tamil Nadu including Madurai, Thirumangalam, Virudhunagar, Sivakasi, Kovilpatti, Tirunelveli and Thiruvananthapuram.
- **Medium-distance trips** between northern Tamil Nadu including Chennai and southern Karnataka including Bangalore at one end and southern parts of Tamil Nadu and Thiruvananthapuram.
- **Long-distance trips** between North India and Southern states like Andhra Pradesh, Telangana and Karnataka at one end and southern Tamil Nadu and Thiruvananthapuram at the other end.

The following table presents a summary of the concession:

Particulars	Details
State	Tamil Nadu
Employer	NHAI
Project type	Toll, Operate and Transfer ("TOT")
Purchase price for the InvIT at an EV level	INR 7,480 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 44 four-lane
Toll Plazas	Salaipudhur
Length of the asset	63.5 km
Commencement of operations	October 2020
Concession period	30 years
Concession end	FY51

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 6 February 2026

18. Nanguneri-Kanyakumari Tollway Private Limited ("NKTPL")

NKTPL is situated in the state of Tamil Nadu, connecting Madurai, northern Tamil Nadu and states north of Tamil Nadu with cities and towns in southern Tamil Nadu and Thiruvananthapuram in Kerala. The Asset is a 63.47-km toll road which lies on NH 44 in Tamil Nadu. It is a four-lane road with one toll plaza.

NKTPL primarily caters to three different types of strategic movements:

- **Short-distance trips** between cities and towns in southern Tamil Nadu including Madurai, Thirumangalam, Virudhunagar, Sivakasi, Kovilpatti, Tirunelveli and Thiruvananthapuram.
- **Medium-distance trips** between northern Tamil Nadu including Chennai and southern Karnataka including Bangalore at one end and southern parts of Tamil Nadu and Thiruvananthapuram.
- **Long-distance trips** between North India and Southern states like Andhra Pradesh, Telangana and Karnataka at one end and southern Tamil Nadu and Thiruvananthapuram at the other end.

The following table presents a summary of the concession:

Particulars	Details
State	Tamil Nadu
Employer	NHAI
Project type	Toll, Operate and Transfer ("TOT")
Purchase price for the InvIT at an EV level	INR 8,156 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 44 four-lane
Toll Plazas	Nanguneri
Length of the asset	63.47 km
Commencement of operations	October 2020
Concession period	30 years
Concession end	FY51

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 6 February 2026

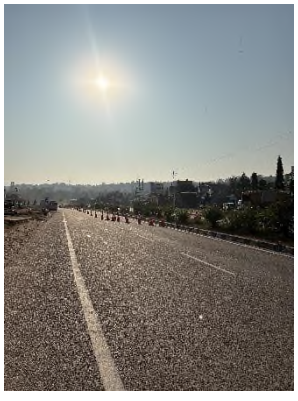
19. Jammu Udhampur Highway Private Limited ("JU" or "JUHPL")

JU was acquired by CHT from National Investment and Infrastructure Fund Limited (NIIF) on 12 June 2025. The Enterprise Value INR of JU was reported at INR13,335 Mn.

JU has entered into a Concession Agreement on 19 July 2010 with the National Highways Authority of India ('NHAI') for the development, maintenance and management for a stretch of National Highway from Jammu to Udhampur section (from 15.000 km to 67.000 km) of NH1A in the Union Territory of Jammu & Kashmir by Four-Laning on design, build, finance, operate and transfer on Annuity ("BOT Annuity") basis. Summary of details of JU are as follows:

Particulars	Details
State	Jammu and Kashmir
Employer	NHAI
Project type	BOT (Annuity)
Purchase price for the InvIT at an EV level	INR 13,335 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH-1A (four lane)
Length of the asset	48 km
Commencement of operations	31 May 2018
Concession period	20 years
Concession end	FY32
Annuity Payment Schedule	Semi-annual in June and December

The pictures of the Asset are shown below:



Note: Site visit conducted by EYMBSLLP personnel on 18 November 2025

20. Quazigund Expressway Private Limited (“QB” or “QEPL”)

QB was acquired by CHT from National Investment and Infrastructure Fund Limited (NIIF) on 12 June 2025. The Enterprise Value INR of QB was reported at INR19,693 Mn.

QB has entered into a Concession Agreement on May 10, 2018 with the National Highways Authority of India ('NHAI') for the development, maintenance and management for a stretch of National Highway from Quazigund to Banihal section (from km 189.350 to km 204.700 including two tunnels of 0.69 kms and 8.45 kms) of NH1A in the Union Territory of Jammu & Kashmir by Two/Four-Laning on design, build, finance, operate and transfer on Annuity (“DBFOT Annuity”) basis.

Summary of details of QB are as follows:

Particulars	Details
State	Jammu and Kashmir
Employer	NHAI
Project type	BOT (Annuity)
Purchase price for the InvIT at an EV level	INR 19,693 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH-1A (four lane)
Length of the asset	16 km
Commencement of operations	15 December 2022
Concession period	20 years
Concession end	FY32
Annuity Payment Schedule	Semi-annual in January and July

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 17 November 2025

21. Andhra Pradesh Expressway Private Limited ("APEPL")

Andhra Pradesh Expressway Private Limited is situated in Telangana and Andhra Pradesh and is a four lane highway on NH44 and connects Kothakota to Kurnool Section (from km. 136+077 to km. 210+699). APEPL operates as a BOT annuity model.

Summary of details of APEPL are as follows:

Particulars	Details
State	Telangana and Andhra Pradesh
Employer	NHAI and MoRTH
Project type	BOT (Annuity)
Purchase price for the InvIT at an EV level	INR 2,079 Mn
InvIT Holding in the SPV	100%
Highway and lane configuration	NH 44 four lane
Toll Plazas	TP1: Pullur
Length of the asset	74.6 km
Commencement of operations	TP1: September 2009
Concession period	20 years
Concession end	FY27

The pictures of the Asset are shown below:

Note: Virtual site visit conducted by EYMBSLLP personnel on 27 February 2026

22. Borgaon Watambare Highways Private Limited ("BWHPL")

Borgaon Watambare Highways Private Limited ("BWHPL") was incorporated under the provisions of the Companies Act, 2013 in India. The SPV has entered into a Concession Agreement on May 10, 2018 with the National Highways Authority of India ('NHAI') for the development, maintenance and management for a stretch of National Highway from Sangli to Solapur (Package-II: Borgaon to Watambare) section (from existing Ch. km. 219.956 to Ch. 272.394/Design Ch. km. 224.000 to km. 276.000) of NH166 in the State of Maharashtra on Hybrid Annuity Mode (HAM).

The following table presents a summary of the concession:

Particulars	Details
State	Maharashtra
Concessioning authority	NHAI
Highway and lane configuration	NH-166 four lane
Project type	HAM
Purchase price for the InvIT at an EV level (100% stake)	INR 3,868 Mn
InvIT Holding in the SPV	100%
Length (km)	52.0 Km
PCOD	September 2021
Construction Period	730 days
Concession Period (Operation period)	15 years
Concession end	FY37

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 12 December 2025

23. Mangalwedha Solapur Highways Private Limited ("MSHPL")

Mangalwedha Solapur Highways Private Limited ("MSHPL") was incorporated under the provisions of the Companies Act, 2013 in India. The SPV has entered into a Concession Agreement on May 10, 2018 with the National Highways Authority of India ('NHAI') for the development, maintenance and management for a stretch of National Highway from Sangli to Solapur (Package-IV: Mangalwedha to Solapur) section (from existing Ch. km. 314.969 to Ch. 370.452/Design Ch. km. 321.600 to km. 378.100) of NH166 in the State of Maharashtra on Hybrid Annuity Mode (HAM).

The following table presents a summary of the concession:

Particulars	Details
State	Maharashtra
Concessioning authority	NHAI
Highway and lane configuration	NH166 four lane
Project type	HAM
Purchase price for the InvIT at an EV level (100% stake)	INR 4,255 Mn
InvIT Holding in the SPV	100%
Length (km)	55.8 Km
PCOD	December 2021
Construction period	730 days
Concession period (operation period)	15 years
Concession end	FY37

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 12 December 2025

24. Mangloor Highways Private Limited (“MHPL”)

Mangloor Highways Private Limited (“MHPL”) was incorporated under the provisions of the Companies Act, 2013 in India. The SPV has entered into a Concession Agreement on May 9, 2018 with the National Highways Authority of India ('NHAI') for the development, maintenance and management for a stretch of National Highway from Mangloor to Telangana/Maharashtra border section (Existing km. 91.350 to 140.873/Design km. 86.788 to km. 135.751) of NH161 in the State of Telangana under Bharatmala Pariyojana on Hybrid Annuity Mode (HAM).

The following table presents a summary of the concession:

Particulars	Details
State	Telangana
Concessioning authority	NHAI
Highway and lane configuration	NH161 four lane
Project type	HAM
Purchase price for the InvIT at an EV level (100% stake)	INR 3,160 Mn
InvIT Holding in the SPV	100%
Length (km)	48.963 Km
PCOD	December 2021
Construction period	730 days
Concession period (operation period)	15 years
Concession end	FY37

The pictures of the Asset are shown below:

Note: Virtual site visit conducted by EYMBSLLP personnel on 27 February 2026

25. Tirumala Highways Private Limited ("THPL")

Tirumala Highways Private Limited ("THPL") was incorporated under the provisions of the Companies Act, 2013 in India. The SPV has entered into a Concession Agreement on May 9, 2018 with the National Highways Authority of India ('NHAI') for the development, maintenance and management for a stretch of National Highway from Chittor to Mallavaram section (from existing km. 158.000 to km. 41.800/Design km. 0.000 to km. 61.128) of NH140 in the State of Andhra Pradesh under Bharatmala Pariyojana on Hybrid Annuity Mode (HAM).

The following table presents a summary of the concession:

Particulars	Details
State	Andhra Pradesh
Concessioning authority	NHAI
Highway and lane configuration	NH140 six lane
Project type	HAM
Purchase price for the InvIT at an EV level (100% stake)	INR 5,129 Mn
InvIT Holding in the SPV	100%
Length (km)	61.128 Km
PCOD	May 2021
Construction period	910 days
Concession period (operation period)	15 years
Concession end	FY37

The pictures of the Asset are shown below:

Note: Site visit conducted by EYMBSLLP personnel on 27 February 2026

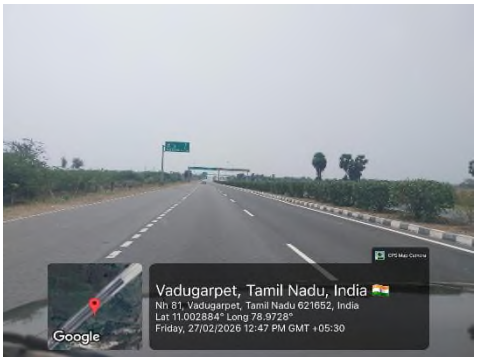
26. Srirangam Infra Private Limited ("SIPL")

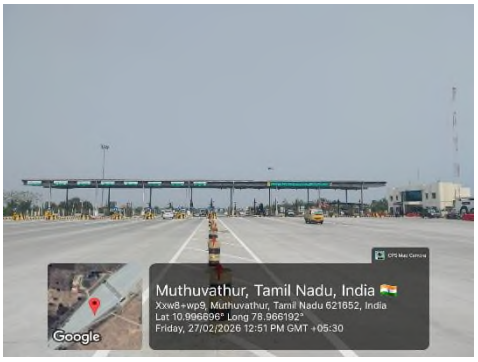
Srirangam Infra Private Limited ("SIPL") was incorporated under the provisions of the Companies Act, 2013 in India. The SPV has entered into a Concession Agreement on April 11, 2018 with the National Highways Authority of India ('NHAI') for the development, maintenance and management for a stretch of National Highway from Trichy to Kallagam section (from km. 0.000 to km. 38.700) of NH227 in the State of Tamil Nadu under Bharatmala Pariyojana on Hybrid Annuity Mode (HAM).

The following table presents a summary of the concession:

Particulars	Details
State	Tamil Nadu
Concessioning authority	NHAI
Highway and lane configuration	NH227 four lane
Project type	HAM
Purchase price for the InvIT at an EV level (100% stake)	INR 4,439 Mn
InvIT Holding in the SPV	100%
Length (km)	38.70 Km
PCOD	May 2021
Construction period	730 days
Concession period (operation period)	15 years
Concession end	FY37

The pictures of the Asset are shown below:





Note: Virtual site visit conducted by EYMBSLLP personnel on 27 February 2026

27. Shankarampet Projects Private Limited ("SPPL")

Shankarampet Projects Private Limited ("SPPL") was incorporated under the provisions of the Companies Act, 2013 in India. The SPV has entered into a Concession Agreement on May 9, 2018 with the National Highways Authority of India ('NHAI') for the development, maintenance and management for a stretch of National Highway from Ramsanpalle village to Mangloor village section (from existing km. 44.757 to km. 91.350/Design km. 39.980 to km. 86.788) of NH 61 in the State of Telangana under Bharatmala Pariyoana on Hybrid Annuity Mode (HAM).

The following table presents a summary of the concession:

Particulars	Details
State	Telangana
Concessioning authority	NHAI
Highway and lane configuration	NH161 four lane
Project type	HAM
Purchase price for the InvIT at an EV level (100% stake)	INR 4,447 Mn
InvIT Holding in the SPV	100%
Length (km)	46.808 Km
PCOD	October 2021
Construction period	730 days
Concession period (operation period)	15 years
Concession end	FY37

The pictures of the Asset are shown below:

Note: Virtual site visit conducted by EYMBSLLP personnel on 3 March 2026

VII. Procedures Adopted

We have carried out the Enterprise Valuation of the InvIT Assets, in accordance with valuation standards as specified / applicable as per SEBI InvIT Regulations, to the extent applicable.

In connection with this analysis, we have adopted the following procedures to carry out the valuation analysis:

- Requested and received financial and qualitative information relating to the InvIT Assets
- Considered the key terms of Concession Agreements;
- Analysis of the Management Projections;
- Considered the Traffic Study Reports and Draft Technical Reports;
- Considered the latest annuity letters for annuity received up to the valuation date;
- Discussed with the Investment Manager on: Background of the SPVs– business and fundamental factors that affect its earning-generating capacity and historical and expected financial performance
- Analysis of the key economic and industry factors which may affect the valuation of the SPV; Analysis of the information available in public domain/ subscribed databases in respect of the comparable companies/ comparable transactions, as considered relevant by us;
- Conducted site visits to assess the operating condition of the InvIT Assets as per the requirements of SEBI (InvIT Regulations) 2014 (as amended)
- Selection of valuation approach and valuation methodology/(ies), in accordance with SEBI (InvIT Regulations), as considered appropriate and relevant by us;
- Analysis of other publicly available information, as considered relevant by us; and
- Determination of Enterprise Value of the InvIT Assets as on the Valuation date.

VIII. Valuation Methodology

To determine the value of enterprises, three traditional approaches can be considered:

A. Market approach

The market approach measures value based on what other purchasers in the market have paid for assets that can be considered reasonably similar to those being valued.

B. Income approach

The income approach determines the value of a business based on its ability to generate desired economic benefit for the owners. The key objective of the income-based methods is to determine the business value as a function of the economic benefit.

C. Asset approach

The asset approach seeks to determine the business value based on the value of its assets.

Summary of various methods used / not used in this engagement is as given below:

Valuation Methodology	Used	Remarks
Income Approach		
Cash Flows method	Yes	DCF method is considered to be one of the most scientific methods of valuation. The individual InvIT Assets have definite concession periods and estimable cash flows for the entire length of the concession. We have therefore relied on the DCF method, using the financial projections provided to us.
Market Approach		
Market Price method	No	Not applicable as none of the SPVs are publicly listed
Comparable Companies' multiples method		
Quoted multiples	No	There are no listed companies comparable to the individual SPVs in terms of concession period, type or region
Transaction multiples	No	There were no recent transactions in comparable assets where sufficient information is available in the public domain.
Cost approach		
Net Asset Value method	No	Does not capture the earning capacity of the business and hence NAV would not be representative of fair value

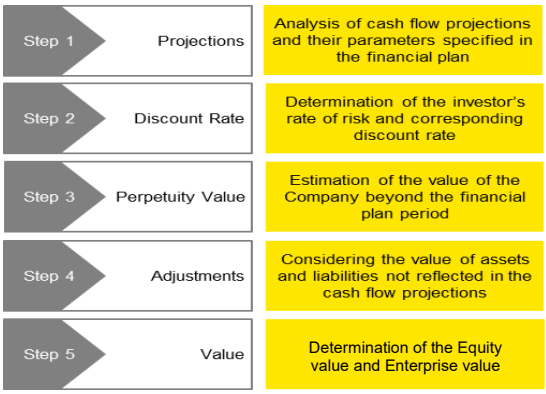
In the case of these SPVs, the Discounted Cash Flow method was considered the most appropriate method for valuation based on the characteristics of the assets being valued (as mentioned above).

Discounted Cash Flow method

Income Based Approach

- Taking into consideration the specifics of the InvIT Assets and the business environment, we have used the discounted cash flow (DCF) method (specifically, the Free Cash Flow to Firm approach) to determine the Enterprise value of the InvIT Assets.
- The profit and loss account forecast covers the remaining concession period of individual InvIT Assets.

DCF Methodology



Calculation of Weighted Average Cost of Capital ("WACC")

Purpose of a discount rate

The application of the income approach requires the determination of an appropriate discount rate at which future cash flows are discounted to their present value as of valuation date.

The discount rate reflects the time value of money and the risk associated with projected future cash flows. It is derived on the basis of the expected return on capital and the price of the best alternative investment. Therefore, the discount rate indicates the minimum required return from the asset being valued if the investor is not to be worse off than he would be if he had invested his money in the next best alternative. The return on this alternative investment must be comparable in terms of dimensions, timing and certainty, with the net cash flows expected to be derived from the subject asset.

To derive the discount rate, the weighted average cost of capital (WACC), which refers to the total capital invested (equity and debt), is used and adjusted for risk premiums or discounts, depending on the asset's specific risk compared to the risk of the overall enterprise. To determine the appropriate WACC it is adequate to consider cost of equity and cost of debt separately.

The derivation of the WACC is based on a group of guideline companies (peer group) which are operating in the same industry/sector as the InvIT Assets (so called "potential acquirers"). To calculate the WACC, cost of equity, cost of debt and the capital structure have to be determined based on market data of the group of "potential acquirers".

Formula for WACC Computation

$$WACC = \frac{E}{E+D} * r_E + \frac{D}{E+D} * r_D * (1 - s)$$

$WACC$	=	Weighted Average Cost of Capital
r_E	=	Cost of Equity
r_D	=	Cost of Debt
E	=	Market Value of Equity
D	=	Market value of interest bearing debt
$E+D$	=	Enterprise Value
s	=	Corporate Tax Rate

Calculation of Cost of equity

For the estimation of the cost of equity for BOT Assets and TOT Assets, the capital asset pricing model ("CAPM") is applied. According to the CAPM, cost of equity consists of a risk-free interest rate and a risk premium. The risk premium is calculated by multiplying the market risk premium by the beta-factor, a company-specific measure of the systematic risk of an equity investment in a company.

To determine cost of equity, its components risk-free rate and risk premium have to be analysed.

1. Risk-free rate

The starting point for the calculation of an appropriate equity rate of return is the calculation of the risk-free rate, which corresponds to the minimum return that an investor can expect from an investment "without" risk. This risk-free rate of return is therefore generally derived from the rate of return on a high-quality long-term government bond. The risk-free rate is based on prevailing YTMs of Gilt Bonds with 10-year residual maturity (rounded) as on 31 March 2026.

2. Risk Premium

i. Market risk premium

Equity Market Risk Premium ('MRP') is the excess return earned by an investor over a risk free rate, when they invest in the stock market. This return compensates investors for taking on the higher risk of equity investing.

According to the CAPM, long-term capital market studies have shown that historically investments in shares have yielded higher returns than investments in low-risk bonds. Further, based upon the EYMBSLLP internal study, the MRP for India post-1990 is estimated in the range of 6.5% - 6.7% for the BSE Sensex and BSE 100 indices. Considering the improved reliability of post-liberalization data and the preference for a broader market index, we have considered an MRP of 7.0% for the purpose of the valuation.

ii. Beta coefficient

According to the CAPM in arriving at the appropriate risk premium, non-systematic risk, which attaches to the specific enterprise and can therefore generally be eliminated by diversifying, is distinguished from systematic risk. A risk premium will only be required to compensate for systematic risk, which cannot be eliminated by diversification. In practice, systematic risk is measured in terms of the beta coefficient and the market risk premium. The market risk premium is defined as the difference between the expected return on a market portfolio and the risk-free rate. The beta coefficient indicates the risk of the equity of the enterprise that is being valued relative to the average market risk (for stocks), which is represented by the market risk premium. A beta higher than one implies that the systematic risk of the company's stock is higher than the market risk. The risk premium is calculated by multiplying the market risk premium by the enterprise's beta coefficient.

Betas reported in public sources are "leveraged", which means that the additional risk to a stockholder due to the debt financing of the company is incorporated in the corresponding beta coefficient.

We have used the relevered beta (based on a three-year data considering Daily returns) of listed Indian companies that are engaged primarily in construction and operation of road assets in India.

In order to arrive at the comparable companies, we have carried out screening on S&P Capital IQ while applying the following selection criteria:

a. Indian companies listed on either Bombay Stock Exchange or National Stock Exchange (provides a set of 9,442 companies).
b. Industry classification as mentioned below (provides a set of 90 companies):
    i. Sector: Industrial; Sub-sector: Construction and Engineering; and Sub-sub-sector: Highways and Street Construction
    ii. Sector: Industrial; Sub-sector: Transportation Infrastructure; and Sub-sub-sector: Highways and Rail Tracks
c. The set of 90 companies were further shortlisted on the basis of the availability of their market capitalization (provides a set of 86 companies)
d. Basis the above list of 86 companies, we have further filtered the companies by applying a filter on the business description of the companies using the keywords “Road” or “Highway” or “Develop” (provides a set of 46 companies)
e. From the list of 46 companies, we have considered only those companies which do not have any qualified auditor’s opinion on the Going Concern assumptions of the entity and for which majority revenue contribution is from road assets and construction activities (provides a set of 31 companies)
f. On the set of 31 companies, we separately applied a filter on the business segment of the companies using the following keywords:
    i. “BOT” or “Road” to arrive at a set of 7 companies.
    ii. “Engineering” and “Construction” to arrive at set of additional 5 companies.
g. From these 11 companies, we analysed the segment reporting basis the information available in the annual report and ruled out 5 companies who were majorly engaged in EPC and/or revenue contribution from BOT/TOT was minimal

Accordingly, we arrived at a set of 6 companies. Further, we have also added four listed InvITs to account for typical investor expectations from an InvIT.

Based on above screening criteria, we shortlisted a total of 10 companies. Please refer Appendix 2 for the list of comparable companies used for computation of beta.

iii. Additional Risk Premium

Concessioning authority specific risk premium: Additional risk premium of 0.5% has been considered to arrive at the cost of equity for NAMEPL basis operational and regulatory risk factors, considering it is a state highway concession agreement.

Alpha Adjustment: Risk free rate is based on prevailing YTMs of Gilt Bonds with 10-year residual maturity (rounded) as on the Valuation Date. The increase in the GILT Bond Rate from ~6.5% to nearly 7% over the last 3 months is majorly due to the ongoing stressed geopolitical situation and consequent liquidity positions. This increase may not be sustainable in the long term and as the geopolitical tensions ease out, these rates may soften again. Further, the overall portfolio has diversified significantly in last few years based on new acquisitions. Despite the geopolitical tensions, the traffic in the portfolio during FY26 has been better as compared to the projections made in the last traffic studies. Hence, we have considered alpha adjustment of -0.25% for BOT Assets and TOT Assets, to account for the above factors in current valuation.

Formula for Cost of Equity Computation for BOT Assets and TOT Assets

$r_e = r_f + b * MRP + AA + CARP$

r_e	=	Cost of equity
r_f	=	Risk-free rate of return
b	=	Beta, a measure of the level of non-diversifiable (i.e., systematic) risk associated with company returns
MRP	=	Market Equity Risk Premium
AA	=	Alpha Adjustment
CARP	=	Concessioning authority specific risk premium

Annuity projects (BOT Annuity Assets and HAM Assets) have a relatively stable cash flow structure as compared to toll projects and do not have traditional risk factors such as traffic risk, tolling risk, etc. There are currently no major listed companies which could be considered comparable to such annuity projects. Hence, we have used the built-up approach to arrive at the cost of equity for such assets.

Formula for Cost of Equity Computation for BOT Annuity Assets and HAM Assets

$r_e = k_d + ARP$

r_e	=	Cost of equity
k_d	=	Pre-tax cost of debt
ARP	=	Additional Risk Premium

Given the risk profile for HAM Assets is majorly influenced by the movement in bank rates, we have applied a risk premium of 5.0% on the cost of debt for HAM Assets, to adequately account for the risk associated with the cash flows. The annuity payments for BOT Annuity Assets are fixed pre-determined semi-annual payments, and hence they have a lower risk profile than the HAM Assets. Accordingly, we have used a 2.0% lower risk premium to compute the cost of equity for BOT Annuity Assets.

Calculation of Cost of Debt

To determine the cost of debt, its components, that is, pre-tax cost of debt and tax rate have to be analysed.

i. Pre-tax cost of debt

The pre-tax cost of debt is the effective interest rate or the total amount of interest that a company or individual owes on any liabilities, such as bonds and loans. Pre-tax cost of debt of SPVs has been considered basis discussions with the Management regarding the effective interest rate.

ii. Tax Rate

Tax rate to be considered for computation of post-tax cost of debt should be the effective tax rate of the company. The effective tax rate represents the present value of the percentage of taxable income paid in taxes as at the Valuation Date. Tax rate of SPVs has been considered basis the effective tax rate of the respective SPVs.

Shape the future with confidence

Calculation of Weighted Average Cost of Capital

The Summary of WACC computed for each of the InvIT Assets is presented below:

Particulars	Weights	JMTPL	MBEL	WUPTPL	NDEPL	FRHL	WVEPL	DATRPL	GAEPL	NAMEPL
Cost of debt (%)	50.0	3.07	3.45	3.77	3.11	3.07	2.95	2.82	3.04	3.02
Cost of equity capital (%)	50.0	6.85	6.86	7.20	6.87	6.85	6.79	6.72	6.83	7.07
WACC		**9.92**	**10.31**	**10.97**	**9.98**	**9.91**	**9.74**	**9.55**	**9.86**	**10.10**

Particulars	Weights	HTPL	JLTPL	JVTPL	LRTPL	KMTPL	MKTPL	KETPL	SMTPL	NKTPL
Cost of debt (%)	50.0	3.06	2.93	2.93	3.09	3.12	3.03	3.11	3.09	3.16
Cost of equity capital (%)	50.0	6.84	6.78	6.77	6.86	6.87	6.83	6.87	6.86	6.89
WACC		**9.90**	**9.71**	**9.70**	**9.95**	**9.99**	**9.86**	**9.98**	**9.95**	**10.05**

Particulars	Weights	APEPL	BWHPL	MSHPL	MHPL	THPL	SIPL	SPPL	JU	QB
Cost of debt (%)	70.0	5.27	3.99	3.98	4.13	4.00	3.94	4.11	4.30	5.27
Cost of equity capital (%)	30.0	3.16	3.76	3.76	3.76	3.76	3.76	3.76	3.16	3.16
WACC		**8.43**	**7.75**	**7.74**	**7.89**	**7.76**	**7.70**	**7.87**	**7.46**	**8.43**

The computed WACC for the BOT Assets and TOT Assets ranges from 9.55% to 10.97%. For the annuity assets, the computed WACC ranges from 7.70% to 7.89% for HAM Assets and 7.46% to 8.43% for BOT Annuity Assets.

Detailed WACC Calculation has been provided in Appendix 2

IX. Valuation Assumptions

Key underlying assumptions as provided by the Management are as follows:

- **Operating Revenue:**
  BOT Assets and TOT Assets: Operating revenue is projected based on the Traffic Study Reports of independent consultants appointed by Management and the estimated toll rates.
  The traffic study reports dated April 2026 have been provided to us by the Management. These reports presented an update of the traffic and revenue forecasts and other macro-economic assumptions. (Refer Appendix 4 for the base traffic for FY 2026 and growth in traffic in the subsequent years as estimated by the independent consultant).
  Further, the toll rates for each of these assets have been estimated based on annual base rate increase (if applicable) and forecast of macro-economic factors such as Wholesale Price Index (WPI).

  BOT Annuity Assets: BOT Annuity Assets are annuity projects with agreed periodical annuities to be received from NHAI and the operating revenue has been projected by the Management accordingly.

  HAM Assets: Operating revenue comprises of construction income; annuity receipts; finance income on Balance Completion Cost; and operation and maintenance income from NHAI. These income receipts have been adjusted by the Management for applicable GST rates; and any claims/ reimbursements pertaining to change in law (i.e., any change in applicable GST rates). The income from these sources has been estimated as per the following:
  1. Construction income: As per the respective Concession Agreements, each SPV is entitled to receive 40% of the Bid Project Cost ("BPC") of the asset adjusted for the price index multiple as on date of achievement of the construction milestone as construction income. The said income has already been received as on Valuation Date by each of the SPVs from NHAI as agreed upon in the Concession Agreements in 5 equal instalments upon achievement of the construction milestones.
  2. Annuity receipts: The remaining 60% portion of the BPC (hereinafter referred to as Balance Completion Cost "BCC") is to be received by the SPVs in biannual instalments commencing from the Commercial Operations Date ("COD") over the remaining life of the Concession period as per the annuity schedules laid out in the respective Concession Agreements.
  3. Finance income: In addition to the above, the SPVs are also entitled to receive interest on the BCC along with the Annuity receipts. The interest would be calculated on reducing balance method at a rate equivalent to 3.0% plus the prevailing Bank Rate. The Management's projections indicate that the long-term Bank Rate is anticipated to be 5.50% over the concession period.
  4. Operation and maintenance income: All O&M expenses over the Concession period will be borne by the SPVs, and they shall receive biannual O&M payments from NHAI along with the annuity receipts. The payments shall be received as per the amounts specified in the respective Concession Agreements adjusted for the price index multiple.

- **Operational Expenditure:** Operational expenditure includes base operating expenditure, admin expenses, Project Manager fee, insurance costs, one-time expenses and other miscellaneous expenses. These expenses are estimated by the Management over the Concession Period.

- **Routine Repair and Maintenance Expenses:** Routine repair and maintenance expenses are estimated by the Management over the projected period.

- **Major Maintenance Expenses (MMR / Periodic maintenance):** Periodic maintenance expenses are incurred to bring the road asset back to an earlier condition or to keep the road asset operating at its present condition. MMR expenditures have been estimated by the Management, based on Draft Technical Due Diligence ("TDD") reports, dated between 17 March 2026 - 30 April 2026, shared by independent technical consultants appointed by the Trust and internal estimates by the Management over the Concession Period.

- **Depreciation and Amortization:**
  BOT Assets: The total project cost has been capitalized in the books of the respective SPVs as an intangible asset.

  TOT Assets: The concession fee paid to NHAI has been capitalized in the books of the respective SPVs as an intangible asset.

  BOT Annuity Assets and HAM Assets: The concessions agreement has been capitalized in the books of the respective SPVs as an intangible asset.

  The said intangible assets have been amortized basis applicable depreciation method (SLM / WDV / Revenue Adjusted) over the respective period of concession. Since depreciation and amortization is a non-cash expenditure, it has been added back to arrive at the net cash flows.

- **Taxes:** Income taxes are estimated considering, as appropriate, brought forward losses, unabsorbed depreciation, MAT credit, tax depreciation/ amortisation policy proposed to be followed by the InvIT Assets and applicable corporate income tax rate.

- **Working Capital:**
  Working capital movement has been considered basis discussions with Management.

  BOT Assets and TOT Assets: Considering the nature of the business of operating road projects, incremental working capital requirement is expected to be Nil for the projected period. Release of working capital has been considered at the end of the respective concession period as the project life comes to an end.
  As per the Supplementary Agreement with NHAI for the Annual Pass Scheme, compensation is to be centrally disbursed by NHAI Headquarters on a weekly basis; however, compensation for the month of March 2026 remains outstanding as on the Valuation Date (except GAEPL, where compensation remains outstanding for the period January 2026 to March 2026). The Management expects to receive the outstanding amount during Q1 FY2027. However, given that there would be around 7 days of recurring receivable cycle against the revenue under the Annual Pass Scheme, based upon the terms of the Supplementary Agreement, 7 days receivables are estimated to be released at the end of the Concession Period.

  BOT Annuity Assets and HAM Assets: Balance with government authorities and current tax assets are assumed to be utilised during FY27 and FY28, while the release of remaining working capital has been considered at the end of the respective concession period as the project life comes to an end.

Shape the future with confidence

X. Basis and Premise of Valuation

1. Basis of Valuation

Valuation Base means the indication of the type of value being used in an engagement. In the present case, we have determined the fair value of the SPVs at the Enterprise level. Fair Value Bases defined as under:

Fair Value

For this valuation, we have considered the International Valuation Standards ("IVS") and have adopted a definition of Market Value as given in IVS 102, "Market Value is the estimated amount for which an asset or liability should exchange on the Valuation Date between a willing buyer and a willing seller in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion". The Fair Value referred elsewhere in the Report is same as Market Value as defined above

2. Valuation Date

Valuation Date is the specific date at which the value of the assets to be valued gets estimated or measured. Valuation is time specific and can change with the passage of time inter-alia due to changes in the condition of the asset to be valued and market parameters. Accordingly, valuation of an asset as at a particular date can be different from other date(s).

The Valuation Date considered for the Enterprise Valuation of the InvIT Assets is 31 March 2026. Our Report does not take account of events or circumstances arising after Valuation Date and we have no responsibility to update the Report for such events or circumstances.

Premise of Value

Premise of Value refers to the conditions and circumstances how an asset is deployed. In the present case, we have determined the Fair Enterprise Value of the SPV on a Going Concern Value defined as under:

Going concern value is the value of a business enterprise that is expected to continue to operate in the future. The intangible elements of going concern value result from factors such as having a trained workforce, an operational plant, the necessary licenses, systems, procedures in place, etc.

Shape the future with confidence

XI. Valuation Conclusion

The fair valuation of InvIT Assets as on 31 March 2026 has been carried out basis the Discounted Cash Flow (DCF) method of valuation. We have considered the financial projections of each of the InvIT Assets provided to us by the Management. Free Cash Flow to Firm approach under DCF method has been considered to determine the Enterprise Value of InvIT Assets. The Enterprise Value has been computed by discounting the free cash flows to the firm (InvIT Assets) from 1 April 2026 until the end of the concession period, using an appropriate Weighted Average Cost of Capital ("WACC").

The Management has appointed independent consultants to carry out traffic study and estimation of toll revenue and technical study for estimation of operating and maintenance expenses and major maintenance expenses, for each of the InvIT Assets over the concession period. We have relied upon Financial Projections, traffic study reports, technical reports provided by independent consultants and other information provided to us for carrying out the valuation of each of the InvIT Assets.

The valuation is based on various assumptions with respect to the InvIT Assets, including their respective present and future financial condition, business strategies and the environment in which they will operate in the future. These assumptions are based on the information that we have been provided with and our discussions with the Management, and reflect current expectations and views regarding future events, and therefore necessarily involve known and unknown risks and uncertainties.

The summary of valuation of each of the InvIT Assets as on 31 March 2026 is presented below:

SPV (Currency: INR mn)	Enterprise Value (excluding other financial assets)	Other financial assets[(1)]	Enterprise Value (including other financial assets)
JMTPL	6,895	446	7,341
MBEL	3,295	824	4,119
WUPTPL	(88)	1,065	977
NDEPL	4,597	70	4,667
FRHPL	26,471	-	26,471
WVEPL	9,101	-	9,101
DATRPL	77,737	49	77,786
GAEPL	38,273	566	38,839
NAMEPL	27,666	-	27,666
HTPL	19,929	227	20,156
JLTPL	12,820	131	12,951
JVTPL	8,014	-	8,014
LRTPL	7,756	790	8,546
KMTPL	13,992	-	13,992
MKTPL	16,583	25	16,608
KETPL	10,671	114	10,785
SMTPL	11,755	23	11,778
NKTPL	11,293	2,962	14,255
JU	11,934	306	12,240
QB	18,735	516	19,251
APEPL	341	475	816
BWHPL	3,180	36	3,216
MSHPL	3,626	108	3,733
MHPL	2,641	105	2,747
SIPL	3,413	53	3,466
SPPL	4,118	78	4,197
THPL	4,625	76	4,701
Total	**3,59,372**	**9,046**	**3,68,418**

Table above represents the 100% enterprise value for all SPVs including MBEL (0.03% of the equity shares of MBEL are held by Madhucon Infra Limited).

Notes:

1. According to IND AS 7, cash & cash equivalents are held for the purpose of meeting short term cash commitments rather than for investments or other purposes. Accordingly, cash & cash equivalents held by the respective SPVs, having maturity of more than 3 months have been considered as other financial assets.

2. WUPTPL reflects a negative Enterprise Value primarily due to projected negative cash flows arising from outstanding maintenance expenditure associated with the asset nearing the end of its useful life. Notwithstanding this, the Management has represented to us that WUPTPL maintains sufficient cash and liquid resources to fund its operating requirements and the outstanding maintenance expenditure.

Our views are based on the current economic, market, industry, regulatory, monetary and other conditions and on the information made available to us, as of the date of this Report. Such conditions may change significantly over a relatively short period of time, and we assume no responsibility and are not required to update, revise or reaffirm our conclusion set out in this Report to reflect events or developments subsequent to the date of the Report.

Shape the future with confidence

Appendices

1. Discounted Cash flow workings for InvIT Assets as at 31 March 2026

1.1 JMTPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Jun31
Number of months		12	12	12	12	12	2
Net revenue		**2,554**	**2,816**	**3,111**	**3,416**	**3,753**	**796**
Operating expenses		(922)	(916)	(947)	(1,130)	(1,140)	(112)
EBITDA		**1,632**	**1,899**	**2,164**	**2,287**	**2,613**	**684**
Depreciation and amortisation		(445)	(490)	(542)	(595)	(653)	(139)
EBIT		**1,187**	**1,409**	**1,622**	**1,692**	**1,959**	**545**
Tax expense		(194)	(238)	(301)	(524)	(274)	(101)
Debt free net income		**994**	**1,171**	**1,321**	**1,168**	**1,685**	**444**
Add: Depreciation and amortisation		445	490	542	595	653	139
Add: Provision for major maintenance		481	481	481	614	614	-
(Increase)/ Decrease in net working capital		9	-	-	-	-	46
Less: Major maintenance expenses		-	(996)	(927)	-	(1,654)	-
Debt free cash flow		**1,928**	**1,146**	**1,417**	**2,376**	**1,299**	**628**
Discount rate (%)		9.92	9.92	9.92	9.92	9.92	9.92
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.65	0.62
Present value debt free cash flow		**1,839**	**994**	**1,118**	**1,707**	**849**	**388**
Present value for explicit period	6,895						
Enterprise value	**6,895**						

1.2 MBEL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	May31
Number of months		12	12	12	12	12	2
Net revenue		**1,304**	**1,442**	**1,594**	**1,750**	**1,923**	**325**
Operating expenses		(526)	(523)	(519)	(740)	(746)	(61)
EBITDA		**778**	**918**	**1,075**	**1,010**	**1,177**	**264**
Depreciation and amortisation		(231)	(256)	(283)	(310)	(341)	(58)
EBIT		**547**	**663**	**793**	**700**	**836**	**206**
Tax expense		(89)	(108)	(51)	(254)	(140)	(39)
Debt free net income		**458**	**555**	**742**	**446**	**696**	**168**
Add: Depreciation and amortisation		231	256	283	310	341	58
Add: Provision for major maintenance		199	199	199	386	386	-
(Increase)/ Decrease in net working capital		(14)	-	-	-	-	24
Less: Major maintenance expenses		-	-	(952)	-	(772)	-
Debt free cash flow		**874**	**1,009**	**271**	**1,142**	**651**	**249**
Discount rate (%)		10.31	10.31	10.31	10.31	10.31	10.31
Present value factor- Mid year discounting		0.95	0.86	0.78	0.71	0.64	0.61
Present value debt free cash flow		**832**	**871**	**212**	**810**	**419**	**151**
Present value for explicit period	3,295						
Enterprise value	**3,295**						

1.3 WUPTPL

Currency: ₹ mn Number of months	Notes	Jun26 3
Net revenue		**404**
Operating expenses		(354)
EBITDA		**50**
Depreciation and amortisation		(139)
EBIT		**(89)**
Tax expense		-
Debt free net income		**(89)**
Add: Depreciation and amortisation		139
Add: Provision for major maintenance		-
(Increase)/ Decrease in net working capital		(139)
Less: Major maintenance expenses		-
Debt free cash flow		**(89)**
Discount rate (%)		10.97
Present value factor- Mid year discounting		0.99
Present value debt free cash flow		**(88)**
Present value for explicit period	(88)	
Enterprise value	**(88)**	

Note- WUPTPL reflects a negative Enterprise Value primarily due to projected negative cash flows arising from outstanding maintenance expenditure associated with the asset nearing the end of its useful life. Notwithstanding this, the Management has represented to us that WUPTPL maintains sufficient cash and liquid resources to fund its operating requirements and the outstanding maintenance expenditure.

1.4 NDEPL

Currency: ₹ mn Number of months	Notes	Mar27 12	Mar28 12	Mar29 12	Mar30 12	Mar31 12	Mar32 12	Jan33 10
Net revenue		**1,358**	**1,468**	**1,629**	**1,824**	**1,985**	**2,179**	**2,001**
Operating expenses		(565)	(561)	(601)	(637)	(659)	(683)	(607)
EBITDA		**793**	**907**	**1,028**	**1,186**	**1,325**	**1,496**	**1,394**
Depreciation and amortisation		(314)	(314)	(314)	(314)	(314)	(314)	(261)
EBIT		**480**	**593**	**715**	**873**	**1,012**	**1,182**	**1,133**
Tax expense		(15)	(97)	(117)	(142)	(165)	(425)	(64)
Debt free net income		**465**	**497**	**598**	**730**	**847**	**758**	**1,069**
Add: Depreciation and amortisation		314	314	314	314	314	314	261
Add: Provision for major maintenance		241	241	245	245	245	245	245
(Increase)/ Decrease in net working capital		(7)	-	-	-	-	-	(78)
Less: Major maintenance expenses		(517)	(536)	-	-	-	-	(1,225)
Debt free cash flow		**495**	**515**	**1,157**	**1,289**	**1,405**	**1,316**	**272**
Discount rate (%)		9.98	9.98	9.98	9.98	9.98	9.98	9.98
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.65	0.59	0.54
Present value debt free cash flow		**472**	**446**	**912**	**924**	**916**	**780**	**148**
Present value for explicit period	4,597							
Enterprise value	**4,597**							

1.5 FRHPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32	Mar33	Mar34
Number of months		12	12	12	12	12	12	12	12
Net revenue		**2,869**	**3,204**	**3,516**	**3,841**	**4,154**	**4,560**	**4,986**	**5,460**
Operating expenses		(763)	(797)	(777)	(808)	(882)	(946)	(984)	(1,024)
EBITDA		**2,105**	**2,407**	**2,739**	**3,033**	**3,272**	**3,614**	**4,003**	**4,437**
Depreciation and amortisation		(561)	(561)	(561)	(561)	(561)	(561)	(561)	(561)
EBIT		**1,545**	**1,846**	**2,178**	**2,472**	**2,712**	**3,054**	**3,442**	**3,876**
Tax expense		(42)	(301)	(355)	(403)	(442)	(498)	(561)	(632)
Debt free net income		**1,502**	**1,545**	**1,823**	**2,069**	**2,269**	**2,556**	**2,881**	**3,244**
Add: Depreciation and amortisation		561	561	561	561	561	561	561	561
Add: Provision for major maintenance		283	283	283	283	298	298	298	298
(Increase)/ Decrease in net working capital		(6)	-	-	-	-	-	-	-
Less: Major maintenance expenses		-	-	(922)	(952)	-	-	-	-
Debt free cash flow		**2,340**	**2,389**	**1,745**	**1,961**	**3,128**	**3,415**	**3,740**	**4,103**
Discount rate (%)		9.91	9.91	9.91	9.91	9.91	9.91	9.91	9.91
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.65	0.59	0.54	0.49
Present value debt free cash flow		**2,232**	**2,073**	**1,378**	**1,409**	**2,045**	**2,030**	**2,023**	**2,019**
Present value for explicit period	26,471								
Enterprise value	**26,471**								

Currency: ₹ mn	Mar35	Mar36	Mar37	Mar38	Mar39	Mar40	Mar41	May41
Number of months	12	12	12	12	12	12	12	1
Net revenue	**5,982**	**6,558**	**7,166**	**7,842**	**8,589**	**7,371**	**7,593**	**751**
Operating expenses	(1,067)	(1,047)	(1,093)	(1,279)	(1,370)	(1,426)	(1,411)	(101)
EBITDA	**4,915**	**5,512**	**6,073**	**6,562**	**7,219**	**5,945**	**6,182**	**651**
Depreciation and amortisation	(561)	(561)	(561)	(561)	(561)	(561)	(561)	(51)
EBIT	**4,354**	**4,951**	**5,513**	**6,002**	**6,658**	**5,384**	**5,622**	**600**
Tax expense	(710)	(807)	(1,195)	(1,611)	(1,776)	(1,455)	(1,112)	(151)
Debt free net income	**3,644**	**4,144**	**4,318**	**4,391**	**4,882**	**3,929**	**4,510**	**449**
Add: Depreciation and amortisation	561	561	561	561	561	561	561	51
Add: Provision for major maintenance	298	298	298	400	400	400	400	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-	145
Less: Major maintenance expenses	-	(1,028)	(1,061)	-	-	-	(1,602)	-
Debt free cash flow	**4,503**	**3,975**	**4,116**	**5,352**	**5,843**	**4,890**	**3,869**	**645**
Discount rate (%)	9.91	9.91	9.91	9.91	9.91	9.91	9.91	9.91
Present value factor- Mid year discounting	0.45	0.41	0.37	0.34	0.31	0.28	0.25	0.24
Present value debt free cash flow	**2,016**	**1,619**	**1,525**	**1,805**	**1,793**	**1,365**	**983**	**155**

1.6 WVEPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32
Number of months		12	12	12	12	12	12
Net revenue		**1,269**	**1,401**	**1,561**	**1,722**	**1,898**	**2,095**
Operating expenses		(406)	(423)	(410)	(410)	(442)	(460)
EBITDA		**863**	**978**	**1,152**	**1,311**	**1,456**	**1,635**
Depreciation and amortisation		(226)	(226)	(226)	(226)	(226)	(226)
EBIT		**637**	**752**	**925**	**1,085**	**1,230**	**1,409**
Tax expense		-	(114)	(151)	(177)	(352)	(397)
Debt free net income		**637**	**638**	**774**	**908**	**877**	**1,011**
Add: Depreciation and amortisation		226	226	226	226	226	226
Add: Provision for major maintenance		161	161	161	130	130	130
(Increase)/ Decrease in net working capital		154	-	-	-	-	-
Less: Major maintenance expenses		-	-	(839)	-	-	-
Debt free cash flow		**1,178**	**1,025**	**323**	**1,265**	**1,234**	**1,368**
Discount rate (%)		9.74	9.74	9.74	9.74	9.74	9.74
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.66	0.60
Present value debt free cash flow		**1,125**	**892**	**256**	**914**	**812**	**820**
Present value for explicit period	9,101						
Enterprise value	**9,101**						

Currency: ₹ mn	Mar33	Mar34	Mar35	Mar36	Mar37	Oct37
Number of months	12	12	12	12	12	6
Net revenue	**2,296**	**2,517**	**2,748**	**3,032**	**3,307**	**1,843**
Operating expenses	(479)	(499)	(521)	(507)	(418)	(234)
EBITDA	**1,817**	**2,018**	**2,228**	**2,525**	**2,888**	**1,609**
Depreciation and amortisation	(226)	(226)	(226)	(226)	(226)	(341)
EBIT	**1,591**	**1,791**	**2,002**	**2,299**	**2,662**	**1,268**
Tax expense	(443)	(494)	(547)	(392)	(680)	(334)
Debt free net income	**1,148**	**1,298**	**1,455**	**1,907**	**1,982**	**934**
Add: Depreciation and amortisation	226	226	226	226	226	341
Add: Provision for major maintenance	130	130	130	130	-	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	(68)
Less: Major maintenance expenses	-	-	-	(912)	-	-
Debt free cash flow	**1,504**	**1,654**	**1,812**	**1,351**	**2,208**	**1,207**
Discount rate (%)	9.74	9.74	9.74	9.74	9.74	9.74
Present value factor- Mid year discounting	0.55	0.50	0.45	0.41	0.38	0.35
Present value debt free cash flow	**822**	**824**	**822**	**559**	**832**	**424**

1.7 DATRPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32
Number of months		12	12	12	12	12	12
Net revenue		**7,006**	**7,553**	**8,383**	**9,295**	**10,239**	**11,282**
Operating expenses		(1,767)	(3,075)	(3,160)	(1,627)	(1,818)	(1,906)
EBITDA		**5,239**	**4,477**	**5,224**	**7,668**	**8,421**	**9,377**
Depreciation and amortisation		(1,166)	(1,166)	(1,166)	(1,166)	(1,166)	(1,166)
EBIT		**4,073**	**3,312**	**4,058**	**6,502**	**7,256**	**8,211**
Tax expense		(692)	(1,262)	(611)	(1,686)	(1,876)	(2,116)
Debt free net income		**3,381**	**2,049**	**3,447**	**4,816**	**5,380**	**6,095**
Add: Depreciation and amortisation		1,166	1,166	1,166	1,166	1,166	1,166
Add: Provision for major maintenance		353	1,668	1,668	161	161	161
(Increase)/ Decrease in net working capital		(54)	-	-	-	-	-
Less: Major maintenance expenses		(1,067)	-	(3,335)	-	-	-
Debt free cash flow		**3,778**	**4,883**	**2,945**	**6,143**	**6,707**	**7,421**
Discount rate (%)		9.55	9.55	9.55	9.55	9.55	9.55
Present value factor- Mid year discounting		0.96	0.87	0.80	0.73	0.66	0.61
Present value debt free cash flow		**3,610**	**4,259**	**2,345**	**4,464**	**4,450**	**4,495**
Present value for explicit period	77,737						
Enterprise value	**77,737**						

Currency: ₹ mn	Mar33	Mar34	Mar35	Mar36	Mar37	Mar38	Mar39
Number of months	12	12	12	12	12	12	12
Net revenue	**12,412**	**13,682**	**15,037**	**16,632**	**18,199**	**20,014**	**21,999**
Operating expenses	(1,998)	(1,852)	(3,950)	(3,927)	(2,330)	(2,589)	(2,723)
EBITDA	**10,413**	**11,831**	**11,087**	**12,706**	**15,869**	**17,426**	**19,276**
Depreciation and amortisation	(1,166)	(1,166)	(1,166)	(1,166)	(1,166)	(1,166)	(1,166)
EBIT	**9,248**	**10,665**	**9,921**	**11,540**	**14,703**	**16,260**	**18,111**
Tax expense	(2,377)	(2,531)	(3,019)	(2,401)	(3,760)	(4,151)	(4,617)
Debt free net income	**6,870**	**8,133**	**6,902**	**9,139**	**10,943**	**12,109**	**13,493**
Add: Depreciation and amortisation	1,166	1,166	1,166	1,166	1,166	1,166	1,166
Add: Provision for major maintenance	161	161	2,037	2,037	198	198	198
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-
Less: Major maintenance expenses	-	(805)	-	(4,074)	-	-	-
Debt free cash flow	**8,197**	**8,656**	**10,105**	**8,268**	**12,307**	**13,473**	**14,858**
Discount rate (%)	9.55	9.55	9.55	9.55	9.55	9.55	9.55
Present value factor- Mid year discounting	0.55	0.50	0.46	0.42	0.38	0.35	0.32
Present value debt free cash flow	**4,532**	**4,368**	**4,656**	**3,477**	**4,725**	**4,722**	**4,753**

Currency: ₹ mn	Mar40	Mar41	Mar42	Mar43	Feb44
Number of months	12	12	12	12	10
Net revenue	**24,257**	**26,536**	**29,134**	**32,035**	**30,616**
Operating expenses	(2,875)	(2,728)	(4,763)	(4,779)	(2,798)
EBITDA	**21,382**	**23,808**	**24,371**	**27,256**	**27,818**
Depreciation and amortisation	(1,166)	(1,166)	(1,166)	(1,166)	(1,013)
EBIT	**20,216**	**22,642**	**23,205**	**26,090**	**26,805**
Tax expense	(5,147)	(5,508)	(6,331)	(6,094)	(6,754)
Debt free net income	**15,069**	**17,134**	**16,874**	**19,996**	**20,050**
Add: Depreciation and amortisation	1,166	1,166	1,166	1,166	1,013
Add: Provision for major maintenance	198	198	1,914	1,914	-
(Increase)/ Decrease in net working capital	-	-	-	-	(68)
Less: Major maintenance expenses	-	(992)	-	(3,828)	-
Debt free cash flow	**16,433**	**17,507**	**19,954**	**19,248**	**20,996**
Discount rate (%)	9.55	9.55	9.55	9.55	9.55
Present value factor- Mid year discounting	0.29	0.27	0.24	0.22	0.20
Present value debt free cash flow	**4,799**	**4,667**	**4,856**	**4,276**	**4,284**

1.8 GAEPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32	Mar33
Number of months		12	12	12	12	12	12	12
Net revenue		**4,538**	**4,749**	**5,184**	**5,720**	**6,272**	**6,861**	**7,499**
Operating expenses		(1,033)	(985)	(1,025)	(991)	(1,030)	(1,129)	(1,215)
EBITDA		**3,505**	**3,765**	**4,159**	**4,729**	**5,242**	**5,732**	**6,284**
Depreciation and amortisation		(873)	(913)	(997)	(1,100)	(1,206)	(1,320)	(1,442)
EBIT		**2,632**	**2,851**	**3,162**	**3,628**	**4,035**	**4,412**	**4,842**
Tax expense		(313)	(465)	(516)	(592)	(658)	(720)	(790)
Debt free net income		**2,319**	**2,386**	**2,646**	**3,037**	**3,377**	**3,693**	**4,052**
Add: Depreciation and amortisation		873	913	997	1,100	1,206	1,320	1,442
Add: Provision for major maintenance		359	359	359	359	359	377	377
(Increase)/ Decrease in net working capital		129	-	-	-	-	-	-
Less: Major maintenance expenses		-	-	-	(1,181)	(1,217)	-	-
Debt free cash flow		**3,680**	**3,659**	**4,002**	**3,315**	**3,725**	**5,389**	**5,872**
Discount rate (%)		9.86	9.86	9.86	9.86	9.86	9.86	9.86
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.65	0.60	0.54
Present value debt free cash flow		**3,511**	**3,177**	**3,164**	**2,385**	**2,440**	**3,212**	**3,186**
Present value for explicit period	38,273							
Enterprise value	**38,273**							

Currency: ₹ mn	Mar34	Mar35	Mar36	Mar37	Mar38	Mar39	Jun39
Number of months	12	12	12	12	12	12	3
Net revenue	**8,226**	**8,995**	**9,883**	**10,785**	**11,780**	**12,916**	**3,164**
Operating expenses	(1,265)	(1,318)	(1,375)	(1,343)	(1,404)	(1,143)	(283)
EBITDA	**6,961**	**7,677**	**8,508**	**9,442**	**10,376**	**11,774**	**2,881**
Depreciation and amortisation	(1,582)	(1,730)	(1,901)	(2,074)	(2,266)	(2,484)	(609)
EBIT	**5,379**	**5,947**	**6,607**	**7,368**	**8,111**	**9,289**	**2,273**
Tax expense	(877)	(970)	(2,213)	(2,127)	(2,356)	(2,954)	(696)
Debt free net income	**4,502**	**4,977**	**4,394**	**5,241**	**5,754**	**6,336**	**1,577**
Add: Depreciation and amortisation	1,582	1,730	1,901	2,074	2,266	2,484	609
Add: Provision for major maintenance	377	377	377	377	377	-	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	(121)
Less: Major maintenance expenses	-	-	-	(1,299)	(1,339)	-	-
Debt free cash flow	**6,461**	**7,084**	**6,672**	**6,393**	**7,058**	**8,820**	**2,064**
Discount rate (%)	9.86	9.86	9.86	9.86	9.86	9.86	9.86
Present value factor- Mid year discounting	0.49	0.45	0.41	0.37	0.34	0.31	0.29
Present value debt free cash flow	**3,190**	**3,184**	**2,730**	**2,381**	**2,392**	**2,721**	**601**

Shape the future with confidence

1.9 NAMEPL

Currency: ₹ mn Number of months	Notes	Mar27 12	Mar28 12	Mar29 12	Mar30 12	Mar31 12	Mar32 12	Mar33 12
Net revenue		**3,690**	**3,906**	**4,383**	**4,399**	**4,908**	**5,173**	**5,817**
Operating expenses		(3,193)	(665)	(705)	(1,117)	(1,124)	(1,149)	(1,199)
EBITDA		**497**	**3,242**	**3,678**	**3,283**	**3,784**	**4,024**	**4,618**
Depreciation and amortisation		(639)	(677)	(759)	(762)	(850)	(896)	(1,008)
EBIT		**(143)**	**2,565**	**2,919**	**2,520**	**2,933**	**3,128**	**3,610**
Tax expense		-	-	(385)	(411)	(478)	(510)	(589)
Debt free net income		**(143)**	**2,565**	**2,533**	**2,109**	**2,455**	**2,618**	**3,021**
Add: Depreciation and amortisation		639	677	759	762	850	896	1,008
Add: Provision for major maintenance		1,662	160	160	517	517	509	517
(Increase)/ Decrease in net working capital		-	-	-	-	-	-	-
Less: Major maintenance expenses		-	(1,286)	(696)	-	(548)	-	(1,002)
Debt free cash flow		**2,159**	**2,115**	**2,757**	**3,388**	**3,274**	**4,023**	**3,544**
Discount rate (%)		10.10	10.10	10.10	10.10	10.10	10.10	10.10
Present value factor- Mid year discounting		0.95	0.87	0.79	0.71	0.65	0.59	0.54
Present value debt free cash flow		**2,058**	**1,831**	**2,167**	**2,420**	**2,123**	**2,370**	**1,897**
Present value for explicit period	27,666							
Enterprise value	**27,666**							

Currency: ₹ mn Number of months	Mar34 12	Mar35 12	Mar36 12	Mar37 12	Mar38 12	Mar39 12	Nov39 8
Net revenue	**6,098**	**6,925**	**7,275**	**8,235**	**8,623**	**9,778**	**6,762**
Operating expenses	(1,261)	(1,346)	(1,318)	(866)	(1,420)	(1,015)	(679)
EBITDA	**4,837**	**5,579**	**5,957**	**7,370**	**7,203**	**8,763**	**6,083**
Depreciation and amortisation	(1,057)	(1,200)	(1,261)	(1,427)	(1,494)	(1,694)	(1,172)
EBIT	**3,781**	**4,379**	**4,696**	**5,943**	**5,709**	**7,069**	**4,912**
Tax expense	(1,185)	(1,371)	(1,118)	(1,694)	(1,488)	(2,045)	(1,425)
Debt free net income	**2,596**	**3,008**	**3,578**	**4,249**	**4,221**	**5,024**	**3,487**
Add: Depreciation and amortisation	1,057	1,200	1,261	1,427	1,494	1,694	1,172
Add: Provision for major maintenance	509	509	509	-	509	-	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	184
Less: Major maintenance expenses	-	-	(1,384)	-	(1,161)	-	-
Debt free cash flow	**4,162**	**4,717**	**3,964**	**5,676**	**5,063**	**6,719**	**4,843**
Discount rate (%)	10.10	10.10	10.10	10.10	10.10	10.10	10.10
Present value factor- Mid year discounting	0.49	0.44	0.40	0.36	0.33	0.30	0.28
Present value debt free cash flow	**2,023**	**2,082**	**1,589**	**2,067**	**1,675**	**2,019**	**1,344**

Shape the future with confidence

1.10 HTPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32	Mar33	Mar34
Number of months		12	12	12	12	12	12	12	12
Net revenue		**1,511**	**1,532**	**1,625**	**1,796**	**1,965**	**2,168**	**2,369**	**2,614**
Operating expenses		(578)	(149)	(992)	(1,010)	(993)	(523)	(560)	(582)
EBITDA		**933**	**1,383**	**633**	**786**	**972**	**1,645**	**1,808**	**2,032**
Depreciation and amortisation		(326)	(326)	(326)	(326)	(326)	(326)	(326)	(326)
EBIT		**607**	**1,057**	**307**	**460**	**647**	**1,319**	**1,482**	**1,707**
Tax expense		-	-	-	-	-	-	-	(88)
Debt free net income		**607**	**1,057**	**307**	**460**	**647**	**1,319**	**1,482**	**1,618**
Add: Depreciation and amortisation		326	326	326	326	326	326	326	326
Add: Provision for major maintenance		-	-	699	699	699	193	193	193
(Increase)/ Decrease in net working capital		(23)	-	-	-	-	-	-	-
Less: Major maintenance expenses		-	-	-	-	(2,098)	-	-	-
Debt free cash flow		**911**	**1,383**	**1,332**	**1,486**	**(426)**	**1,839**	**2,002**	**2,137**
Discount rate (%)		9.90	9.90	9.90	9.90	9.90	9.90	9.90	9.90
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.65	0.60	0.54	0.49
Present value debt free cash flow		**869**	**1,201**	**1,052**	**1,068**	**(279)**	**1,094**	**1,084**	**1,053**
Present value for explicit period	19,929								
Enterprise value	**19,929**								

Currency: ₹ mn	Mar35	Mar36	Mar37	Mar38	Mar39	Mar40	Mar41	Mar42	Mar43
Number of months	12	12	12	12	12	12	12	12	12
Net revenue	**2,874**	**3,171**	**3,453**	**3,792**	**4,156**	**3,438**	**3,597**	**3,772**	**6,129**
Operating expenses	(605)	(629)	(654)	(639)	(721)	(703)	(728)	(755)	(891)
EBITDA	**2,269**	**2,542**	**2,799**	**3,153**	**3,436**	**2,735**	**2,869**	**3,017**	**5,238**
Depreciation and amortisation	(326)	(326)	(326)	(326)	(326)	(326)	(326)	(326)	(326)
EBIT	**1,944**	**2,216**	**2,473**	**2,827**	**3,110**	**2,409**	**2,543**	**2,691**	**4,912**
Tax expense	(605)	(677)	(745)	(495)	(917)	(742)	(776)	(814)	(1,374)
Debt free net income	**1,338**	**1,538**	**1,728**	**2,332**	**2,193**	**1,668**	**1,767**	**1,877**	**3,539**
Add: Depreciation and amortisation	326	326	326	326	326	326	326	326	326
Add: Provision for major maintenance	193	193	193	193	225	225	225	225	225
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-	-	-
Less: Major maintenance expenses	-	-	-	(1,354)	-	-	-	-	-
Debt free cash flow	**1,858**	**2,058**	**2,247**	**1,497**	**2,744**	**2,219**	**2,318**	**2,428**	**4,090**
Discount rate (%)	9.90	9.90	9.90	9.90	9.90	9.90	9.90	9.90	9.90
Present value factor- Mid year discounting	0.45	0.41	0.37	0.34	0.31	0.28	0.25	0.23	0.21
Present value debt free cash flow	**833**	**840**	**834**	**506**	**844**	**621**	**590**	**562**	**862**

Currency: ₹ mn	Mar44	Mar45	Mar46	Mar47	Mar48	Mar49	Mar50	Oct50
Number of months	12	12	12	12	12	12	12	7
Net revenue	**6,744**	**7,372**	**8,052**	**8,814**	**9,673**	**10,575**	**11,548**	**6,956**
Operating expenses	(932)	(975)	(1,022)	(1,030)	(900)	(1,000)	(1,062)	(623)
EBITDA	**5,812**	**6,397**	**7,030**	**7,783**	**8,773**	**9,575**	**10,486**	**6,333**
Depreciation and amortisation	(326)	(326)	(326)	(326)	(326)	(326)	(326)	(506)
EBIT	**5,486**	**6,071**	**6,704**	**7,458**	**8,448**	**9,249**	**10,160**	**5,827**
Tax expense	(1,518)	(1,666)	(1,825)	(1,505)	(2,208)	(2,410)	(2,639)	(1,593)
Debt free net income	**3,968**	**4,405**	**4,879**	**5,953**	**6,240**	**6,839**	**7,521**	**4,233**
Add: Depreciation and amortisation	326	326	326	326	326	326	326	506
Add: Provision for major maintenance	225	225	225	225	-	-	-	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-	(24)
Less: Major maintenance expenses	-	-	-	(2,028)	-	-	-	-
Debt free cash flow	**4,519**	**4,956**	**5,430**	**4,476**	**6,566**	**7,165**	**7,847**	**4,715**
Discount rate (%)	9.90	9.90	9.90	9.90	9.90	9.90	9.90	9.90
Present value factor- Mid year discounting	0.19	0.17	0.16	0.14	0.13	0.12	0.11	0.10
Present value debt free cash flow	**867**	**865**	**862**	**647**	**863**	**857**	**855**	**477**

1.11 JLTPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32	Mar33
Number of months		12	12	12	12	12	12	12
Net revenue		**1,138**	**1,241**	**1,328**	**1,459**	**1,602**	**1,755**	**1,924**
Operating expenses		(257)	(614)	(628)	(620)	(392)	(420)	(436)
EBITDA		**881**	**628**	**700**	**839**	**1,209**	**1,335**	**1,488**
Depreciation and amortisation		(187)	(187)	(187)	(187)	(187)	(187)	(187)
EBIT		**694**	**441**	**513**	**652**	**1,022**	**1,149**	**1,301**
Tax expense		-	-	(45)	-	(298)	(352)	(395)
Debt free net income		**694**	**441**	**468**	**652**	**724**	**797**	**906**
Add: Depreciation and amortisation		187	187	187	187	187	187	187
Add: Provision for major maintenance		-	387	387	387	134	134	134
(Increase)/ Decrease in net working capital		2	-	-	-	-	-	-
Less: Major maintenance expenses		-	-	-	(1,162)	-	-	-
Debt free cash flow		**883**	**1,015**	**1,042**	**64**	**1,045**	**1,118**	**1,227**
Discount rate (%)		9.71	9.71	9.71	9.71	9.71	9.71	9.71
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.66	0.60	0.55
Present value debt free cash flow		**843**	**883**	**826**	**46**	**689**	**671**	**672**
Present value for explicit period	12,820							
Enterprise value	**12,820**							

Currency: ₹ mn	Mar34	Mar35	Mar36	Mar37	Mar38	Mar39	Mar40
Number of months	12	12	12	12	12	12	12
Net revenue	**2,108**	**2,308**	**2,536**	**2,770**	**3,038**	**3,331**	**3,656**
Operating expenses	(454)	(473)	(493)	(486)	(517)	(556)	(582)
EBITDA	**1,654**	**1,835**	**2,043**	**2,284**	**2,521**	**2,775**	**3,074**
Depreciation and amortisation	(187)	(187)	(187)	(187)	(187)	(187)	(187)
EBIT	**1,467**	**1,648**	**1,856**	**2,097**	**2,335**	**2,588**	**2,887**
Tax expense	(440)	(488)	(542)	(368)	(664)	(728)	(804)
Debt free net income	**1,027**	**1,160**	**1,314**	**1,729**	**1,671**	**1,860**	**2,083**
Add: Depreciation and amortisation	187	187	187	187	187	187	187
Add: Provision for major maintenance	134	134	134	134	129	129	129
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-
Less: Major maintenance expenses	-	-	-	(939)	-	-	-
Debt free cash flow	**1,348**	**1,481**	**1,635**	**1,111**	**1,986**	**2,175**	**2,398**
Discount rate (%)	9.71	9.71	9.71	9.71	9.71	9.71	9.71
Present value factor- Mid year discounting	0.50	0.45	0.41	0.38	0.34	0.31	0.29
Present value debt free cash flow	**673**	**674**	**678**	**420**	**684**	**683**	**686**

Currency: ₹ mn	Mar41	Mar42	Mar43	Mar44	Mar45	Oct45
Number of months	12	12	12	12	12	7
Net revenue	**3,997**	**4,376**	**4,788**	**5,259**	**5,733**	**3,473**
Operating expenses	(609)	(638)	(670)	(703)	(702)	(348)
EBITDA	**3,388**	**3,738**	**4,118**	**4,555**	**5,031**	**3,125**
Depreciation and amortisation	(187)	(187)	(187)	(187)	(187)	(290)
EBIT	**3,201**	**3,551**	**3,931**	**4,368**	**4,844**	**2,835**
Tax expense	(884)	(972)	(1,068)	(1,178)	(1,039)	(785)
Debt free net income	**2,317**	**2,579**	**2,863**	**3,190**	**3,805**	**2,049**
Add: Depreciation and amortisation	187	187	187	187	187	290
Add: Provision for major maintenance	129	129	129	129	129	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	(90)
Less: Major maintenance expenses	-	-	-	-	(1,029)	-
Debt free cash flow	**2,633**	**2,894**	**3,179**	**3,506**	**3,092**	**2,250**
Discount rate (%)	9.71	9.71	9.71	9.71	9.71	9.71
Present value factor- Mid year discounting	0.26	0.24	0.22	0.20	0.18	0.17
Present value debt free cash flow	**687**	**688**	**689**	**693**	**557**	**377**

1.12 JVTPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32	Mar33
Number of months		12	12	12	12	12	12	12
Net revenue		**791**	**860**	**919**	**1,011**	**1,110**	**1,215**	**1,328**
Operating expenses		(138)	(593)	(606)	(597)	(371)	(397)	(411)
EBITDA		**653**	**267**	**313**	**414**	**739**	**819**	**917**
Depreciation and amortisation		(119)	(119)	(119)	(119)	(119)	(119)	(119)
EBIT		**534**	**148**	**194**	**295**	**619**	**699**	**797**
Tax expense		-	-	(131)	-	(88)	(225)	(253)
Debt free net income		**534**	**148**	**62**	**295**	**532**	**474**	**544**
Add: Depreciation and amortisation		119	119	119	119	119	119	119
Add: Provision for major maintenance		-	382	382	382	132	132	132
(Increase)/ Decrease in net working capital		(20)	-	-	-	-	-	-
Less: Major maintenance expenses		-	-	-	(1,146)	-	-	-
Debt free cash flow		**633**	**649**	**564**	**(350)**	**783**	**725**	**795**
Discount rate (%)		9.70	9.70	9.70	9.70	9.70	9.70	9.70
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.66	0.60	0.55
Present value debt free cash flow		**605**	**565**	**447**	**(253)**	**516**	**436**	**435**
Present value for explicit period	8,014							
Enterprise value	**8,014**							

Currency: ₹ mn	Mar34	Mar35	Mar36	Mar37	Mar38	Mar39	Mar40
Number of months	12	12	12	12	12	12	12
Net revenue	**1,453**	**1,593**	**1,752**	**1,913**	**2,095**	**2,291**	**2,518**
Operating expenses	(427)	(444)	(462)	(453)	(481)	(517)	(540)
EBITDA	**1,025**	**1,148**	**1,290**	**1,460**	**1,615**	**1,774**	**1,979**
Depreciation and amortisation	(119)	(119)	(119)	(119)	(119)	(119)	(119)
EBIT	**906**	**1,029**	**1,171**	**1,341**	**1,495**	**1,655**	**1,859**
Tax expense	(283)	(316)	(353)	(165)	(435)	(476)	(528)
Debt free net income	**623**	**713**	**817**	**1,176**	**1,060**	**1,178**	**1,331**
Add: Depreciation and amortisation	119	119	119	119	119	119	119
Add: Provision for major maintenance	132	132	132	132	126	126	126
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-
Less: Major maintenance expenses	-	-	-	(922)	-	-	-
Debt free cash flow	**874**	**964**	**1,068**	**504**	**1,305**	**1,423**	**1,576**
Discount rate (%)	9.70	9.70	9.70	9.70	9.70	9.70	9.70
Present value factor- Mid year discounting	0.50	0.46	0.41	0.38	0.34	0.31	0.29
Present value debt free cash flow	**436**	**439**	**443**	**191**	**450**	**447**	**451**

Currency: ₹ mn	Mar41	Mar42	Mar43	Mar44	Mar45	Oct45
Number of months	12	12	12	12	12	7
Net revenue	**2,745**	**3,013**	**3,294**	**3,614**	**3,942**	**2,382**
Operating expenses	(564)	(590)	(617)	(647)	(641)	(314)
EBITDA	**2,182**	**2,423**	**2,677**	**2,967**	**3,301**	**2,069**
Depreciation and amortisation	(119)	(119)	(119)	(119)	(119)	(186)
EBIT	**2,062**	**2,304**	**2,557**	**2,848**	**3,181**	**1,883**
Tax expense	(580)	(641)	(705)	(778)	(609)	(520)
Debt free net income	**1,483**	**1,663**	**1,853**	**2,070**	**2,572**	**1,364**
Add: Depreciation and amortisation	119	119	119	119	119	186
Add: Provision for major maintenance	126	126	126	126	126	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	1
Less: Major maintenance expenses	-	-	-	-	(1,004)	-
Debt free cash flow	**1,728**	**1,908**	**2,098**	**2,315**	**1,813**	**1,550**
Discount rate (%)	9.70	9.70	9.70	9.70	9.70	9.70
Present value factor- Mid year discounting	0.26	0.24	0.22	0.20	0.18	0.17
Present value debt free cash flow	**451**	**454**	**455**	**458**	**327**	**260**

1.13 LRTPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32	Mar33	Mar34
Number of months		12	12	12	12	12	12	12	12
Net revenue		**748**	**820**	**904**	**984**	**1,083**	**1,176**	**1,273**	**1,380**
Operating expenses		(995)	(141)	(151)	(1,092)	(1,108)	(1,091)	(542)	(578)
EBITDA		**(246)**	**679**	**753**	**(108)**	**(25)**	**85**	**731**	**802**
Depreciation and amortisation		(164)	(164)	(164)	(164)	(164)	(164)	(164)	(164)
EBIT		**(410)**	**515**	**590**	**(272)**	**(189)**	**(79)**	**567**	**639**
Tax expense		-	-	-	-	-	-	-	-
Debt free net income		**(410)**	**515**	**590**	**(272)**	**(189)**	**(79)**	**567**	**639**
Add: Depreciation and amortisation		164	164	164	164	164	164	164	164
Add: Provision for major maintenance		-	-	-	798	798	798	216	216
(Increase)/ Decrease in net working capital		8	-	-	-	-	-	-	-
Less: Major maintenance expenses		-	-	-	-	-	(2,395)	-	-
Debt free cash flow		**(238)**	**679**	**753**	**690**	**773**	**(1,511)**	**947**	**1,018**
Discount rate (%)		9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.65	0.59	0.54	0.49
Present value debt free cash flow		**(227)**	**589**	**594**	**495**	**505**	**(897)**	**511**	**500**
Present value for explicit period	7,756								
Enterprise value	**7,756**								

Currency: ₹ mn	Mar35	Mar36	Mar37	Mar38	Mar39	Mar40	Mar41	Mar42	Mar43
Number of months	12	12	12	12	12	12	12	12	12
Net revenue	**1,510**	**1,663**	**1,843**	**1,962**	**2,145**	**2,349**	**2,554**	**2,781**	**3,067**
Operating expenses	(597)	(618)	(640)	(663)	(646)	(477)	(527)	(557)	(590)
EBITDA	**913**	**1,045**	**1,202**	**1,299**	**1,499**	**1,872**	**2,027**	**2,223**	**2,477**
Depreciation and amortisation	(164)	(164)	(164)	(164)	(164)	(164)	(164)	(164)	(164)
EBIT	**749**	**881**	**1,038**	**1,135**	**1,335**	**1,708**	**1,863**	**2,059**	**2,313**
Tax expense	(158)	(313)	(354)	(379)	(49)	(470)	(509)	(559)	(623)
Debt free net income	**592**	**568**	**685**	**756**	**1,286**	**1,238**	**1,354**	**1,501**	**1,690**
Add: Depreciation and amortisation	164	164	164	164	164	164	164	164	164
Add: Provision for major maintenance	216	216	216	216	216	-	-	-	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-	-	-
Less: Major maintenance expenses	-	-	-	-	(1,511)	-	-	-	-
Debt free cash flow	**971**	**948**	**1,065**	**1,136**	**154**	**1,402**	**1,518**	**1,665**	**1,854**
Discount rate (%)	9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95
Present value factor- Mid year discounting	0.45	0.41	0.37	0.34	0.31	0.28	0.25	0.23	0.21
Present value debt free cash flow	**434**	**385**	**393**	**382**	**47**	**389**	**383**	**382**	**387**

Currency: ₹ mn	Mar44	Mar45	Mar46	Mar47	Mar48	Mar49	Mar50	Oct50
Number of months	12	12	12	12	12	12	12	7
Net revenue	**3,290**	**3,597**	**3,911**	**4,272**	**3,490**	**3,738**	**3,775**	**3,328**
Operating expenses	(622)	(658)	(696)	(737)	(702)	(742)	(773)	(517)
EBITDA	**2,668**	**2,938**	**3,215**	**3,536**	**2,789**	**2,997**	**3,003**	**2,812**
Depreciation and amortisation	(164)	(164)	(164)	(164)	(164)	(164)	(164)	(255)
EBIT	**2,504**	**2,774**	**3,051**	**3,372**	**2,625**	**2,833**	**2,839**	**2,557**
Tax expense	(671)	(739)	(809)	(890)	(702)	(754)	(756)	(707)
Debt free net income	**1,833**	**2,035**	**2,242**	**2,482**	**1,923**	**2,079**	**2,083**	**1,850**
Add: Depreciation and amortisation	164	164	164	164	164	164	164	255
Add: Provision for major maintenance	-	-	-	-	-	-	-	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-	(12)
Less: Major maintenance expenses	-	-	-	-	-	-	-	-
Debt free cash flow	**1,997**	**2,199**	**2,406**	**2,646**	**2,087**	**2,243**	**2,247**	**2,092**
Discount rate (%)	9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95
Present value factor- Mid year discounting	0.19	0.17	0.16	0.14	0.13	0.12	0.11	0.10
Present value debt free cash flow	**380**	**380**	**378**	**378**	**271**	**265**	**242**	**209**

1.14 KMTPL

Currency: ₹ mn Number of months	Notes	Mar27 12	Mar28 12	Mar29 12	Mar30 12	Mar31 12	Mar32 12
Net revenue		**1,348**	**1,489**	**1,637**	**1,799**	**1,963**	**2,160**
Operating expenses		(593)	(605)	(565)	(599)	(651)	(674)
EBITDA		**756**	**885**	**1,072**	**1,200**	**1,311**	**1,486**
Depreciation and amortisation		(312)	(312)	(312)	(312)	(312)	(312)
EBIT		**444**	**573**	**760**	**888**	**999**	**1,175**
Tax expense		-	-	-	-	-	-
Debt free net income		**444**	**573**	**760**	**888**	**999**	**1,175**
Add: Depreciation and amortisation		312	312	312	312	312	312
Add: Provision for major maintenance		256	256	256	240	240	240
(Increase)/ Decrease in net working capital		(9)	-	-	-	-	-
Less: Major maintenance expenses		-	-	(1,362)	-	-	-
Debt free cash flow		**1,002**	**1,140**	**(34)**	**1,440**	**1,551**	**1,727**
Discount rate (%)		9.99	9.99	9.99	9.99	9.99	9.99
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.65	0.59
Present value debt free cash flow		**956**	**989**	**(27)**	**1,032**	**1,011**	**1,023**
Present value for explicit period	13,992						
Enterprise value	**13,992**						

Currency: ₹ mn Number of months	Mar33 12	Mar34 12	Mar35 12	Mar36 12	Mar37 12	Mar38 12	Mar39 12	Mar40 12
Net revenue	**2,357**	**2,586**	**2,595**	**2,777**	**3,031**	**3,324**	**3,636**	**3,986**
Operating expenses	(697)	(722)	(743)	(692)	(517)	(588)	(620)	(655)
EBITDA	**1,660**	**1,864**	**1,853**	**2,085**	**2,514**	**2,736**	**3,016**	**3,331**
Depreciation and amortisation	(312)	(312)	(312)	(312)	(312)	(312)	(312)	(312)
EBIT	**1,349**	**1,552**	**1,541**	**1,774**	**2,202**	**2,425**	**2,704**	**3,019**
Tax expense	-	(502)	(513)	(152)	(625)	(683)	(755)	(835)
Debt free net income	**1,349**	**1,050**	**1,028**	**1,622**	**1,577**	**1,742**	**1,949**	**2,184**
Add: Depreciation and amortisation	312	312	312	312	312	312	312	312
Add: Provision for major maintenance	240	240	240	240	-	-	-	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-	-
Less: Major maintenance expenses	-	-	-	(1,682)	-	-	-	-
Debt free cash flow	**1,900**	**1,602**	**1,580**	**492**	**1,889**	**2,053**	**2,261**	**2,496**
Discount rate (%)	9.99	9.99	9.99	9.99	9.99	9.99	9.99	9.99
Present value factor- Mid year discounting	0.54	0.49	0.45	0.40	0.37	0.33	0.30	0.28
Present value debt free cash flow	**1,024**	**785**	**703**	**199**	**695**	**687**	**688**	**691**

Currency: ₹ mn Number of months	Mar41 12	Mar42 12	Mar43 12	Mar44 12	Mar45 12	Oct45 7
Net revenue	**4,350**	**4,769**	**5,201**	**5,710**	**4,666**	**2,650**
Operating expenses	(692)	(731)	(772)	(817)	(724)	(420)
EBITDA	**3,659**	**4,038**	**4,429**	**4,893**	**3,942**	**2,230**
Depreciation and amortisation	(312)	(312)	(312)	(312)	(312)	(484)
EBIT	**3,347**	**3,726**	**4,117**	**4,581**	**3,630**	**1,746**
Tax expense	(918)	(1,015)	(1,113)	(1,230)	(991)	(559)
Debt free net income	**2,428**	**2,712**	**3,004**	**3,351**	**2,639**	**1,187**
Add: Depreciation and amortisation	312	312	312	312	312	484
Add: Provision for major maintenance	-	-	-	-	-	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	(5)
Less: Major maintenance expenses	-	-	-	-	-	-
Debt free cash flow	**2,740**	**3,024**	**3,316**	**3,662**	**2,951**	**1,666**
Discount rate (%)	9.99	9.99	9.99	9.99	9.99	9.99
Present value factor- Mid year discounting	0.25	0.23	0.21	0.19	0.17	0.16
Present value debt free cash flow	**689**	**692**	**689**	**692**	**507**	**266**

Shape the future with confidence

1.15 MKTPL

Currency: ₹ mn Number of months	Notes	Mar27 12	Mar28 12	Mar29 12	Mar30 12	Mar31 12	Mar32 12	Mar33 12
Net revenue		**1,450**	**1,607**	**1,778**	**1,472**	**1,539**	**1,614**	**2,567**
Operating expenses		(437)	(448)	(438)	(459)	(482)	(498)	(574)
EBITDA		**1,014**	**1,159**	**1,340**	**1,012**	**1,058**	**1,116**	**1,994**
Depreciation and amortisation		(291)	(291)	(291)	(291)	(291)	(291)	(291)
EBIT		**723**	**868**	**1,049**	**721**	**766**	**825**	**1,703**
Tax expense		-	-	-	-	-	-	(384)
Debt free net income		**723**	**868**	**1,049**	**721**	**766**	**825**	**1,319**
Add: Depreciation and amortisation		291	291	291	291	291	291	291
Add: Provision for major maintenance		161	161	161	183	183	183	183
(Increase)/ Decrease in net working capital		0	-	-	-	-	-	-
Less: Major maintenance expenses		-	-	(828)	-	-	-	-
Debt free cash flow		**1,175**	**1,320**	**673**	**1,195**	**1,240**	**1,299**	**1,793**
Discount rate (%)		9.86	9.86	9.86	9.86	9.86	9.86	9.86
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.65	0.60	0.54
Present value debt free cash flow		**1,121**	**1,146**	**532**	**860**	**812**	**774**	**973**
Present value for explicit period	16,583							
Enterprise value	**16,583**							

Currency: ₹ mn Number of months	Mar34 12	Mar35 12	Mar36 12	Mar37 12	Mar38 12	Mar39 12	Mar40 12
Net revenue	**2,816**	**3,067**	**3,364**	**3,678**	**3,991**	**4,361**	**4,796**
Operating expenses	(597)	(620)	(646)	(648)	(771)	(829)	(864)
EBITDA	**2,219**	**2,446**	**2,717**	**3,030**	**3,220**	**3,532**	**3,933**
Depreciation and amortisation	(291)	(291)	(291)	(291)	(291)	(291)	(291)
EBIT	**1,928**	**2,155**	**2,426**	**2,739**	**2,929**	**3,241**	**3,642**
Tax expense	(589)	(650)	(721)	(434)	(869)	(949)	(1,050)
Debt free net income	**1,339**	**1,505**	**1,705**	**2,305**	**2,060**	**2,292**	**2,591**
Add: Depreciation and amortisation	291	291	291	291	291	291	291
Add: Provision for major maintenance	183	183	183	183	252	252	252
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-
Less: Major maintenance expenses	-	-	-	(1,461)	-	-	-
Debt free cash flow	**1,813**	**1,979**	**2,179**	**1,317**	**2,603**	**2,835**	**3,134**
Discount rate (%)	9.86	9.86	9.86	9.86	9.86	9.86	9.86
Present value factor- Mid year discounting	0.49	0.45	0.41	0.37	0.34	0.31	0.28
Present value debt free cash flow	**895**	**890**	**891**	**491**	**882**	**875**	**880**

Currency: ₹ mn Number of months	Mar41 12	Mar42 12	Mar43 12	Mar44 12	Mar45 12	Oct45 7
Net revenue	**5,191**	**5,661**	**6,174**	**6,753**	**7,361**	**4,461**
Operating expenses	(899)	(936)	(977)	(956)	(781)	(478)
EBITDA	**4,293**	**4,724**	**5,197**	**5,798**	**6,580**	**3,983**
Depreciation and amortisation	(291)	(291)	(291)	(291)	(291)	(452)
EBIT	**4,002**	**4,433**	**4,906**	**5,507**	**6,289**	**3,531**
Tax expense	(1,142)	(1,251)	(1,370)	(1,078)	(1,655)	(1,001)
Debt free net income	**2,860**	**3,182**	**3,536**	**4,429**	**4,634**	**2,530**
Add: Depreciation and amortisation	291	291	291	291	291	452
Add: Provision for major maintenance	252	252	252	252	-	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	(56)
Less: Major maintenance expenses	-	-	-	(1,763)	-	-
Debt free cash flow	**3,403**	**3,725**	**4,079**	**3,209**	**4,925**	**2,927**
Discount rate (%)	9.86	9.86	9.86	9.86	9.86	9.86
Present value factor- Mid year discounting	0.26	0.23	0.21	0.19	0.18	0.16
Present value debt free cash flow	**870**	**867**	**864**	**619**	**864**	**477**

Shape the future with confidence

1.16 KETPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32	Mar33	Mar34
Number of months		12	12	12	12	12	12	12	12
Net revenue		**853**	**943**	**1,031**	**1,123**	**1,226**	**1,339**	**1,472**	**1,599**
Operating expenses		(490)	(426)	(410)	(432)	(462)	(478)	(494)	(511)
EBITDA		**363**	**517**	**621**	**691**	**763**	**861**	**977**	**1,087**
Depreciation and amortisation		(189)	(189)	(189)	(189)	(189)	(189)	(189)	(189)
EBIT		**173**	**327**	**432**	**502**	**574**	**671**	**788**	**898**
Tax expense		-	-	-	-	-	-	-	-
Debt free net income		**173**	**327**	**432**	**502**	**574**	**671**	**788**	**898**
Add: Depreciation and amortisation		189	189	189	189	189	189	189	189
Add: Provision for major maintenance		187	187	187	180	180	180	180	180
(Increase)/ Decrease in net working capital		(30)	-	-	-	-	-	-	-
Less: Major maintenance expenses		-	-	(995)	-	-	-	-	-
Debt free cash flow		**519**	**704**	**(187)**	**871**	**943**	**1,040**	**1,157**	**1,267**
Discount rate (%)		9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.65	0.59	0.54	0.49
Present value debt free cash flow		**495**	**610**	**(147)**	**624**	**615**	**617**	**623**	**621**
Present value for explicit period	10,671								
Enterprise value	**10,671**								

Currency: ₹ mn	Mar35	Mar36	Mar37	Mar38	Mar39	Mar40	Mar41	Mar42	Mar43
Number of months	12	12	12	12	12	12	12	12	12
Net revenue	**1,738**	**1,913**	**2,067**	**2,259**	**2,449**	**2,681**	**2,919**	**3,181**	**3,435**
Operating expenses	(530)	(510)	(578)	(620)	(643)	(667)	(693)	(721)	(701)
EBITDA	**1,208**	**1,403**	**1,490**	**1,639**	**1,807**	**2,014**	**2,225**	**2,460**	**2,735**
Depreciation and amortisation	(189)	(189)	(189)	(189)	(189)	(189)	(189)	(189)	(189)
EBIT	**1,019**	**1,214**	**1,300**	**1,450**	**1,617**	**1,825**	**2,036**	**2,271**	**2,545**
Tax expense	(106)	(74)	(422)	(461)	(504)	(557)	(611)	(670)	(373)
Debt free net income	**913**	**1,139**	**879**	**989**	**1,113**	**1,268**	**1,425**	**1,601**	**2,172**
Add: Depreciation and amortisation	189	189	189	189	189	189	189	189	189
Add: Provision for major maintenance	180	180	208	208	208	208	208	208	208
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-	-	-
Less: Major maintenance expenses	-	(1,258)	-	-	-	-	-	-	(1,456)
Debt free cash flow	**1,282**	**250**	**1,276**	**1,386**	**1,511**	**1,665**	**1,823**	**1,998**	**1,114**
Discount rate (%)	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98
Present value factor- Mid year discounting	0.45	0.41	0.37	0.33	0.30	0.28	0.25	0.23	0.21
Present value debt free cash flow	**571**	**101**	**470**	**464**	**460**	**461**	**459**	**457**	**232**

Currency: ₹ mn	Mar44	Mar45	Mar46	Mar47	Mar48	Mar49	Mar50	Oct50
Number of months	12	12	12	12	12	12	12	7
Net revenue	**3,777**	**3,084**	**3,209**	**3,337**	**5,283**	**5,709**	**6,218**	**3,736**
Operating expenses	(548)	(531)	(559)	(588)	(731)	(773)	(818)	(479)
EBITDA	**3,229**	**2,553**	**2,650**	**2,749**	**4,552**	**4,937**	**5,400**	**3,257**
Depreciation and amortisation	(189)	(189)	(189)	(189)	(189)	(189)	(189)	(294)
EBIT	**3,040**	**2,364**	**2,460**	**2,559**	**4,363**	**4,747**	**5,211**	**2,963**
Tax expense	(812)	(642)	(666)	(691)	(1,145)	(1,242)	(1,359)	(819)
Debt free net income	**2,228**	**1,722**	**1,794**	**1,868**	**3,217**	**3,505**	**3,852**	**2,143**
Add: Depreciation and amortisation	189	189	189	189	189	189	189	294
Add: Provision for major maintenance	-	-	-	-	-	-	-	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-	(2)
Less: Major maintenance expenses	-	-	-	-	-	-	-	-
Debt free cash flow	**2,417**	**1,911**	**1,983**	**2,057**	**3,407**	**3,694**	**4,041**	**2,435**
Discount rate (%)	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98
Present value factor- Mid year discounting	0.19	0.17	0.16	0.14	0.13	0.12	0.11	0.10
Present value debt free cash flow	**457**	**329**	**310**	**293**	**441**	**434**	**432**	**242**

Shape the future with confidence

1.17 SMTPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32	Mar33	Mar34
Number of months		12	12	12	12	12	12	12	12
Net revenue		**912**	**1,014**	**1,110**	**1,212**	**1,329**	**1,447**	**1,582**	**1,722**
Operating expenses		(497)	(490)	(473)	(443)	(475)	(492)	(509)	(527)
EBITDA		**414**	**524**	**637**	**769**	**854**	**956**	**1,073**	**1,194**
Depreciation and amortisation		(191)	(191)	(191)	(191)	(191)	(191)	(191)	(191)
EBIT		**223**	**333**	**446**	**578**	**663**	**765**	**882**	**1,003**
Tax expense		-	-	-	-	-	-	-	-
Debt free net income		**223**	**333**	**446**	**578**	**663**	**765**	**882**	**1,003**
Add: Depreciation and amortisation		191	191	191	191	191	191	191	191
Add: Provision for major maintenance		237	237	237	175	175	175	175	175
(Increase)/ Decrease in net working capital		2	-	-	-	-	-	-	-
Less: Major maintenance expenses		-	-	(985)	-	-	-	-	-
Debt free cash flow		**653**	**760**	**(111)**	**944**	**1,029**	**1,131**	**1,248**	**1,370**
Discount rate (%)		9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.65	0.59	0.54	0.49
Present value debt free cash flow		**623**	**660**	**(87)**	**677**	**672**	**671**	**674**	**673**
Present value for explicit period	11,755								
Enterprise value	**11,755**								

Currency: ₹ mn	Mar35	Mar36	Mar37	Mar38	Mar39	Mar40	Mar41	Mar42	Mar43
Number of months	12	12	12	12	12	12	12	12	12
Net revenue	**1,881**	**2,065**	**2,244**	**2,427**	**2,647**	**2,889**	**3,161**	**3,435**	**3,724**
Operating expenses	(547)	(526)	(596)	(640)	(665)	(691)	(719)	(748)	(727)
EBITDA	**1,334**	**1,539**	**1,648**	**1,787**	**1,982**	**2,198**	**2,442**	**2,686**	**2,997**
Depreciation and amortisation	(191)	(191)	(191)	(191)	(191)	(191)	(191)	(191)	(191)
EBIT	**1,143**	**1,348**	**1,457**	**1,596**	**1,791**	**2,007**	**2,251**	**2,495**	**2,806**
Tax expense	(312)	(115)	(461)	(497)	(547)	(602)	(664)	(726)	(446)
Debt free net income	**831**	**1,233**	**997**	**1,099**	**1,244**	**1,405**	**1,587**	**1,769**	**2,361**
Add: Depreciation and amortisation	191	191	191	191	191	191	191	191	191
Add: Provision for major maintenance	175	175	204	204	204	204	204	204	204
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-	-	-
Less: Major maintenance expenses	-	(1,226)	-	-	-	-	-	-	(1,426)
Debt free cash flow	**1,198**	**372**	**1,391**	**1,494**	**1,639**	**1,800**	**1,982**	**2,164**	**1,329**
Discount rate (%)	9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95
Present value factor- Mid year discounting	0.45	0.41	0.37	0.34	0.31	0.28	0.25	0.23	0.21
Present value debt free cash flow	**535**	**151**	**514**	**502**	**501**	**500**	**501**	**498**	**278**

Currency: ₹ mn	Mar44	Mar45	Mar46	Mar47	Mar48	Mar49	Mar50	Oct50
Number of months	12	12	12	12	12	12	12	7
Net revenue	**4,081**	**4,414**	**4,811**	**3,937**	**4,105**	**4,256**	**6,761**	**4,052**
Operating expenses	(582)	(643)	(681)	(631)	(665)	(699)	(870)	(510)
EBITDA	**3,499**	**3,771**	**4,130**	**3,306**	**3,440**	**3,556**	**5,891**	**3,543**
Depreciation and amortisation	(191)	(191)	(191)	(191)	(191)	(191)	(191)	(297)
EBIT	**3,308**	**3,580**	**3,939**	**3,115**	**3,249**	**3,365**	**5,700**	**3,246**
Tax expense	(880)	(948)	(1,039)	(832)	(866)	(895)	(1,483)	(891)
Debt free net income	**2,428**	**2,631**	**2,900**	**2,283**	**2,384**	**2,471**	**4,218**	**2,355**
Add: Depreciation and amortisation	191	191	191	191	191	191	191	297
Add: Provision for major maintenance	-	-	-	-	-	-	-	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-	(26)
Less: Major maintenance expenses	-	-	-	-	-	-	-	-
Debt free cash flow	**2,619**	**2,822**	**3,091**	**2,474**	**2,575**	**2,662**	**4,409**	**2,626**
Discount rate (%)	9.95	9.95	9.95	9.95	9.95	9.95	9.95	9.95
Present value factor- Mid year discounting	0.19	0.17	0.16	0.14	0.13	0.12	0.11	0.10
Present value debt free cash flow	**498**	**488**	**486**	**354**	**335**	**315**	**475**	**263**

Shape the future with confidence

1.18 NKTPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32	Mar33	Mar34	Mar35
Number of months		12	12	12	12	12	12	12	12	12
Net revenue		**859**	**952**	**1,051**	**1,149**	**1,267**	**1,384**	**1,507**	**1,655**	**1,801**
Operating expenses		(446)	(428)	(419)	(435)	(464)	(481)	(498)	(517)	(536)
EBITDA		**413**	**524**	**632**	**714**	**803**	**903**	**1,009**	**1,138**	**1,265**
Depreciation and amortisation		(236)	(236)	(236)	(236)	(236)	(236)	(236)	(236)	(236)
EBIT		**177**	**287**	**396**	**478**	**567**	**667**	**773**	**902**	**1,029**
Tax expense		-	-	-	-	-	-	-	-	-
Debt free net income		**177**	**287**	**396**	**478**	**567**	**667**	**773**	**902**	**1,029**
Add: Depreciation and amortisation		236	236	236	236	236	236	236	236	236
Add: Provision for major maintenance		181	181	181	170	170	170	170	170	170
(Increase)/ Decrease in net working capital		(22)	-	-	-	-	-	-	-	-
Less: Major maintenance expenses		-	-	(955)	-	-	-	-	-	-
Debt free cash flow		**572**	**704**	**(143)**	**884**	**973**	**1,073**	**1,179**	**1,308**	**1,435**
Discount rate (%)		10.05	10.05	10.05	10.05	10.05	10.05	10.05	10.05	10.05
Present value factor- Mid year discounting		0.95	0.87	0.79	0.72	0.65	0.59	0.54	0.49	0.44
Present value debt free cash flow		**545**	**610**	**(112)**	**632**	**632**	**634**	**633**	**638**	**636**
Present value for explicit period	11,293									
Enterprise value	**11,293**									

Currency: ₹ mn	Mar36	Mar37	Mar38	Mar39	Mar40	Mar41	Mar42	Mar43	Mar44
Number of months	12	12	12	12	12	12	12	12	12
Net revenue	**1,978**	**2,149**	**2,345**	**2,568**	**2,794**	**3,043**	**3,343**	**3,637**	**2,975**
Operating expenses	(525)	(607)	(646)	(671)	(698)	(725)	(756)	(747)	(533)
EBITDA	**1,453**	**1,542**	**1,699**	**1,897**	**2,097**	**2,318**	**2,587**	**2,890**	**2,442**
Depreciation and amortisation	(236)	(236)	(236)	(236)	(236)	(236)	(236)	(236)	(236)
EBIT	**1,217**	**1,306**	**1,462**	**1,660**	**1,861**	**2,082**	**2,351**	**2,653**	**2,206**
Tax expense	-	(189)	(476)	(527)	(579)	(635)	(703)	(403)	(614)
Debt free net income	**1,217**	**1,117**	**986**	**1,133**	**1,282**	**1,446**	**1,647**	**2,250**	**1,592**
Add: Depreciation and amortisation	236	236	236	236	236	236	236	236	236
Add: Provision for major maintenance	170	214	214	214	214	214	214	214	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	-	-	-
Less: Major maintenance expenses	(1,187)	-	-	-	-	-	-	(1,497)	-
Debt free cash flow	**435**	**1,567**	**1,436**	**1,583**	**1,732**	**1,897**	**2,097**	**1,204**	**1,828**
Discount rate (%)	10.05	10.05	10.05	10.05	10.05	10.05	10.05	10.05	10.05
Present value factor- Mid year discounting	0.40	0.37	0.33	0.30	0.27	0.25	0.23	0.21	0.19
Present value debt free cash flow	**175**	**573**	**478**	**478**	**476**	**473**	**476**	**248**	**342**

Currency: ₹ mn	Mar45	Mar46	Mar47	Mar48	Mar49	Mar50	Oct50
Number of months	12	12	12	12	12	12	7
Net revenue	**3,093**	**3,224**	**5,139**	**5,622**	**6,129**	**6,670**	**4,013**
Operating expenses	(572)	(603)	(733)	(776)	(823)	(871)	(531)
EBITDA	**2,521**	**2,621**	**4,407**	**4,845**	**5,307**	**5,799**	**3,482**
Depreciation and amortisation	(236)	(236)	(236)	(236)	(236)	(236)	(367)
EBIT	**2,285**	**2,385**	**4,170**	**4,609**	**5,070**	**5,563**	**3,115**
Tax expense	(634)	(659)	(1,109)	(1,219)	(1,335)	(1,459)	(876)
Debt free net income	**1,651**	**1,726**	**3,062**	**3,390**	**3,735**	**4,103**	**2,239**
Add: Depreciation and amortisation	236	236	236	236	236	236	367
Add: Provision for major maintenance	-	-	-	-	-	-	-
(Increase)/ Decrease in net working capital	-	-	-	-	-	-	26
Less: Major maintenance expenses	-	-	-	-	-	-	-
Debt free cash flow	**1,887**	**1,962**	**3,298**	**3,626**	**3,971**	**4,340**	**2,632**
Discount rate (%)	10.05	10.05	10.05	10.05	10.05	10.05	10.05
Present value factor- Mid year discounting	0.17	0.15	0.14	0.13	0.12	0.11	0.10
Present value debt free cash flow	**321**	**303**	**463**	**463**	**461**	**457**	**258**

1.19 JU

Currency: INR mn Number of months		Mar27 12	Mar28 12	Mar29 12	Mar30 12	Mar31 12	Jul31 4
Net revenue		**4,038**	**4,038**	**4,038**	**4,038**	**4,038**	**2,019**
Operating expenses		(1,239)	(725)	(671)	(661)	(886)	(228)
EBITDA		**2,799**	**3,313**	**3,367**	**3,377**	**3,152**	**1,791**
Depreciation and amortisation		(3.0)	(3.0)	(3.0)	(3.0)	(3.0)	(1.5)
EBIT		**2,796**	**3,310**	**3,364**	**3,374**	**3,148**	**1,789**
Tax expense		-	(350)	(848)	(860)	(692)	(385)
Debt free net income		**2,796**	**2,960**	**2,516**	**2,513**	**2,457**	**1,405**
Add: Depreciation and amortisation		3.0	3.0	3.0	3.0	3.0	1.5
Add: Provision for major maintenance		92	92	157	157	157	-
(Increase)/ Decrease in net working capital		-	-	-	-	-	(72)
Add: Advance income tax (including TDS)		105	105				
Less: Major maintenance expenses		-	(647)	-	-	(472)	-
Debt free cash flow		**2,996**	**2,513**	**2,677**	**2,674**	**2,145**	**1,335**
Discount rate (%)		7.46	7.46	7.46	7.46	7.46	7.46
Present value factor- Mid year discounting		0.96	0.90	0.84	0.78	0.72	0.69
Present value debt free cash flow		**2,890**	**2,256**	**2,236**	**2,079**	**1,552**	**921**
Present value for explicit period	11,934						
Enterprise value	**11,934**						

Note: The above Enterprise Value includes the pass-through advance tax of INR 119.34 Mn to the erstwhile shareholders. As per the information provided by the Management, the payment to the erstwhile shareholders shall happen from the Trust, hence, the adjustment for the pass-through advance tax has not been made at the SPV level.

1.20 QEPL

Currency: INR mn		Mar27	Mar28	Mar29	Mar30	Mar31	Jun31
Number of months		12	12	12	12	12	2
Net revenue		**4,900**	**4,900**	**4,900**	**4,900**	**4,900**	**1,678**
Operating expenses		(907)	(526)	(529)	(514)	(556)	(147)
EBITDA		**3,993**	**4,374**	**4,371**	**4,386**	**4,344**	**1,531**
Depreciation and amortisation		(2.1)	(2.1)	(2.1)	(2.1)	(2.1)	(0.7)
EBIT		**3,991**	**4,372**	**4,369**	**4,384**	**4,342**	**1,530**
Tax expense		-	-	-	-	-	-
Debt free net income		**3,991**	**4,372**	**4,369**	**4,384**	**4,342**	**1,530**
Add: Depreciation and amortisation		2.1	2.1	2.1	2.1	2.1	0.7
Add: Provision for major maintenance		54	54	54	-	-	-
(Increase)/ Decrease in net working capital		-	-	-	-	-	323
Add: Advance income tax (including TDS)		63	63				
Less: Major maintenance expenses		-	-	(435)	-	-	-
Debt free cash flow		**4,110**	**4,491**	**3,991**	**4,386**	**4,344**	**1,855**
Discount rate (%)		8.43	8.43	8.43	8.43	8.43	8.43
Present value factor- Mid year discounting		0.96	0.89	0.82	0.75	0.69	0.66
Present value debt free cash flow		**3,947**	**3,978**	**3,260**	**3,304**	**3,018**	**1,228**
Present value for explicit period	18,735						
Enterprise value	**18,735**						

1.21 APEPL

Currency: ₹ mn	Notes	Sep26
Number of months		6
Net revenue		**565**
Operating expenses		(175)
EBITDA		**390**
Depreciation and amortisation		(1)
EBIT		**390**
Tax expense		-
Debt free net income		**390**
Add: Depreciation and amortisation		1
Add: Provision for major maintenance		-
(Increase)/ Decrease in net working capital		(43)
Less: Major maintenance expenses		-
Debt free cash flow		**348**
Discount rate (%)		8.43
Present value factor- Mid year discounting		0.98
Present value debt free cash flow		**341**
Present value for explicit period	341	
Enterprise value	**341**	

Shape the future with confidence

1.22 BWHPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32
Number of months		12	12	12	12	12	12
Total Annuity		**861**	**852**	**842**	**831**	**820**	**808**
Operating expenses		(283)	(257)	(250)	(261)	(281)	(292)
EBITDA		**578**	**596**	**592**	**570**	**539**	**516**
Depreciation and amortisation		(1)	(1)	(1)	(1)	(1)	(1)
EBIT		**577**	**595**	**591**	**569**	**538**	**515**
Tax expense		(89)	(132)	(55)	(141)	(138)	(137)
Debt free net income		**488**	**463**	**536**	**428**	**400**	**378**
Add: Depreciation and amortisation		1	1	1	1	1	1
(Increase)/ Decrease in net working capital		54	54	-	-	-	-
Add: Provision for Major maintenance		85	85	85	78	78	78
Less: Major maintenance expenses		-	-	(340)	-	-	-
Debt free cash flow		**628**	**603**	**282**	**507**	**478**	**457**
Discount rate (%)		7.75	7.75	7.75	7.75	7.75	7.75
Present value factor- Mid year discounting		0.96	0.89	0.83	0.77	0.71	0.66
Present value debt free cash flow		**605**	**539**	**234**	**390**	**342**	**303**
Present value for explicit period	3,180						
Enterprise value	**3,180**						
Add: Deferred consideration	-						
Adjusted Enterprise value	**3,180**						

Currency: ₹ mn	Mar33	Mar34	Mar35	Mar36	Sep36
Number of months	12	12	12	12	6
Total Annuity	**794**	**776**	**745**	**738**	**368**
Operating expenses	(303)	(315)	(328)	(319)	(122)
EBITDA	**491**	**461**	**417**	**419**	**247**
Depreciation and amortisation	(1)	(1)	(1)	(1)	(1)
EBIT	**490**	**460**	**416**	**418**	**246**
Tax expense	(134)	(128)	(119)	-	(34)
Debt free net income	**356**	**331**	**297**	**418**	**212**
Add: Depreciation and amortisation	1	1	1	1	1
(Increase)/ Decrease in net working capital	-	-	-	-	(21)
Add: Provision for Major maintenance	78	78	78	78	-
Less: Major maintenance expenses	-	-	-	(543)	-
Debt free cash flow	**435**	**410**	**375**	**(46)**	**191**
Discount rate (%)	7.75	7.75	7.75	7.75	7.75
Present value factor- Mid year discounting	0.62	0.57	0.53	0.49	0.47
Present value debt free cash flow	**268**	**234**	**199**	**(23)**	**89**

Shape the future with confidence

1.23 MSHPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32
Number of months		12	12	12	12	12	12
Total Annuity		**946**	**923**	**913**	**901**	**889**	**876**
Operating expenses		(317)	(281)	(272)	(285)	(308)	(320)
EBITDA		**629**	**641**	**640**	**616**	**581**	**557**
Depreciation and amortisation		(1)	(1)	(1)	(1)	(1)	(1)
EBIT		**628**	**640**	**639**	**614**	**580**	**556**
Tax expense		(97)	(137)	(56)	(149)	(147)	(146)
Debt free net income		**530**	**503**	**583**	**465**	**433**	**409**
Add: Depreciation and amortisation		1	1	1	1	1	1
(Increase)/ Decrease in net working capital		89	89	-	-	-	-
Add: Provision for Major maintenance		92	92	92	83	83	83
Less: Major maintenance expenses		-	-	(367)	-	-	-
Debt free cash flow		**712**	**685**	**309**	**550**	**517**	**494**
Discount rate (%)		7.74	7.74	7.74	7.74	7.74	7.74
Present value factor- Mid year discounting		0.96	0.89	0.83	0.77	0.72	0.66
Present value debt free cash flow		**686**	**612**	**256**	**423**	**370**	**328**
Present value for explicit period	3,626						
Enterprise value	**3,626**						
Add: Deferred consideration	-						
Adjusted Enterprise value	**3,626**						

Currency: ₹ mn	Mar33	Mar34	Mar35	Mar36	Nov36
Number of months	12	12	12	12	8
Total Annuity	**862**	**847**	**815**	**800**	**783**
Operating expenses	(332)	(346)	(360)	(347)	(189)
EBITDA	**530**	**501**	**455**	**453**	**594**
Depreciation and amortisation	(1)	(1)	(1)	(1)	(1)
EBIT	**528**	**500**	**454**	**452**	**593**
Tax expense	(143)	(139)	(129)	-	(119)
Debt free net income	**385**	**361**	**324**	**452**	**474**
Add: Depreciation and amortisation	1	1	1	1	1
(Increase)/ Decrease in net working capital	-	-	-	-	(19)
Add: Provision for Major maintenance	83	83	83	83	-
Less: Major maintenance expenses	-	-	-	(584)	-
Debt free cash flow	**470**	**446**	**409**	**(47)**	**456**
Discount rate (%)	7.74	7.74	7.74	7.74	7.74
Present value factor- Mid year discounting	0.62	0.57	0.53	0.49	0.46
Present value debt free cash flow	**290**	**255**	**217**	**(23)**	**211**

Shape the future with confidence

1.24 MHPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32
Number of months		12	12	12	12	12	12
Total Annuity		**793**	**773**	**764**	**756**	**746**	**736**
Operating expenses		(359)	(353)	(340)	(306)	(332)	(344)
EBITDA		**433**	**421**	**425**	**450**	**414**	**391**
Depreciation and amortisation		(1)	(1)	(1)	(1)	(1)	(1)
EBIT		**432**	**419**	**423**	**449**	**413**	**390**
Tax expense		(50)	(104)	-	(84)	(110)	(108)
Debt free net income		**382**	**316**	**423**	**365**	**303**	**282**
Add: Depreciation and amortisation		1	1	1	1	1	1
(Increase)/ Decrease in net working capital		126	81	-	-	-	-
Add: Provision for Major maintenance		143	143	143	85	85	85
Less: Major maintenance expenses		-	-	(573)	-	-	-
Debt free cash flow		**652**	**541**	**(5)**	**452**	**390**	**368**
Discount rate (%)		7.89	7.89	7.89	7.89	7.89	7.89
Present value factor- Mid year discounting		0.96	0.89	0.83	0.77	0.71	0.66
Present value debt free cash flow		**628**	**483**	**(4)**	**346**	**277**	**243**
Present value for explicit period	2,641						
Enterprise value	**2,641**						
Add: Deferred consideration	-						
Adjusted Enterprise value	**2,641**						

Currency: ₹ mn	Mar33	Mar34	Mar35	Mar36	Dec36
Number of months	12	12	12	12	9
Total Annuity	**724**	**711**	**685**	**642**	**689**
Operating expenses	(358)	(372)	(387)	(371)	(234)
EBITDA	**366**	**339**	**297**	**272**	**454**
Depreciation and amortisation	(1)	(1)	(1)	(1)	(1)
EBIT	**365**	**338**	**296**	**270**	**454**
Tax expense	(104)	(100)	(91)	-	(39)
Debt free net income	**260**	**238**	**205**	**270**	**414**
Add: Depreciation and amortisation	1	1	1	1	1
(Increase)/ Decrease in net working capital	-	-	-	-	107
Add: Provision for Major maintenance	85	85	85	85	-
Less: Major maintenance expenses	-	-	-	(595)	-
Debt free cash flow	**346**	**324**	**291**	**(239)**	**522**
Discount rate (%)	7.89	7.89	7.89	7.89	7.89
Present value factor- Mid year discounting	0.61	0.57	0.52	0.49	0.45
Present value debt free cash flow	**211**	**183**	**153**	**(116)**	**238**

Shape the future with confidence

1.25 SIPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32
Number of months		12	12	12	12	12	12
Total Annuity		**921**	**871**	**860**	**850**	**838**	**826**
Operating expenses		(235)	(244)	(236)	(239)	(258)	(269)
EBITDA		**686**	**627**	**624**	**611**	**580**	**556**
Depreciation and amortisation		(1)	(1)	(1)	(1)	(1)	(1)
EBIT		**685**	**627**	**623**	**611**	**579**	**556**
Tax expense		(123)	(133)	(71)	(143)	(141)	(140)
Debt free net income		**562**	**494**	**552**	**467**	**438**	**416**
Add: Depreciation and amortisation		1	1	1	1	1	1
(Increase)/ Decrease in net working capital		30	30	-	-	-	-
Add Provision for Major maintenance		71	71	71	54	54	54
Less: Major maintenance expenses		-	-	(284)	-	-	-
Debt free cash flow		**663**	**595**	**340**	**522**	**492**	**470**
Discount rate (%)		7.70	7.70	7.70	7.70	7.70	7.70
Present value factor- Mid year discounting		0.96	0.89	0.83	0.77	0.72	0.66
Present value debt free cash flow		**639**	**532**	**282**	**402**	**353**	**313**
Present value for explicit period	3,413						
Enterprise value	**3,413**						
Add: Deferred consideration	-						
Adjusted Enterprise value	**3,413**						

Currency: ₹ mn	Mar33	Mar34	Mar35	Mar36	May36
Number of months	12	12	12	12	2
Total Annuity	**811**	**793**	**761**	**761**	**369**
Operating expenses	(281)	(293)	(306)	(296)	(45)
EBITDA	**531**	**500**	**456**	**465**	**324**
Depreciation and amortisation	(1)	(1)	(1)	(1)	(0)
EBIT	**530**	**500**	**455**	**465**	**324**
Tax expense	(137)	(132)	(123)	(31)	(69)
Debt free net income	**393**	**368**	**333**	**433**	**255**
Add: Depreciation and amortisation	1	1	1	1	0
(Increase)/ Decrease in net working capital	-	-	-	-	(19)
Add Provision for Major maintenance	54	54	54	54	-
Less: Major maintenance expenses	-	-	-	(378)	-
Debt free cash flow	**448**	**422**	**387**	**110**	**237**
Discount rate (%)	7.70	7.70	7.70	7.70	7.70
Present value factor- Mid year discounting	0.62	0.57	0.53	0.49	0.47
Present value debt free cash flow	**276**	**242**	**206**	**54**	**112**

Shape the future with confidence

1.26 SPPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32
Number of months		12	12	12	12	12	12
Total Annuity		**1,103**	**1,002**	**991**	**977**	**964**	**949**
Operating expenses		(341)	(350)	(342)	(300)	(321)	(333)
EBITDA		**762**	**652**	**649**	**678**	**643**	**617**
Depreciation and amortisation		(0)	(0)	(0)	(0)	(0)	(0)
EBIT		**761**	**652**	**648**	**677**	**642**	**616**
Tax expense		(27)	(147)	-	(162)	(162)	(161)
Debt free net income		**735**	**505**	**648**	**516**	**480**	**455**
Add: Depreciation and amortisation		0	0	0	0	0	0
(Increase)/ Decrease in net working capital		150	90	-	-	-	-
Add: Provision for Major maintenance		160	160	160	97	97	97
Less: Major maintenance expenses		-	-	(639)	-	-	-
Debt free cash flow		**1,045**	**755**	**169**	**613**	**578**	**552**
Discount rate (%)		7.87	7.87	7.87	7.87	7.87	7.87
Present value factor- Mid year discounting		0.96	0.89	0.83	0.77	0.71	0.66
Present value debt free cash flow		**1,006**	**674**	**140**	**470**	**411**	**364**
Present value for explicit period	4,118						
Enterprise value	**4,118**						
Add: Deferred consideraition	-						
Adjusted Enterprise value	**4,118**						

Currency: ₹ mn	Mar33	Mar34	Mar35	Mar36	Oct36
Number of months	12	12	12	12	6
Total Annuity	**933**	**916**	**880**	**858**	**848**
Operating expenses	(345)	(358)	(372)	(362)	(150)
EBITDA	**588**	**557**	**507**	**495**	**698**
Depreciation and amortisation	(0)	(0)	(0)	(0)	(0)
EBIT	**587**	**557**	**507**	**495**	**698**
Tax expense	(159)	(154)	(144)	-	(131)
Debt free net income	**429**	**402**	**362**	**495**	**567**
Add: Depreciation and amortisation	0	0	0	0	0
(Increase)/ Decrease in net working capital	-	-	-	-	(28)
Add: Provision for Major maintenance	97	97	97	97	-
Less: Major maintenance expenses	-	-	-	(679)	-
Debt free cash flow	**526**	**500**	**460**	**(86)**	**539**
Discount rate (%)	7.87	7.87	7.87	7.87	7.87
Present value factor- Mid year discounting	0.61	0.57	0.53	0.49	0.46
Present value debt free cash flow	**322**	**283**	**242**	**(42)**	**248**

Shape the future with confidence

1.27 THPL

Currency: ₹ mn	Notes	Mar27	Mar28	Mar29	Mar30	Mar31	Mar32
Number of months		12	12	12	12	12	12
Total Annuity		**1,283**	**1,255**	**1,237**	**1,219**	**1,200**	**1,180**
Operating expenses		(439)	(450)	(440)	(371)	(395)	(408)
EBITDA		**844**	**805**	**797**	**848**	**805**	**771**
Depreciation and amortisation		(1)	(1)	(1)	(1)	(1)	(1)
EBIT		**843**	**805**	**797**	**848**	**804**	**771**
Tax expense		(189)	(202)	-	(192)	(214)	(212)
Debt free net income		**654**	**602**	**797**	**656**	**590**	**559**
Add: Depreciation and amortisation		1	1	1	1	1	1
(Increase)/ Decrease in net working capital		65	64	-	-	-	-
Add: Provision for Major maintenance		238	238	238	146	146	146
Less: Major maintenance expenses		-	-	(952)	-	-	-
Debt free cash flow		**958**	**905**	**83**	**802**	**737**	**705**
Discount rate (%)		7.76	7.76	7.76	7.76	7.76	7.76
Present value factor- Mid year discounting		0.96	0.89	0.83	0.77	0.71	0.66
Present value debt free cash flow		**922**	**809**	**69**	**618**	**526**	**468**
Present value for explicit period	4,625						
Enterprise value	**4,625**						
Add: Deferred consideraition	-						
Adjusted Enterprise value	**4,625**						

Currency: ₹ mn	Mar33	Mar34	Mar35	Mar36	May36
Number of months	12	12	12	12	1
Total Annuity	**1,156**	**1,127**	**1,078**	**1,032**	**562**
Operating expenses	(422)	(437)	(452)	(440)	(40)
EBITDA	**734**	**690**	**626**	**593**	**522**
Depreciation and amortisation	(1)	(1)	(1)	(1)	(0)
EBIT	**734**	**690**	**625**	**592**	**522**
Tax expense	(207)	(200)	(186)	-	(36)
Debt free net income	**527**	**490**	**439**	**592**	**486**
Add: Depreciation and amortisation	1	1	1	1	0
(Increase)/ Decrease in net working capital	-	-	-	-	73
Add: Provision for Major maintenance	146	146	146	146	-
Less: Major maintenance expenses	-	-	-	(1,021)	-
Debt free cash flow	**673**	**637**	**586**	**(282)**	**559**
Discount rate (%)	7.76	7.76	7.76	7.76	7.76
Present value factor- Mid year discounting	0.62	0.57	0.53	0.49	0.47
Present value debt free cash flow	**414**	**363**	**310**	**(139)**	**264**

2. Detailed WACC Computation

Computation of Cost of Equity

► Based on the parameters mentioned in the Report above, the cost of equity for InvIT Assets is computed in the following table:

Particulars	Notes	JMTPL	MBEL	WUPTPL	NDEPL	FRHL	WVEPL	DATRPL	GAEPL	NAMEPL
Risk-free rate (%)	a	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
Beta	b	0.99	1.00	1.09	1.00	0.99	0.98	0.96	0.99	0.99
Equity market risk premium (%)	c	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
Concessioning authority specific risk premium (%)	d	-	-	-	-	-	-	-	-	0.50
Alpha adjustment (%)	d	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)
Cost of equity capital (%)		**13.69**	**13.72**	**14.40**	**13.74**	**13.69**	**13.58**	**13.44**	**13.66**	**14.15**

Particulars	Notes	HTPL	JLTPL	JVTPL	LRTPL	KMTPL	MKTPL	KETPL	SMTPL	NKTPL
Risk-free rate (%)	a	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
Beta	b	0.99	0.97	0.97	1.00	1.00	0.99	1.00	1.00	1.00
Equity market risk premium (%)	c	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
Concessioning authority specific risk premium (%)	d	-	-	-	-	-	-	-	-	-
Alpha adjustment (%)	d	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)	(0.25)
Cost of equity capital (%)		**13.68**	**13.55**	**13.55**	**13.72**	**13.74**	**13.66**	**13.74**	**13.72**	**13.78**

Particulars	Notes	APEPL	BWHPL	MSHPL	MHPL	THPL	SIPL	SPPL	JU	QB
Debt borrowing rate (%)	e	7.53	7.53	7.53	7.53	7.53	7.53	7.53	7.53	7.53
Additional risk premium (%)	d	3.00	5.00	5.00	5.00	5.00	5.00	5.00	3.00	3.00
Cost of equity capital (%)		**10.53**	**12.53**	**12.53**	**12.53**	**12.53**	**12.53**	**12.53**	**10.53**	**10.53**

Computation of Cost of Debt

► Based on the parameters mentioned in the Report above, the cost of debt for InvIT Assets is computed in the following table:

Particulars	Notes	JMTPL	MBEL	WUPTPL	NDEPL	FRHL	WVEPL	DATRPL	GAEPL	NAMEPL
Debt borrowing rate (%)	e	7.53	8.40	7.53	7.53	7.53	7.53	7.53	7.53	7.53
Expected income tax rate (%)	f	18.45	17.89	-	17.33	18.52	21.53	25.00	19.39	19.70
After-tax cost of debt (%)		**6.14**	**6.90**	**7.53**	**6.22**	**6.14**	**5.91**	**5.65**	**6.07**	**6.05**

Particulars	Notes	HTPL	JLTPL	JVTPL	LRTPL	KMTPL	MKTPL	KETPL	SMTPL	NKTPL
Debt borrowing rate (%)	e	7.53	7.53	7.53	7.53	7.53	7.53	7.53	7.53	7.53
Expected income tax rate (%)	f	18.85	22.11	22.24	17.83	17.26	19.40	17.34	17.91	16.17
After-tax cost of debt (%)		**6.11**	**5.87**	**5.86**	**6.19**	**6.23**	**6.07**	**6.22**	**6.18**	**6.31**

Particulars	Notes	APEPL	BWHPL	MSHPL	MHPL	THPL	SIPL	SPPL	JU	QB
Debt borrowing rate (%)	e	7.53	7.53	7.53	7.53	7.53	7.53	7.53	7.53	7.53
Expected income tax rate (%)	f	-	24.22	24.50	21.67	24.13	25.17	22.10	18.44	-
After-tax cost of debt (%)		**7.53**	**5.71**	**5.69**	**5.90**	**5.71**	**5.63**	**5.87**	**6.14**	**7.53**

Notes:

a. Based on prevailing YTMs of Gilt Bonds with 10-year residual maturity (rounded) as on 31 March 2026.

b. Please refer the table for Beta working below

c. Based on EYMBSLLP internal study on the prevailing market risk premium in India

d. We have applied 5.0% risk premium on the cost of debt for the InvIT, to arrive at the cost of equity for HAM Assets, to adequately account for the risk associated with the cash flows, such as fluctuations in the bank rates etc. Further, we have used a 2.0% lower risk premium to arrive at the cost of equity for BOT Annuity Assets, since they are fixed annuity projects (wherein the annuity payments are predetermined and are not dependent on any external parameters such as bank rates etc).

Concessioning authority specific risk premium: Additional risk premium of 0.5% has been considered for NAMEPL to account for operational and regulatory risk factors, considering it is a state highway concession agreement.

Alpha adjustment: Risk free rate is based on prevailing YTMs of Gilt Bonds with 10-year residual maturity (rounded) as on the Valuation Date. The increase in the GILT Bond Rate from 6.5% to nearly 7% is majorly due to the ongoing stressed geopolitical situation and consequent liquidity positions. This increase may not be sustainable in the long term and as the geopolitical tensions ease out, these rates may soften again. Further, the overall portfolio has diversified significantly in last few years based on new acquisitions. Despite the geopolitical tensions, the traffic in the portfolio during FY26 has been better as compared to the projections made in the last traffic study. Hence, we have considered alpha adjustment of -0.25% for BOT Assets and TOT Assets to account for the above factors in current valuation.

e. Of all the SPVs held by the Trust, MBEL has external debt and all other SPVs have the borrowings via the Trust. Hence the cost of debt for MBEL is based upon the borrowing cost of MBEL itself and the cost of borrowings for all other SPVs are based upon the borrowing cost of the Trust.

f. Based on effective tax rate of respective SPV's

Calculation of Beta

a. **Calculation of Unlevered Beta**

Currency: ₹ mn	Equity beta	Market capitalisation	Net debt	Enterprise value	Debt-equity ratio based on 3 year average	Effective tax rate (%)	Unlevered beta based on 3 year debt-equity
IRB Infrastructure Developers Limited	1.61	2,55,632	26,614	2,82,246	37	25.17	1.27
PNC Infratech Limited	1.34	45,172	69,462	1,14,634	77	25.17	0.85
Dilip Buildcon Limited	1.56	96,543	72,347	1,68,890	116	25.17	0.83
IRB InvIT Fund	0.14	75,670	27,964	1,03,634	60	25.17	0.10
Ashoka Buildcon Limited	1.66	33,392	11,049	44,441	107	25.17	0.92
Sadbhav Infrastructure Project Limited	0.87	1,356	31,239	32,595	1,969	25.17	0.06
KNR Constructions Limited	1.24	31,845	15,661	47,506	13	25.17	1.13
Powergrid Infrastructure Investment Trust	0.22	82,112	8,936	91,048	7	25.17	0.21
Indus Infra Trust	0.07	54,961	13,207	68,168	16	25.17	0.06
Indigrid Infrastructure Trust	0.09	1,62,001	1,74,867	3,36,868	153	25.17	0.04
Average	**0.88**						**0.55**

Source: Capital IQ

Note: Given that Indus Infra Trust was listed on 12 March 2024, the beta parameters have been considered for last 2 year as against 3 years for other comparable companies.

b. **Calculation of Relevered beta**

Particulars	JMTPL	MBEL	WUPTPL	NDEPL	FRHL	WVEPL	DATRPL	GAEPL	NAMEPL
IRB Infrastructure Developers Limited	2.30	2.30	2.53	2.31	2.30	2.26	2.21	2.29	2.28
PNC Infratech Limited	1.54	1.54	1.70	1.55	1.54	1.51	1.48	1.53	1.53
Dilip Buildcon Limited	1.51	1.52	1.67	1.52	1.51	1.49	1.46	1.50	1.50
IRB InvIT Fund	0.18	0.18	0.20	0.18	0.18	0.18	0.17	0.18	0.18
Ashoka Buildcon Limited	1.67	1.68	1.84	1.68	1.67	1.64	1.61	1.66	1.66
Sadbhav Infrastructure Project Limited	0.10	0.10	0.11	0.10	0.10	0.10	0.10	0.10	0.10
KNR Constructions Limited	2.05	2.06	2.26	2.06	2.05	2.02	1.98	2.04	2.04
Powergrid Infrastructure Investment Trust	0.38	0.38	0.42	0.38	0.38	0.37	0.36	0.38	0.38
Indus Infra Trust	0.11	0.11	0.12	0.11	0.11	0.11	0.11	0.11	0.11
Indigrid Infrastructure Trust	0.08	0.08	0.09	0.08	0.08	0.08	0.08	0.08	0.08
Average	**0.99**	**1.00**	**1.09**	**1.00**	**0.99**	**0.98**	**0.96**	**0.99**	**0.99**

Particulars	HTPL	JLTPL	JVTPL	LRTPL	KMTPL	MKTPL	KETPL	SMTPL	NKTPL
IRB Infrastructure Developers Limited	2.29	2.25	2.25	2.31	2.31	2.29	2.31	2.30	2.33
PNC Infratech Limited	1.54	1.51	1.51	1.55	1.55	1.53	1.55	1.54	1.56
Dilip Buildcon Limited	1.51	1.48	1.48	1.52	1.52	1.50	1.52	1.52	1.53
IRB InvIT Fund	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Ashoka Buildcon Limited	1.67	1.64	1.64	1.68	1.68	1.66	1.68	1.68	1.69
Sadbhav Infrastructure Project Limited	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
KNR Constructions Limited	2.05	2.01	2.01	2.06	2.07	2.04	2.06	2.06	2.08
Powergrid Infrastructure Investment Trust	0.38	0.37	0.37	0.38	0.38	0.38	0.38	0.38	0.38
Indus Infra Trust	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Indigrid Infrastructure Trust	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Average	**0.99**	**0.97**	**0.97**	**1.00**	**1.00**	**0.99**	**1.00**	**1.00**	**1.00**

Calculation of WACC

BOT Assets and TOT Assets: Considering the finite life of the asset, the cashflows being prone to Traffic and inflation risk and the current & expected debt to equity structure of the SPVs, we have conservatively considered a long-term debt-to-equity ratio of 50:50

BOT Annuity Assets and HAM Assets: The leverage risk in the assets with fixed, stable cashflow schedules and subdued risk, is relatively lower. Hence, a higher debt-to-equity ratio of 70:30 is considered after considering the nature of income from HAM Assets and BOT Annuity Assets.

The net debt to enterprise value ratio of the InvIT as at 31 March 2026 is ~46.8%.

Based upon the credit rating profile the Trust can increase their leverage to 70% net debt to enterprise ratio, in accordance with the InvIT Regulations. However, as per their existing Debt covenants, the Trust can increase their leverage to 60% net debt to enterprise ratio.

Our assumption for debt-to-equity ratio of 50:50 for BOT Assets & TOT Assets and 70:30 for HAM Assets & BOT Annuity Assets, respectively results in an overall debt-to-equity ratio of 53:47. This is broadly in line with the existing debt to equity structure of the InvIT as on 31 March 2026.

Particulars	Weights	JMTPL	MBEL	WUPTPL	NDEPL	FRHL	WVEPL	DATRPL	GAEPL	NAMEPL
Cost of debt (%)	50.0	3.07	3.45	3.77	3.11	3.07	2.95	2.82	3.04	3.02
Cost of equity capital (%)	50.0	6.85	6.86	7.20	6.87	6.85	6.79	6.72	6.83	7.07
WACC		**9.92**	**10.31**	**10.97**	**9.98**	**9.91**	**9.74**	**9.55**	**9.86**	**10.10**

Particulars	Weights	HTPL	JLTPL	JVTPL	LRTPL	KMTPL	MKTPL	KETPL	SMTPL	NKTPL
Cost of debt (%)	50.0	3.06	2.93	2.93	3.09	3.12	3.03	3.11	3.09	3.16
Cost of equity capital (%)	50.0	6.84	6.78	6.77	6.86	6.87	6.83	6.87	6.86	6.89
WACC		**9.90**	**9.71**	**9.70**	**9.95**	**9.99**	**9.86**	**9.98**	**9.95**	**10.05**

Particulars	Weights	APEPL	BWHPL	MSHPL	MHPL	THPL	SIPL	SPPL	JU	QB
Cost of debt (%)	70.0	5.27	3.99	3.98	4.13	4.00	3.94	4.11	4.30	5.27
Cost of equity capital (%)	30.0	3.16	3.76	3.76	3.76	3.76	3.76	3.76	3.16	3.16
WACC		**8.43**	**7.75**	**7.74**	**7.89**	**7.76**	**7.70**	**7.87**	**7.46**	**8.43**

The computed WACC for the BOT Assets and TOT Assets ranges from 9.55% to 10.97%. For the annuity assets, the computed WACC ranges from 7.70% to 7.89% for HAM Assets and 7.46% to 8.43% for BOT Annuity Assets.

Shape the future with confidence

3. Change in assumptions from previous annual valuation:

A comparison of assumptions used to carry out the current and previous annual valuation exercise has been present below:

A. Change in assumptions for WPI

The Management has considered the applicable WPI growth rate of 0.96% (i.e. actual WPI growth as of 31 December 2025, as reported by RBI) for FY 2027, for the SPVs having increase in toll rates being computed based upon increase in WPI derived from actual WPI growth as of 31 December of the previous year. Applicable WPI growth rates from FY 2028 onwards have been kept unchanged.

B. Change in assumptions for WACC Computation

a. BOT & TOT Assets

WACC Input	BOT & TOT Assets		Remarks
	Mar-25	Mar-26	
Debt/Equity	45:55	50:50	Post acquisition of JU and QB, the existing and expected debt to equity ratio at the InvIT level has increased. Thus, the weight to debt has been increased to bring the same broadly in line with the existing debt to equity structure of the InvIT as on 31 March 2026.
Cost of equity calculation			
Risk-free rate	6.5%	7.0%	The risk-free rate is based on prevailing YTMs of Gilt Bonds with 10-year residual maturity (rounded) as on 31 March 2026..
Unlevered beta	0.62	0.55	1. Bharat Road Network Limited has been removed as comparable as the company has a qualified opinion on its going concern assumptions and has limited trading volumes. 2. Indus Infrastructure Trust, Indigrid Trust and Powergrid Trust have additionally been considered as comparables for beta computation to account for typical investor expectations from an InvIT. 3. Given that Indus Infrastructure Trust was listed on 12 March 2024, beta parameters for Indus Infrastructure trust have been considered based upon 2 year returns. 4. Further, given the limited datapoints of monthly returns for Indus Infrastructure Trust, we have considered daily returns for all the comparable companies (in order to maintain consistency of data) as against the monthly returns considered during the previous valuations.
Relevered beta	0.99 - 1.12	0.96-1.09	
Market equity risk premium (ERP)	7.0%	7.0%	
Concessioning authority specific risk premium (%)	0.5%	0.5%	
Alpha adjustment (%)		(0.25%)	Risk free rate is based on prevailing YTMs of Gilt Bonds with 10-year residual maturity (rounded) as on the Valuation Date. The increase in the GILT Bond Rate from 6.5% to nearly 7% is majorly due to the ongoing stressed geopolitical situation and consequent liquidity positions. This increase may not be sustainable in the long term and as the geopolitical tensions ease out, these rates may soften again. Further, the overall portfolio has diversified significantly in last few years based on new acquisitions. Despite the geopolitical tensions, the traffic in the portfolio during FY26 has been better as compared to the projections made in the last traffic study. Hence, we have considered alpha adjustment of -0.25% to account for the above factors in current valuation for BOT Assets and TOT Assets.
Cost of equity	**13.4% - 14.3%**	**13.4% - 14.4%**	
Cost of debt calculation			
Debt borrowing rate	8.19% / 8.4%	7.53% / 8.4%	As indicated earlier, MBEL has external borrowings and hence the cost of borrowings for MBEL is based upon the borrowing cost of the SPV itself. However, the borrowings for other BOT Assets and TOT Assets within the trust are via the Trust, hence the cost of borrowings for these SPVs are based upon the borrowing cost of the Trust. The borrowing cost for the Trust has been reduced from 8.19% to 7.53%. Accordingly the debt borrowing rate has been adjusted for respective SPVs.
Effective income tax rate	0.0% - 26.4%	0.0% - 25.00%	
After-tax cost of debt	**6.0% - 8.2%**	**5.65% - 7.53%**	
WACC	**10.1% - 11.6%**	**9.55% - 10.97%**	

b. BOT Annuity Assets and HAM Assets

WACC Input	HAM Assets		BOT Annuity Assets		Remarks
	Mar-25	Mar-26	Mar-25	Mar-26	
Debt/Equity	70:30	70:30	70:30	70:30	
Cost of equity calculation					
Debt borrowing rate	8.19%	7.53%	8.19%	7.53%	As indicated earlier, the HAM Assets and BOT Annuity Assets have the borrowings via the Trust. Hence the cost of debt for all the HAM Assets and BOT Annuity Assets are based upon the borrowing cost of the Trust. the borrowing cost for the Trust has been reduced from 8.19% to 7.53%. Accordingly the debt borrowing rate has been adjusted for respective SPVs.
Additional Risk Premium	5.0%	5.0%	3.0%	3.0%	
Cost of equity	**13.2%**	**12.5%**	**11.2%**	**10.5%**	
Cost of debt calculation					
Debt borrowing rate	8.19%	7.53%	8.19%	7.53%	
Effective income tax rate	20.9% - 24.3%	21.67% - 25.17%	0%	0.0% - 18.44%	JU and QB assets were acquired during Q1 FY26, hence the range includes JU & QB assets in March 2026, but are not included in March 2025.
After-tax cost of debt	**6.2% - 6.5%**	**5.6% - 5.9%**	**8.2%**	**6.1% - 7.5%**	
WACC	**8.3% to 8.5%**	**7.7% to 7.9%**	**9.1%**	**7.5% to 8.4%**	

C. Change in Traffic Estimates

Based upon the recent traffic study conducted, the Management has considered the revised traffic estimates provided by M/s Steer Davies Gleave India Private Limited dated April 2026. The traffic update included

i. Updates to the traffic estimates for FY 2027, based upon the actual traffic achieved during FY 2026. Further the growth rates considered to estimate traffic in subsequent years were also updated based upon revised assessment of the impact such as traffic diversions, revised projected capacity augmentation dates etc.

ii. Impact from the adoption of annual passes by passenger vehicles has been considered while computing estimated revenue from revised traffic estimates. The impact varies across the portfolio depending upon the proportion of passenger vehicles to the total traffic at each toll plaza.

D. Change in Operating expenses

i. The Management has estimated an additional fee of 0.413% (i.e. 0.35% + 18% GST) of the toll/annuity revenues is to be paid to Cube Highways Technologies Private Limited (“CHTPL”) for expert service agreement.

E. Change in Major maintenance expenses

i. The Management has projected an increase in major maintenance expenses based on the TDD report, majorly due to changes in the base for non-bitumen costs and rise in bitumen prices.

F. Change in deferred consideration for HAM Assets

i. As part of the acquisition of HAM Assets by the InvIT, we understand that there were certain deferred consideration amounts which were to be paid by the InvIT to CH-III, when they are received from NHAI (to be paid within a period not exceeding eighteen months from the date of the transfer agreement, subject to receipt of such amounts from

NHAI), as agreed between CH-III and the InvIT as per the terms and conditions of the relevant share purchase agreements and in compliance with the applicable law. These amounts include pending GST claims, receivables due to Change in Law ("CIL"), withheld annuities and descoping related receivables. However, since the period of eighteen months is completed, hence these amounts are no longer payable to CH-III. Hence the adjustment to Enterprise Value of the HAM Assets is no longer computed.

Shape the future with confidence

Statement of assets

SPV (Currency: INR Mn)	Net Tangible assets	Intangible assets	Non-current assets	Current assets	Total
JMTPL	15	2,841	69	606	3,530
MBEL	14	1,462	30	944	2,449
WUPTPL	7.7	163	8.7	1,238	1,418
NDEPL	13	2,129	1.0	164	2,308
FRHPL	15	8,446	215	375	9,051
WVEPL	8.5	2,821	35	239	3,104
DATRPL	71	21,926	16	685	22,698
GAEPL	41	20,568	33	933	21,575
NAMEPL	26	14,825	281	790	15,922
HTPL	3.3	8,650	10	409	9,072
JLTPL	31	3,998	0.8	383	4,412
JVTPL	30	2,536	1.9	210	2,778
LRTPL	48	4,303	4.8	858	5,214
KMTPL	49	6,691	1.7	117	6,858
MKTPL	14	6,259	0.9	211	6,485
KETPL	12	5,015	1.6	255	5,283
SMTPL	13	5,055	0.8	193	5,262
NKTPL	13	6,258	49	3,656	9,977
JU	24	-	8,269	4,464	12,757
QB	18	-	11,209	6,708	17,936
APEPL	1.2	-	10	1,382	1,393
BWHPL	13	-	289	1,486	1,789
MSHPL	15	-	526	1,337	1,879
MHPL	16	-	216	1,493	1,725
SIPL	6.5	0.8	1,119	1,098	2,225
SPPL	5.6	-	1,981	1,400	3,387
THPL	5.5	0.6	1,236	1,624	2,867
Total	**529**	**1,23,947**	**25,615**	**33,261**	**1,83,351**

Source: Management

Shape the future with confidence

4. **Traffic Estimates as per the Traffic Study Report provided to us by the Management and published by M/s Steer Davies Gleave India Private Limited**

A. Jaipur Mahua Tollway Private Limited ("JMTPL")

Table 1: Traffic via Toll Plaza 1 (Sikandra)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	11605	1212	360	1852	685	351	3974	20038
FY28	12427	1274	367	1924	720	353	4202	21266
FY29	13281	1338	374	1996	756	355	4423	22522
FY30	14164	1402	380	2068	792	357	4582	23746
FY31	15089	1469	387	2142	829	359	4811	25087
FY32	16075	1539	394	2218	868	361	5052	26507

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	7.16%	5.21%	1.98%	3.93%	4.90%	0.29%	6.34%	6.26%
FY28	7.08%	5.12%	1.94%	3.89%	5.11%	0.57%	5.74%	6.13%
FY29	6.87%	5.02%	1.91%	3.74%	5.00%	0.57%	5.26%	5.91%
FY30	6.65%	4.78%	1.60%	3.61%	4.76%	0.56%	3.59%	5.43%
FY31	6.53%	4.78%	1.84%	3.58%	4.67%	0.56%	5.00%	5.65%
FY32	6.53%	4.77%	1.81%	3.55%	4.70%	0.56%	5.01%	5.66%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 3: Traffic via Toll Plaza 2 (Rajadhok)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	13123	1134	370	1622	585	260	2830	19924
FY28	14052	1192	377	1685	615	261	2993	21177
FY29	15018	1252	385	1748	646	263	3151	22462
FY30	16016	1312	392	1811	676	264	3258	23730
FY31	17062	1375	399	1876	708	266	3421	25106
FY32	18177	1440	406	1943	742	268	3592	26566

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited)

Table 3: Traffic via Toll Plaza 2 (Rajadhok)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	(2.84%)	7.18%	(8.19%)	(1.58%)	(0.34%)	(8.45%)	(0.56%)	(2.01%)
FY28	7.08%	5.11%	1.89%	3.88%	5.13%	0.38%	5.76%	6.29%
FY29	6.87%	5.03%	2.12%	3.74%	5.04%	0.77%	5.28%	6.07%
FY30	6.65%	4.79%	1.82%	3.60%	4.64%	0.38%	3.40%	5.65%
FY31	6.53%	4.80%	1.79%	3.59%	4.73%	0.76%	5.00%	5.80%
FY32	6.53%	4.73%	1.75%	3.57%	4.80%	0.75%	5.00%	5.82%

B. Mahua Bharatpur Expressways Limited ("MBEL")

Table 1: Traffic via Toll Plaza 1 (Amoli)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	8222	946	297	1457	581	335	4083	15921

FY28	8805	995	302	1513	611	337	4317	16880
FY29	9410	1045	308	1570	641	339	4544	17856
FY30	10035	1095	313	1627	672	341	4709	18792
FY31	10691	1147	319	1685	703	343	4944	19832
FY32	11389	1202	325	1745	736	345	5192	20933

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Amoli)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	7.2%	5.2%	2.1%	3.9%	4.9%	0.6%	6.2%	6.2%
FY28	7.1%	5.2%	1.7%	3.8%	5.2%	0.6%	5.7%	6.0%
FY29	6.9%	5.0%	2.0%	3.8%	4.9%	0.6%	5.3%	5.8%
FY30	6.6%	4.8%	1.6%	3.6%	4.8%	0.6%	3.6%	5.2%
FY31	6.5%	4.7%	1.9%	3.6%	4.6%	0.6%	5.0%	5.5%
FY32	6.5%	4.8%	1.9%	3.6%	4.7%	0.6%	5.0%	5.6%

Source: Computed based on traffic forecasts in Table 1

Table 3: Traffic via Toll Plaza 2 (Ludhawai)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	9658	1112	308	1496	596	338	4075	17582
FY28	10342	1169	314	1553	627	340	4309	18654
FY29	11053	1227	320	1612	658	342	4535	19747
FY30	11787	1286	325	1670	689	344	4699	20802
FY31	12557	1348	331	1730	722	346	4934	21968
FY32	13378	1412	337	1791	756	348	5181	23203

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 4: Forecast for growth rates via Toll Plaza 2 (Ludhawai)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	7.2%	5.2%	2.0%	3.9%	4.7%	0.6%	6.2%	6.2%
FY28	7.1%	5.1%	1.9%	3.8%	5.2%	0.6%	5.7%	6.1%
FY29	6.9%	5.0%	1.9%	3.8%	4.9%	0.6%	5.2%	5.9%
FY30	6.6%	4.8%	1.6%	3.6%	4.7%	0.6%	3.6%	5.3%
FY31	6.5%	4.8%	1.8%	3.6%	4.8%	0.6%	5.0%	5.6%
FY32	6.5%	4.7%	1.8%	3.5%	4.7%	0.6%	5.0%	5.6%

Source: Computed based on traffic forecasts in Table 3

C. Western U.P. Tollway Private Limited ("WUPTPL)

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Siwaya)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY26	29,082	1,520	976	2,285	384	439	910	35,597

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Siwaya)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	(4.3%)	3.2%	(4.3%)	3.2%	(2.6%)	(9.4%)	(5.5%)	(3.5%)

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

D. Nelamangala Devihalli Expressway Private Limited ("NDEPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Doddakarenahalli)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	23454	1941	1294	1871	1097	302	847	30806
FY28	24977	2048	1329	1923	1122	299	869	32567
FY29	26861	2157	1365	1974	1163	300	906	34727
FY30	28935	2267	1400	2024	1205	302	944	37078
FY31	30938	2381	1435	2075	1247	304	983	39364
FY32	33071	2500	1471	2127	1292	306	1024	41791
FY33	35427	2630	1509	2183	1339	308	1067	44463

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Doddakarenahalli)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	6.8%	5.7%	2.8%	2.8%	2.3%	(1.0%)	2.7%	6.0%
FY28	6.5%	5.5%	2.8%	2.8%	2.2%	(1.1%)	2.6%	5.7%
FY29	7.5%	5.3%	2.6%	2.6%	3.7%	0.6%	4.3%	6.6%
FY30	7.7%	5.1%	2.6%	2.6%	3.6%	0.6%	4.2%	6.8%
FY31	6.9%	5.0%	2.5%	2.5%	3.5%	0.6%	4.1%	6.2%
FY32	6.9%	5.0%	2.5%	2.5%	3.5%	0.6%	4.1%	6.2%
FY33	7.1%	5.2%	2.6%	2.6%	3.7%	0.6%	4.3%	6.4%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 3: Base Traffic (FY26) via Toll Plaza 2 (Karbylu)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	17764	1449	934	1536	785	300	842	23609
FY28	19066	1519	960	1578	815	302	879	25120
FY29	20379	1590	985	1620	846	303	917	26640
FY30	21801	1661	1010	1661	876	305	956	28271
FY31	23174	1734	1036	1703	907	307	995	29856
FY32	24626	1810	1062	1746	939	309	1036	31527
FY33	26221	1892	1089	1791	973	311	1081	33358

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 4: Forecast for growth rates via Toll Plaza 2 (Karbylu)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	7.6%	5.0%	2.8%	2.8%	3.9%	0.6%	4.5%	6.6%
FY28	7.3%	4.8%	2.8%	2.8%	3.8%	0.6%	4.5%	6.4%
FY29	6.9%	4.6%	2.6%	2.6%	3.7%	0.6%	4.3%	6.1%
FY30	7.0%	4.5%	2.6%	2.6%	3.6%	0.6%	4.2%	6.1%
FY31	6.3%	4.4%	2.5%	2.5%	3.5%	0.6%	4.1%	5.6%
FY32	6.3%	4.4%	2.5%	2.5%	3.5%	0.6%	4.1%	5.6%
FY33	6.5%	4.5%	2.6%	2.6%	3.7%	0.6%	4.3%	5.8%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

E. Farakka-Raiganj Highways Private Limited ("FRHPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Lakshmipur)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	2983	1638	575	441	1234	720	5545	13138
FY28	3173	1707	593	448	1294	740	5967	13922
FY29	3366	1777	610	454	1347	751	6329	14634
FY30	3559	1847	627	460	1400	755	6625	15274
FY31	3757	1919	644	467	1446	754	6880	15867
FY32	3966	1994	662	473	1510	762	7245	16613
FY33	4196	2075	682	480	1579	772	7644	17428
FY34	4439	2159	701	487	1651	781	8061	18280
FY35	4694	2245	721	494	1726	790	8497	19169
FY36	4962	2335	742	501	1803	800	8952	20096
FY37	5244	2428	763	508	1882	809	9427	21063
FY38	5540	2524	785	516	1965	819	9922	22071
FY39	5851	2623	807	523	2050	828	10438	23122
FY40	6177	2725	829	530	2138	838	10976	24214
FY41	6517	2831	852	537	2229	847	11536	25350
FY42	6874	2939	875	545	2322	857	12118	26532

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Lakshmipur)

	CJV	Mini LCV	.CV	Bus	2A	3A	MAV	Total
FY27	8.4%	6.0%	3.0%	1.5%	4.9%	3.7%	9.0%	7.3%
FY28	6.4%	4.2%	3.0%	1.5%	4.8%	2.7%	7.6%	6.0%
FY29	6.1%	4.1%	2.9%	1.5%	4.1%	1.5%	6.1%	5.1%
FY30	5.8%	3.9%	2.8%	1.4%	3.9%	0.5%	4.7%	4.4%
FY31	5.5%	3.9%	2.8%	1.4%	3.3%	(0.1%)	3.9%	3.9%
FY32	5.6%	3.9%	2.8%	1.4%	4.4%	1.2%	5.3%	4.7%
FY33	5.8%	4.1%	2.9%	1.5%	4.6%	1.2%	5.5%	4.9%
FY34	5.8%	4.0%	2.9%	1.4%	4.5%	1.2%	5.5%	4.9%
FY35	5.8%	4.0%	2.9%	1.4%	4.5%	1.2%	5.4%	4.9%
FY36	5.7%	4.0%	2.9%	1.4%	4.5%	1.2%	5.4%	4.8%
FY37	5.7%	4.0%	2.8%	1.4%	4.4%	1.2%	5.3%	4.8%
FY38	5.6%	4.0%	2.8%	1.4%	4.4%	1.2%	5.3%	4.8%
FY39	5.6%	3.9%	2.8%	1.4%	4.3%	1.2%	5.2%	4.8%
FY40	5.6%	3.9%	2.8%	1.4%	4.3%	1.1%	5.2%	4.7%
FY41	5.5%	3.9%	2.8%	1.4%	4.3%	1.1%	5.1%	4.7%
FY42	5.5%	3.8%	2.7%	1.4%	4.2%	1.1%	5.0%	4.7%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 3: Base Traffic (FY26) via Toll Plaza 2 (Gazole)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	4823	2045	560	707	1420	759	4247	14561
FY28	5113	2118	573	717	1488	780	4542	15333
FY29	5411	2193	587	728	1550	785	4752	16006
FY30	5716	2267	600	738	1612	790	4963	16686
FY31	6032	2342	613	748	1668	789	5130	17324
FY32	6368	2420	627	759	1742	798	5402	18117
FY33	6738	2505	641	770	1821	808	5699	18984
FY34	7128	2592	656	781	1904	818	6010	19890
FY35	7538	2681	671	792	1990	828	6335	20837
FY36	7969	2773	687	803	2079	838	6675	21824
FY37	8421	2867	702	815	2171	847	7029	22854
FY38	8897	2965	718	826	2266	857	7398	23929
FY39	9396	3065	734	838	2364	867	7783	25049
FY40	9918	3167	750	850	2466	877	8184	26214
FY41	10465	3271	767	861	2570	887	8602	27426
FY42	11039	3379	784	873	2679	897	9036	28688

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 4: Forecast for growth rates via Toll Plaza 2 (Gazole)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	7.2%	4.7%	2.4%	1.5%	4.9%	1.8%	6.2%	5.6%
FY28	6.0%	3.6%	2.4%	1.5%	4.8%	2.8%	6.9%	5.3%
FY29	5.8%	3.5%	2.3%	1.5%	4.2%	0.6%	4.6%	4.4%
FY30	5.6%	3.4%	2.3%	1.4%	4.0%	0.6%	4.4%	4.3%
FY31	5.5%	3.3%	2.2%	1.4%	3.5%	(0.1%)	3.4%	3.8%
FY32	5.6%	3.3%	2.2%	1.4%	4.4%	1.2%	5.3%	4.6%
FY33	5.8%	3.5%	2.3%	1.5%	4.6%	1.2%	5.5%	4.8%
FY34	5.8%	3.5%	2.3%	1.4%	4.5%	1.2%	5.5%	4.8%
FY35	5.8%	3.5%	2.3%	1.4%	4.5%	1.2%	5.4%	4.8%
FY36	5.7%	3.4%	2.3%	1.4%	4.5%	1.2%	5.4%	4.7%
FY37	5.7%	3.4%	2.3%	1.4%	4.4%	1.2%	5.3%	4.7%
FY38	5.6%	3.4%	2.3%	1.4%	4.4%	1.2%	5.3%	4.7%
FY39	5.6%	3.4%	2.2%	1.4%	4.3%	1.2%	5.2%	4.7%
FY40	5.6%	3.3%	2.2%	1.4%	4.3%	1.1%	5.2%	4.6%
FY41	5.5%	3.3%	2.2%	1.4%	4.3%	1.1%	5.1%	4.6%
FY42	5.5%	3.3%	2.2%	1.4%	4.2%	1.1%	5.0%	4.6%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

F. Walayar Vadakkencherry Expressways Private Limited ("WVEPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Pampampallam)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	14059	3592	1148	2327	1627	563	2828	26145
FY28	15108	3756	1186	2414	1708	569	3024	27766
FY29	16178	3923	1223	2502	1791	575	3228	29420
FY30	17265	4090	1260	2590	1875	578	3440	31098
FY31	18406	4262	1298	2679	1961	582	3661	32850
FY32	19620	4441	1337	2772	2052	585	3852	34660
FY33	20962	4635	1379	2872	2151	588	4061	36647
FY34	22379	4834	1421	2975	2254	592	4228	38683
FY35	23873	5039	1464	3081	2361	595	4401	40815
FY36	25449	5251	1508	3190	2472	599	4634	43103
FY37	27107	5469	1553	3302	2588	603	4879	45501
FY38	28853	5693	1598	3418	2708	606	5134	48010
FY39	30687	5923	1645	3536	2834	610	5401	50635
FY40	32619	6160	1692	3658	2963	613	5680	53384
FY41	34652	6405	1739	3782	3098	616	5969	56261
FY42	36790	6656	1788	3909	3237	620	6271	59271
FY43	39037	6915	1838	4040	3381	623	6584	62417
FY44	41397	7181	1888	4173	3529	627	6910	65705
FY45	43875	7454	1940	4309	3683	630	7248	69139

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Pampampallam)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	7.7%	4.6%	3.3%	3.8%	3.8%	0.6%	4.3%	5.9%
FY28	7.5%	4.6%	3.3%	3.7%	5.0%	1.1%	6.9%	6.2%
FY29	7.1%	4.4%	3.2%	3.6%	4.8%	1.1%	6.7%	6.0%
FY30	6.7%	4.3%	3.1%	3.5%	4.7%	0.6%	6.5%	5.7%
FY31	6.6%	4.2%	3.0%	3.5%	4.6%	0.6%	6.4%	5.6%
FY32	6.6%	4.2%	3.0%	3.5%	4.6%	0.6%	5.2%	5.5%
FY33	6.8%	4.4%	3.1%	3.6%	4.8%	0.6%	5.4%	5.7%
FY34	6.8%	4.3%	3.1%	3.6%	4.8%	0.6%	4.1%	5.6%
FY35	6.7%	4.2%	3.0%	3.6%	4.8%	0.6%	4.1%	5.5%
FY36	6.6%	4.2%	3.0%	3.5%	4.7%	0.6%	5.3%	5.6%
FY37	6.5%	4.1%	3.0%	3.5%	4.7%	0.6%	5.3%	5.6%
FY38	6.4%	4.1%	2.9%	3.5%	4.7%	0.6%	5.2%	5.5%
FY39	6.4%	4.0%	2.9%	3.5%	4.6%	0.6%	5.2%	5.5%
FY40	6.3%	4.0%	2.9%	3.4%	4.6%	0.6%	5.2%	5.4%
FY41	6.2%	4.0%	2.8%	3.4%	4.5%	0.6%	5.1%	5.4%
FY42	6.2%	3.9%	2.8%	3.4%	4.5%	0.6%	5.0%	5.3%
FY43	6.1%	3.9%	2.8%	3.3%	4.4%	0.6%	5.0%	5.3%
FY44	6.0%	3.8%	2.7%	3.3%	4.4%	0.5%	4.9%	5.3%
FY45	6.0%	3.8%	2.7%	3.3%	4.4%	0.5%	4.9%	5.2%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Shape the future with confidence

G. D A Toll Road Private Limited ("DATRPL")

Table 1: Traffic via Toll Plaza 1 (Gadpuri)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total
FY27	36629	3368	1695	1236	1704	693	1577	1	46904
FY28	39056	3503	1720	1289	1759	684	1662	1	49674
FY29	41814	3639	1761	1341	1836	690	1770	1	52852
FY30	44608	3775	1795	1394	1910	694	1865	1	56043
FY31	47509	3914	1830	1447	1985	698	1964	1	59349
FY32	50569	4058	1864	1502	2062	702	2068	1	62827
FY33	53916	4213	1901	1562	2145	706	2182	1	66626
FY34	57413	4372	1938	1623	2229	711	2301	1	70588
FY35	60989	4535	1976	1685	2313	715	2426	1	74640
FY36	64737	4702	2013	1749	2400	719	2555	1	78878
FY37	68662	4874	2051	1815	2489	723	2691	1	83306
FY38	72767	5049	2089	1882	2580	728	2832	1	87929
FY39	77058	5228	2127	1950	2674	732	2980	1	92751
FY40	81539	5412	2165	2020	2771	736	3133	1	97776
FY41	86208	5599	2203	2091	2870	740	3293	2	103004
FY42	91068	5789	2241	2163	2971	744	3459	2	108437
FY43	96123	5984	2279	2236	3075	749	3632	2	114079
FY44	101376	6182	2317	2311	3181	753	3812	2	119933

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Gadpuri)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	6.59%	4.08%	1.62%	4.39%	3.02%	(1.84%)	5.77%	5.87%
FY28	6.63%	4.01%	1.47%	4.29%	3.23%	(1.30%)	5.39%	5.91%
FY29	7.06%	3.88%	2.38%	4.03%	4.38%	0.88%	6.50%	6.40%
FY30	6.68%	3.74%	1.93%	3.95%	4.03%	0.58%	5.37%	6.04%
FY31	6.50%	3.68%	1.95%	3.80%	3.93%	0.58%	5.31%	5.90%
FY32	6.44%	3.68%	1.86%	3.80%	3.88%	0.57%	5.30%	5.86%
FY33	6.62%	3.82%	1.98%	3.99%	4.03%	0.57%	5.51%	6.05%
FY34	6.49%	3.77%	1.95%	3.91%	3.92%	0.71%	5.45%	5.95%
FY35	6.23%	3.73%	1.96%	3.82%	3.77%	0.56%	5.43%	5.74%
FY36	6.15%	3.68%	1.87%	3.80%	3.76%	0.56%	5.32%	5.68%
FY37	6.06%	3.66%	1.89%	3.77%	3.71%	0.56%	5.32%	5.61%
FY38	5.98%	3.59%	1.85%	3.69%	3.66%	0.69%	5.24%	5.55%
FY39	5.90%	3.55%	1.82%	3.61%	3.64%	0.55%	5.23%	5.48%
FY40	5.82%	3.52%	1.79%	3.59%	3.63%	0.55%	5.13%	5.42%
FY41	5.73%	3.46%	1.76%	3.51%	3.57%	0.54%	5.11%	5.35%
FY42	5.64%	3.39%	1.72%	3.44%	3.52%	0.54%	5.04%	5.27%
FY43	5.55%	3.37%	1.70%	3.37%	3.50%	0.67%	5.00%	5.20%
FY44	5.46%	3.31%	1.67%	3.35%	3.45%	0.53%	4.96%	5.13%

Shape the future with confidence

Table 3: Traffic via Toll Plaza 2 (Karman)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total
FY27	24134	1754	1519	997	3853	2048	3512	4	37820
FY28	25567	1827	1498	1032	3903	1947	3533	4	39310
FY29	27499	1901	1514	1067	4181	1991	3820	4	41976
FY30	29592	1975	1544	1101	4448	2026	4091	4	44780
FY31	31783	2051	1573	1136	4698	2050	4346	4	47640
FY32	34112	2129	1603	1172	4959	2074	4614	4	50668
FY33	36680	2214	1635	1211	5242	2099	4908	4	53993
FY34	39384	2300	1667	1251	5535	2125	5214	4	57480
FY35	42176	2389	1699	1291	5834	2150	5528	4	61071
FY36	45119	2480	1731	1332	6147	2176	5856	4	64844
FY37	48216	2573	1764	1373	6473	2201	6201	4	68805
FY38	51471	2667	1796	1415	6813	2227	6563	4	72958
FY39	54890	2764	1829	1458	7167	2253	6943	4	77308
FY40	58476	2863	1862	1502	7536	2279	7340	4	81861
FY41	62223	2964	1894	1546	7920	2304	7756	4	86611
FY42	66134	3066	1927	1590	8320	2330	8191	4	91562
FY43	70211	3170	1960	1635	8736	2356	8646	4	96717
FY44	74456	3275	1992	1680	9168	2382	9121	4	102079

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 2 (Karman)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	5.15%	4.28%	(2.75%)	3.53%	(0.41%)	(6.65%)	(1.07%)	2.83%
FY28	5.94%	4.16%	(1.38%)	3.51%	1.30%	(4.93%)	0.60%	3.94%
FY29	7.56%	4.05%	1.07%	3.39%	7.12%	2.26%	8.12%	6.78%
FY30	7.61%	3.89%	1.98%	3.19%	6.39%	1.76%	7.09%	6.68%
FY31	7.40%	3.85%	1.88%	3.18%	5.62%	1.18%	6.23%	6.39%
FY32	7.33%	3.80%	1.91%	3.17%	5.56%	1.17%	6.17%	6.36%
FY33	7.53%	3.99%	2.00%	3.33%	5.71%	1.21%	6.37%	6.56%
FY34	7.37%	3.88%	1.96%	3.30%	5.59%	1.24%	6.23%	6.46%
FY35	7.09%	3.87%	1.92%	3.20%	5.40%	1.18%	6.02%	6.25%
FY36	6.98%	3.81%	1.88%	3.18%	5.37%	1.21%	5.93%	6.18%
FY37	6.86%	3.75%	1.91%	3.08%	5.30%	1.15%	5.89%	6.11%
FY38	6.75%	3.65%	1.81%	3.06%	5.25%	1.18%	5.84%	6.04%
FY39	6.64%	3.64%	1.84%	3.04%	5.20%	1.17%	5.79%	5.96%
FY40	6.53%	3.58%	1.80%	3.02%	5.15%	1.15%	5.72%	5.89%
FY41	6.41%	3.53%	1.72%	2.93%	5.10%	1.10%	5.67%	5.80%
FY42	6.29%	3.44%	1.74%	2.85%	5.05%	1.13%	5.61%	5.72%
FY43	6.16%	3.39%	1.71%	2.83%	5.00%	1.12%	5.55%	5.63%
FY44	6.05%	3.31%	1.63%	2.75%	4.95%	1.10%	5.49%	5.54%

Table 5: Traffic via Toll Plaza 3 (Mahuvan)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total
FY27	15874	1765	1512	1166	4015	2118	4205	3	30659
FY28	16619	1839	1492	1207	4076	2017	4274	3	31527
FY29	17839	1914	1508	1248	4364	2063	4611	3	33549
FY30	19197	1989	1537	1288	4641	2098	4932	3	35685
FY31	20618	2065	1566	1329	4902	2123	5239	3	37846
FY32	22129	2144	1596	1372	5175	2148	5563	3	40130
FY33	23795	2228	1628	1417	5470	2174	5917	3	42633
FY34	25549	2315	1660	1463	5776	2201	6286	3	45254
FY35	27361	2405	1692	1510	6088	2227	6664	3	47950
FY36	29269	2496	1724	1558	6414	2253	7060	3	50779
FY37	31278	2590	1756	1607	6754	2280	7476	3	53745
FY38	33390	2685	1788	1656	7109	2307	7913	3	56852
FY39	35608	2783	1821	1706	7479	2333	8370	4	60104
FY40	37934	2882	1853	1757	7864	2360	8849	4	63504
FY41	40365	2984	1886	1808	8265	2387	9351	4	67049
FY42	42902	3087	1919	1860	8682	2414	9875	4	70742
FY43	45547	3191	1951	1913	9116	2440	10423	4	74586
FY44	48301	3297	1983	1966	9567	2467	10996	4	78582

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 3 (Mahuvan)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	3.47%	4.25%	(2.83%)	3.55%	(0.17%)	(6.41%)	0.19%	1.51%
FY28	4.69%	4.19%	(1.32%)	3.52%	1.52%	(4.77%)	1.64%	2.83%
FY29	7.34%	4.08%	1.07%	3.40%	7.07%	2.28%	7.88%	6.41%
FY30	7.61%	3.92%	1.92%	3.21%	6.35%	1.70%	6.96%	6.37%
FY31	7.40%	3.82%	1.89%	3.18%	5.62%	1.19%	6.22%	6.06%
FY32	7.33%	3.83%	1.92%	3.24%	5.57%	1.18%	6.18%	6.03%
FY33	7.53%	3.92%	2.01%	3.28%	5.70%	1.21%	6.36%	6.24%
FY34	7.37%	3.90%	1.97%	3.25%	5.59%	1.24%	6.24%	6.15%
FY35	7.09%	3.89%	1.93%	3.21%	5.40%	1.18%	6.01%	5.96%
FY36	6.97%	3.78%	1.89%	3.18%	5.35%	1.17%	5.94%	5.90%
FY37	6.86%	3.77%	1.86%	3.15%	5.30%	1.20%	5.89%	5.84%
FY38	6.75%	3.67%	1.82%	3.05%	5.26%	1.18%	5.85%	5.78%
FY39	6.64%	3.65%	1.85%	3.02%	5.20%	1.13%	5.78%	5.72%
FY40	6.53%	3.56%	1.76%	2.99%	5.15%	1.16%	5.72%	5.66%
FY41	6.41%	3.54%	1.78%	2.90%	5.10%	1.14%	5.67%	5.58%
FY42	6.29%	3.45%	1.75%	2.88%	5.05%	1.13%	5.60%	5.51%
FY43	6.17%	3.37%	1.67%	2.85%	5.00%	1.08%	5.55%	5.43%
FY44	6.05%	3.32%	1.64%	2.77%	4.95%	1.11%	5.50%	5.36%

H. Ghaziabad Aligarh Expressway Private Limited ("GAEPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Luharli)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	25780	2111	1578	2258	1944	677	2477	36826
FY28	26800	2188	1570	2326	1976	654	2430	37945
FY29	28749	2264	1610	2393	2077	661	2534	40288
FY30	30755	2340	1655	2461	2176	668	2656	42711
FY31	32818	2417	1701	2528	2279	676	2781	45199
FY32	34970	2496	1747	2597	2386	684	2912	47792
FY33	37344	2580	1796	2670	2503	693	3054	50641
FY34	39845	2667	1846	2745	2624	701	3202	53630
FY35	42478	2755	1897	2820	2750	709	3356	56766
FY36	45237	2844	1948	2896	2881	718	3516	60040
FY37	48125	2935	1999	2972	3017	726	3682	63455
FY38	51144	3027	2051	3048	3158	735	3854	67015
FY39	54295	3120	2102	3125	3304	743	4032	70722
FY40	57583	3214	2154	3202	3455	752	4216	74577

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Luharli)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	9.0%	3.7%	(2.0%)	3.0%	0.2%	(5.2%)	(4.5%)	6.0%
FY28	4.0%	3.6%	(0.5%)	3.0%	1.6%	(3.3%)	(1.9%)	3.0%
FY29	7.3%	3.5%	2.5%	2.9%	5.1%	0.9%	4.3%	6.2%
FY30	7.0%	3.4%	2.8%	2.8%	4.8%	1.2%	4.8%	6.0%
FY31	6.7%	3.3%	2.7%	2.7%	4.7%	1.2%	4.7%	5.8%
FY32	6.6%	3.3%	2.7%	2.7%	4.7%	1.2%	4.7%	5.7%
FY33	6.8%	3.4%	2.8%	2.8%	4.9%	1.2%	4.9%	6.0%
FY34	6.7%	3.3%	2.8%	2.8%	4.8%	1.2%	4.8%	5.9%
FY35	6.6%	3.3%	2.7%	2.7%	4.8%	1.2%	4.8%	5.8%
FY36	6.5%	3.2%	2.7%	2.7%	4.8%	1.2%	4.8%	5.8%
FY37	6.4%	3.2%	2.6%	2.6%	4.7%	1.2%	4.7%	5.7%
FY38	6.3%	3.1%	2.6%	2.6%	4.7%	1.2%	4.7%	5.6%
FY39	6.2%	3.1%	2.5%	2.5%	4.6%	1.2%	4.6%	5.5%
FY40	6.1%	3.0%	2.5%	2.5%	4.6%	1.1%	4.6%	5.5%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Shape the future with confidence

Table 3: Base Traffic (FY26) via Toll Plaza 2 (Somna)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	9434	855	955	1503	1563	617	1698	16624
FY28	9696	880	903	1537	1495	568	1532	16610
FY29	10336	905	914	1575	1552	570	1587	17438
FY30	11004	930	940	1619	1626	577	1663	18358
FY31	11688	954	965	1663	1703	584	1741	19299
FY32	12400	980	992	1709	1783	591	1823	20277
FY33	13181	1006	1020	1757	1870	598	1912	21345
FY34	14001	1034	1048	1806	1961	605	2005	22459
FY35	14859	1061	1077	1855	2055	613	2101	23621
FY36	15753	1089	1106	1905	2153	620	2201	24827
FY37	16684	1117	1135	1955	2255	627	2305	26078
FY38	17653	1145	1164	2005	2360	635	2412	27374
FY39	18659	1174	1193	2056	2469	642	2524	28717
FY40	19703	1202	1223	2107	2582	649	2640	30106

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 4: Forecast for growth rates via Toll Plaza 2 (Somna)

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	5.8%	3.0%	(8.6%)	1.9%	(7.5%)	(11.1%)	(13.4%)	0.1%
FY28	2.8%	2.9%	(5.5%)	2.3%	(4.4%)	(8.0%)	(9.7%)	(0.1%)
FY29	6.6%	2.8%	1.3%	2.4%	3.8%	0.5%	3.6%	5.0%
FY30	6.5%	2.7%	2.8%	2.8%	4.8%	1.2%	4.8%	5.3%
FY31	6.2%	2.7%	2.7%	2.7%	4.7%	1.2%	4.7%	5.1%
FY32	6.1%	2.6%	2.7%	2.7%	4.7%	1.2%	4.7%	5.1%
FY33	6.3%	2.7%	2.8%	2.8%	4.9%	1.2%	4.9%	5.3%
FY34	6.2%	2.7%	2.8%	2.8%	4.8%	1.2%	4.8%	5.2%
FY35	6.1%	2.7%	2.7%	2.7%	4.8%	1.2%	4.8%	5.2%
FY36	6.0%	2.6%	2.7%	2.7%	4.8%	1.2%	4.8%	5.1%
FY37	5.9%	2.6%	2.6%	2.6%	4.7%	1.2%	4.7%	5.0%
FY38	5.8%	2.5%	2.6%	2.6%	4.7%	1.2%	4.7%	5.0%
FY39	5.7%	2.5%	2.5%	2.5%	4.6%	1.2%	4.6%	4.9%
FY40	5.6%	2.4%	2.5%	2.5%	4.6%	1.1%	4.6%	4.8%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Shape the future with confidence

I. N.A.M. Expressway Private Limited ("NAMEPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Madgulapally)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	7990	883	870	685	1404	672	2224	14727
FY28	8700	907	894	689	1479	671	2352	15692
FY29	9310	932	919	675	1502	648	2358	16345
FY30	9911	956	943	683	1464	628	2346	16931
FY31	10540	981	967	690	1469	619	2379	17645
FY32	11213	1006	991	701	1551	629	2520	18611
FY33	11951	1032	1018	712	1627	637	2658	19636
FY34	12725	1059	1044	724	1706	645	2804	20707
FY35	13537	1086	1071	735	1788	652	2955	21824
FY36	14386	1113	1097	747	1873	660	3113	22991
FY37	15275	1141	1125	759	1961	668	3278	24207
FY38	16203	1169	1152	770	2053	676	3451	25473
FY39	17172	1197	1179	782	2148	684	3630	26791
FY40	18189	1225	1207	793	2246	691	3817	28169

Source: Traffic Due Diligence Report - Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Madgulapally)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	7.7%	2.9%	2.9%	1.8%	5.2%	1.3%	5.8%	6.0%
FY28	8.9%	2.8%	2.8%	0.6%	5.4%	(0.3%)	5.7%	6.5%
FY29	7.0%	2.7%	2.7%	(1.9%)	1.6%	(3.4%)	0.3%	4.2%
FY30	6.4%	2.6%	2.6%	1.1%	2.6%	(3.0%)	(0.5%)	3.6%
FY31	6.4%	2.6%	2.6%	1.1%	0.3%	(1.5%)	1.4%	4.2%
FY32	6.4%	2.6%	2.6%	1.6%	5.6%	1.6%	5.9%	5.5%
FY33	6.6%	2.6%	2.6%	1.6%	4.9%	1.2%	5.5%	5.5%
FY34	6.5%	2.6%	2.6%	1.6%	4.8%	1.2%	5.5%	5.5%
FY35	6.4%	2.5%	2.5%	1.6%	4.8%	1.2%	5.4%	5.4%
FY36	6.3%	2.5%	2.5%	1.6%	4.8%	1.2%	5.4%	5.3%
FY37	6.2%	2.5%	2.5%	1.5%	4.7%	1.2%	5.3%	5.3%
FY38	6.1%	2.4%	2.4%	1.5%	4.7%	1.2%	5.3%	5.2%
FY39	6.0%	2.4%	2.4%	1.5%	4.6%	1.2%	5.2%	5.2%
FY40	5.9%	2.4%	2.4%	1.5%	4.6%	1.1%	5.2%	5.1%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 3: Base Traffic (FY26) via Toll Plaza 2 (Tummalacheruvu)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	6896	767	812	658	1376	692	2926	14128
FY28	7526	794	846	662	1450	691	3179	15147
FY29	8056	821	880	648	1472	668	3254	15798
FY30	8574	848	915	655	1432	649	3290	16362
FY31	9118	875	950	662	1435	640	3373	17052
FY32	9699	903	986	672	1516	650	3566	17993
FY33	10338	933	1025	683	1590	658	3625	18853
FY34	11008	963	1065	694	1667	666	3823	19887
FY35	11710	994	1106	706	1747	674	4030	20966
FY36	12445	1025	1148	717	1830	682	4245	22091
FY37	13214	1056	1190	728	1917	690	4470	23265
FY38	14017	1088	1234	739	2006	698	4705	24487
FY39	14855	1121	1278	750	2099	706	4950	25758
FY40	15735	1154	1323	761	2195	714	5205	27087

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 4: Forecast for growth rates via Toll Plaza 2 (Tummalacheruvu)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	7.7%	3.6%	4.4%	1.8%	5.2%	1.3%	5.8%	6.0%
FY28	9.1%	3.5%	4.2%	0.5%	5.4%	(0.2%)	8.6%	7.2%
FY29	7.0%	3.4%	4.0%	(2.1%)	1.5%	(3.3%)	2.4%	4.3%
FY30	6.4%	3.3%	3.9%	1.1%	(2.7%)	(2.8%)	1.1%	3.6%
FY31	6.3%	3.2%	3.9%	1.0%	0.2%	(1.4%)	2.5%	4.2%
FY32	6.4%	3.2%	3.8%	1.6%	5.6%	1.6%	5.7%	5.5%
FY33	6.6%	3.3%	4.0%	1.6%	4.9%	1.2%	1.6%	4.8%
FY34	6.5%	3.2%	3.9%	1.6%	4.8%	1.2%	5.5%	5.5%
FY35	6.4%	3.2%	3.8%	1.6%	4.8%	1.2%	5.4%	5.4%
FY36	6.3%	3.1%	3.8%	1.6%	4.8%	1.2%	5.4%	5.4%
FY37	6.2%	3.1%	3.7%	1.5%	4.7%	1.2%	5.3%	5.3%
FY38	6.1%	3.0%	3.6%	1.5%	4.7%	1.2%	5.3%	5.3%
FY39	6.0%	3.0%	3.6%	1.5%	4.6%	1.2%	5.2%	5.2%
FY40	5.9%	3.0%	3.6%	1.5%	4.6%	1.1%	5.2%	5.2%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 5: Base Traffic (FY26) via Toll Plaza 3 (Elchuru)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	3104	852	462	517	1080	616	2292	8923
FY28	3455	888	481	518	1139	613	2424	9518
FY29	3707	924	501	502	1146	590	2434	9804
FY30	3943	960	520	507	1090	570	2426	10017
FY31	4191	997	541	511	1077	560	2464	10340
FY32	4458	1035	561	519	1142	569	2609	10893
FY33	4752	1076	583	528	1197	576	2753	11465
FY34	5060	1118	606	536	1256	583	2903	12061
FY35	5382	1160	629	545	1316	590	3060	12682
FY36	5720	1204	653	553	1378	597	3224	13329
FY37	6073	1249	677	562	1443	604	3395	14003
FY38	6443	1294	702	570	1511	611	3573	14704
FY39	6828	1341	727	579	1581	618	3759	15432
FY40	7232	1388	753	587	1653	625	3953	16191

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 6: Forecast for growth rates via Toll Plaza 3 (Elchuru)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	7.7%	4.4%	4.4%	1.8%	5.2%	1.3%	5.8%	5.6%
FY28	11.3%	4.2%	4.2%	0.2%	5.4%	(0.4%)	5.7%	6.7%
FY29	7.3%	4.0%	4.0%	(3.1%)	0.6%	(3.9%)	0.4%	3.0%
FY30	6.3%	3.9%	3.9%	0.9%	(4.8%)	(3.4%)	(0.3%)	2.2%
FY31	6.3%	3.9%	3.9%	0.9%	(1.2%)	(1.8%)	1.6%	3.2%
FY32	6.4%	3.8%	3.8%	1.6%	6.0%	1.7%	5.9%	5.3%
FY33	6.6%	4.0%	4.0%	1.6%	4.9%	1.2%	5.5%	5.2%
FY34	6.5%	3.9%	3.9%	1.6%	4.8%	1.2%	5.5%	5.2%
FY35	6.4%	3.8%	3.8%	1.6%	4.8%	1.2%	5.4%	5.2%
FY36	6.3%	3.8%	3.8%	1.6%	4.8%	1.2%	5.4%	5.1%
FY37	6.2%	3.7%	3.7%	1.5%	4.7%	1.2%	5.3%	5.1%
FY38	6.1%	3.6%	3.6%	1.5%	4.7%	1.2%	5.3%	5.0%
FY39	6.0%	3.6%	3.6%	1.5%	4.6%	1.2%	5.2%	5.0%
FY40	5.9%	3.6%	3.6%	1.5%	4.6%	1.1%	5.2%	4.9%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

J. Hazaribagh Tollway Private Limited ("HTPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Pundag)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	10978	1573	878	373	1026	531	2790	18150
FY28	11135	1637	817	346	968	479	2657	18041
FY29	11591	1700	796	336	960	456	2663	18505
FY30	12349	1764	821	344	1003	462	2815	19561
FY31	13108	1829	847	353	1045	467	2964	20616
FY32	13914	1896	873	361	1088	472	3122	21729
FY33	14801	1969	900	371	1134	478	3293	22950
FY34	15735	2043	929	380	1182	484	3473	24230
FY35	16715	2120	958	389	1232	490	3661	25569
FY36	17746	2198	987	399	1284	496	3857	26971
FY37	18829	2278	1017	409	1336	502	4061	28437
FY38	19965	2361	1048	419	1391	507	4275	29970
FY39	21156	2445	1079	429	1447	513	4497	31572
FY40	22407	2532	1111	439	1505	519	4729	33247
FY41	23715	2621	1144	449	1565	525	4970	34993
FY42	25081	2712	1177	459	1626	531	5221	36812
FY43	27107	2804	1210	480	1728	548	5564	39447
FY44	28627	2898	1244	490	1795	554	5839	41454
FY45	30210	2994	1278	501	1863	560	6125	43539
FY46	31857	3092	1313	512	1933	566	6422	45702
FY47	33568	3192	1349	523	2005	572	6730	47946
FY48	35345	3293	1384	534	2079	579	7049	50271
FY49	37188	3396	1420	545	2155	585	7380	52677
FY50	39106	3502	1457	557	2233	591	7722	55174
FY51	41025	3605	1493	568	2310	596	8063	57667

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Pundag)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	(0.1%)	4.2%	(5.9%)	(6.3%)	(4.9%)	(8.5%)	(4.0%)	(1.3%)
FY28	1.4%	4.1%	(6.9%)	(7.2%)	(5.7%)	(9.6%)	(4.8%)	(0.6%)
FY29	4.1%	3.9%	2.5%	2.9%	(0.8%)	(4.9%)	0.2%	2.6%
FY30	6.5%	3.7%	3.1%	2.5%	4.5%	1.2%	5.7%	5.7%
FY31	6.2%	3.7%	3.1%	2.5%	4.1%	1.2%	5.3%	5.4%
FY32	6.1%	3.7%	3.1%	2.5%	4.1%	1.2%	5.3%	5.4%
FY33	6.4%	3.8%	3.2%	2.6%	4.3%	1.2%	5.5%	5.6%
FY34	6.3%	3.8%	3.2%	2.5%	4.2%	1.2%	5.5%	5.6%
FY35	6.2%	3.7%	3.1%	2.5%	4.2%	1.2%	5.4%	5.5%
FY36	6.2%	3.7%	3.1%	2.5%	4.2%	1.2%	5.4%	5.5%
FY37	6.1%	3.7%	3.1%	2.4%	4.1%	1.2%	5.3%	5.4%
FY38	6.0%	3.6%	3.0%	2.4%	4.1%	1.2%	5.3%	5.4%
FY39	6.0%	3.6%	3.0%	2.4%	4.0%	1.2%	5.2%	5.3%
FY40	5.9%	3.5%	3.0%	2.4%	4.0%	1.1%	5.2%	5.3%
FY41	5.8%	3.5%	2.9%	2.3%	4.0%	1.1%	5.1%	5.3%
FY42	5.8%	3.5%	2.9%	2.3%	3.9%	1.1%	5.0%	5.2%
FY43	8.1%	3.4%	2.8%	4.4%	6.3%	3.3%	6.6%	7.2%
FY44	5.6%	3.4%	2.8%	2.2%	3.8%	1.1%	4.9%	5.1%
FY45	5.5%	3.3%	2.8%	2.2%	3.8%	1.1%	4.9%	5.0%
FY46	5.5%	3.3%	2.7%	2.2%	3.8%	1.1%	4.8%	5.0%
FY47	5.4%	3.2%	2.7%	2.1%	3.7%	1.1%	4.8%	4.9%
FY48	7.2%	3.2%	2.6%	3.3%	5.6%	1.2%	5.4%	5.4%
FY49	5.2%	3.1%	2.6%	2.1%	4.2%	1.0%	4.7%	4.8%
FY50	5.2%	3.1%	2.6%	2.1%	3.6%	1.0%	4.6%	4.7%
FY51	4.9%	2.9%	2.5%	2.0%	3.4%	1.0%	4.4%	4.5%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

K. Jhansi – S Tollway Private Limited ("JLTPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Babina)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	OSV	Total
FY27	3185	672	186	347	1642	1399	2019	2	9451
FY28	3385	697	190	357	1703	1390	2122	2	9846
FY29	3590	723	195	368	1729	1342	2198	2	10147
FY30	3801	748	199	379	1817	1366	2330	2	10642
FY31	4020	774	204	390	1906	1390	2467	3	11154
FY32	4252	801	209	401	2000	1414	2612	3	11692
FY33	4508	830	214	413	2100	1440	2772	3	12280
FY34	4777	859	219	426	2203	1467	2940	3	12893
FY35	5059	890	224	438	2309	1493	3116	3	13533
FY36	5355	921	229	451	2419	1520	3302	3	14201
FY37	5666	953	235	464	2533	1546	3496	4	14898
FY38	5992	986	240	478	2651	1574	3700	4	15625
FY39	6334	1020	246	491	2774	1601	3914	4	16383
FY40	6691	1054	251	505	2901	1628	4138	4	17173
FY41	7066	1090	257	519	3032	1656	4373	5	17996
FY42	7457	1126	262	534	3168	1684	4618	5	18854
FY43	7867	1163	268	548	3309	1712	4874	5	19747
FY44	8296	1201	274	563	3455	1740	5142	5	20677
FY45	8744	1240	280	578	3605	1769	5422	6	21644
FY46	9213	1280	286	594	3760	1797	5714	6	22649
FY47	9702	1321	292	610	3920	1826	6018	6	23695
FY48	10212	1362	298	626	4086	1855	6335	7	24781
FY49	10744	1405	304	642	4256	1884	6666	7	25908
FY50	11299	1448	311	659	4432	1913	7010	7	27077
FY51	11853	1491	317	675	4606	1941	7354	8	28243

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Babina)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	4.8%	3.8%	2.5%	3.2%	2.1%	(3.0%)	4.0%	2.7%
FY28	6.3%	3.8%	2.5%	3.1%	3.7%	(0.7%)	5.1%	4.2%
FY29	6.1%	3.6%	2.4%	3.0%	1.5%	(3.5%)	3.6%	3.1%
FY30	5.9%	3.5%	2.3%	2.9%	5.1%	1.8%	6.0%	4.9%
FY31	5.8%	3.5%	2.3%	2.9%	4.9%	1.8%	5.9%	4.8%
FY32	5.8%	3.5%	2.3%	2.9%	4.9%	1.8%	5.9%	4.8%
FY33	6.0%	3.6%	2.4%	3.0%	5.0%	1.8%	6.1%	5.0%
FY34	6.0%	3.6%	2.4%	3.0%	4.9%	1.8%	6.1%	5.0%
FY35	5.9%	3.5%	2.4%	3.0%	4.8%	1.8%	6.0%	5.0%
FY36	5.9%	3.5%	2.3%	2.9%	4.8%	1.8%	5.9%	4.9%
FY37	5.8%	3.5%	2.3%	2.9%	4.7%	1.8%	5.9%	4.9%
FY38	5.8%	3.5%	2.3%	2.9%	4.7%	1.8%	5.8%	4.9%
FY39	5.7%	3.4%	2.3%	2.9%	4.6%	1.7%	5.8%	4.9%
FY40	5.6%	3.4%	2.3%	2.8%	4.6%	1.7%	5.7%	4.8%
FY41	5.6%	3.4%	2.2%	2.8%	4.5%	1.7%	5.7%	4.8%
FY42	5.5%	3.3%	2.2%	2.8%	4.5%	1.7%	5.6%	4.8%
FY43	5.5%	3.3%	2.2%	2.7%	4.4%	1.7%	5.6%	4.7%
FY44	5.5%	3.3%	2.2%	2.7%	4.4%	1.6%	5.5%	4.7%
FY45	5.4%	3.2%	2.2%	2.7%	4.4%	1.6%	5.4%	4.7%
FY46	5.4%	3.2%	2.1%	2.7%	4.3%	1.6%	5.4%	4.6%
FY47	5.3%	3.2%	2.1%	2.7%	4.3%	1.6%	5.3%	4.6%
FY48	5.3%	3.2%	2.1%	2.6%	4.2%	1.6%	5.3%	4.6%
FY49	5.2%	3.1%	2.1%	2.6%	4.2%	1.6%	5.2%	4.6%
FY50	5.2%	3.1%	2.1%	2.6%	4.1%	1.5%	5.2%	4.5%
FY51	4.9%	2.9%	2.0%	2.5%	3.9%	1.5%	4.9%	4.3%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

L. Jhansi – Vigakhet Tollway Limited ("JVTPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Vigakhet)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	OSV	Total
FY27	2382	502	169	338	1587	1401	1915	2	8297
FY28	2531	521	174	348	1645	1391	2012	2	8625
FY29	2684	540	178	359	1668	1343	2081	2	8857
FY30	2842	559	182	369	1753	1367	2206	2	9281
FY31	3006	579	186	380	1840	1391	2336	3	9720
FY32	3180	599	190	391	1930	1416	2473	3	10181
FY33	3371	620	195	403	2027	1442	2624	3	10685
FY34	3572	643	200	415	2126	1468	2784	3	11210
FY35	3783	665	204	427	2228	1494	2951	3	11756
FY36	4004	689	209	440	2334	1521	3126	3	12327
FY37	4237	713	214	452	2444	1548	3310	4	12922
FY38	4480	737	219	465	2559	1575	3504	4	13543
FY39	4736	763	224	479	2677	1602	3706	4	14190
FY40	5003	788	229	492	2799	1630	3918	4	14865
FY41	5283	815	234	506	2926	1658	4140	5	15567
FY42	5576	842	239	520	3058	1686	4373	5	16298
FY43	5883	870	245	534	3193	1714	4615	5	17059
FY44	6203	898	250	549	3334	1742	4869	5	17850
FY45	6538	927	255	564	3479	1770	5134	6	18673
FY46	6888	957	261	579	3629	1799	5410	6	19529
FY47	7254	987	266	594	3783	1828	5698	6	20418
FY48	7636	1019	272	610	3943	1857	5999	7	21341
FY49	8034	1051	278	626	4107	1886	6312	7	22299
FY50	8448	1083	283	642	4277	1915	6637	7	23292
FY51	8863	1115	289	657	4445	1943	6963	8	24282

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Vigakhet)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	4.8%	3.8%	2.5%	3.2%	2.0%	(3.0%)	3.8%	2.5%
FY28	6.3%	3.8%	2.5%	3.1%	3.6%	(0.7%)	5.0%	4.0%
FY29	6.1%	3.6%	2.4%	3.0%	1.4%	(3.5%)	3.5%	2.7%
FY30	5.9%	3.5%	2.3%	2.9%	5.1%	1.8%	6.0%	4.8%
FY31	5.8%	3.5%	2.3%	2.9%	4.9%	1.8%	5.9%	4.7%
FY32	5.8%	3.5%	2.3%	2.9%	4.9%	1.8%	5.9%	4.7%
FY33	6.0%	3.6%	2.4%	3.0%	5.0%	1.8%	6.1%	4.9%
FY34	6.0%	3.6%	2.4%	3.0%	4.9%	1.8%	6.1%	4.9%
FY35	5.9%	3.5%	2.4%	3.0%	4.8%	1.8%	6.0%	4.9%
FY36	5.9%	3.5%	2.3%	2.9%	4.8%	1.8%	5.9%	4.9%
FY37	5.8%	3.5%	2.3%	2.9%	4.7%	1.8%	5.9%	4.8%
FY38	5.8%	3.5%	2.3%	2.9%	4.7%	1.8%	5.8%	4.8%
FY39	5.7%	3.4%	2.3%	2.9%	4.6%	1.7%	5.8%	4.8%
FY40	5.6%	3.4%	2.3%	2.8%	4.6%	1.7%	5.7%	4.7%
FY41	5.6%	3.4%	2.2%	2.8%	4.5%	1.7%	5.7%	4.7%
FY42	5.5%	3.3%	2.2%	2.8%	4.5%	1.7%	5.6%	4.7%
FY43	5.5%	3.3%	2.2%	2.7%	4.4%	1.7%	5.6%	4.7%
FY44	5.5%	3.3%	2.2%	2.7%	4.4%	1.6%	5.5%	4.6%
FY45	5.4%	3.2%	2.2%	2.7%	4.4%	1.6%	5.4%	4.6%
FY46	5.4%	3.2%	2.1%	2.7%	4.3%	1.6%	5.4%	4.6%
FY47	5.3%	3.2%	2.1%	2.7%	4.3%	1.6%	5.3%	4.5%
FY48	5.3%	3.2%	2.1%	2.6%	4.2%	1.6%	5.3%	4.5%
FY49	5.2%	3.1%	2.1%	2.6%	4.2%	1.6%	5.2%	4.5%
FY50	5.2%	3.1%	2.1%	2.6%	4.1%	1.5%	5.2%	4.5%
FY51	4.9%	2.9%	2.0%	2.5%	3.9%	1.5%	4.9%	4.2%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Shape the future with confidence

M. Lucknow – Raebareli Tollway Private Limited ("LRTPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Dakhina Sekhpur)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	11509	1478	384	789	463	181	679	15484
FY28	12206	1515	392	814	474	181	694	16277
FY29	12947	1552	401	839	486	182	711	17119
FY30	13707	1588	411	864	497	183	728	17979
FY31	14799	1685	420	908	509	184	745	19191
FY32	15336	1663	430	914	521	185	763	19812
FY33	16258	1703	440	942	534	187	782	20844
FY34	17227	1743	451	970	547	188	801	21925
FY35	18245	1784	462	998	560	189	820	23057
FY36	19313	1826	472	1027	573	190	839	24242
FY37	21283	1869	483	1104	587	191	859	26375
FY38	21610	1912	494	1088	600	192	879	26775
FY39	22842	1955	506	1119	614	193	899	28129
FY40	24131	1999	517	1150	628	194	920	29540
FY41	25481	2044	529	1182	643	195	941	31015
FY42	26894	2089	540	1215	657	197	962	32555
FY43	28962	2135	552	1276	672	198	983	34778
FY44	29919	2182	564	1283	686	199	1005	35838
FY45	31535	2229	577	1317	701	200	1027	37586
FY46	33224	2277	589	1353	716	201	1049	39409
FY47	34987	2325	601	1389	732	202	1071	41308
FY48	36828	2374	614	1425	747	203	1094	43285
FY49	40357	2424	627	1526	763	204	1117	47017
FY50	40746	2474	640	1500	778	205	1140	47483
FY51	42746	2522	652	1537	794	206	1162	49619

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Dakhina Sekhpur)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	4.2%	2.5%	3.2%	1.4%	1.8%	(1.6%)	1.6%	3.6%
FY28	6.1%	2.5%	3.1%	2.1%	2.3%	(0.1%)	2.2%	5.1%
FY29	6.1%	2.4%	3.0%	2.4%	2.5%	0.6%	2.5%	5.2%
FY30	5.9%	2.3%	2.9%	2.3%	2.4%	0.6%	2.4%	5.2%
FY31	8.0%	2.3%	5.1%	2.3%	2.4%	0.6%	2.4%	6.7%
FY32	3.6%	2.3%	0.7%	2.3%	2.4%	0.6%	2.4%	3.2%
FY33	6.0%	2.4%	3.0%	2.4%	2.4%	0.6%	2.4%	5.2%
FY34	6.0%	2.4%	3.0%	2.4%	2.4%	0.6%	2.4%	5.2%
FY35	5.9%	2.4%	3.0%	2.4%	2.4%	0.6%	2.4%	5.2%
FY36	5.9%	2.3%	2.9%	2.3%	2.4%	0.6%	2.4%	5.1%
FY37	10.2%	2.3%	7.4%	2.3%	2.4%	0.6%	2.4%	8.8%
FY38	1.5%	2.3%	(1.4%)	2.3%	2.3%	0.6%	2.3%	1.5%
FY39	5.7%	2.3%	2.9%	2.3%	2.3%	0.6%	2.3%	5.1%
FY40	5.6%	2.3%	2.8%	2.3%	2.3%	0.6%	2.3%	5.0%
FY41	5.6%	2.2%	2.8%	2.2%	2.3%	0.6%	2.3%	5.0%

FY42	5.5%	2.2%	2.8%	2.2%	2.2%	0.6%	2.2%	5.0%
FY43	7.7%	2.2%	5.0%	2.2%	2.2%	0.6%	2.2%	6.8%
FY44	3.3%	2.2%	0.5%	2.2%	2.2%	0.5%	2.2%	3.0%
FY45	5.4%	2.2%	2.7%	2.2%	2.2%	0.5%	2.2%	4.9%
FY46	5.4%	2.1%	2.7%	2.1%	2.2%	0.5%	2.2%	4.8%
FY47	5.3%	2.1%	2.7%	2.1%	2.1%	0.5%	2.1%	4.8%
FY48	5.3%	2.1%	2.6%	2.1%	2.1%	0.5%	2.1%	4.8%
FY49	9.6%	2.1%	7.1%	2.1%	2.1%	0.5%	2.1%	8.6%
FY50	1.0%	2.1%	(1.7%)	2.1%	2.1%	0.5%	2.1%	1.0%
FY51	4.9%	2.0%	2.5%	2.0%	2.0%	0.5%	2.0%	4.5%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Shape the future with confidence

N. Kotwa - Muzaffarpur Tollway Private Limited ("KMTPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Parsoni Khem)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	4250	980	552	405	1356	992	2719	11256
FY28	4544	1021	571	417	1425	998	2876	11853
FY29	4844	1061	590	428	1495	1004	3036	12460
FY30	5153	1102	609	439	1567	1010	3199	13081
FY31	5478	1143	628	450	1641	1016	3369	13727
FY32	5823	1187	648	461	1718	1022	3547	14408
FY33	6203	1233	669	473	1802	1029	3743	15153
FY34	6603	1281	691	485	1889	1035	3947	15932
FY35	7023	1330	713	498	1754	894	3742	15594
FY36	7465	1380	735	510	1778	862	3833	16564
FY37	7929	1431	758	523	1862	867	4036	17408
FY38	8416	1484	781	536	1948	872	4248	18288
FY39	8928	1538	805	549	2039	877	4469	19206
FY40	9438	1591	828	561	2132	882	4699	20134
FY41	9973	1645	852	574	2228	887	4939	21101
FY42	10533	1701	875	587	2329	892	5188	22107
FY43	11118	1757	900	600	2432	897	5447	23154
FY44	11729	1815	925	613	2539	902	5717	24242
FY45	12367	1874	950	626	2649	907	5997	25373
FY46	13032	1935	975	640	2763	912	6287	26548
FY47	13727	1997	1001	653	2881	917	6589	27668
FY48	14722	2060	1028	675	3041	928	6942	29399
FY49	15489	2124	1054	689	3168	933	7268	30730
FY50	16288	2190	1082	704	3299	938	7605	32109
FY51	17087	2255	1108	717	3428	943	7941	33483

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Parsoni Khem)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	5.3%	4.2%	3.5%	2.8%	5.2%	0.6%	5.8%	4.7%
FY28	6.9%	4.1%	3.5%	2.8%	5.1%	0.6%	5.8%	4.9%
FY29	6.6%	4.0%	3.3%	2.6%	4.9%	0.6%	5.6%	4.8%
FY30	6.4%	3.8%	3.2%	2.6%	4.8%	0.6%	5.4%	4.7%
FY31	6.3%	3.8%	3.2%	2.5%	4.7%	0.6%	5.3%	4.6%
FY32	6.3%	3.8%	3.1%	2.5%	4.7%	0.6%	5.3%	4.6%
FY33	6.5%	3.9%	3.3%	2.6%	4.9%	0.6%	5.5%	4.8%
FY34	6.4%	3.9%	3.2%	2.6%	4.8%	0.6%	5.5%	4.8%
FY35	6.4%	3.8%	3.2%	2.5%	(7.2%)	(13.6%)	(5.2%)	(3.0%)
FY36	6.3%	3.8%	3.1%	2.5%	1.4%	(3.5%)	2.4%	2.7%
FY37	6.2%	3.7%	3.1%	2.5%	4.7%	0.6%	5.3%	4.8%
FY38	6.1%	3.7%	3.1%	2.5%	4.7%	0.6%	5.3%	4.8%
FY39	6.1%	3.6%	3.0%	2.4%	4.6%	0.6%	5.2%	4.7%
FY40	5.7%	3.4%	2.9%	2.3%	4.6%	0.6%	5.2%	4.6%
FY41	5.7%	3.4%	2.8%	2.3%	4.5%	0.6%	5.1%	4.6%
FY42	5.6%	3.4%	2.8%	2.2%	4.5%	0.6%	5.0%	4.6%

FY43	5.6%	3.3%	2.8%	2.2%	4.4%	0.6%	5.0%	4.5%
FY44	5.5%	3.3%	2.7%	2.2%	4.4%	0.5%	4.9%	4.5%
FY45	5.4%	3.2%	2.7%	2.2%	4.4%	0.5%	4.9%	4.5%
FY46	5.4%	3.2%	2.7%	2.2%	4.3%	0.5%	4.8%	4.4%
FY47	5.3%	3.2%	2.7%	2.1%	4.3%	0.5%	4.8%	4.4%
FY48	7.2%	3.2%	2.6%	3.3%	5.6%	1.2%	5.4%	5.4%
FY49	5.2%	3.1%	2.6%	2.1%	4.2%	0.5%	4.7%	4.3%
FY50	5.2%	3.1%	2.6%	2.1%	4.1%	0.5%	4.6%	4.3%
FY51	4.9%	2.9%	2.5%	2.0%	3.9%	0.5%	4.4%	4.1%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Shape the future with confidence

O. Madurai – Kanyakumari Tollway Private Limited ("MKTPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Kappalur)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	21098	2742	3231	1842	1405	589	1085	31994
FY28	22599	2874	3320	1905	1453	601	1137	33890
FY29	24121	3006	3407	1968	1501	612	1189	35808
FY30	25656	3140	3494	2031	1549	624	1242	37739
FY31	27260	3278	3581	2094	1597	636	1297	39745
FY32	28953	3420	3670	2159	1647	648	1353	41853
FY33	31186	3574	3764	2250	1718	666	1424	44584
FY34	33150	3731	3859	2321	1772	678	1487	47002
FY35	35204	3893	3955	2393	1827	691	1551	49517
FY36	37349	4059	4051	2466	1883	704	1617	52132
FY37	39585	4229	4148	2539	1939	716	1685	54846
FY38	41915	4403	4246	2614	1996	729	1754	57661
FY39	44337	4582	4344	2690	2054	742	1825	60577
FY40	46874	4765	4443	2767	2113	754	1898	63619
FY41	49530	4954	4544	2845	2173	767	1974	66791
FY42	52309	5149	4646	2925	2234	780	2051	70098
FY43	55214	5349	4749	3006	2296	793	2131	73542
FY44	58248	5555	4854	3089	2359	806	2213	77128
FY45	61417	5766	4959	3173	2423	819	2297	80860
FY46	64724	5983	5066	3258	2488	833	2384	84741
FY47	68171	6206	5174	3345	2554	846	2473	88775
FY48	71764	6435	5283	3433	2622	859	2564	92966
FY49	75506	6670	5393	3522	2690	873	2657	97317
FY50	79400	6911	5505	3613	2759	886	2753	101833
FY51	83296	7148	5613	3702	2827	899	2848	106339

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Kappalur)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	5.7%	4.9%	2.8%	3.5%	3.5%	2.1%	4.9%	5.0%
FY28	7.1%	4.8%	2.7%	3.4%	3.4%	2.1%	4.8%	5.9%
FY29	6.7%	4.6%	2.6%	3.3%	3.3%	2.0%	4.6%	5.7%
FY30	6.4%	4.5%	2.5%	3.2%	3.2%	1.9%	4.5%	5.4%
FY31	6.3%	4.4%	2.5%	3.1%	3.1%	1.9%	4.4%	5.3%
FY32	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	4.3%	5.3%
FY33	7.7%	4.5%	2.6%	4.2%	4.3%	2.8%	5.2%	6.5%
FY34	6.3%	4.4%	2.5%	3.2%	3.2%	1.9%	4.4%	5.4%
FY35	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	4.3%	5.4%
FY36	6.1%	4.3%	2.4%	3.0%	3.0%	1.8%	4.3%	5.3%
FY37	6.0%	4.2%	2.4%	3.0%	3.0%	1.8%	4.2%	5.2%
FY38	5.9%	4.1%	2.4%	2.9%	2.9%	1.8%	4.1%	5.1%
FY39	5.8%	4.0%	2.3%	2.9%	2.9%	1.7%	4.0%	5.1%
FY40	5.7%	4.0%	2.3%	2.9%	2.9%	1.7%	4.0%	5.0%
FY41	5.7%	4.0%	2.3%	2.8%	2.8%	1.7%	4.0%	5.0%
FY42	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.9%	5.0%
FY43	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.9%	4.9%
FY44	5.5%	3.8%	2.2%	2.7%	2.7%	1.6%	3.8%	4.9%

FY45	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.8%	4.8%
FY46	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.8%	4.8%
FY47	5.3%	3.7%	2.1%	2.7%	2.7%	1.6%	3.7%	4.8%
FY48	5.3%	3.7%	2.1%	2.6%	2.6%	1.6%	3.7%	4.7%
FY49	5.2%	3.6%	2.1%	2.6%	2.6%	1.6%	3.6%	4.7%
FY50	5.2%	3.6%	2.1%	2.6%	2.6%	1.5%	3.6%	4.6%
FY51	4.9%	3.4%	2.0%	2.5%	2.6%	1.5%	3.4%	4.4%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

P. Kanyakumari – Etturavattam Tollway Private Limited ("KETPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Etturvattam)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	9018	1770	1400	1006	821	362	933	15316
FY28	9660	1855	1439	1040	849	370	972	16189
FY29	10310	1941	1477	1075	877	377	1010	17071
FY30	10966	2027	1514	1109	905	384	1049	17959
FY31	11652	2116	1552	1144	933	392	1088	18881
FY32	12376	2208	1591	1179	962	399	1129	19848
FY33	13169	2307	1631	1217	993	407	1172	20901
FY34	13998	2409	1673	1255	1024	414	1216	21995
FY35	14866	2513	1714	1294	1056	422	1262	23132
FY36	15771	2621	1756	1334	1088	430	1308	24312
FY37	16716	2730	1798	1374	1121	437	1355	25536
FY38	17699	2843	1840	1414	1154	445	1403	26803
FY39	18722	2958	1883	1455	1187	453	1451	28114
FY40	19794	3076	1926	1496	1221	461	1501	29481
FY41	20915	3198	1969	1539	1256	468	1552	30904
FY42	22088	3324	2014	1582	1291	476	1604	32386
FY43	23315	3453	2058	1626	1327	484	1658	33928
FY44	24597	3586	2104	1671	1363	492	1712	35531
FY45	25935	3723	2149	1716	1400	500	1768	37198
FY46	27331	3863	2196	1762	1438	508	1825	38930
FY47	28787	4007	2242	1809	1476	517	1884	40729
FY48	30304	4155	2290	1857	1515	525	1943	42596
FY49	31884	4307	2337	1905	1555	533	2004	44532
FY50	33528	4462	2386	1954	1595	541	2066	46540
FY51	35173	4615	2433	2002	1634	549	2127	48541

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Etturvattam)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	5.7%	4.9%	2.8%	3.5%	3.5%	2.1%	4.2%	4.9%
FY28	7.1%	4.8%	2.7%	3.4%	3.4%	2.1%	4.1%	5.7%
FY29	6.7%	4.6%	2.6%	3.3%	3.3%	2.0%	4.0%	5.5%
FY30	6.4%	4.5%	2.5%	3.2%	3.2%	1.9%	3.8%	5.2%
FY31	6.3%	4.4%	2.5%	3.1%	3.1%	1.9%	3.8%	5.1%
FY32	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	3.7%	5.1%
FY33	6.4%	4.5%	2.6%	3.2%	3.2%	1.9%	3.8%	5.3%
FY34	6.3%	4.4%	2.5%	3.2%	3.2%	1.9%	3.8%	5.2%
FY35	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	3.7%	5.2%
FY36	6.1%	4.3%	2.4%	3.0%	3.0%	1.8%	3.7%	5.1%
FY37	6.0%	4.2%	2.4%	3.0%	3.0%	1.8%	3.6%	5.0%
FY38	5.9%	4.1%	2.4%	2.9%	2.9%	1.8%	3.5%	5.0%
FY39	5.8%	4.0%	2.3%	2.9%	2.9%	1.7%	3.5%	4.9%

FY40	5.7%	4.0%	2.3%	2.9%	2.9%	1.7%	3.4%	4.9%
FY41	5.7%	4.0%	2.3%	2.8%	2.8%	1.7%	3.4%	4.8%
FY42	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.4%	4.8%
FY43	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.3%	4.8%
FY44	5.5%	3.8%	2.2%	2.7%	2.7%	1.6%	3.3%	4.7%
FY45	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.3%	4.7%
FY46	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.2%	4.7%
FY47	5.3%	3.7%	2.1%	2.7%	2.7%	1.6%	3.2%	4.6%
FY48	5.3%	3.7%	2.1%	2.6%	2.6%	1.6%	3.2%	4.6%
FY49	5.2%	3.6%	2.1%	2.6%	2.6%	1.6%	3.1%	4.5%
FY50	5.2%	3.6%	2.1%	2.6%	2.6%	1.5%	3.1%	4.5%
FY51	4.9%	3.4%	2.0%	2.5%	2.5%	1.5%	2.9%	4.3%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Shape the future with confidence

Q. Salaipudhur – Madurai Tollway Private Limited ("SMTPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Salaipudhur)

	CJV	Mini LCV	Bus	LVC	2A	3A	MAV	Total
FY27	8398	1649	1236	909	758	336	765	14056
FY28	8995	1728	1270	940	784	343	797	14862
FY29	9601	1807	1304	972	810	350	828	15676
FY30	10212	1888	1337	1002	836	357	860	16496
FY31	10850	1971	1370	1034	862	363	892	17347
FY32	11524	2056	1404	1066	889	370	925	18240
FY33	12263	2149	1440	1100	917	377	961	19212
FY34	13035	2243	1477	1135	946	384	997	20223
FY35	13843	2341	1513	1170	975	392	1034	21273
FY36	14686	2440	1550	1205	1005	399	1072	22364
FY37	15566	2543	1587	1242	1035	406	1111	23495
FY38	16482	2647	1625	1278	1066	413	1150	24666
FY39	17434	2754	1662	1315	1096	420	1190	25878
FY40	18432	2865	1700	1353	1128	427	1231	27142
FY41	19476	2978	1739	1391	1160	435	1273	28458
FY42	20569	3095	1778	1430	1192	442	1315	29828
FY43	21711	3216	1817	1470	1225	449	1359	31255
FY44	22905	3339	1857	1510	1259	457	1404	32738
FY45	24151	3467	1898	1551	1293	464	1450	34281
FY46	25451	3597	1938	1593	1328	472	1497	35883
FY47	26806	3731	1980	1635	1364	479	1545	37458
FY48	28219	3869	2021	1678	1400	487	1593	39276
FY49	29690	4010	2064	1722	1436	495	1643	41068
FY50	31222	4155	2106	1767	1473	502	1694	42927
FY51	32754	4298	2148	1810	1509	510	1744	44780

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Salaipudhur)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	5.7%	4.9%	2.8%	3.5%	3.5%	2.1%	4.2%	4.9%
FY28	7.1%	4.8%	2.7%	3.4%	3.4%	2.1%	4.1%	5.7%
FY29	6.7%	4.6%	2.6%	3.3%	3.3%	2.0%	4.0%	5.5%
FY30	6.4%	4.5%	2.5%	3.2%	3.2%	1.9%	3.8%	5.2%
FY31	6.3%	4.4%	2.5%	3.1%	3.1%	1.9%	3.8%	5.2%
FY32	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	3.7%	5.1%
FY33	6.4%	4.5%	2.6%	3.2%	3.2%	1.9%	3.8%	5.3%
FY34	6.3%	4.4%	2.5%	3.2%	3.2%	1.9%	3.8%	5.3%
FY35	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	3.7%	5.2%
FY36	6.1%	4.3%	2.4%	3.0%	3.0%	1.8%	3.7%	5.1%
FY37	6.0%	4.2%	2.4%	3.0%	3.0%	1.8%	3.6%	5.1%
FY38	5.9%	4.1%	2.4%	2.9%	2.9%	1.8%	3.5%	5.0%
FY39	5.8%	4.0%	2.3%	2.9%	2.9%	1.7%	3.5%	4.9%
FY40	5.7%	4.0%	2.3%	2.9%	2.9%	1.7%	3.4%	4.9%
FY41	5.7%	4.0%	2.3%	2.8%	2.8%	1.7%	3.4%	4.8%
FY42	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.4%	4.8%
FY43	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.3%	4.8%

FY44	5.5%	3.8%	2.2%	2.7%	2.7%	1.6%	3.3%	4.7%
FY45	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.3%	4.7%
FY46	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.2%	4.7%
FY47	5.3%	3.7%	2.1%	2.7%	2.7%	1.6%	3.2%	4.6%
FY48	5.3%	3.7%	2.1%	2.6%	2.6%	1.6%	3.2%	4.6%
FY49	5.2%	3.6%	2.1%	2.6%	2.6%	1.6%	3.1%	4.6%
FY50	5.2%	3.6%	2.1%	2.6%	2.6%	1.5%	3.1%	4.5%
FY51	4.9%	3.4%	2.0%	2.5%	2.5%	1.5%	2.9%	4.3%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

R. Nanguneri-Kanyakumari Tollway Private Limited ("NKTPL")

Table 1: Base Traffic (FY26) via Toll Plaza 1 (Nanguneri)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	10745	1807	1330	827	719	342	698	16470
FY28	11480	1894	1366	855	747	349	743	17436
FY29	12238	1981	1402	884	784	359	799	18449
FY30	13017	2070	1438	912	809	366	829	19442
FY31	13831	2160	1474	940	834	373	860	20474
FY32	14690	2254	1510	969	860	380	892	21558
FY33	15631	2355	1549	1001	888	387	927	22739
FY34	16616	2459	1588	1032	916	394	962	23969
FY35	17645	2566	1628	1064	944	402	997	25248
FY36	18720	2675	1667	1096	973	409	1034	26577
FY37	19841	2787	1707	1129	1002	416	1071	27956
FY38	21009	2902	1747	1162	1031	424	1109	29387
FY39	22223	3020	1788	1196	1061	431	1147	30868
FY40	23495	3140	1829	1230	1092	439	1187	32413
FY41	24826	3265	1870	1265	1122	446	1227	34024
FY42	26219	3393	1912	1301	1154	454	1268	35703
FY43	27675	3525	1955	1337	1186	461	1310	37451
FY44	29196	3661	1997	1373	1219	469	1354	39271
FY45	30784	3800	2041	1411	1252	476	1398	41165
FY46	32441	3934	2085	1449	1285	484	1443	43134
FY47	34377	4090	2129	1492	1328	495	1497	45411
FY48	36189	4241	2174	1531	1363	502	1544	47548
FY49	38075	4396	2220	1571	1399	510	1592	49767
FY50	40039	4555	2265	1612	1435	518	1642	52069
FY51	42004	4711	2310	1651	1470	526	1690	54365

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

Table 2: Forecast for growth rates via Toll Plaza 1 (Nanguneri)

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	6.9%	4.9%	2.8%	3.5%	3.5%	2.1%	(4.2%)	5.4%
FY28	6.8%	4.8%	2.7%	3.4%	3.8%	2.3%	6.4%	5.9%
FY29	6.6%	4.6%	2.6%	3.3%	4.9%	2.8%	7.5%	5.8%
FY30	6.4%	4.5%	2.5%	3.2%	3.2%	1.9%	3.8%	5.4%
FY31	6.3%	4.4%	2.5%	3.1%	3.1%	1.9%	3.8%	5.3%
FY32	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	3.7%	5.4%
FY33	6.4%	4.5%	2.6%	3.2%	3.2%	1.9%	3.8%	5.5%
FY34	6.3%	4.4%	2.5%	3.2%	3.2%	1.9%	3.8%	5.4%
FY35	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	3.7%	5.3%
FY36	6.1%	4.3%	2.4%	3.0%	3.0%	1.8%	3.7%	5.3%
FY37	6.0%	4.2%	2.4%	3.0%	3.0%	1.8%	3.6%	5.2%
FY38	5.9%	4.1%	2.4%	2.9%	2.9%	1.8%	3.5%	5.1%
FY39	5.8%	4.0%	2.3%	2.9%	2.9%	1.7%	3.5%	5.0%
FY40	5.7%	4.0%	2.3%	2.9%	2.9%	1.7%	3.4%	5.0%
FY41	5.7%	4.0%	2.3%	2.8%	2.8%	1.7%	3.4%	5.0%
FY42	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.4%	4.9%
FY43	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.3%	4.9%
FY44	5.5%	3.8%	2.2%	2.7%	2.7%	1.6%	3.3%	4.9%
FY45	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.3%	4.8%
FY46	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.2%	4.8%

FY47	6.0%	3.7%	2.1%	3.0%	3.3%	2.2%	3.7%	5.3%
FY48	5.3%	3.7%	2.1%	2.6%	2.6%	1.6%	3.2%	4.7%
FY49	5.2%	3.6%	2.1%	2.6%	2.6%	1.6%	3.1%	4.7%
FY50	5.2%	3.6%	2.1%	2.6%	2.6%	1.5%	3.1%	4.6%
FY51	4.9%	3.4%	2.0%	2.5%	2.5%	1.5%	2.9%	4.4%

Source: Traffic Due Diligence Report - M/s Steer Davies Gleave India Private Limited

5. Operating Revenue

A. BOT Assets and TOT Assets

The break-up of FY 2026 Revenue for BOT Assets and TOT Assets are presented below:

Particulars	JMTPL	MBEL	WUPTPL	NDEPL	FRHPL	WVEPL
Revenue from Toll Operations	2,431	1,218	1,816	1,253	2,711	1,164

Particulars	DATRPL	GAEPL	NAMEPL	HTPL	JLTPL	JVTPL
Revenue from Toll Operations	7,006	4,467	3,467	1,506	1,090	759

Particulars	LRTPL	KMTPL	MKTPL	KETPL	SMTPL	NKTPL
Revenue from Toll Operations	711	1,249	1,333	793	862	802

The revenue for BOT Assets and TOT Assets are estimated to grow at a CAGR of 7.1% to 10.0% (from FY 2026 till the last full financial year of the concession period of respective SPVs). The revenue growth is driven by 2 factors:

1. Traffic estimates – The traffic estimates are considered based upon a traffic study conducted by independent consultant appointed by the Investment Manager. Kindly refer to Section 5 for detailed traffic projections by the independent consultant for each SPV.
2. Toll rates - The year-on-year growth in the toll rates for the projected period is considered as per the following computation, based upon the respective concession agreements.

SPV	Growth in toll rates as per the respective concession agreements (%)
JMTPL	Base fees escalated as 100% of WPI (based on the estimated WPI growth as of March 31, 2026)
MBEL	Base fees escalated as 100% of WPI (based on the estimated WPI growth as of March 31, 2026)
WUPTPL	Base fees escalated as 100% of WPI (based on the estimated WPI growth as of March 31, 2026)
NDEPL	Base fees escalated as 100% of WPI (based on average WPI growth during FY 2026)
FRHPL^	Annual base increase 3% + 40% increase in WPI (derived from the actual WPI growth as of December 31, 2025)
WVEPL^	Annual base increase 3% + 40% increase in WPI (derived from the actual WPI growth as of December 31, 2025)
DATRPL^	Annual base increase 3% + 40% increase in WPI (derived from the actual WPI growth as of December 31, 2025)
GAEPL^	Annual base increase 3% + 40% increase in WPI (derived from the actual WPI growth as of December 31, 2025)
NAMEPL^	Base fees escalated as 100% of WPI (derived from the actual WPI growth as of December 31, 2025)
HTPL^	Annual base increase 3% + 40% increase in WPI (derived from the actual WPI growth as of December 31, 2025)
JLTPL^	Annual base increase 3% + 40% increase in WPI (derived from the actual WPI growth as of December 31, 2025)
JVTPL^	Annual base increase 3% + 40% increase in WPI (derived from the actual WPI growth as of December 31, 2025)
LRTPL^	Annual base increase 3% + 40% increase in WPI (derived from the actual WPI growth as of December 31, 2025)
KMTPL^	Annual base increase 3% + 40% increase in WPI (derived from the actual WPI growth as of December 31, 2025)
MKTPL^	Annual base increase 3% + 40% increase in WPI (derived from the actual WPI growth as of December 31, 2025)
KETPL^	Annual base increase 3% + 40% increase in WPI (derived from the actual WPI growth as of December 31, 2025)
SMTPL^	Annual base increase 3% + 40% increase in WPI (derived from the actual WPI growth as of December 31, 2025)
NKTPL^	Annual base increase 3% + 40% increase in WPI (derived from the actual WPI growth as of December 31, 2025)

^ SPVs with WPI-linked escalation based on the actual WPI growth as of December of the previous year

WPI growth rate of 0.96% (derived from the actual WPI growth as of December 31, 2025), 2.4% (based on the Management's expectations / their internal estimates regarding WPI growth as of March 31, 2026) and 2.4% (based on Management's expectations / their internal estimates regarding average WPI growth during FY 2026) has been taken into account for FY26, reflecting the applicable WPI rates for each SPV, for FY27, as specified in their respective concession agreements. Additionally, WPI for FY28-FY31 is projected to fall within the range of 4.4% to 5.1%. It is also anticipated that WPI will eventually align with the long-term rate of 4.1% starting in FY32. These WPI projections are based on Management's expectations / their internal estimates regarding WPI trends.

FY	Applicable WPI growth rate	
	SPVs with WPI-linked escalation based on the actual WPI growth as of December of the previous year	For other SPVs
FY27	0.96%	2.4%
FY28	5.0%	5.0%
FY29	5.1%	5.1%
FY30	4.9%	4.9%
FY31	4.4%	4.4%
FY32 onwards	4.1%	4.1%

Source: Management

B. BOT Annuity Assets

The Annuity income as of FY 2026 for BOT Annuity Assets are presented below:

Particulars	JU	QB	APEPL
Annuity Income	4,038	4,900	1,130

Since the annuity income for BOT Annuity Assets is based upon the fixed annuity schedules as per the Concession Agreement, there is no year-on-year growth considered.

C. HAM Assets

The break-up of revenue of HAM Assets for FY 2026 are presented below:

Particulars	BWHPL	MSHPL	MHPL	THPL	SPPL	SIPL
Annuity Income	405	404	320	558	454	533
Finance Income	595	674	571	944	702	633
O&M Income	46	44	43	30	43	50

Finance Income - The year-on-year growth in the finance income is based upon the bank rate. The Management's projections indicate that the long-term Bank Rate is anticipated to be 5.50% over the concession period.

Annuity Income - Since the annuity income is based upon the annuity schedules, as per the Concession Agreement, the annuity income has been projected accordingly.

O&M Income - The year-on-year growth in the O&M income is based upon the price index multiple (i.e. summation of 70% of WPI and 30% of CPI), in line with the Concession Agreement. CPI growth rate has been considered in the range of 4.0% to 5.20% over the projection period. The CPI projections are based on Management's expectations / their internal estimates regarding CPI trends.

6. Operating Expenses

The break-up of operating expenses for the InvIT Assets as of FY 2026 are presented below:

Particulars	JMTPL	MBEL	WUPTPL	NDEPL	FRHL	WVEPL	DATRPL	GAEPL	NAMEPL
Project Management Fees	51	27	37	25	53	25	158	85	74
Operation and maintenance expenses	276	205	196	215	280	153	634	341	373
Routine Maintenance expenses	75	42	62	53	106	95	474	120	105

Particulars	HTPL	JLTPL	JVTPL	LRTPL	KMTPL	MKTPL	KETPL	SMTPL	NKTPL
Project Management Fees	30	23	17	18	26	34	19	20	21
Operation and maintenance expenses	94	82	76	92	153	165	120	131	140
Routine Maintenance expenses	-	-	-	-	93	58	40	53	43

Particulars	BWHPL	MSHPL	MHPL	THPL	SPPL	SIPL	JU	QB	APEPL
Project Management Fees	17	18	15	22	18	18	37	89	26
Operation and maintenance expenses	94	103	108	97	108	89	179	283	121
Routine Maintenance expenses	32	38	44	26	33	74	115	67	60

Note: Operating and Maintenance Expenses include majorly include Employee Benefit Expense, One-time expenses etc.

Operation and maintenance expenses - The year-on-year growth in the operation and maintenance expenses (excluding insurance) has been considered at 1.4 times WPI growth estimates. Further, year-on-year growth in insurance costs has been considered to be based on WPI growth. WPI growth rates are estimated to be in the range of 0.96% to 5.1% during the projected period as described earlier.

Routine Maintenance – The year-on-year growth in routine maintenance costs has been considered to be based on WPI growth, with certain adjustments pertaining to the Management's estimate of the cost mix between the Bitumen related costs and Non-Bitumen related costs. The years during which major maintenance expenses are being incurred, these expenses are estimated to be at 50% of the normalized level.

Project Management Fees (PM fees) – The Management has estimated the PM fees as higher of 1.829% (i.e. 1.55% + 18% GST) of the total revenue in the respective financial year and a base fee (post considering an annual inflation of 7%).

Additional technical service fees –The Management has estimated an additional fee of 0.413% (i.e. 0.35% + 18% GST) of the toll/annuity revenues will be paid to Cube Highways Technologies Private Limited ("CHTPL") for expert service agreement.

Employee Benefit Expenses – The Client has assessed the implications of the four Labour Codes notified by the Government of India, namely the Code on Wages, 2019, the Industrial Relations Code, 2020, the Code on Social Security, 2020 and the Occupational Safety, Health and Working Conditions Code, 2020, which came into effect on November 21, 2025. Based on the Client's current understanding of the applicable provisions, the rules notified by the Government of India on 8 May 2026, FAQs issued by the Ministry of Labour and Employment, legal opinions obtained, contractual arrangements with service providers and Management's assessment of potential exposures relating to contract labour engaged through third-party contractors, the Client has estimated the financial implications thereof and made an additional provisions towards contractual obligations and related exposures.

Further, considering the evolving regulatory framework, judicial developments and the possibility of future obligations arising under the labour laws, the Client will continue to monitor such developments and appropriately reassess the accounting impact, if any, in future periods.

Shape the future with confidence

7. Details of major repairs for each of the SPVs

A. Historical periodical major repairs:

The historical major maintenance expenses for all the InvIT Assets are shown in the table below:

SPVs / Major repairs (INR Million)	FY24	FY25	FY26
JMTPL	289	640	59
MBEL	527	186	45
WUPTPL	-	10	714
NDEPL	5	7	10
FRHPL	64	-	23
WVEPL	44	-	-
GAEPL	956	-	375
DATRPL	101	-	-
NAMEPL	-	144	505
HTPL	-	-	-
JLTPL	-	-	-
JVTPL	-	-	-
KMTPL	-	-	-
LRTPL	-	-	-
MKTPL	-	-	-
KETPL	-	-	-
SMTPL	-	-	-
NKTPL	-	-	-
APEPL	-	-	-
JU	-	-	-
QB	-	-	-

Note: Since NAMEPL *& HAM Assets were acquired during FY 2025, and JU & QB were acquired during Q1 FY 2026 historical* major maintenance expenses *are not available.*

Shape the future with confidence

B. Estimates of the major repairs to be carried out in the forecast period:

The forecasted major maintenance expenses for all the InvIT Assets are shown in the tables below:

SPV (INR Mn)	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39
JMTPL	-	(996)	(927)	-	(1,654)	-	-	-	-	-	-	-	-
MBEL	-	-	(952)	-	(772)	-	-	-	-	-	-	-	-
WUPTPL	-	-	-	-	-	-	-	-	-	-	-	-	-
NDEPL	(517)	(536)	-	-	-	-	(1,225)	-	-	-	-	-	-
FRHPL	-	-	(922)	(952)	-	-	-	-	-	(1,028)	(1,061)	-	-
WVEPL	-	-	(849)	-	-	-	-	-	-	(912)	-	-	-
DATRPL	(1,067)	-	(3,335)	-	-	-	-	(805)	-	(4,074)	-	-	-
GAEPL	-	-	-	(1,181)	(1,217)	-	-	-	-	-	(1,299)	(1,339)	-
NAMEPL	-	(1,286)	(696)	-	(548)	-	(1,002)	-	-	(1,384)	-	(1,161)	-
HTPL	-	-	-	-	(2,098)	-	-	-	-	-	-	(1,354)	-
JLTPL	-	-	-	(1,162)	-	-	-	-	-	-	(939)	-	-
JVTPL	-	-	-	(1,146)	-	-	-	-	-	-	(922)	-	-
LRTPL	-	-	-	-	-	(2,395)	-	-	-	-	-	-	(1,511)
KMTPL	-	-	(1,362)	-	-	-	-	-	-	(1,682)	-	-	-
MKTPL	-	-	(828)	-	-	-	-	-	-	-	(1,461)	-	-
KETPL	-	-	(995)	-	-	-	-	-	-	(1,258)	-	-	-
SMTPL	-	-	(985)	-	-	-	-	-	-	(1,226)	-	-	-
NKTPL	-	-	(955)	-	-	-	-	-	-	(1,187)	-	-	-
JU	-	(647)	-	-	(472)	-	-	-	-	-	-	-	-
QB	-	-	(435)	-	-	-	-	-	-	-	-	-	-
APEPL	-	-	-	-	-	-	-	-	-	-	-	-	-
BWHPL	-	-	(340)	-	-	-	-	-	-	(543)	-	-	-
MSHPL	-	-	(367)	-	-	-	-	-	-	(584)	-	-	-
MHPL	-	-	(573)	-	-	-	-	-	-	(595)	-	-	-
SIPL	-	-	(284)	-	-	-	-	-	-	(378)	-	-	-
SPPL	-	-	(639)	-	-	-	-	-	-	(679)	-	-	-
THPL	-	-	(952)	-	-	-	-	-	-	(1,021)	-	-	-

SPV (INR Mn)	FY40	FY41	FY42	FY43	FY44	FY45	FY46	FY47	FY48	FY49	FY50	FY51
JMTPL	-	-	-	-	-	-	-	-	-	-	-	-
MBEL	-	-	-	-	-	-	-	-	-	-	-	-
WUPTPL	-	-	-	-	-	-	-	-	-	-	-	-
NDEPL	-	-	-	-	-	-	-	-	-	-	-	-
FRHPL	-	(1,602)	-	-	-	-	-	-	-	-	-	-
WVEPL	-	-	-	-	-	-	-	-	-	-	-	-
DATRPL	-	(992)	-	(3,828)	-	-	-	-	-	-	-	-
GAEPL	-	-	-	-	-	-	-	-	-	-	-	-
NAMEPL	-	-	-	-	-	-	-	-	-	-	-	-
HTPL	-	-	-	-	-	-	-	(2,028)	-	-	-	-
JLTPL	-	-	-	-	-	(1,029)	-	-	-	-	-	-
JVTPL	-	-	-	-	-	(1,004)	-	-	-	-	-	-
LRTPL	-	-	-	-	-	-	-	-	-	-	-	-
KMTPL	-	-	-	-	-	-	-	-	-	-	-	-
MKTPL	-	-	-	-	(1,763)	-	-	-	-	-	-	-
KETPL	-	-	-	(1,456)	-	-	-	-	-	-	-	-
SMTPL	-	-	-	(1,426)	-	-	-	-	-	-	-	-
NKTPL	-	-	-	(1,497)	-	-	-	-	-	-	-	-
JU	-	-	-	-	-	-	-	-	-	-	-	-
QB	-	-	-	-	-	-	-	-	-	-	-	-
APEPL	-	-	-	-	-	-	-	-	-	-	-	-
BWHPL	-	-	-	-	-	-	-	-	-	-	-	-
MSHPL	-	-	-	-	-	-	-	-	-	-	-	-
MHPL	-	-	-	-	-	-	-	-	-	-	-	-
SIPL	-	-	-	-	-	-	-	-	-	-	-	-
SPPL	-	-	-	-	-	-	-	-	-	-	-	-
THPL	-	-	-	-	-	-	-	-	-	-	-	-

C. Movement in initial capital expenditure for BOT Assets and TOT Assets:

SPVs / Capex (INR Million)	FY24	FY25	FY26
DATRPL	40	16	6
HTPL*	138	165	(42)
JLTPL*	23	17	(3)
JVTPL	35	85	139
KMTPL	72	29	7
LRTPL*	(10)	-	(150)
MKTPL	38	42	24
KETPL	29	12	38
SMTPL	29	5	20
NKTPL	27	139	135
WUPTL			15
NDEPL			10
MBEL			44
FRHPL			23
WVEPL			-
NAMEPL*			(697)
GAEPL			375
JMTPL			59

Note: The positive capital expenditure represents the initial capex incurred during the year.

**The negative capital expenditure represents additional capex requirement identified during the year resulting into increase in overall budget.*

D. Movement in balance work for BOT Annuity and HAM Assets:

SPVs / Capex (INR Million)	FY25	FY26
BWHPL	20	38
MSHPL	40	38
MHPL	25	77
KSIPL	-	19
KSPPL	-	16
KTIPL	-	6
JU	-	(88)
QB	-	(191)
APEL	-	(7)

8. One-time expenses

One-time expenses include major maintenance expenses related to pending MM cycles or capital expenditures yet to be incurred due to various reasons including pending land allotment from NHAI/State Authority.

Particulars	JMTPL	MBEL	WUPTPL	NDEPL	FRHL	WVEPL	DATRPL	GAEPL	NAMEPL
One-Time Expenses	8	43	394	19	10	-	88	90	1,004

Particulars	HTPL	JLTPL	JVTPL	LRTPL	KMTPL	MKTPL	KETPL	SMTPL	NKTPL
One-Time Expenses	467	130	44	863	21	20	116	28	63

Particulars	BWHPL	MSHPL	MHPL	THPL	SPPL	SIPL	JU	QB	APEPL
One-Time Expenses	37	47	19	2	2	2	527	410	28

9. Outstanding debt payable by SPVs to InvIT as of 31 March 2026:

SPV (Currency: INR mn)	Weighted average borrowing cost	Debt Outstanding
JMTPL	10.2%	460
NDEPL	13.6%	2,292
FRHPL	15.2%	15,452
WVEPL	15.3%	4,615
DATRPL	14.8%	24,350
GAEPL	13.9%	18,599
NAMEPL	15.3%	16,674
HTPL	13.6%	9,726
JLTPL	13.5%	3,374
JVTPL	13.6%	1,991
LRTPL	13.4%	4,080
KMTPL	14.7%	7,574
MKTPL	14.5%	7,144
KETPL	14.7%	5,931
SMTPL	14.6%	5,862
NKTPL	13.9%	11,207
APEPL	14.2%	1,274
BWHPL	12.6%	1,174
MSHPL	12.6%	1,337
MHPL	12.6%	1,732
SIPL	12.6%	1,176
SPPL	12.6%	2,522
THPL	12.6%	1,562
QEPL	12.2%	13,072
JUHPL	12.2%	7,762
Total		**1,70,941**

10. Sensitivity Analysis

Sensitivity of WACC on Enterprise Value (including other financial assets)

SPV (Currency: INR Mn)	Enterprise Value (including other financial assets)	Change in Enterprise Value (including other financial assets)	
	Base Case	WACC +0.50%	WACC -0.5%
JMTPL	7,341	(76)	78
MBEL	4,119	(35)	35
WUPTPL	977	0	(0)
NDEPL	4,667	(71)	73
FRHPL	26,471	(843)	885
WVEPL	9,101	(231)	240
DATRPL	77,786	(3,218)	3,416
GAEPL	38,839	(1,093)	1,142
NAMEL	27,666	(830)	868
HTPL	20,156	(1,077)	1,168
JLTPL	12,951	(556)	593
JVTPL	8,014	(354)	378
LRTPL	8,546	(448)	486
KMTPL	13,992	(579)	616
MKTPL	16,608	(712)	760
KETPL	10,785	(564)	610
SMTPL	11,778	(612)	662
NKTPL	14,255	(598)	648
JU	12,240	(136)	139
QB	18,855	(217)	221
APEPL	816	(0)	0
BWHPL	3,216	(56)	57
MSHPL	3,733	(66)	68
MHPL	2,747	(47)	48
SIPL	3,466	(62)	64
SPPL	4,197	(72)	75
THPL	4,701	(84)	86
Total	**3,68,021**	**(12,635)**	**13,419**

Shape the future with confidence

Sensitivity of WPI on Enterprise Value (including other financial assets)

SPV (Currency: INR Mn)	Enterprise Value (including other financial assets)	Change in Enterprise Value (including other financial assets)	
	Base Case	WPI+1%	WPI-1%
JMTPL	7,341	276	(206)
MBEL	4,119	117	(67)
WUPTPL	977	2	(2)
NDEPL	4,667	162	(157)
FRHPL	26,471	1,065	(978)
WVEPL	9,101	296	(238)
DATRPL	77,786	4,526	(4,110)
GAEPL	38,839	1,390	(1,280)
NAMEL	27,666	1,453	(1,352)
HTPL	20,156	1,666	(1,411)
JLTPL	12,951	800	(694)
JVTPL	8,014	481	(410)
LRTPL	8,546	606	(520)
KMTPL	13,992	790	575
MKTPL	16,608	981	(911)
KETPL	10,785	781	(708)
SMTPL	11,778	874	(760)
NKTPL	14,255	829	(731)
JU	12,240	(37)	36
QB	19,251	(46)	45
APEPL	816	-	-
BWHPL	3,216	(74)	69
MSHPL	3,733	(83)	77
MHPL	2,747	(90)	84
SIPL	3,466	(60)	56
SPPL	4,197	(84)	78
THPL	4,701	(99)	93
Total	**3,68,418**	**16,521**	**(13,422)**

Shape the future with confidence

11. Valuation of the projects in the previous 3 years

Currency: INR Mn	Sep'23	Mar'24	Mar'25
JMTPL	9,841	10,046	9,493
MBEL	3,952	4,429	4,070
WUPTPL	2,332	1,370	165
NDEPL	5,548	5,329	5,076
FRHPL	25,441	26,570	26,853
WVEPL	9,918	9,502	9,410
DATRPL	68,756	73,155	74,808
GAEPL	25,448	29,946	32,782
NAMEPL	NA	NA	25,982
HTPL	15,270	16,703	17,974
JLTPL	11,308	11,648	12,211
JVTPL	7,035	7,269	7,638
LRTPL	6,613	7,652	7,170
KMTPL	13,302	13,139	13,261
MKTPL	13,082	13,640	14,168
KETPL	7,860	8,289	9,477
SMTPL	8,624	9,329	10,345
NKTPL	8,612	9,076	9,752
APEPL	1,499	1,014	1,228
BWHPL	NA	NA	3,580
MSHPL	NA	NA	4,106
MHPL	NA	NA	2,940
SPPL	NA	NA	4,412
SIPL	NA	NA	4,012
THPL	NA	NA	5,205
Total	**244,442**	**258,106**	**3,16,119**

12. India Equity Market Risk Premium: EY Study

Equity Market Risk Premium (EMRP or MRP) is the excess return earned by an investor over a risk free rate, when they invest in the stock market. This return compensates investors for taking on the higher risk of equity investing.

There are various approaches to estimating MRP like surveying investors or calculating MRP implied in stock prices via forward forecasts. One of the most objective approach is to calculate MRP by analysing historical MRP earned over a long period of time. EY has used this approach. This has involved the following steps

Time period to be considered:

A relatively long time period is selected, as in the short-term markets can be volatile leading to under/over-estimation of MRP depending upon near term market performance. stock market data is available from 1979 onwards. Further a period commencing from 1990 onwards is also suitable as it coincides with India's economic liberalization.

Rm: Market Return

Returns on BSE Sensex/BSE100 Index or NSE Nifty may be considered as a proxy for the market returns. Since data for NSE Nifty is available only from 1994, returns on BSE Sensex and BSE 100 have been considered for analysis of a longer period of data.

Rf: Risk Free Rate

Hypothetically, risk free rate is the return on security or portfolio securities that has no default risk and is completely uncorrelated with returns on anything else in the economy. In India, the yield on 10-year residual maturity government bond is considered as a reasonable proxy for the risk-free rate.

Adjustment for dividend yields

Return on equities is derived from a combination of dividend receipts and increase in share prices/ index. Since BSE Sensex and BSE100 Index are price return indices, the dividend yields for them are added to the average MRP to arrive at total return on equities.

Choice between Arithmetic and Geometric Mean

Geometric mean is preferred on the grounds that it takes compounding into account over the sample period.

Since the dividends are paid out in cash, it is assumed they are not re-invested, hence arithmetic mean of the dividend yield is added to the MRP.

Conclusion

Rf calculated for each of the year is deducted from Rm, which includes both returns on the stock index and the dividend yield of the index. The difference Rm- Rf is averaged over the period by using Geometric Mean.

The calculations of the study show that Market Risk Premium, while varying as per period and choice of index, converges around 7% (rounded). This is then considered a reasonable benchmark for India's Market Risk Premium.

13. Disclosures regarding list of one-time sanctions/approvals which are obtained or pending and Disclosures regarding list of up to date/overdue periodic clearances

The disclosures regarding list of one-time sanctions/approvals which are obtained or pending and list of up to date/overdue periodic clearances for the InvIT Assets are shown in the below table.

13.1 JMTPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Certificate of completion - Dated 09-03-2015	Independent consultant	Active
2	Environmental clearance dated August 1,2006	MOEFCC	Active
3	No-objection certificate for obtaining an environmental clearance dated May 6, 2006	RSPCB	Active
4	Consent to establish	RSPCB	Active
5	No Objection certificates for ground water abstraction from borewells located at 3 locations along the stretch.	CGWA	Active
6	Renewal of No Objection certificates for ground water abstraction from borewells located at 4 locations along the stretch	CGWA	Active (3 Borewells) However, NOC renewal for 1 borewell is still in process with department due to some previous payment issue which was not updated on portal. Multiple reminders have been sent to department for which department is checking and will update for further submission of renewal application.
7	Renewed license under the Contract Labour (R&A) Act, 1970	Licensing Officer and Assistant Labour Commissioner GOI	Active

13.2 MBEL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Certificate of completion Dated-13-09-2009	Independent Consultant	Active
2	Consent to Operate (Green Category) under the Section 25 and Section 26 of the Water	RSPCB	Four new DG sets, CPCB IV norms (two at each plaza – 2 x 58.5kVA and 2x 125 kVA) procured and installed due to trigger of Central Air Quality

	(Prevention and Control of Pollution) Act, 1974 and Section 21(4) of the Air (Prevention and Control of Pollution) Act, 1981		Management directive in NCR region. The renewed consent issued for Amoli Toll Plaza. SPV is still following up with RSPCB to re-submit the rejected application for Ludhawai Toll Plaza as discussed with officials. No further update received from department as of now due to implication of supreme court order in the region considering project falls in Taj Trapezium Zone.
3	No Objection certificates for ground water abstraction from borewells located at 5 locations along the stretch	CGWA	Active (4 Borewell) Out of 5 borewells, one borewell is presently not operational. Thus, renewal application for the same is not submitted for now and will be submitted once borewell is operational.
4	Renewed certificate of registration under the Contract Labour (Regulation and Abolition) Act, 1970 dated 13.09.2022	Licensing Officer and Assistant Labour Commissioner GOI	Active

13.3 WUPTPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Certificate of completion UNI/D-06/O&M-IC/NH-58/2016-17/1075 -Dated- 02-06-2016	Independent Consultant	Active
2	Authorisation under the Hazardous and Other Wastes	UPPCB	Authorisation under Hazardous Waste Management Rules, 2016 is not applicable as per notification issued dated 01 March 2019. Per the notification, an occupier shall not be required to obtain an authorisation under this rule, from the State Pollution Control Board, in case the consent to establish or consent to operate, is not required from the State Pollution Control Board or Pollution Control Committee under the Water (Prevention and Control of Pollution) Act, 1974 (25 of 1974) and Air (Prevention and Control of Pollution) Act, 1981 (21 of 1981); Refer Point no. 3 for clarity on non-applicability of consent for WUPTPL. Though, used oil (HW) generated from DG sets is being managed as per the said rules and disposed of to authorised vendor timely.
3	Consent dated February 3, 2019 under Sections 25 and 26 of the Water (Prevention and Control of Pollution) Act, 1974 for the	UPPCB	WUPTPL submitted letter with detailed rationale to RO, UPPCB, Meerut justifying exemption of plaza operations under the Water and Air Acts.

	disposal of its industrial effluents through the effluence treatment plant for irrigation/ or to the river through drains, and discharge of domestic effluents through septic tanks		Active
4	Consent dated February 3, 2019 under Sections 21 and Section 22 of the Air (Prevention and Control of Pollution) Act, 1981, for the emission of air pollutants from the diesel generator installed at the Toll Plazas by the Company	UPPCB	
5	No Objection certificates for ground water abstraction from borewells located at 4 locations along the stretch dated 19.03.2023	Ground Water Department, Government of Uttar Pradesh	Active
6	Draft No Objection certificates for ground water abstraction from borewells located at 3 locations along the stretch dated 06.03.2023		Active
7	Renewed certificate of Registration under the Contract Labour (Regulation and Abolition) Act, 1970 dated 13.06.2022	Regional Labour Commissioner, GOI	Active

13.4 NDEPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Environment Clearance for upgradation of existing 2 lane road from Nelamangala to Bommanhalli dated March 13, 2007.	MoEFCC	Active
2	Provisional certificate of completion dated June 23, 2012	IE	Active
3	Permission for utilization of borewell for drinking purposes at toll plaza 1	District Groundwater Directorate, Bengaluru Rural District	Active
4	No-objection certificate dated December 13, 2022 for extraction of groundwater at the toll plaza 2	Karnataka Ground Water Authority	Active

5	Registration under Shop and Establishment Act	Labor Department	Active

13.5 FRHPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Environment clearance for widening and strengthening of existing 2 lane to 4/6 lane from Farakka to Raiganj dated September 16, 2008	Ministry of Environment & Forests	Active
2	No Objection Certificates No. PG/DOES/342 and PG/DOES/343 dated March 16, 2018, for installation of 2*180 KVA at both toll plazas, Stand by Outdoor Canopy D.G. Set	Chief Electrical Inspector, Directorate of Electricity, Government of West Bengal	Active
3	Certificate of completion dated March 25, 2022 issued by the independent engineer	IE	Active
4	Renewed Labour License No. 46/L(80)/2017-E,3 under Contract Labour (Regulation and Abolition) Act, 1970 dated March 2, 2023	Licensing Officer, Ministry of Labour and Employment, Government of India	Active
5	Certificate of registration under The Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 dated March 6, 2017	Deputy Chief Labour Commissioner, Ministry of Labour and Employment, Government of India	Active

13.6 WVEPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Completion certificate APL/W-V/NS-2/02/2015-16/47 Dated- 31-10-2015	Independent Consultant	Active
2	Environment Clearance dated September 15, 2008 for widening and strengthening of 4/6 laning	Ministry of Environment and Forests	Active
3	Application dated July 16, 2021 submitted by WVEPL for obtaining NOC to extract ground water from an operational borewell. Application specifying the revised extraction quantity (based on actual consumption as per electromagnetic flow meter) was submitted by SPV for same location dated February 6, 2023 as advised by GW official. SPV obtained yield test certificate from Ground water department on February 22, 2023, for the existing borewell.	District Office, Ground Water Department, Palakkad	Active (1 Borewell) NOC Application for 2 borewells is approved based on verbal confirmation by department official but NOC letter is yet to receive from Department.
4	Three fresh applications (each dated March 24, 2023) submitted by WVEPL for obtaining NOC to extract ground water from proposed/new borewell at Chandranagar, Erattakulam and Kannanur, along the road to manage water requirement for the median and avenue plants maintenance. There is a correction on point (4) : As per department's process for digging new borewell, three applications submitted by WVEPL (each dated March 24, 2023) to extract ground water from proposed borewells at Chandranagar, Erattakulam and Kannanur, along the road to manage water requirement for the median and avenue plants maintenance. After conduct of survey by department and SPV, two locations were finalised and borewells digged by SPV at Erattakulam and Kannaur.		
5	Renewed license under the Contract Labour (R&A) Act, 1970	Licensing Officer and Assistant Labour Commissioner GOI	Active
6	Registration under Shop and Establishment Act	Labor Department	Active

13.7 DATRPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Environment clearance dated July 23, 2012 for widening and improvement to six-laning	Ministry of Environment & Forests	Active
2	Forest clearance stage-I approval dated May 8, 2012	Ministry of Environment & Forests	Active
3	Forest clearance stage-I approval dated June 21, 2012	Ministry of Environment & Forests	Active
4	Forest clearance stage-II approval dated April 16, 2013	Ministry of Environment & Forests	Active
5	Forest clearance stage-II approval dated August 23, 2013	Ministry of Environment & Forests	Active
6	Provisional certificate of completion dated May 20, 2022 issued by the independent engineer	IE	Active
7	No objection certificate for ground water extraction from existing borewell at Mahuvan Toll Plaza.	Ground Water Department, Government of Uttar Pradesh	Active (NOC copy enclosed)
8	No objection certificate for ground water extraction from existing borewell at Karman Toll Plaza.	Ground Water Department, Government of Uttar Pradesh	Active (NOC copy enclosed)
9	In-principle approval dated January 7, 2020 for harmonious substitution of existing shareholders of DATRPL with CH-III	NHAI	Active
10	Final approval dated November 17, 2020 for harmonious substitution of existing shareholders of DATRPL with CH-III.	NHAI	Active
11	No objection certificate for ground water extraction from new installed borewell for Miyawaki Plantation Watering at Km 108 in median.	Ground Water Department, Government of Uttar Pradesh	This is the newly constructed borewell for which pre-requisite actions (Procurement and installation of flowmeter) is under process as there is some delay at vendor's end for the supply of flowmeter. The drafting of application is under process and will be submitted post establishment of average daily consumption from the borewell (based on

			data from flowmeter to be installed) The whole process will be completed by May end.

13.8 APEPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Final Completion Certificate AA/APEL/504/09-10/1491Dated- 04-01-2010	Independent Consultant	Active
2	Environment clearance dated May 19, 2006 for upgrading existing 2 lane to 4 lane	Ministry of Environment and Forest	Active
3	Letter seeking permission for extraction of ground water was submitted to respective Mandal Revenue Officer (MRO), Kurnool District dated 15.04.2018 and Reminder Letter was submitted dated 22.01.2021.	Mandal Revenue Officer, Government of Andhra Pradesh	Pending with Department
4	Total 5 Nos. of operational borewells for ground water abstraction along the stretch across Andhra Pradesh and Telangana State No objection certificate for ground water extraction from existing operational borewells (3 Nos.) located in Telangana State at below mentioned locations. • Office Area (1no.) • Base camp (1no.) • Truck Laybye Public Toilet Block (1 no.)	Ground Water Department, Government of Telangana	Active (3 borewells) The penalties were waived off by the department based on the last bill received for ground water extraction from the respective borewells. SPV has paid all the dues and all compliances are in place..
5	Certificate of registration of establishment dated June 4, 2019 issued by Labour Department	Government of National Capital Territory of Delhi	Active

13.9 GAEPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Environmental clearance dated March 3, 2009	Ministry of Environment and Forest	Active
2	Completion certificate dated April 23, 2022	IE	Active

3	Forest clearance dated March 30, 2012	Ministry of Environment and Forest	Active
4	No objection certificate for ground water extraction from the operational borewells (5 locations)	Ground Water Department, Government of Uttar Pradesh	Active (NOC obtained for 3 locations) Draft NOC obtained for 2 borewells. The ground water abstraction charges have been paid post issuance of draft NOC. Final NOC is awaited from department.
5	No objection certificate for ground water extraction from the additional operational borewells recently installed at 5 locations.	Ground Water Department, Government of Uttar Pradesh	Pre-requisite actions (procurement and installation of flowmeters) have been completed. It was observed during submission of NOC application for 5 borewells that ground water abstraction is not permitted in Critical and Over exploited areas based UPGWD guidelines. Out of 5 locations, 2 falls under critical zone and 3 falls under over exploited zone. Therefore, NOC submission is also not allowed for these borewells. The matter was intimated to Legal team dated 06.08.2025 post which legal team has recommended to stop the usage of borewell and close the borewells immediately as required by law. Following this, SPV was informed through email dated 19.08.2025 to stop the borewell operations (along with its removal from site) and identify the alternative suitable source of water (third party tanker/municipal supply) to cater the water requirement at the respective locations.

			The closure of one borewell located at SPV office was already completed and SPV is in process of signing the agreement with third party for 2 borewells post which these borewells will also be closed Further, SPV identifying the alternative source of water for the remaining two locations.
6	Application dated November 16, 2022 for issuance of license under the Contract Labour (Regulation and Abolition) Act, 1970.	Ministry of Labour and Employment, Office of the Assistant Labour Commissioner (Central), Jhansi,	Pending with department

13.10 HTPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Environment clearance dated February 19, 2007	Ministry of Environment & Forests	Active
2	Registration certificate dated July 31, 2020 issued by Department of Labour	Government of National Capital Territory of Delhi	Active

13.11 JLTPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Environment clearance dated January 17, 2007	Ministry of Environment & Forests	Active
2	No objection certificate for extraction of ground water from borewell at toll plaza	Ground Water Department, Ministry of Jal Shakti, Government of Uttar Pradesh	Active
3	No objection certificate for extraction of ground water from borewell at new toll plaza building.	Ground Water Department, Ministry of Jal Shakti, Government of Uttar Pradesh	There is negligible flow in the newly constructed borewell in December 2025 due to the very low water level in the region. SPV is observing the operations of borewell till monsoon season and will take required actions. The pre-

			requisite actions (Procurement and installation of flowmeter) are to be initiated. NOC application process will be initiated post establishing the average daily consumption based on flowmeter data.
4	Registration certificate dated July 31, 2020 issued by Department of Labour	Government of National Capital Territory of Delhi	Active

13.12 JVTPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Environment clearance dated February 19, 2007	Ministry of Environment & Forests	Active
2	No objection certificate for extraction of ground water from borewell at toll plaza	Ground Water Department, Ministry of Jal Shakti, Government of Uttar Pradesh	Active
3	Borewell Registration Certificate based on No objection certificate conditions.	Ground Water Department, Ministry of Jal Shakti, Government of Uttar Pradesh	Active
4	Registration certificate dated July 31, 2020 issued by Department of Labour	Government of National Capital Territory of Delhi	Active

13.13 KMTPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	No-objection certificate for ground water abstraction with NOC number CGWA/NOC/INF/ORIG/2021/13127 valid from September 29, 2021 to September 27, 2026	Government of India	Active
2	No objection certificate from Central Ground Water Authority for ground water abstraction from the new operational borewell at two locations (Toll Plaza and Public Toilet Block in front of Toll Plaza).	Government of India	Active
3	Registration certificate dated July 31, 2020 issued by Department of Labour	Government of National Capital Territory of Delhi	Active

13.14 LRTPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Environment clearance dated July 10, 2012	Ministry of Environment & Forests	Active
2	No-objection certificate dated January 5, 2023 for extraction of ground water at NH-30, Dakhina Shekpur Toll Plaza	Ground Water Department, Government of Uttar Pradesh	Active
3	Registration certificate dated July 31, 2020 issued by Department of Labour	Government of National Capital Territory of Delhi	Active

13.15 MKTPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Registration certificate dated July 31, 2020 issued by Department of Labour	Government of National Capital Territory of Delhi	Active

13.16 KETPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Applications dated April 25, 2022 submitted by KETL for obtaining NOC to extract ground water from operational borewells at plazas under Tamil Nadu Groundwater (Development and Management) Act, 2003	Water Resource Department, Public Works Department, Government of Tamil Nadu	Borewell is permanently closed in January 2025.
3	Registration certificate dated October 15, 2020 issued by Department of Labour	Government of National Capital Territory of Delhi	Active

13.17 SMTPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	No objection certificate for withdrawal of groundwater dated 23.11.2021	Water Resource Department, Public Works Department, Government of Tamil Nadu	Active

2	Registration certificate dated October 28, 2020 issued by Department of Labour	Government of National Capital Territory of Delhi	Active

13.18 NKTPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Applications dated March 24, 2022 submitted by NKTL, for obtaining NOC to extract ground water from operational borewells at plaza under Tamil Nadu Groundwater (Development and Management) Act, 2003	Water Resource Department, Public Works Department, Government of Tamil Nadu	Active
2	Application dated February 16, 2023 submitted by NKTL, for obtaining NOC to extract ground water from proposed borewell at plaza under Tamil Nadu Groundwater (Development and Management) Act, 2003		Active
3	Registration certificate dated October 28, 2020 issued by Department of Labour	Government of National Capital Territory of Delhi	Active

13.19 SPPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Forest clearance for the diversion of 72.2262 ha. along for 4 laning of Sangareddy – Nanded – Akola section of NH 161 from Km 0.000 to Km 140.000	Ministry of Environment & Forests	Active (Common Proposal for SPPL and MHPL)
2	No Objection certificates for ground water abstraction from borewell located at Rest area BHS along the stretch.	Telangana Ground Water Authority	Active
3	Renewed license under the Contract Labour (R&A) Act, 1970	Licensing Officer and Assistant Labour Commissioner GOI	Active
4	Registration under Building and Other Construction Work Act, 1996	Registering Officer and Assistant Labour Commissioner GOI	Active

13.20 MHPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Forest clearance for the diversion of 72.2262 ha. along for 4 laning of Sangareddy – Nanded – Akola section of NH 161 from Km 0.000 to Km 140.000	Ministry of Environment & Forests	Active (Common Proposal for SPPL and MHPL)
2	No Objection certificates for ground water abstraction from borewell located at O&M Centre RHS along the stretch.	Telangana Ground Water Authority	Active
3	No Objection certificates for ground water abstraction from borewell located at Rest Area RHS along the stretch.	Telangana Ground Water Authority	NOC application for ground water abstraction is submitted on 14.05.2025 and is under process with department. SPV has also shared one reminder letter to department dated 16.03.2026. No further action taken by department as on date.
3	Renewed license under the Contract Labour (R&A) Act, 1970	Licensing Officer and Assistant Labour Commissioner GOI	Active

13.21 BWHPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	No Objection certificates for ground water abstraction from borewell located at Public Toilet block LHS along the stretch.	CGWA	NOC exempted

13.22 MSHPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Forest clearance proposal for the diversion of 11.24 ha. along Mangalwedha - Solapur section of NH – 166 from Km 321.600 to Km 378.100 (Existing: Km 314.969 -	Ministry of Environment & Forests	Proposal is still pending at User Agency due to EDS raised by Regional Office dated 24.05.2025 through DFO. The present status of proposal is showing as delisted (due to non-reply of EDS by UA within

	Km 370.452 on HAM in the State of Maharashtra.		90 days). No further update from the last status provided. This is under purview of NHAI. SPV is following up for smooth operation of the project.
2	No Objection certificates for ground water abstraction from borewell located at Public Toilet block RHS along the stretch.	CGWA	Active

13.23 SIPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Applications for obtaining NOC to extract ground water from operational borewells at 4 locations along the stretch under Tamil Nadu Groundwater (Development and Management) Act, 2003	Water Resource Department, Public Works Department, Government of Tamil Nadu	NOC application for two borewells at Public Toilet Block is under process. SPV has submitted the updated land document to Ground Water Department after coordinating with NHAI. Now, department has to take further action and process NOC.
2	Renewed license under the Contract Labour (R&A) Act, 1970	Licensing Officer and Assistant Labour Commissioner GOI	Active

13.24 THPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Renewed license under the Contract Labour (R&A) Act, 1970	Licensing Officer and Assistant Labour Commissioner GOI	Active
2	Registration under Shop and Establishment Act	Labor Department	Active

13.25 NAMEPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Consent dated February 3, 2019 under Sections 25 and 26 of the Water (Prevention and Control of Pollution) Act, 1974 for the disposal of its industrial effluents through the effluence treatment plant for irrigation/ or to the river through drains, and discharge of domestic effluents through septic tanks for Madugulapally Toll Plaza	TSPCB	Active Consent Exemption under Air and Water Act
2	Consent dated February 3, 2019 under Sections 21 and Section 22 of the Air (Prevention and Control of Pollution) Act, 1981, for the emission of air pollutants from the diesel generator installed at the Toll Plazas by the Company for Madugulapally Toll Plaza	TSPCB	
3	Consent under Air (Prevention and Control of Pollution) Act, 1981 for DG Sets (180 KVA and 125 KVA) for Thummalacheruvu Toll Plaza at Thummalacheruvu, Piduguralla, Andhra Pradesh	APPCB	Active
4	Consent under Air (Prevention and Control of Pollution) Act, 1981 for DG Sets (180 KVA and 125 KVA) for Elchuru Toll Plaza at Elchuru, Prakasam, Andhra Pradesh	APPCB	Active
5	Permission for extraction of ground water from Mandal Revenue Officer (MRO), Guntur (now known as Palanadu) District dated 25.10.2018	Mandal Revenue Officer, Government of Andhra Pradesh	Active
6	Permission for extraction of ground water from Mandal Revenue Officer (MRO), Bapatla District dated 25.10.2018	Mandal Revenue Officer, Government of Andhra Pradesh	Active
7	No Objection certificates for ground water abstraction from new borewell located at Madugulapally Toll Plaza	Telangana Ground Water Authority	Active
8	Renewed license under the Contract Labour (R&A) Act, 1970	Licensing Officer and Assistant Labour Commissioner GOI	Active

9	Registration under Shop and Establishment Act	Labor Department	Active
10	Registration under Building and Other Construction Work Act, 1996	Registering Officer and Assistant Labour Commissioner GOI	Active
11	Renewed certificate of registration under the Contract Labour (Regulation and Abolition) Act, 1970	Licensing Officer and Assistant Labour Commissioner GOI	Active

13.26 JUHPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Environment clearance dated Aug 31, 2010 for 4/6 laning of Jammu Udhampur Section of NH 1A and further amendment of Environmental Clearance dated May 3, 2013	Ministry of Environment & Forests	Active
2	Wildlife Clearance for four laning of National Highway (NH-1A) from Jammu to Udhampur passing through Ramnagar (7.97 ha) and Nandni Wildlife Sanctuary (13.40 ha) in Jammu region.	National Board of Wildlife Sanctuary, Ministry of Environment and Forests Wildlife Division	Active
3	Forest Clearance was obtained in Jammu and Udhampur division Permission copy is not provided during handover of project apart from forest area within Wildlife Sanctuary	J&K State Forest Department	Active
4	Authorization for Operating DG sets in Tunnel area dated 18.04.2018	J&K State Pollution Control Board	Active
5	Authorization for Operating DG sets at Ban Toll plaza dated 01.08.2017	J&K State Pollution Control Board	Active
6	Renewed license under the Contract Labour (R&A) Act, 1970	Licensing Officer and Assistant Labour Commissioner GOI	Active
7	Registration under Building and Other Construction Work Act, 1996	Registering Officer and Assistant Labour Commissioner GOI	Active
8	Registration under Shop and Establishment Act	Labor Department	Active

13.27 QEPL

Sr. No.	Description of permit	Issuing Authority	Current Status
1	Environment clearance dated July 13, 2007 for four laning of Quazigund Banihal Section of NH 1A	Ministry of Environment & Forests	Environmental clearance was obtained for 32.7 km whereas the actual project length is 15.35 km for which EC is not required. NHAI letter stating of non-applicability of EC is enclosed
2	Forest clearance dated 27.05.2008 in Pir Panjal Range of Kahmir Region	J&K Forest Department	Active
3	Forest clearance dated 16.02.2010 in Chakore Conservation Reserve for construction of underground tunnel	J&K Forest Department	Active
4	Permission of Ground Water Abstraction from borewell (1 no.) situated at South side of Tunnel	Jal Shakti (PHE) Department, Government of Jammu and Kashmir	Active
5	Permission of Ground Water Abstraction from borewell (1 no.) situated at North side of Tunnel	Jal Shakti (PHE) Department, Government of Jammu and Kashmir	NOC application was submitted by Athaang pre asset acquisition by Cube. Based on the further discussion with Ground Water Department and the last query letter sent, SPV has responded to the department along with related document and conveyed fee (Demand Draft of INR 1,00,000). NOC application is in process with department for further action. Enclosing the copy of response letter submitted to department.
6	Renewed license under the Contract Labour (R&A) Act, 1970	Licensing Officer and Assistant Labour Commissioner GOI	Active
7	Registration under Building and Other Construction Work Act, 1996	Registering Officer and Assistant Labour Commissioner GOI	Active
8	Consent dated February 3, 2019 under Sections 25 and 26 of the Water (Prevention and Control of Pollution) Act, 1974 for the disposal of its	J&K State Pollution Control Board	QEPL submitted letter with detailed rationale to RO, Jammu and Srinagar justifying exemption of plaza operations under the Water and Air Acts. Active

	industrial effluents through the effluence treatment plant for irrigation/ or to the river through drains, and discharge of domestic effluents through septic tanks		Copies of consent exemption under Air and Water Act intimation letter submitted is enclosed.
9	Consent dated February 3, 2019 under Sections 21 and Section 22 of the Air (Prevention and Control of Pollution) Act, 1981, for the emission of air pollutants from the diesel generator installed at the Toll Plazas by the Company		

14. Details of on-going litigations

14.1 Litigation and Regulatory Actions against the Trust and its Associates

As at the date of this Placement Memorandum, there are no outstanding criminal litigation, non-ordinary course regulatory actions or material civil litigation against the Trust and its Associates, except as disclosed in this section.

14.2 Litigation involving the Initial Portfolio Assets

Material civil proceedings filed against the Initial Portfolio Assets

DATRPL

(i) VKR Projects Private Limited ("**Plaintiff**") has filed a commercial suit against DATRPL ("**Defendant**") before the High Court of Judicature at Bombay ("**Bombay High Court**") in relation to a letter of intent issued by the Defendant wherein the Defendant sought the services of the Plaintiff in the laying and shifting of electricity cables in a specific section of the Defendant's project highway ("**Service**"). Due to a delay in the completion of the Service, the Defendant refused to pay an amount of ₹ 4,193.32 million. The Plaintiff has claimed that the aforesaid delay was due to the delay in handing over of the complete project site by the Defendant and accordingly, the Plaintiff has filed the present suit before the Bombay High Court. The Plaintiff has prayed for, amongst other things, the Bombay High Court to (i) direct the Defendant to pay an amount of ₹ 4,193.32 million to the Plaintiff, along with statutory taxes and an interest at the rate of 18% per annum up to the date of realization of such amount, (ii) order the specific performance of the terms of letter of intent, and (iii) direct the Defendant to deposit a sum of ₹ 277.28 million with the Bombay High Court. The matter is currently pending.

Others

(i). Certain persons ("**Petitioners**") have filed separate cases against some of the Initial Portfolio Assets before various civil and consumer courts, amongst other things, (i) alleging excess collection of toll; (ii) challenging acquisition of land used for the Initial Portfolio Assets; and (iii) challenging certain encroachment notices served upon the Petitioners. These matters are currently pending.

(ii). Certain persons have filed separate labour cases against some of the Initial Portfolio Assets before various civil and labour courts in relation to, amongst other things, wrongful termination of employment, increase in salaries and demands of bonus. These matters are currently pending.

Material civil proceedings filed by the Initial Portfolio Assets

WUPTL

(i). WUPTL ("**Claimant"**) has initiated arbitration proceedings against NHAI ("**Respondent**") before the Indian Council of Arbitration, New Delhi ("**ICA**"). The Claimant had entered into a concession agreement dated September 9, 2005 with the Respondent ("**Concession**

Agreement"). Due to change in law by way of an order of Supreme Court dated October 9, 2015 and the notification issued by National Green Tribunal dated February 18, 2016, (i) environmental compensation charges were to be levied on all light and heavy duty commercial vehicles entering New Delhi; (ii) commercial vehicles were prohibited from entering into New Delhi if not destined to New Delhi; and (iii) transportation of mining materials in Yamunanagar and Saharanpur districts was prohibited. The Claimant has alleged that these events led to substantial reduction in the commercial traffic on the project highway causing toll revenue losses to the Claimant. In accordance with the terms of the Concession Agreement, the Claimant sought compensation from the Respondent for the losses incurred due to 'change in law' event which was refused by the Respondent. Accordingly, the Claimant had initiated arbitration proceedings, and sought compensation of ₹ 666.00 million along with interest. However, the arbitration proceedings were kept in abeyance in order to pursue amicable settlement before the Conciliation Committee of Independent Experts. The matter is currently pending.

Criminal Proceedings involving the Initial Portfolio Assets

DATRPL

(i). The State of Haryana has initiated criminal proceedings against the project manager of DATRPL before the Chief Judicial Magistrate, Faridabad ("**CJM Court**"). A first information report was filed against DATRPL under sections 279, 337, 338 and 304A of the Indian Penal Code, 1860, as amended, in relation to the death of the son of Manoj Kumar Wadhwa in a road accident allegedly due to potholes on the road forming part of DATRPL's project. The matter is currently pending before the CJM Court.

(ii). Giriraj Kishore ("**Complainant**") has initiated criminal proceedings against Rajesh Madan and the Team Leader of U.R.S. Scale Wilson Pvt. Ltd. ("**Respondents**") before the Court of Judicial Magistrate, Chhata, Mathura ("**CJM Court**"). A First Information Report ("**FIR**") was filed by the Complainant under Section 430 of the Indian Penal Code, 1860 ("**IPC**"), as amended, against the Respondents in relation to the project assets of DATRPL for intentionally not constructing a drain near Complainant's land despite multiple reminders which has led to the collapse of Complainant's boundary wall and has also destroyed the crops planted in Complainant's land. The CJM took cognizance of the complaint on April 6, 2022 under Section 432 of the IPC. The matter is currently pending.

MBEL

(i). The Labour Enforcement Officer ("**Plaintiff**") has filed two separate cases against MBEL (erstwhile Madhucon Agra Jaipur Expressway Limited) before the Civil Court, Bair District, Bharatpur ("**Civil Court**") alleging non-compliance under Sections 23 and 24 of the Contract Labour (Regulation and Abolition) Act, 1970. The Plaintiff has also filed another case before Civil Court under Section 22 of the Minimum Wages Act, 1948 for non-payment of minimum wage to a worker as stipulated under the aforesaid Act. The matters are currently pending.

(ii). Uttam Sharma ("**Complainant**") has filed a criminal complaint against the erstwhile directors and certain employees of MBEL ("**Accused Persons**") before the court of Additional Chief Judicial Magistrate, Bharatpur ("**ACJM Court**"). The complaint was filed under section 418 and 420 of the Indian Penal Code, 1860 for charging excess toll fees from the commuters using the project highway. The ACJM Court took cognizance of the complaint on October 29, 2014 and issued a bailable warrant of arrest against the Accused Persons

("**Warrant**"). Aggrieved by the Warrant, the erstwhile directors of MBEL have filed a revision petition before the sessions court. The matter is currently pending.

(iii). Certain persons ("**Complainants**") have filed claims before certain courts and tribunals including the Motor Accident Claim Tribunal and the Lok Adalat claiming compensation due to accidents that occurred on the Project assets. These matters are currently pending.

Regulatory Proceedings involving Initial Portfolio Assets

(i). The office of the Registration and Stamps Department, Government of Telangana has issued notices to APEL and KMC Constructions Limited ("**KMC**") in relation to the inadequate stamping of the EPC contract entered into between APEL and KMC. APEL is contesting the aforesaid notices.

(ii). 2 of our Initial Portfolio Assets (being, GAEPL and WUPTL) have received notices from the office of the Collector, Aligarh and the office of the Additional District Magistrate (Finance Revenue), Meerut, respectively, in relation to the stamping of the concession agreements entered into by such Initial Portfolio Assets. The Collector, Aligarh has also passed an order in this regard. The relevant Initial Portfolio Assets are contesting the aforesaid notices and the order before various authorities and while these matters are currently pending, in accordance with the share purchase agreement through which the Cube Group acquired these Initial Portfolio Assets, the erstwhile sellers are obligated to indemnify, defend and hold harmless the Initial Portfolio Assets in relation to any payment of deficient stamp duty on the concession agreements.

Claims against Initial Portfolio Assets

TOT SPVs

(i). NHAI had, by way of its letter dated October 19, 2020 to the TOT SPVs, notified October 20, 2020 as the 'Appointed Date' under respective concession agreements and also noted that there was a delay by the TOT SPVs in the completion of the conditions precedent set out in their respective concession agreements, thereby entitling NHAI to levy liquidated damages on the Project SPVs. Subsequently, by way of its letter dated November 18, 2020, NHAI levied a claim of net liquidated damages of ₹ 83.70 million on the TOT SPVs rejecting their contentions of delay due to a force majeure event. The TOT SPVs had intimated NHAI of the occurrence of 'force majeure' events and sought deferment of the 'Appointed Date' pursuant to correspondences dated March 28, 2020, July 9, 2020 and August 10, 2020 and contested the claims on liquidated damages pursuant to its letters dated October 28, 2020 and November 27, 2020. NHAI has, by way of its letter dated November 18, 2020, agreed to grant the benefit of 'Force Majeure' for the period between March 24, 2020 to April 19, 2020 and declined to extend the benefit for any period thereafter. NHAI imposed liquidated damages on the TOT SPVs for delay in completion of its conditions precedent and also conceded delay on its part in publication of the fee notification. NHAI has sent three reminders by way of letters dated January 15, 2021, February 5, 2021 and February 26, 2021 to the TOT SPVs to pay the damages for an amount of ₹ 83.70 million to NHAI. NHAI has also stated in the aforementioned letter that the Project SPVs are required to pay interest at a rate equal to 5% above the bank rate and interest as per the relevant concession agreements. The TOT SPVs vide a letter dated July 19, 2021 agreed, under protest, that they are liable to pay a penalty of only ₹ 41.60 million in light of the delay being only for the

period of 135 days as opposed to different period of delays for each TOT SPV. The letter also stated that in light of the Atma Nirbhar guidelines dated June 3, 2020, the TOT SPVs is eligible for a grace period of six months for completion of all its obligations. The TOT SPVs vide letters dated April 12, 2022, have requested NHAI for revised calculation of damages and being penalized only for an amount of ₹ 39.80 million as the full and final amount payable as such damages. Further, the TOT SPVs, vide letters dated June 27, 2022, have stated that since NHAI never invoked force majeure provisions in terms of the relevant concession agreements and the outbreak of Covid-19 did not affect its obligations in relation to other projects, it is not entitled to take any action against the TOT SPVs in this regard.

APEL

(i). The regional office of NHAI, Hyderabad *vide* its letter dated May 12, 2022, has raised a claim of ₹ 77.20 million in relation to a negative change of scope proposal by APEL. Additionally, it has requested the General Manager, NHAI (Telangana) to execute a settlement agreement between NHAI and APEL so that that both the parties do not raise any claims against each other in respect of positive or negative change of scope in future. The claim is currently pending.

(ii). The regional office of NHAI, Hyderabad *vide* its letter dated September 9, 2022 has raised a claim of approximately ₹7.97 million in relation to a default in rectifying certain defects in the APEL Project Highway as recommended by the independent engineer, *vide* letter dated September 2, 2022. APEL has, *vide* letters dated September 6, 2022 and September 10, 2022, disputed such claim and has requested NHAI to hold the same and provide it time to submit a detailed justification. The claim is currently pending.

JMTL

(i). The independent engineer has issued a notice dated August 26, 2021 providing an opportunity to cure the defects and deficiencies in terms of operation and maintenance obligations under the JMTL Concession Agreement. JMTL, in its response dated September 4, 2021, has stated that it has taken efforts to restrict the unauthorized median cut by way of closure or by providing alternate viable solutions to the relevant authorities and has requested for withdrawal of the notice.

(ii). The independent engineer has issued a notice dated October 7, 2021, providing an opportunity to cure the defects and deficiencies in relation to failure to replace a metal beam crash barrier in terms of operation and maintenance obligations under the JMTL Concession Agreement. JMTL, in its response dated October 13, 2021, has submitted a compliance report for rectification of MBCB.

(iii). The independent engineer has imposed a penalty of ₹ 1.07 million vide letter dated October 22, 2021 for delay in painting of median kerb. JMTL, in its response dated October 26, 2021, stated that work was delayed due to consistent rains which severely affected the work progress and quality of work and has requested or extension for the completion of the work. Further, vide its letter dated November 17, 2021, JMTL stated that the work has been completed in totality and requested for withdrawal of notice and waiver of penalty.

(iv). The independent engineer has issued a notice dated October 27, 2021, providing an opportunity to cure the defects and deficiencies in relation to rectifying the service road in terms of operation and maintenance obligations under the JMTL Concession Agreement. JMTL, in its response dated November 1, 2021, has submitted that the rectifications has been carried out.

(v). The independent engineer has issued a notice dated March 9, 2022, providing an opportunity to cure the defects and deficiencies in relation to dumping encroachment bolder waste material dump in right of way of the project highway in terms of operation and maintenance obligations under the JMTL Concession Agreement. JMTL, in its response dated March 14, 2022, has stated that the observations have been complied with and has requested for withdrawal of notice.

LRTL

(i). The NHAI, through a letter dated August 19, 2021, has issued notice to LRTL for submission of negative change of scope for de-scoping of a proposed vehicle underpass. The independent engineer, *vide* letter dated August 24, 2021, issued notice to LRTL for submission of the relevant proposal. LRTL, in its response dated December 7, 2021 has submitted detailed proposal of estimate for negative change of scope. The independent engineer has provided certain observations in relation to the responses submitted by LRTL which has been complied with by LRTL as stated in the letter dated February 9, 2022. The independent engineer *vide* letter dated August 18, 2022 has submitted, for perusal and approval by the NHAI, a negative change of scope proposal, as submitted by LRTL, of a proposed vehicle underpass of approximately ₹ 536.17 million. In this regard, LRTL is required to pay 80% of the descoped amount, amounting to ₹ 428.93 million to NHAI. The claim is currently pending.

MBEL

(i). The independent engineer has imposed a penalty of ₹ 0.98 million *vide* letter dated May 1, 2019 for failure to take necessary steps to remove encroachment at the site. MBEL has objected to the claim *vide l*etter dated October 22, 2020 stating that the norms and guidelines were followed and executed and continuous efforts are being taken to clear the encroachments in the affected area.

(ii). The independent engineer has issued notice dated January 5, 2022 providing an opportunity to cure the defects and deficiencies in terms of operation and maintenance obligations under the MBEL Concession Agreement. MBEL, in its response dated January 6, 2022 has stated that the pavement defect rectification is under process and therefore, it is not in non-compliance of the relevant obligations under the MBEL Concession Agreement.

DATRPL

(i). NHAI *vide* letter dated September 1, 2022 has imposed a sum of ₹ 16.7 million on DATRPL on account of non-illumination of street lights on Project Highway on the recommendation of the independent engineer. The claim is currently pending.

GAEPL

(i). NHAI *vide* letter dated September 1, 2022 has notified GAEPL to deposit an amount of approximately ₹17.44 million as damages for breach of maintenance obligation under the Concession Agreement. GAEPL has submitted its response to NHAI, *vide*, letter dated September 10, 2022, delineating the remedial measures undertaken by GAEPL to fulfil its operation and maintenance obligations. GAEPL has submitted that there was no breach of maintenance obligation and accordingly there is no default as alleged by the independent engineer. The claim is currently pending.

NDEPL

(i). The independent engineer has imposed a penalty of ₹ 2.43 million vide letter dated November 5, 2021 for failure in conducting the required test at the major bridges in terms of the provision of the NDEPL Concession Agreement.

(ii). The independent engineer has imposed a penalty of ₹ 1.15 million vide letter dated November 5, 2021 for not rectifying the defects as notified by the independent engineer for the month of April 2021, within the stipulated time period in terms of the NDEPL Concession Agreement.

(iii). The independent engineer has imposed a penalty of ₹ 41.19 million vide letter dated July 5, 2022 for not carrying out periodical maintenance work (for instance, repair of shoulder, studs, road marking and BC overlay) for the period of January 2021 to May 2022. NDEPL has objected to the claim and has requested NHAI to direct the independent engineer to recalculate the penalty amount. The claim is currently pending with NHAI.

WVEPL

(i). The independent engineer has imposed a penalty of ₹ 3.82 million *vide* letter dated February 24, 2022 for delay in rectification of defects and deficiencies of road and bridge operations in operations and maintenance in terms of the WVEPL Concession Agreement. WVEPL has objected to the claim *vide* letter dated March 4, 2022 stating that all defects and deficiencies were rectified within the stipulated time period and has requested the independent engineer to waive off the damages. The claim is currently pending.

15. Litigation involving the Sponsors and their associates (including common associates of the Sponsors, the Project Manager and the Investment Manager)

i. ICICI Bank Limited (**"Plaintiff"**) filed a commercial suit before High Court of Bombay (**"High Court"**) against State Bank of India and Dena Bank (**"Original Defendants"**) seeking an injunction against them from exercising the right of substitution of Lanco Devihalli Highways Limited (**"LDHL"**) with any selectee. Since CH-I (**"Defendant"**) was shortlisted as the selectee for substituting LDHL with an SPV held by it or its associate, it was impleaded as a defendant in the said commercial suit by an order dated February 11, 2019. The High Court by way of its order dated February 18, 2019 stated that CH-I was required to pay transaction consideration after the Original Defendants have granted no objection. Pursuant to the aforesaid order, the transaction was closed and supplementary concession agreement was executed by NDEPL. While CH-I continues to be a party to the said suit, the outstanding issue is with reference to the distribution of consideration. Thus, CH-I has filed

an application for removal of its name as a defendant to the suit. The matter is currently pending.

ii. CH-II (**"Plaintiff"**) has filed a commercial suit before the High Court of Bombay (**"High Court"**) against IL&FS Transportation Networks Limited (**"ITNL"**), Infrastructure Leasing and financial Services Limited (**"IL&FS"**) and Chenani Nashri Tunnelway Limited (**"CNTL"**) (collectively, referred to as **"Defendants"**) seeking, inter alia, (a) specific performance of the share purchase agreement (**"SPA"**) executed between the Plaintiff and the Defendants in relation to transfer of 100% shareholding of ITNL in CNTL to the Plaintiff; (b) mandatory injunction against the Defendants to extend the long stop date (as defined in the SPA) up to ninety days after receipt of all approvals and fulfilment of all conditions. The Hon'ble Bombay High Court passed an interim order dated September 14, 2021 directing the Plaintiff to file an application before the National Company Law Tribunal, Mumbai (**"NCLT"**). Subsequently, the Plaintiff filed an application before the NCLT. The Plaintiff also approached the Bombay High Court seeking injunction to restrain the Defendants from divesting, disposing of, transferring, alienating, or creating any other interests in the shares of CNTL otherwise than under the SPA. The High Court in its order dated November 25, 2021 recorded that any decision at the behest of IL&FS and ITNL cannot prejudice any rights and contentions of Plaintiff. The matter is currently pending before the NCLT.

iii. N. Vijaya Kumar (**"Petitioner"**) has filed a writ petition against KNR Tirumala Infra Private Limited (**"Respondent"**) before the High Court of Andhra Pradesh at Amaravathi (**"High Court"**) seeking a writ of mandamus. The Petitioner prays for declaration of the act of permanently covering up Mungilipattu Kaluva water channel a natural spring stream channel by the Respondent as illegal, improper and unconstitutional. The Petitioner also seeks relief to direct the Respondent to restore Mungilipattu Kaluva water channel by constructing proper drainage systems to ensure the free flow of the water channel. The petition is currently pending and is at the stage of admission

SPV	Type	Brief of facts
APEPL	Writ Petition	The case was brought by P Naganna and K Lakshmi individually against each other along with other governmental authorities for their inaction on the illegal construction done by one another. The land in question is disputed and supposedly falls within the purview of NHAI.
APEPL	Writ Petition	The case was brought by P Naganna and K Lakshmi individually against each other along with other Governmental Authorities for their inaction on the illegal construction done by one another. The land in question is disputed and supposedly falls within the purview of NHAI. The Court is presently accepting show case in regard to admissibility of this matter. (APEL is R-6 in the matter)
APEPL	Civil	Andhra Pradesh Expressway Private Limited had been issued with notices dated July 16, 2019, August 21, 2019 and September 09, 2019 from Registration and Stamp Department, Government of Telangana levying stamp duty amounting to INR 22,50,00,000 (Indian Rupees Two Hundred And Twenty Five Million) on an agreement dated April 20, 2006 executed between APEPL and M/s KMC Constructions Limited . The agreement between APEPL and KMC is in the form of an engineering procurement and construction contract whereby APEPL had engaged M/s KMC Constructions Limited for carrying out construction work at a total consideration of INR 4500,000,000 (Indian Rupees our Thousand Five Hundred Million). It is alleged by the authority that the stamp duty has not been paid by APEPL as per the rate of 5% applicable for construction of any immovable property.
APEPL	Civil	The respondents issued a directive to the claimant - asking them to provide 40 mm BC overlay during the second and the third period maintenance which was in violation of the concession agreement and the applicable industry and government standards and the industry practice and lacked the authority of law to do so. Aggrieved by the same, the claimant filed for an arbitration claiming for the losses and interest for the costs incurred as a result of carrying out the directions passed by the respondent.
DATRPL	Writ Petition	The petitioner has filed the case against the NHAI for illegal acquisition of land of the petitioner without paying any compensation for the widening of the NH-2. As per the demarcation report, the land has been absorbed by the NHAI without compensation. The petitioners have moved to the court to either be paid the compensation as per section 3G of the National Highways Amendment Act, 1997 or the land be returned to them.
DATRPL	Criminal	A first information report under sections 279,337,338 and 304A of the Indian Penal Code, 1860, as amended, has been filed against DATRPL in the police station at sector 7, Faridabad in relation to the death of the son of Mr. Manoj Kumar Wadhwa in a road accident on February 10, 2014, alleged to have taken place due to potholes on the project road

DATRPL	Civil	After the NHAI took a portion of parcel of land belonging to the plaintiff, the remainder of the land was used by him for opening a shop. the only access to the shop is through the National Highway but the same is alleged to have been hindered by NHAI by putting up guard rails and iron rods. the plaintiff has moved this suit for permanent injunction against NHAI as the guard rails/ iron roads blocks his only way of passage. This has been alleged to be an illegal encroachment of land of the plaintiff for which he has already filed a case with the district collector for enhancement of compensation. A suit has been filed by one Mr. Sukhdev seeking a permanent injunction restraining DATRPL sfrom encroaching the only way of his land. As per the contentions of the plaintiff, it has been alleged that DATRPL is constructing a railing in front of the land of the defendant that is going to obstruct the right of way of the defendant and thus has sought a permanent injunction against NHAI and toll plaza.
DATRPL	Appeal	The suit had been instituted by residents of village Gadpuri alleging that the land on which Gadpuri Toll Plaza is made belongs to the Gram Panchayat of Gadpuri village and NHAI or DATRPL have no interest in the property. It is alleged that the defendants are colluding with the state authority who are allowing defendants 2 to 4 to illegally encroach onto the property in question. It is further alleged that the defendants wish to construct toll way booths and their offices on the disputed property illegally. Therefore, the plaintiff sought mandatory and permanent injunction restraining the defendants from illegally occupying the suit property and not to perform any construction on the disputed property. The suit has been dismissed by the Civil Judge (junior division) vide order dated 21.05.2022 and therefore residents of Gram Panchayat have preferred an appeal against the order dated 21.05.2022.
DATRPL	Writ Petition	The Petitioner has filed the Writ Petition alleging that the Notice dated 18.05.2023 issued by DATR to the Petitioner for removal of encroachment near Palwal Bus Stand is illegal and shall be quashed.
DATRPL	Civil	A civil suit for injunction has been filed by Mr. Sunil Kumar and others seeking injunction against NHAI and DATRPL for doing any construction on the disputed land. The plaintiff has alleged that certain portion of land on the row of Delhi-Agra toll belong to him, and the said land has never been acquired by NHAI. The plaintiff has also filed a case for contempt of court against some of the NHAI and DATRPL's officials alleging that the respondents had demolished certain portion of their property and constructed a boundary wall in violation of the Allahabad High Court’s order for maintaining status quo dated 23.01.2023.

DATRPL	Writ Petition	This is in relation to a civil writ petition that has been filed before High Court of Punjab & Haryana, by one Mr. Karan Singh Dalal against NHAI, DATRPL, Cube Highways and Reliance Constructions This petition, inter alia, alleges that DATRPL has been issued Provisional Certificate on the pretext of having completed the six-laning work while the six laning work remains incomplete and thus, seeking the following prayer from the court: a) Quashing of provisional certificate. b) Shifting of Gadpuri toll plaza to an appropriate place, away from Arohi Model School, Gadpuri
DATRPL	Writ Petition	The petitioner is aggrieved by the fact that there is no drainage system for storm waters along with the highway alongside NH2 from escorts corporate office 155, Mathura Road, Faridabad to near metro pillar number 630, Faridabad which leads to rain water entering residential houses in Huda residential area at sector 28. The petitioner is aggrieved by the fact despite various complaints in this behalf no action has been taken by respondent no.1 till date following are the parties to suit:- 1) R-1, NHAI 2) R-2, Municipal Corporation of Faridabad 3) R-3, Haryana Urban Development authority complex 4) R-4, UOI
DATRPL	Civil	This case has been filed alleging that the Gadpuri Toll Plaza has been constructed on land belonging to Gram Panchayat Gadpuri. They have sought the removal of encroachment from the said lands.
DATRPL	Civil	The plaintiffs are co-owners and in joint possession of two shops (area 35 sq. yards) situated in Village Baghola, Tehsil & District Palwal, duly shown in the site plan and forming part of Khewat/Khatoni No. 780/925, Khasra No. 112. Out of the plaintiffs' original 105 sq. yards land, 70 sq. yards had earlier been acquired by Defendant No.2 for road widening, for which compensation was duly received, leaving 35 sq. yards where the plaintiffs' shops are constructed. However, in the report "Babat Kabja Tasdik Karne Bare Moja Baghola" issued by Defendant No.1, the area was recorded as 89 sq. yards instead of 105 sq. yards. Further, Defendants No.1 and 3, acting in collusion, issued a notice dated 01.03.2024 for demolition of the plaintiffs' shops for road widening. The plaintiffs' requests on 14.03.2024 for correction of the report and withdrawal of the notice were refused, giving rise to the present cause of action
DATRPL	Civil	The complainant has filed a case alleging that the pipeline and related chamber near Goverdhan Chauraha, Chatta Kasba has not been constructed and maintained properly by NHAI and related parties. Complainant has alleged that the water from the pipeline overflows and has led the complainant to suffer various damages such as seepage/ cracks in his constructed school, bad smell in the vicinity etc. the complainant has sought compensation for compensation for such damages

DATRPL	Appeal	The District Consumer Disputes Redressal Commission, Dholpur has passed an order dated 18.12.2024 against DATRPL. The Commission ordered that the SPV had not correctly scanned the Fastag of the complainant because of which, despite having sufficient balance in Fastag, the complainant was made to pay penalty over and above the User Fee wrongfully. As a result, the Commission has ordered the following to be paid by the SPV: - 1. INR 110 to be refunded along with interest @ 9%. 2. Cost towards legal fee - INR 3000. 3. Compensation towards mental sufferage - INR 5000. 4. Penalty on account of inconvenience suffered by general public - 25000. The SPV has filed an appeal challenging the said order
DATRPL	Criminal	The complainant filed a criminal case against Rajesh Madaan and the i.e. for mischief due to non-completion of the drainage works. The complainant states that Mr Rajesh is the NHAI contractor and is awarded the work for construction and maintenance of Delhi Mathura Road. He has alleged that during the construction of a bridge and service road near barsana chauraha, the drainage works was knowingly left incomplete. He alleges that the drainage works were not completed despite several requests. He alleges that he was asked to pay Rs. 2,000 to the JE for resuming the works and on his refusal to pay such amount, the works were never started. He further contends that the respondents intentionally diverted the water of the drainage in the direction of the complainant's farm which has not only destroyed a boundary wall but also crops. He alleges this as a mischief. Court prima facie found malfeasance and mischief and subsequently issued summons.
JMTPL	Civil	It is alleged by the Petitioner that the Respondents are wrongfully (without paying any compensation) proceeding to demolish structures on the land held by the Petitioner through PATTA near NH 21. The Petitioner has challenged the notice for removal of encroachments issued by JMTL dated 03.09.2022.
JMTPL	Civil	It is alleged by the Petitioner that the Respondents are wrongfully (without paying any compensation) proceeding to demolish structures on the land held by the Petitioner through PATTA No. 24 (dated 22.01.1980) near NH 21. The Petitioner has challenged the notice for removal of encroachments issued by JMTL dated 03.09.2022.
JMTPL	Civil	This case has been filed by the father and mother of the deceased who died due to electrocution at the Project Highway alleging that the deceased died due to negligence of the PNC Infratech Ltd, during the construction of highways. JMTL is also party in this case

JMTPL	Civil	This case has been filed by Ms Manjudevi, the wife of the deceased who died on the national highway due to sudden rush of the cattle at the highway which hit the two-wheeler of the deceased. The Petitioner alleges that the said accident occurred due to negligence on part of NHAI and JMTL as it was their responsibility to make arrangements for preventing such animals from coming onto the roads. The case was earlier filed in the Motor Accident Claim Tribunal however, the said case was considered as a fatal accident and therefore was disposed with the instructions to file the same in appropriate court vide order dated 22.03.2022 (pronounced on 23.03.2022).
JMTPL	Civil	Case has been filed by Mr. Raj Kumar alleging excess collection of Rs. 130 (which was the FasTag penalty collected by JMTL as his FasTag could not be detected by the system as it was registered via chasis number) seeking (a) Refund of Rs 130. (b) Damages of Rs 2,21,000
JMTPL	Civil	Mr. Ram Singh had filed multiple cases against JMTL seeking an injunction against JMTL from installing Static Weigh Bridge. However, the revenue board rejected all such cases and allowed JMTL to install SWB. The Order passed in favour of JMTL by revenue board has been challenged by Ram Singh.
JMTPL	Civil	The Petitioner alleges that Mr. Sanjay Kumar Meena has died on NH-21 due to a dead bull lying on the road. It is alleged that the cleaning and maintenance of the road has been done negligently which has resulted in the death of Mr. Sanjay Kumar.
JMTPL	Writ Petition	Mr Raghuveer Singh was employed as security supervisor with IJM from August 2006, Subsequently, he was transferred to JMTL wherein his employment was terminated without notice. The Labour Court held vide its order dated 02.05.2018 that the termination of Mr. Raguveer Singh without notice as unlawful and ordered IJM to pay Rs. 40,000 to him. Mr Raghuveer Singh has challenged the order of the Labour Court before the High Court of Rajasthan and sought reinstatement in the employment of JMTL.
JMTPL	Civil	It is alleged by the Petitioner that the Respondents are wrongfully (without paying any compensation) proceeding to demolish structures on the land held by the Petitioner through PATTA NO. 8 (dated 26.03.1984) near NH 21. The Petitioner has challenged the notice for removal of encroachments issued by JMTL dated 03.09.2022
JMTPL	Civil	Mrs. Reena has filed this case claiming compensation amounting to INR 36,50,000/-(@interest and cost of 50,000 and 25000 towards litigation) for death of her husband caused due to an accident on the road maintained by JMTPL. She alleges that when her husband (deceased) was passing through the JMTPL land, his motorcycle collided with a bull on the road which resulted in his death. It is alleged that the accident occurred due to the SPV's negligence in not putting any indicator/signage and any fencing for prevention of such accidents.

JMTPL	Civil	Mr. Rameshwar Prasad has filed this case claiming compensation amounting to INR 36,50,000/- (@interest and cost of 50,000 and 25000 towards litigation) for death of his son caused due to an accident on the road maintained by JMTPL. It is alleged that when his son (deceased) was passing through the JMTPL land, his scooty collided with a bull on the road which resulted in his death. It is alleged that the accident occurred due to the SPV's negligence in not putting any indicator/signage/lights and any fencing for prevention of such accidents
JMTPL	Civil	The complaint has alleged that the complainant has been made to pay penalty despite there being sufficient balance in the Fastag.
JMTPL	Civil	"The complaint has alleged that the complainant has been made to pay penalty despite their being sufficient balance in the fastag at Amoli toll plaza"
JMTPL	Civil	The case concerns a fatal accident that occurred on 08.02.2020 at about 7:30 PM on NH-21, where cement blocks were left in the middle of the road without any warning signs, lighting, or radium strips, leading to the accident. In its judgment dated 29.09.2025, the Hon'ble Court held that the responsibility for construction, operation, and maintenance of the concerned highway stretch rested with Defendant Nos. 1 and 2 under contractual arrangements with the National Highway Authority of India, and that the accident occurred due to their negligence in failing to ensure proper safety measures. The Court relied upon witness testimony and statutory provisions under the Fatal Accidents Act, 1855, and observed that despite being informed by residents, no corrective action was taken. While deciding Issue No. 3, the Court noted that Defendant No. 2 failed to discharge the burden of proving that he was not a necessary party. Consequently, the suit was partly decreed in favour of the plaintiffs, holding Defendant Nos. 1 to 3 jointly and severally liable. However, National Insurance Company Limited (Defendant No. 3), in its review petition, contends that this finding is erroneous, as its liability arises only under a voluntary insurance policy (Exhibit NA-3/1) taken by Defendant No. 1, M/s PNC Infratech Limited, covering only acts carried out by the insured at the construction site during the policy period, and not under any compulsory statutory insurance such as the Motor Vehicles Act. The insurer asserts that it neither insured Defendant No. 2 nor covered any act attributable to him, and therefore, fastening joint and several liability on National Insurance Company Limited is a clerical and legal error warranting reconsideration of the operative portion of the judgment.

JMTPL	Civil	This case has been filed by the plaintiffs, who are residents of village Gurjar Simla, Tehsil Sikrai, District Dausa, asserting their ownership, possession, and khatedari rights over land bearing Arazi Khasra No. 187 measuring 0.1000 hectares, along with a residential house, shop, and cattle shed constructed thereon by their ancestors about 40 years ago. The dispute arises due to alleged wrong revenue entries and amendments during settlement proceedings, pursuant to which Defendant No. 1 (the highway authority/operator) and Defendant No. 2 (Public Works Department) have claimed that the plaintiffs' land falls within Khasra No. 199 and have forcibly attempted to evict the plaintiffs without paying compensation. The plaintiffs contend that 7 biswa of their land from old Khasra No. 132/2 was acquired by Defendant No. 2 without payment of compensation, and that despite clear revenue records showing Khasra No. 187 as their land, the defendants, along with Defendant No. 3, illegally entered the land on 06.12.2022 and attempted demolition using machinery. The plaintiffs therefore seek protection of their possession and ownership rights.
MBEL	Civil	The Complainant has filed the case alleging that despite having a pass for concessional rates to be charged at the Toll Ludhawai, the Complainant was charged an excess toll amount. The complainant alleges that as per the concessional rate, he was to be charged toll @ Rs. 5 however, he was charged at Rs. 25. He alleges excess collection of tolls of Rs. 40 and states that despite repeated complaints, his concern was not addressed. He now claims the refund of the excess amount along with charges towards mental agony and court expenses.
MBEL	Writ Petition	The petitioner has challenged the notice issued by MBEL for the removal of encroachment done by the petitioners. The Petitioner has challenged the notice on the ground that it has already challenged the acquisition of the relevant land by NHAI and the proceedings in that regard are still pending.
MBEL	Criminal	The complainant Mr. Suresh Kumar alleges that Mr. Anoop Singh along with the toll staff beat the complainant and also spoke bad words to him on his caste. He has filed a complaint under the Scheduled Castes and the Scheduled Tribes (Prevention of Atrocities) Act, 1989 and IPC against Mr. Anoop Singh. The matter pertains to removal of encroachment near NH-21.
MBEL	Writ Petition	The petitioners challenged the land acquisition notification wherein the old and the new *khata* numbers mentioned different owners. When the objections were entertained by the district collector, the presence of some pertinent documents revealed that the petitioners are the actual owners of the land, but the respondent while the case of determination of ownership is going on, asked the petitioners to vacate the land premises. even though the authorities have indicated the demolition of the property without even paying the compensation or deciding over the ownership dispute or even proceedings to acquire the said property.

MBEL	Civil	The plaintiffs have claimed that they have been allotted land on patta near nh-21 and that they have complied with the requirement of leaving 75feet distance from the national highway in doing the construction on the land. It is alleged that the defendants have sent illegal notice to the plaintiffs for removal of encroachment on the said land despite the fact that the said land belongs to the plaintiffs and no compensations has ever been paid to them. The plaintiff has filed this case seeking a temporary and permanent injunction against mbel/defendant from removing any of the alleged encroachment.
MBEL	Civil	The case has been filed by Amar Singh (resident of nearby locality) alleging that there is a *kacha* land (belonging to NHAI) adjacent to the carriageway wherein some individuals have made encroachments. As a result of such encroachment on the said land, the passage to his house is blocked. He seeks relief of removal of such encroachments from all the encroachers, administration, NHAI and Project Manager.
MBEL	Civil	The Plaintiff is claiming that the compensation paid by NHAI for acquiring his land is very less and seeks to get additional compensation for the said land. The plaintiff has to submit affidavit.
MBEL	Civil	Mr. Vinod Kumar has obtained a stay on the encroachment proceedings with respect to his property in the vicinity of MBEL stretch without making MBEL a party to the case. Since MBEL was not aware of the said proceedings, it issued a routine notice for removal of encroachment to the plaintiff. Now the plaintiff has filed a contempt petition alleging breach of court's order adding MBEL also as a party. Arguements has been filed. Waiting for order
MBEL	Civil	The matter relates to land acquisition compensation not being received by the Plaintiff.
MBEL	Civil	This is a land acquisition related case. The Plaintiff alleges that it has not received the compensation for acquisition of Land. He alleges that NHAI, through its agency (MBEL), is wrongly asking the plaintiff to vacate the land without payment of compensation for the land.
MBEL	Criminal	The petitioner has alleged that the accused Mr. Brijendra Singh has illegally constructed some tanks in front of her land which is resulting in blocking her way. It is alleged by the petitioner that the officials of MBEL did not accept her request for removal of Mr. Brijendra's encroachment and that MBEL officials are acting in connivance with Mr. Brijendra. In the present petition, the petitioner has challenged the order dated 10.03.2025 of lower court wherein the lower court has rejected to take cognizance of the matter.
MBEL	Criminal	Mr. Rajendra had filed an FIR alleging a scuffle and bad behaviour by the employees of MBEL. Since the police closed the FIR, the petitioner filed a protest petition against the closure of the FIR for taking cognizance of the matter. Thereafter, the court has taken cognizance in the matter.

MBEL	Civil	The complainant has filed a complaint stating that his toll fee was deducted twice, once at the toll plaza and again through Paytm. Accordingly, he has sought a refund of the excess amount along with compensation of Rs. 2,50,000/- for alleged mental harassment.
MKTPL	Appeal	Three writ petitions have been filed by Madurai district bus owners' association (2) and Virudhnagar district bus owners' association challenging the judgment passed by the madras high court in the W.P. nos. 5121, 5118 and 6527 of 2021 and batch matters. The petitioners in all the writ petitions have challenged the notification no. 2606 dated 26.06.2013 (pertaining to Madurai-Kanyakumari section) which provides for discounted rates of daily and monthly pass on various legal grounds. The notification no. 2606 stipulates daily pass and monthly passes to be provided at the rate of (a) daily pass- @1.5 times of the fees for one-way journey with a capping of maximum of 2 single journeys per day (b) monthly pass- @ 2/3rd of the fee payable for 50 single journeys with capping on the maximum of 50 single journeys per month. The main contention of the petitioners in all the 3 writs is that such a capping of 2 journeys per day or 50 single journeys per months prescribed in the notification is illegal.
MKTPL	Writ Petition	The petitioner is running a bakery and tea shop in Lakshmi nagar virudhnagar which is abutting the service road of national highway. The respondent cleared the encroachment in the highway on the complaint given by Sundarrajan. On 20.6.2024 the respondent came at 2.45 am with bulldozer and erased the structure. The petitioner who came to spot being informed by his employees. He tried to prevent the respondent and their men from demolishing the structure. During the scuffle the bulldozer hit the shoulder of the petitioner. The petitioner sustained nerve injury in shoulder and admitted in the hospital. The petitioner gave complaint to the complaint who didn't receive the same. The petitioner sought Information under RTI. The action of the respondent cause monetary loss and permanent damage to the health to the petitioner. Hence the present petition filed claiming compensation.
MKTPL	Writ Petition	The petitioner is the absolute owner of lands in Kappalur Village, Madurai District. In 2007, a portion of the land was acquired for NH-7 widening, but compensation remains unpaid. The grievance now is that the respondents have begun constructing a toll plaza office building, as claimed by the petitioner, it blocks ingress and egress to the petitioner's property. The petitioner therefore seeks a Writ of Mandamus to rectify survey sketch errors and to consider his representation for protecting access to the property.

NDEPL	Criminal	An over speeding car hit the pedestrian resulting in his death on the NDEPL stretch. His wife has filed a FIR against driver of the car, NDEPL's employee Mr. Hari Babu (toll supervisor) and the NHAI inspector before Kudur police station. She alleges that the toll supervisor had failed to maintain the road which was the reason of accident. Being aggrieved by such frivolous complaint and considering the pendency of criminal case in the FIR and further investigation in crime no. 0275/2023, Mr. Haribabu is approaching the high court for quashing of the complaint filed by the wife of the deceased
NKTPL	Civil	The complaint has alleged that the complainant has been made to pay penalty despite there being sufficient balance in the fastag.
SMTPL	Writ Petition	Mr. Maharajan, has filed a writ petition in the High Court stating all false statements alleging proper road maintenance and repair works are not being undertaken at the road stretch between Madurai - Kanyakumari. He prays that the toll collection shall be suspended at Salaidupur (Kayathar) and Nanguneri Toll Plaza till repair and maintenance of the road stretch between Madurai-Kanyakumari is completed. He has made several other frivolous allegation stating that the road is filled with potholes and cracks resulting in accidents, the amenities at toll plaza are bad, use of handheld scanners due to non-functioning of scanner, no plantation work being undertaken etc. He has made allegation that the bridges at Ponnakudi-Sengulam and Moondraippu have remained pending for more than 3 years causing dilapidated condition of the nearby road resulting in heavy jam.
WUPTPL	Writ Petition	The Writ Petition has been filed by a group of individuals, i.e., the Petitioners, under Article 226 of the Constitution of India, allegedly claiming to be acting in bonafide public interest to protect certain fundamental rights of the local commuters and, inter alia, challenging the grant of concession by the NHAI for the project highway to WUPTL. WUPTL and Cube Highways and Transportation Assets Advisors Private Limited have been impleaded as respondents in the proceedings.
WUPTPL	Civil	We had received notices from the ADM, stamp department Uttar Pradesh levying stamp duty amounting to Rs. 25.13 crores on the concession agreement executed between WUPTL and NHAI and asking the authorized representatives to show cause on why such duty shall not be levied. We had duly filed our reply to this letter from ADM and made our representation in this regard

WUPTPL	Writ Petition	The case was filed before Lok Adalat by the wife of the deceased claiming a compensation of Rs. 1 crore alleging that the deceased met with the accident that caused his death due to negligence of WUPTL and non-maintenance of railing at the Sakoti over bridge. Lok Adalat (Permanent/Temporary) is a pre-litigation mechanism for conciliation and settlement of cases relating to public utility services like transport, postal, telegraph etc. and has no authority to pass any order/direction. It is a forum that allows parties to settle the dispute and in case of failure of settlement, the matter is referred to court. Disregarding the same, the Permanent Lok Adalat has passed an order dated 09.02.2022 in the above-mentioned case directing WUPTL to pay 77 Lakhs to the petitioner within 2 (two) months from the date of the Order. Therefore, WUPTL has filed a Writ Petition before Allahabad High Court challenging the order of Lok Adalat.
WUPTPL	Civil	One Mr. Gyan Kumar has filed this case seeking compensation amounting to INR 34,85,000 (along with 12% interest) for injuries sustained by him due to an accident on the WUPTL Land stretch. He alleges that the reason for the accident was the bad condition of the road which is attributable to the negligence of NHAI and WUPTL.
WUPTPL	Civil	The complainant has alleged incorrect deduction of Fastag amount at Siwaya toll on 25.01.2024 despite the fact that his car was parked at his house.
WUPTPL	Criminal	The Applicant is Manager of Shivaya Toll Plaza, Meerut, which is operated by Western U.P. Tollways Pvt. Ltd. (WUPTL). As per prosecution version informant has suffered road accident due to falling in ditch near toll bridge and sustained injuries. It was submitted that applicant is merely operating the said toll plaza on a contract basis and he has absolutely no duty or role in maintenance of road. Referring to facts of the matter, it was submitted that no prima-facie case is made out against applicant.
LRTPL	Civil	The notice dated 30.10.2025 has been issued alleging a stamp duty deficiency of INR 99,90,96,000 on the Concession Agreement dated 27.12.2019 executed between LRTPL and NHAI. Subsequently, the stamp authorities issued a show cause notice dated 08.12.2022 regarding the appropriate stamp duty to be paid on the Concession Agreement, to which LRTPL submitted its detailed reply on 08.02.2023. No action was taken by the authorities after LRTPL's reply. Thereafter, the present Notice was issued and LRTPL duly appeared before the authority on 20.11.2025, wherein the proceedings were adjourned, and time was given to submit a reply to the Notice.
LRTPL	Civil	Assistant Commissioner of Stamps (First) vide notice dated 30.10.2025 initiated proceeding against LRTPL for paying insufficient stamp duty in the Concession Agreement entered with NHAI. The Office of Assistant Commissioner of Stamps is asking for amount of 99,90,96,000 as stamp duty.

WVEPL	Civil	This case has been filed by the wife of the deceased who died due to electrocution at the project highway alleging that the deceased died due to negligence of the SPV in maintaining the project highway. WVEPL is respondent no. 3 in the suit
WVEPL	Civil	The Concessionaire had claimed for an extension in Concession Period for 1460 days on account of the Actual Average Traffic falling short of the Target Traffic, in accordance with Article 29 of the Concession Agreement. The IE has however, recommended for only 328 days EOT. Thereafter, NHAI had reduced the concession period for 1.5 years on account of the target traffic issue. The SPV has therefore raised a claim against NHAI.
WVEPL	Writ Petition	The petitioners have challenged NHAI's encroachment removal notices. NHAI vide the notices had alleged that there is an illegal encroachment of Government land at km 197+507 LHS in Pudussery Village of Palakkad District within the Right of Way of the National Highway section of NH-544 between Walayar to Vadakkencerry and similarly in the case of 2nd petitioner there is an illegal encroachment at 197 + 157 LHS. Therefore, the petitioners were called upon to remove such unauthorized occupation within 7 days from the date of the said notice.
THPL	Writ Petition	The petitioner has filed the writ petition seeking an order or direction more particularly one in the nature of a writ of mandamus declaring the action of the respondent 1 to 4 in permanently covering up Mungilipattu Kaluva water channel a natural spring stream channel situate in SY NOS 142 to 707 of Kongaravaripalli Village Chandragiri Mandal Chittoor district as illegal improper and unconstitutional and consequently direct the respondents to restore Mungilipattu Kaluva water channel by constructing proper drainage systems to ensure the free flow of the water channel. The case is being handled by the sellers.
THPL	Writ Petition	KTIPL has filed a writ petition before the High Court of Andhra Pradesh seeking quashing of DRC-07 proceedings dated 17.03.2022 (issued for the year 2018-19, 2019-20, 2020-21) and assessment order dated 16.03.2022 imposing tax to an extent of Rs. 113.44 Crores. Such tax has been imposed on the SPV on the ground that the future annuities to be received from NHAI is not exempted from GST in view of the circular no. 150/06/2021-GST dated 17.06.2021 ("the Impugned Circular"). SPV has challenged the Impugned Circular issued by ministry of finance vide which it was clarified that construction of road services falling under heading 9954 is not covered by entry 23-A and thus is not exempted. The SPV has taken grounds that the exemption under entry 23-A is still applicable as annuities are to be paid in lieu of toll collection and therefore the demand for GST on future annuities is illegal. The Court vide order dated 25.07.2022 directed for stay of all further proceedings pursuant to the impugned DRC-07 notices for the years 2018-19, 2019-20 & 2020-21.

MSHPL	Criminal	In discharge of its financial liabilities, MSHPL had initiated an electronic funds transfer on 02.05.2022 in favor of one M/s Vishwayog Buildcon for an amount of Rs.12,18,544/- on its bank account bearing number 5870011000002731, maintained in the Solapur Janata Sahakari Bank Limited. However, due to wrong entry of the bank account number, the funds were inadvertently credited to the account of M/s Rajdeep Enterprises (Proprietorship of Rohit Sharma) bearing bank account number 5870011000002730 resulting in wrongful credit of Rs. 12,18,544/- to M/s Rajdeep Enterprises account vide UTR Ref-PUNBH22122048515. The Company, upon noticing the aforesaid oversight, contacted M/s Rajdeep Enterprises and requested for the reversal of the aforesaid amount wrongfully credited to him. While M/s Rajdeep Enterprises returned the amount of Rs. 9,00,000/- during the months of July to December 2022, balance amount of Rs. 3,18,544/- remained outstanding to the Company. Further, a post-dated cheque bearing number 364529 dated 25.03.2023 for the payment of remaining amount of Rs. 3,18,544/- was issued by M/s Rajdeep Enterprises in favour of the Company. However, the same was dishonoured on presentation due to insufficiency of funds. As M/s Rajdeep Enterprises has failed to pay the Outstanding Amount within the prescribed time, the Company has initiated legal proceedings against Mr. Rohit Sharma (Proprietor of M/s Rajdeep Enterprises) under Section 138 of the Negotiable Instruments Act, 1881.
BWHPL, MSHPL and MHPL	Civil	The 3 SPVs i.e. BWHPL, MSHPL, and MHPL and CH III have raised various claims against Dilip Buildcon Limited (The Erstwhile Sellers of the SPVs) originating from the Share Purchase Agreements (“SPA”) and EPC Agreements executed between the SPV and DBL before the Singapore International Arbitration Centre (SIAC). The following Claims are claimed :- 1.BWHPL – INR 26.49 Crores 2. MHPL – INR 192.63 Crores 3. MSHPL – INR 65.33 Crores 4. CH III - 32.9 Crores. DBL has filed counterclaims against the SPVs as under:- i. Payment due from MHPL: INR 8,02,52,000 and compensation for loss of purchase valuation ii. Payment due from MSHPL: INR 11,88,70,000 and compensation for loss of purchase valuation iii. Compensation from BWHPL for loss of purchase valuation

MHPL	Criminal	Mr. Rajinder Bhati (Cube Highways) has received a notice from Madnoor Police station based on an FIR filed by Mr. Ismail Shaik. He has alleged death of his father due to the High Mud Mounds kept near the vicinity of NH-161 to be attributable to NHAI officials. It is alleged that his father had went on the mud mount to collect some beer bottles but due to the height of mud mount running closer to electricity lines, he caught electric shock leading to his death. He has alleged negligence on part of Road maintaining authorities in non-removal of such mud mounds by maintenance authorities.
MHPL	Civil	There are 2 issues for which the SPV is contesting against NHAI in arbitration: - 1. NHAI Project Director recommendation dated 28.12.2023 to the Regional Officer of NHAI to recover alleged excess monies paid under the Milestone Payments (during construction phase) to the Petitioner to the tune of INR 27,92,30,507/- (Rupees Twenty Seven Crore Ninety Two Lakh Thirty Thousand Five Hundred and Seven only) from the crystalized Annuity and Operations & Maintenance payment of MHPL on account of alleged wrongful adoption of CPI. 2. NHAI proposed recovery for alleged damages to the tune of Rs. 134.784 Crores imposed on MHPL for not carrying out repair and rectification works. Further NHAI in their Counter Claims have raised a claim against the SPV amounting to INR 524 Crores alleging delay in rectification works. In this 524 Crore Rs Counter Claim, NHAI has claimed Rs 376 Crores alleging improper functioning of TMS works, Rs. 5.32 Lacs for non-completion of punch list items, Rs. 123 Crores towards remaining from the 134 Crore penalty already imposed, along with interest amounting to INR 25 Crores
HTPL	Civil	The complainant Mr. Ram Nath has filed the case because he was charged double the amount of toll tax and alleged that the toll plaza employee misbehaved with him. A show cause was issued to the toll plaza and its employee which was duly responded. It is HTPL's position that the complainant did not have a valid fastag and therefore he was charged double the amount which he refused to pay and started arguing. Mr. Ram Nath has claimed an amount of Rs. 5,00,000

GAEPL	Writ Petition	On 15-02-2016, the Collector, Aligarh issued a show cause notice under Sections 33/47 A of the Indian Stamp Act, 1899 (Stamp Act) to GAEPL stating that the Deputy Commissioner Stamps, Aligarh Division, Aligarh has been informed that the National Highways Authority of India has given the right to collect toll tax for 24 years to GAEPL in consideration of Rs.1.00 per annum and Rs.57.5 Crores security (5% of prima facie total cost of the project Rs.1,114 Crores). Thus, the Concession Agreement so executed in this regard is in nature of a lease deed as defined under Section 2(16)(c) of the Stamp Act. The show cause notice further stated that in addition to Rs.1.00 annual rent, GAEPL has also paid premium, thus the instrument will be covered by Article 35 of Schedule I B of the Stamp Act and stamp duty amounting to Rs 45,63,99,940/- is payable by GAEPL on the Concession Agreement. According, GAEPL was asked to show cause as to why an amount of Rs.45,63,99,940/- towards stamp duty deficiency and penalty thereon shall not be recovered from GAEPL. That on 25-02-2020, the Collector, Aligarh passed an ex parte order of recovery of Rs. 45,63,99,940 from GAEPL towards payment of stamp duty on the Concession Agreement along with simple interest at the rate of 1.5% per month. GAEPL got this ex parte order recalled and filed its detailed objections. However, the Collector Aligarh passed an order dated 13.10.2020 (reaffirming the ex parte order) holding that the Concession Agreement is a Lease Deed under Section 2 (16) (c) of the Stamp Act and is chargeable with stamp duty under Article 35 (c) (1) of Schedule 1B appended to the Stamp Act with an amount equivalent to Rs.45,64,00,040/-. The Collector, Aligarh further imposed a penalty of Rs.45,63,994/- on the petitioner and ordered the amount to be recovered along with simple interest at the rate of 1.5% per month. The amount of stamp duty has been calculated taking 20 times of the performance security of Rs.57.05 crores i.e. Rs.1141 crores to be the premium amount and Rs.1.00 per annum to be the rent. GAEPL challenged the order of the Collector, Aligarh dated 13.10.2020 before the Hon'ble High Court of Allahabad and the Hon'ble High Court of Allahabad vide its order dated 18.12.2020 stayed any coercive action against GAEPL during the pendency of the case.
GAEPL	Writ Petition	The main allegation of the Petitioner is that the base of the Drainage/Nalah at NH-91 (which is under the purview of NHAI) near Gata No. 343 and 433 Chanderu Village (Sikandrabad), Bulandshahr is very high as compared to the pond. Resultantly due to high base of the Nalah, water from the pond does not drain and overflow from the pond resulting issues like (i) damage to the crops of the Petitioner (ii) risk of disease to nearby schools, (iii) causing flood like situation etc. GAEPL is not a party to the writ petition. However, remedy of lowering down the base of the Nalah has been sought from NHAI.

JLTPL	Civil	Amit Yadav an ex-employee of Aegis Ltd. was terminated on 16.08.2023 by Aegis (the previous contractor at JLTPL site). Mr. Amit is now seeking reinstatement of services from SKM (the current contractor) and JLTPL. He also demands for salary from the date of his termination i.e. 16.08.2023
JVTPL	Civil	A Notice dated 21.02.2024 (Impugned Notice) was issued by the Assistant Inspector General (Registration), Lalitpur, Uttar Pradesh issued under Section 47A of the Indian Stamps Act, 1899 and Section 7(3) of the UP Stamp (Valuation of Property) Rules, 1997. Vide the said notice, the Authority asked JVTPL to provide the original copy of the Concession Agreement executed between JVTPL and the National Highways Authority of India (NHAI) dated 27.12.2019 for assessing the stamp duty payable. Apprehending levy of stamp duty, the SPV had refused to provide such signed copy and challenged the notice dated 21.02.2024 before the High Court of Allahabad. The High Court vide order dated 15.03.2024 has granted stay in favour of JVTPL restricting the Authority from taking any coercive actions against the SPV.
SIPL	Criminal	A complaint has been received from Smt. Benittameri, who was employed as a Paramedic with the concessionaire for the SIPL project, alleging sexual harassment by the Manager Ramesh Vadivel.
JLTPL	Civil	The user was traveling without FASTag and initially claimed exemption by showing an ID card as a Forest Department official. Our Toll Collector denied the exemption since the official was traveling in a personal vehicle. The user refused to pay double charges. The Toll Collector informed that if payment was made via UPI, only 1.25 times the toll would apply. The user made an incorrect UPI payment of ₹90 instead of ₹112.50. The Toll Collector requested a second transaction and assured the first would be refunded. The user demanded an immediate refund. To avoid delay, the Plaza Supervisor refunded ₹90 from his personal UPI account. Due to the initial stage of static/dynamic UPI implementation, the slip for ₹112.50 was not generated through TMS. On user's demand, the Plaza Supervisor generated a slip of ₹180 (including double charges) and handed it over. The user now claims three payments: two UPI transactions (₹90 and ₹112.50) and one cash payment (₹180)

AJUHPL	Civil	The industrial dispute has been referred to the Tribunal-cum-Labour Court under Section 10(2A) of the ID Act, 1947. Summons issued for appearance on 24.11.2025 at 10:30 A.M. with relevant documents, failing which the matter may proceed ex parte. Multiple plaintiffs in this Case- 1. Rajinder Kumar 2. Sikander Singh 3. Bharat Bhushan 4. Radhey Sham 5. Ajay Kumar 6. Kuldeep Kumar 7. Bhishav Kumar 8. Amarjeet Singh 9. Neeraj Sharma 10. Vinod Kumar 11. Rakesh Kumar 12. Avneet Singh 13. Lakhan Mashi 14. Balvinder Kumar 15. Sunil Sharma 16. Vivek Kumar 17. Babu Singh 18. Kalyan Singh 19. Rakesh Verma 20. Bansi Lal 21. Raspal Singh 22. Satish Kumar 23. Shamsher Singh 24. Kuldeep Singh 25. Jagdev Singh 26. Shadi Lal 27. Sanjeev Kumar 28. Kamal Dev 29. Balbinder Singh 30. Mangal Singh 31. Sunil Kumar 32. Sh. Rakesh Singh 33. Sh. Sunil Kumar 34. Sh. Rohit Dutt

Note- The Management do not expect any liabilities to arise out of these litigations, and hence we have not factored any impact of these in our valuation.

Shape the future with confidence

16. Ongoing Litigations for Direct Tax

Sl No	SPV	Assessment Year (AY)	Forum where dispute is currently pending	Amount Involved (Millions)- Income/additions made by the department	Remarks
1	JMTL	2023-24	DRP	2.36	Appeal to be filed before 13/03/2026
2	JMTL	2017-18	ITAT	21.87	Matter adjourned to 20/04/2026.
3	JMTL	2017-18	270A	-	penalty on account of TP addition of INR 2,18,73,742 has been made and has been upheld by the DRP. Response submitted. Appeal before the ITAT has been filed.
4	JMTL	2023-24	143(3)	-	Draft Assessment order (11/02/2026) received wherein TP adjustment vide order dated 17 Nov 25 (Adjustment amount 23,60,464)
5	JMTL	2024-25	143(3)	-	Response to last notice filed
6	MBEL	2010-11	CIT(A)	425.03	Hearing notice received. Response to be filed
7	MBEL	2011-12	CIT(A)	274.41	Hearing notice received. Response to be filed
8	MBEL	2012-13	CIT(A)	493.88	Hearing notice received. Response to be filed
9	MBEL	2013-14	ITAT	424.33	Company filed the appeal with the ITAT for non-granting of depreciation; Department filed the appeal with the ITAT on non-deduction of capital grant from the FA. ITAT dismissed the appeal, SPV is in discussion with counsel to file an appeal before HC.
10	MBEL	2014-15	ITAT	150.26	CIT(A) passed the order and allowed the penal interest and INR 14.42Cr MMR provision. However, appeal with the ITAT is still pending for balance addition of INR 15,02,64,000. ITAT dismissed the appeal, SPV is in discussion with counsel to file an appeal before HC
11	MBEL	2017-18	CIT(A)	7.72	Hearing notice received. Response to be filed
12	MBEL	2020-21	CIT(A)	-	Favourable order received from AO pursuant to DRO directions, initial TP adjustment deleted. SPV is following up with AO to delete the penalty
13	MBEL	2010-11	271(1)(c)	-	CIT(A) filed against adverse order passed by AO. Also, penalty abeyance letter filed with AO to keep proceedings in abeyance till disposal of appeal by CIT(A).
14	MBEL	2011-12	271(1)(c)	-	CIT(A) filed against adverse order passed by AO. Also, penalty abeyance letter filed

					with AO to keep proceedings in abeyance till disposal of appeal by CIT(A).
15	MBEL	2017-18	270A	-	Response submitted
16	MBEL	2024-25	143(3)	-	Response filed
17	WUPTL	2017-18	270A	-	Penalty under section 270A was initiated by the AO. A response has been filed requesting the AO to keep the proceedings in abeyance till the conclusion of ITAT proceedings.
18	WUPTL	2018-19	270A	-	Penalty under section 270A was initiated by the AO. A response has been filed requesting the AO to keep the proceedings in abeyance till the conclusion of ITAT proceedings.
19	WUPTL	2024-25	143(3)	-	-
20	WVEPL	2021-22	270A	-	Penalty under section 270A was initiated by the AO. A response has been filed requesting the AO to keep the proceedings in abeyance till the conclusion of ITAT proceedings.
21	WVEPL	2023-24	143(3)	-	TP order passed and disallowance of INR 11,28,56,542 made by TPO on interred on OCDs
22	WVEPL	2024-25	143(3)	-	Response to last notice filed
23	WVEPL	2014-15	CIT(A)	39.40	CIT(A) filed, Response to last notice has been filed.
24	WVEPL	2021-22	ITAT	248.17	DRP directions received. No relief from DRP. Appeal filed with ITAT, hearing on 01/06/2026
25	WVEPL	2023-24	DRP	112.86	Appeal to be filed before 22/04/2026
26	APEL	2016-17	271(1)(C)	-	Response filed for keeping penalty in abeyance till the disposal of CIT(A).
27	APEL	2011-12	High Court	675.69	Department filed an appeal with High Court
28	APEL	2012-13	High Court	508.83	Department filed an appeal with High Court
29	APEL	2013-14	High Court	299.76	Department filed an appeal with High Court
30	APEL	2014-15	High Court	197.92	Department filed an appeal with High Court
31	APEL	2015-16	High Court	111.13	Department filed an appeal with High Court
32	APEL	2016-17	CIT(A)	73.95	CIT(A) filed
33	APEL	2017-18	CIT(A)	337.48	Submission filed on 21-06-2023
34	APEL	2018-19	High Court	493.30	Department filed an appeal with High Court
35	APEL	2022-23	147	-	Response to be filed against notice u/s 148A
36	DATRPL	2023-24	143(3)	-	Draft assessment order (04/01/2026) passed wherein TP adjustment vide order dated 16 Dec 25 (Adjustment amount 40,88,61,220), Corporate tax adjustment INR 39 Cr and 13 Cr under section 94B

37	DATRPL	2024-25	143(3)	-	-
38	DATRPL	2022-23	147	-	Reassessment notice issued by AO on account of pre-payment premium on term loan from banks amounting to Rs.11,82,51,000/-
39	FRHPL	2023-24	DRP	849.04	Appeal filed on 17/03/2026
40	FRHPL	2022-23 (department appeal)	ITAT	-	Appeal filed by Department against the favourable CIT(A) order.
41	FRHPL	2021-22	CIT(A)	-	Submission filed on 26 September 2025 against hearing notice issued. Awaiting for VC.
42	FRHPL-Department appeal penalty-270A	2022-23	ITAT	-	Appeal filed by department
43	FRHPL	2024-25	143(3)	-	Draft assessment order (17/02/2026) passed wherein TP adjustment vide order dated 01 Jan 26 (Adjustment amount 84,90,36,526).
44	FRHPL	2024-25	143(3)	-	Response to last notice filed
45	NDEPL	2024-25	143(3)	-	Response to last notice filed
46	HTPL	2021-22	270A	-	Penalty under section 270A was initiated by the AO. A response has been filed requesting the AO to keep the proceedings in abeyance till the conclusion of ITAT proceedings.
47	HTPL	2022-23	270A	-	Response filed. Further notice awaited
48	HTPL	2023-24	143(3)	-	Draft assessment order (24/03/2026) passed wherein depreciation claim of INR 1,57,64,50,033 disallowed and Amortization of INR 34,01,55,418 allowed and 'TP adjustment vide order dated 08 Jan 26 (Adjustment amount 9,75,35,200)
49	HTPL	2023-24	DRP	1673.98	DRP to be filed by 23/04/2026
50	HTPL	2022-23	CIT(A)	2077.69	CIT(A) filed
51	KETPL	2023-24	143(3)	-	Draft assessment order (05/03/2026) passed wherein TP adjustment vide order dated 31 Oct 25 (Adjustment amount 35,25,19,822)
52	KETPL	2023-24	DRP	352.52	DRP to be filed
53	KETPL	2021-22	CIT(A)	-	CIT(A) (along with stay of demand letter and condonation of delay) has been filed

					in this regard. Further, communication is awaited in this regard.
54	MKTPL	2021-22	270A	-	Penalty under section 270A was initiated by the AO. A response has been filed requesting the AO to keep the proceedings in abeyance till the conclusion of ITAT proceedings.
55	MKTPL	2023-24	143(3)	-	Draft assessment order (19/03/2026) passed wherein depreciation claim of INR 108,63,92,318 and TP disallowance as per TP order dated 19 Sept 25.
56	MKTPL	2023-24	DRP	1354.07	DRP to be filed by 17/04/2026
57	MKTPL	2021-22	ITAT	52.62	DRP directions received. No relief from DRP. Appeal with ITAT, hearing on 27/04/2026
58	NKTPL	2021-22	270A	-	Penalty under section 270A was initiated by the AO. A response has been filed requesting the AO to keep the proceedings in abeyance till the conclusion of ITAT proceedings.
59	NKTPL	2023-24	143(3)	-	- TDS Disallowance u/s.40(a)(ia) of INR 9,26,94,748 - Difference in creditors balance disallowed u/s 68 INR 1,64,59,707 - TP adjustment of INR 21,97,42,991
60	SMTPL	2023-24	143(3)	-	Draft assessment order (04/01/2026) passed wherein TP adjustment vide order dated 29 Jan 26 and disallowance of INR 5,92,24,644 made by TPO on interest on OCDs
61	SMTPL	2023-24	DRP	59.22	Appeal filed on 17/03/2026
62	KMTPL	2023-24	DRP	767.92	Appeal filed on 18/02/2026
63	KMTPL	2022-23	CIT(A)	217.24	CIT(A) filed
64	KMTPL	2022-23	270A		Response to be filed
65	KMTPL	2023-24	143(3)		Draft assessment order (20/01/2026) passed wherein TP adjustment vide TP order dated 31 Oct 25 (Adjustment amount 37,03,17,984)
66	KMTPL	2024-25	143(3)		Response to last notice filed
67	LRTPL	2023-24	270A	-	Penalty under section 270A was initiated by the AO. Response to be filed
68	LRTPL	2023-24	CIT(A)	124.42	CIT(A) to be filed
69	JVTPL	2023-24	DRP	72.65	appeal filed on 20/02/2026
70	JVTPL	2023-24	143(3)	-	TP order dated 31 Oct 25 (Adjustment amount 7,26,50,672)
71	JVTPL	2024-25	143(3)	-	Response to be filed against notice u/s 143(2)
72	GAEPL	2017-18	CIT(A)	2466.10	Submission filed, awaiting for further communication.
73	GAEPL	2022-23	CIT(A)	252.81	CIT(A) filed on 19 October 2025. Awaiting for hearing notice.

74	KSPPL	2022-23	CIT(A)	407.87	CIT(A) filed
75	KSPPL	2022-23	270A	-	Response submitted.
76	KSPPL	2024-25	143(3)	-	response to last notice filed
77	KSPPL	2022-23	154	-	Disallowance of director sitting fee Rs.48,00,000/- (i.e., 30% of Rs.1,60,00,000/-). Response to SCN filed order awaited
78	KSPPL	2024-25	143(3)	-	Draft Assessment (23/02/2026) order received wherein TP adjustment vide order passed on 19 Sept 25 for disallowance of INR 2,03,17,040 made on interest on OCDs and depreciation claim of INR 67,06,73,899.
79	KSPPL	2023-24	DRP	690.99	DRP to be filed 25 March 2026
80	THPL	2022-23	CIT(A)	4.8	Appeal filed
81	THPL	2023-24	143(3)	-	Draft assessment order (28/03/2026) passed wherein TP disallowance of INR 1,52,81,418 made by TPO on interest on OCDs
82	BWHPL	2022-23	ITAT	5.90	DRP directions received on 01 December 2025. The entire amount of adjustment was upheld.
83	BWHPL	2023-24	CIT(A)	-	CIT(A) filed
84	BWHPL	2023-24	DRP	12.57	Appeal filed on 27/02/2026
85	BWHPL	2024-25	143(3)	-	Response to last notice filed
86	BWHPL	2023-24	143(3)	-	Draft Assessment (09/02/2026) order received wherein TP adjustment vide order dated 30 Dec 25 (Adjustment amount 1,25,74,643)
87	MHPL	2023-24	143(3)	-	Draft Assessment (19/02/2026) order received wherein TP adjustment vide order dated 31 Dec 25 (Adjustment amount 99,54,107)
88	MHPL	2022-23	DRP	9.95	Appeal filed on 17/03/2026
89	MHPL	2024-25	CIT(A)	32.39	Appeal to be filed
90	MHSPL	2023-24	DRP	16.91	Appeal filed on 27/02/2026
91	MHSPL	2024-25	143(3)	-	Response to last notice filed
92	MHSPL	2023-24	143(3)	-	Draft Assessment (02/02/2026) order received wherein TP adjustment vide order dated 31 Dec 25 (Adjustment amount 169,12,852)
93	THPL	2023-24	DRP	15.28	DRP to be filed by 27/04/2026
94	DARTPL	2023-24	DRP	408.86	Appeal filed on 30/01/2026
95	NAMEPL	2023-24	143(3)	-	Draft Assessment (26/02/2026) order received wherein TP adjustment order passed on 27 Jan 2026 and disallowance of INR 15,00,00,000 on NCDs and INR 1,39,80,000 on OCDs made by TPO.

96	NAMEPL	2024-25	143(3)	-	Response to last notice filed
97	NAMEPL	2023-24	DRP	163.98	DRP to be filed 28/03/2026
98	NAMEPL	2020-21	ITAT	316.40	ITAT filed
99	NAMEPL	2018-19	High Court	87.60	Pending
100	JU	2015-16	271(1)(C)	-	- AO issued notice u/s. 274 read with section 271(1) for addition made in assessment order - the proceeding kept in abeyance as Company preferred an appeal with CIT(A) against assessment order
101	JU	2016-17	271(1)(C)	-	- AO issued notice u/s. 274 read with section 271(1) for addition made in assessment order - the proceeding kept in abeyance as Company preferred an appeal with CIT(A) against assessment order
102	JU	2017-18	CIT(A)	6.07	Appeal filed on 06/04/2026
103	JU	2017-18	270A	-	Response to be filed
104	JU	2018-19	CIT(A)	1597.12	Appeal filed with CIT(A)
105	JU	2017-18	CIT(A)	2316.81	Appeal filed with CIT(A)
106	JU	2016-17	CIT(A)	3281.31	Appeal filed with CIT(A)
107	JU	2015-16	CIT(A)	4744.85	Appeal filed with CIT(A)
108	JU	2014-15	High Court	92.81	Department filed an appeal with High Court
109	JU	2014-15	CIT(A)	-	Appeal filed with CIT(A)
110	JU	2013-14	CIT(A)	170.10	Appeal filed with CIT(A)
111	JU	2022-23	CIT(A)	1537.01	Appeal filed with CIT(A)
112	JU	2023-24	CIT(A)	855.05	Appeal filed with CIT(A)
113	QB	2023-24	143(3)	-	Clean order passed but due to error in computation sheet demand of INR 75.76 crores has been raised. Rectification application filed on portal
114	JMTL	2016-17	154	21208506	Rectification application pending with AO
115	JMTL	2018-19	154	91250	Rectification application pending with AO
116	JMTL	2020-21	154	7450	Rectification application pending with AO
117	GAEPL	2018-19	154	1160	SPV accepted the demand
118	QB	2023-24	154	757685610	Rectification application filed

Note 1 - On-going regular assessments of various entities are not mentioned above since the specific issues are not picked up by the department
Note 2 - The Management do not expect any liabilities to arise out of these litigations, and hence we have not factored any impact of these in our valuation.

17. Ongoing Litigations for Indirect Tax

Sl No	Entity Name	FY	Pending Before	Regime	Demand (in INR Mn)	Issue involved
1	WUPTL	2018-19	Joint Commissioner	GST	0.11	Appeal rejected, stay application to filed with authority
2	WUPTL	2018-19	Joint Commissioner	GST	0.87	Appeal rejected, stay application to filed with authority
4	WUPTL	2017-18	First appeal	VAT	20.75	Earlier VAT authority has passed ex-parte order and raised demand of INR 2.072 crores Application for reopening of assessment is filed. Pending for disposal
5	WUPTL	2017-18	First appeal	Entry Tax	0.80	Earlier VAT authority has passed ex-parte order and raised demand of INR 8,00,000 Application for reopening of assessment is filed. Pending for disposal
6	JMTPL	2019-20	Office of Joint Commissioner	GST	1.55	The Company is in receipt of OIO dated 29th August 2024 having ref no ZD080824085394X Appeal has been filed on 28.11.2024
7	NKTPL	2020-21	COMMERCIAL TAX OFFICER	GST	48.92	Tax not paid for the services provided to NHAI, writ filed.
8	NKTPL	2021-22	COMMERCIAL TAX OFFICER	GST	86.34	Tax not paid for the services provided to NHAI, writ filed.
9	NKTPL	2022-23	COMMERCIAL TAX OFFICER	GST	149.14	Tax not paid for the services provided to NHAI, writ filed.
10	WVEPL	2017-18	Appeal	GST	1.21	Appeal filed against the demand 27.9.2022
11	APEL	2017-18 to 2021-22	Appeal	GST	111.91	Appel is filed on 22.03.2024
13	GAEPL	2013-14	Second appeal	VAT	4.88	-SPV has received ex-party order dated 31 March 2017 imposing a tax demand of INR 2,30,00,000 which was later quashed in an appeal filed by the SPV against the said ex-party order. - Thereafter, the Deputy Commissioner passed order u/s 34(8) of UP VAT dated 3 September 2020 and imposed tax demand of INR 48.77 lakhs (i.e. WCT of INR 24,38,523 and 100%

						penalty on WCT amount) in relation to non-deduction WCT on utility shifting works. - SPV has filed an appeal dated 29 January 2021 against the said order imposing tax demand of INR 48.77 lakhs. - Appeal of the SPV has been reject via order dated 28 December 2022 - SPV has filed the appeal before Tribunal. In process
14	GAEPL	2014 -15	Second appeal	VAT	7.77	- SPV has received ex-parte order dated 19 March 2018 passed u/s 28(2) of UP VAT by Dy. Commissioner Commercial tax and raised demand of 2.645 Crores considering the utility shifting work as sale-purchase activity - Subsequently, SPV filed the appeal dated 19 March 2018 by paying of INR 40 lakhs under dispute before the Additional commissioner Grade-2 (Appeal) – I, Noida - Commissioner of Appeals remanded back the matter to the Deputy Commissioner for fresh assessment. - Dy. Commissioner Commercial tax passed order u/s 28(2)(i) dated 29 October 2020 (received on 17 December 2020) passed by, considering the amount received from NHAI towards utility shifting work as deemed sale and imposed a tax demand of INR 77,74,791 - SPV again preferred an appeal before Additional commissioner Grade-2 (Appeal) – I, Noida which is being rejected via order dated 28 December 2022 - SPV has filed the appeal before Tribunal. in Process
15	GAEPL	2015 -16	First appeal	VAT	2.18	- SPV has received ex-party order imposing a tax demand
16	GAEPL	2016 -17	Second appeal	VAT	0.48	- SPV has received ex-party order imposing a tax demand which was later quashed in an appeal filed by the SPV against the said ex-party order. - Dy. Commissioner Commercial tax passed order u/s 28(2)(i) dated 08 September 2021 passed by, considering the amount received from NHAI towards utility shifting work as deemed sale and imposed a tax demand of INR 4,82,164

						- SPV preferred an appeal before Additional commissioner Grade-2 (Appeal) – I, Noida which is being rejected via order dated 28 December 2022 - SPV has filed the appeal before Tribunal, in process.
17	GAEPL	2017 -18	Second appeal	VAT	0.15	-SPV has received ex-party order imposing a tax demand which was later quashed In an appeal filed by the SPV against the said ex-party order. -Dy. Commissioner Commercial tax passed order u/s 28(2)(i) dated 29 June 2021 passed by, considering the amount received from NHAI towards utility shifting work as sale-purchase activity and imposed a tax demand of INR 1,53,442. -SPV preferred an appeal before Additional commissioner Grade-2 (Appeal) – I, Noida which is being rejected via order dated 28 December 2022. - SPV has filed the appeal before Tribunal, in process.
18	SMTPL	2020 -21	Commercial Tax Officer	GST	47.47	Writ has been admitted by the HC
19	SMTPL	2021 -22	Commercial Tax Officer	GST	87.17	Writ has been admitted by the HC
20	SMTPL	2022 -23	Commercial Tax Officer	GST	121.82	Writ has been admitted by the HC
21	MKTPL	2022 -23	Commercial Tax Officer	GST	3.15	The company is in process of filling an appeal with the appellate authority.
22	MKTPL	2023 -24	Commercial Tax Officer	GST	2.46	The company is in process of filling an appeal with the appellate authority.
23	KETPL	2021 -22	Commercial Tax Officer	GST	3.56	Appeal filed on 27.01.2026

24	KETPL	2022-23	Commercial Tax Officer	GST	2.34	Appeal filed on 27.01.2026
25	KETPL	2023-24	Commercial Tax Officer	GST	1.94	Appeal filed on 27.01.2026
26	MSHPL	2021-22	State Tax officer	GST	7.25	Fresh order received, appeal to be filed
28	MSHPL	2019-20	Officer (ST)	GST	1.94	Amnesty application rejected, previous filed appeal restored.
30	KSPPL	2019-20	Deputy COMMISSIONER (ST)	GST	815.02	Appeal rejected, Writ filed with the High Court
31	KSPPL	2020-21	Assistant Commissioner	GST	0.59	Appeal filed
32	KSPPL	2019-20	ASSISTANT COMMISSIONER (ST)	GST	8.11	Appeal filed on 18/11/2024
33	KSPPL	2021-22	ASSISTANT COMMISSIONER (ST)	GST	2.08	Appeal has been filed on 29.03.2026
34	KSIPL	2019-20	Commercial Tax Officer	GST	6.36	Appeal has been filed
35	KSIPL	2021-22	Commercial Tax Officer	GST	239.28	Company is in receipt of Notice in form DRC-01. Matter was originally remanded back to Adjudicating Authority for consideration factoring the CBIC circular vide DRC-07 having reference no. ZD330423147444M. Fresh SCN issued and demand of INR 9 Cr proposed.
36	KSIPL	2020-21	Commercial Tax Officer	GST	8.60	Order has been passed, and demand is raised on Cos & Utility shifting, appeal filed
37	KSIPL	2019-20	Commercial Tax Officer	GST	4.65	Order has been passed, and demand is raised on Cos & Utility shifting, appeal filed

38	KSIPL	2020 -21		GST	1.05	Appeal filed
39	KSIPL	2022 -23	Commercial Tax Officer	GST	19.91	Appeal has been filed on 08.11.2025
40	KSIPL	2023 -24	Commercial Tax Officer	GST	17.03	Appeal has been filed on 08.11.2025
41	KSIPL	2024 -25	Commercial Tax Officer	GST	10.63	Appeal has been filed on 08.11.2025
42	KTIPL	2020 -21	ASSISTANT COMMISSIONER (ST)	GST	860.55	10% pre deposit already made. Writ has been filed in HC
43	KTIPL	2019 -20	ASSISTANT COMMISSIONER (ST)	GST	1802.44	10% pre deposit already made. Writ has been filed in HC
44	KTIPL	2018 -19	ASSISTANT COMMISSIONER (ST)	GST	2.69	10% pre deposit already made. Writ has been filed in HC

Note 1 - On-going regular assessments of various entities are not mentioned above since the specific issues are not picked up by the department.

Note 2 - The Management do not expect any liabilities to arise out of these litigations, and hence we have not factored any impact of these in our valuation.

18. Other Disclosures

18.1 Details of revenue pendency including local authority rates associated with SPV and compounding charges

As given to understand by the Management, the InvIT Assets do not have material dues including local authority taxes (sum as Municipal Tax, Property Tax, etc.) pending to be payable to the government authorities with respect to the SPVs (InvIT assets).

18.2 Vulnerability to natural or induced hazards that may not have been covered in town planning/building control

As given to understand by the Management, the InvIT Assets are not vulnerable to natural or induced hazards which have not been considered in town planning/building control.

18.3 Any other matters which may affect the project or its value

There are no other matters which may affect the project or its value.

ANNEXURE B –TECHNICAL REPORTS

(*The remainder of this page is intentionally kept blank*)

FP Project Management

Technical Due Diligence of Borgaon to Watambare Section of NH-166 from km. 224+000 to km. 276+000 in the State of Maharashtra on Hybrid Annuity Mode (HAM)

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited

315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025
Tel: +91-22-6660 3901
e-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	TSM / RMW	AKA	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Service Road 6
2.9 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 8
3.3 Major / Minor Intersection 10
3.4 Inventory and Condition Survey of Structures and Bridges 11
3.4.1 Cross Drainage Structures (Culverts) 11
3.4.2 Minor Bridges 14
3.4.3 Major Bridge (length > 60 m) 16
3.4.4 Underpasses 18
3.4.5 Light Vehicular Underpasses 19
3.5 Drainage 21
3.6 Slope Protection 22
3.7 Road Furniture 23
3.7.1 Pavement Marking 23
3.7.2 Traffic Signage 24
3.7.3 Highway Lighting 24
3.7.4 Road Studs / Cat's Eye 25

3.7.5 Avenue Plantation and Median Plantation 25
3.7.6 Traffic Signage / Median kerb painting / KM Stone 26
3.7.7 Crash Barriers 27
3.7.8 Delineators 28
3.8 Toll Plaza 29
3.9 Bus Bays and Passenger Shelters 31
3.10 Truck Lay Bye 32
3.11 Advanced Traffic Management System (ATMS) 32
3.11.1 Automatic Traffic Counter cum classifier (ATCC) 33
3.11.2 Emergency Call Boxes (ECB) 33
3.11.3 CCTV Surveillance Cameras 34
3.12 Video Incident Detection System 34
3.13 Balance Work Status 34
3.14 Operation and Maintenances 34
3.14.1 O&M Contract 34
3.14.2 Organization Chart 34
3.14.3 Operation 35
3.14.4 Routine Maintenance 36
4 Pavement Investigation and Assessment 37
4.1 General 37
4.2 Surveys and Investigation 37
4.2.1 Pavement Condition Survey 37
4.2.2 Network Survey Vehicles (NSV) Survey 37
4.2.3 Roughness Survey 37
4.2.4 Periodic Maintenance Strategy 39
5 Cost Estimates 40
5.1 General 40
5.2 Rate Assumption 40
5.3 Balance Work Cost (CAPEX) 41
5.4 Routine O&M Cost 41
5.5 Major Maintenance Cost 42
5.6 Periodic Replacement of TMS / ATMS System 42
5.7 Escalation Assumption 43
5.8 Summary of Cost 43
Annexures 45
Annexure I - Routine Maintenance Cost 46
Annexure II - Major Maintenance Cost 50

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Details of Summary for Structures 11
Table 3-2 Details of New Minor Bridges 14
Table 3-3 Details of Major Bridges 16
Table 3-4 Details of Vehicular Underpasses 18
Table 3-5 Details of Light Vehicular Underpasses 19
Table 3-6 Details of Summary for Toll Plaza Items 29
Table 4-1 Summary of Pavement Condition 37
Table 4-3 Result of Roughness Survey as per CA 38
Table 4-4 Major Maintenance Cycle 39
Table 5-1 Summary of Unit Rates 40
Table 5-2 Summary of Operation Cost 42
Table 5-3 Escalation 43

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start of the Project Road 5
Figure 2-3 End of Project Road 5
Figure 3-1 Photographs of Pavement Condition (Main Carriageway) 7
Figure 3-2 Photographs of Service Road 9
Figure 3-3 Photographs of Major Junction 10
Figure 3-4 Photographs of Minor Junctions 10
Figure 3-5 Photographs of Culverts 13
Figure 3-6 Photographs of Minor Bridge 15
Figure 3-7 Photographs of Major Bridges 16
Figure 3-8 Photographs of Underpasses 18
Figure 3-9 Photographs of Light Vehicular Underpasses 19
Figure 3-10 Photographs of Drainage 21
Figure 3-11 Photographs of Slope Protection 22
Figure 3-12 Photographs of Road Marking 23
Figure 3-13 Photographs of Traffic Signage 24
Figure 3-14 Photographs of Highway Lighting 24
Figure 3-15 Photographs of Road studs / Cat Eyes 25
Figure 3-16 Photographs of Avenue and Median Plantation 26
Figure 3-17 Photographs of Road Signages 26
Figure 3-18 Photographs of MBCB / Crash Barrier 28
Figure 3-19 Photographs of Delineator 28
Figure 3-20 Photographs of Toll Plaza 30
Figure 3-21 Photographs of Bus Bays / Passenger Shelter 32
Figure 3-22 Photographs of Truck lay bye 32
Figure 3-23 Photographs of ATCC 33
Figure 3-24 Photographs of ECB 33
Figure 3-25 Photographs of CCTV Surveillance Camera 34

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of National Highway No. 166 including the section from Borgaon to Watambare (km. 224+000 to km. 276+000) on Hybrid Annuity Mode in the State of Maharashtra (approx. 52.000 kms) (hereinafter referred as "Project Road").

M/s. DBL Borgaon Watambare Highway Private Limited (DBWHPL) (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for development, maintenance and management of National Highway No. 166 including the section from Borgaon to Watambare (Sangli Solapur Pkg-II) on Hybrid Annuity Mode.

The Date of Concession Agreement is 10th May 2018. The concession period of the project is 17 years commencing from the Appointed Date including implementation period. The Appointed Date of the project is 22nd April 2019. The Provisional Completion Certificate was issued on 24th September 2021 for the length of 50.146 kms out of the project length of 52.000 kms. The project has also received Final Completion Certificate for the length of 51.802 km with effective from 01st March 2023.

Sr. No.	Description	Date
1	Date of Signing the Concession Agreement	10th May 2018
2	Appointed Date	22nd April 2019
3	Scheduled Project Completion Date	21st April 2021
4	Revised Scheduled Project Completion Date	19th October 2021
5	Scheduled End of Concession	17th April 2036
6	Date of issue of Provisional Completion Certificate	24th September 2021
7	Date of Commencement of Commercial Operation	24th September 2021
8	Date of Issue of Completion Certificate	1st March 2023

Presently, the project is under operation and maintenance and the Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets.
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.
- Formulation of future major maintenance strategy

- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence.
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period.

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified Engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings.
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted.
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority.
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets, mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimates.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Client. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyses the same as per the best engineering / industry practices.

The site visit and inspection of the project site was carried out during the period from **9th March 2026 to 10th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for technical due diligence study**.**

Chapter 2 **Project Description:** The chapter describes existing project features, overview of project development etc.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on the site visit**.**

Chapter 4 **Pavement Investigation and Assessment:** This chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance

Chapter 5 **Cost Estimates:** This chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **M/s. DBL Borgaon to Watambare Highway Private Limited (DBWHPL),** is a company promoted by Cube Highways or company a Special Purpose Vehicle (SPV) formed for implementing this project on 22nd April 2019.

2.2 Location

The Site of the Four-Lane divided Project Road comprises the section of National Highway 166 commencing from Design km. 224+000 at Borgaon to Design km. 276+000 (Approx length is 52.00 kms) at Watambare in the State of Maharashtra.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map

The photographs taken during the site visit are presented below.

Figure 2-2 Start of the Project Road

Start of Project at km. 224+000 (RHS)

Start of Project at km. 224+000 (LHS)

Figure 2-3 End of Project Road

End of Project at km. 276+000 (RHS)

End of Project at km. 276+000 (LHS)

2.3 Climate

The project location has three distinct seasons. Summer takes place from the middle of February to the middle of June, characterised by largely dry conditions towards the start, with rainfall tending to increase as the season progresses. Temperatures in summer are largely characterised by hot days and mild nights. Monsoon takes place from the middle of June to late October. Rainfall is most common in this season than at any other time of year. Temperatures in the monsoon season are characterised by warm, humid days and mild, humid nights. Winter takes place from early November to early February. This season is largely dry, with rain mostly concentrated in November. Temperatures in winter are characterised by warm days and cool nights. The total rainfall is around 22 inches (580 mm).

2.4 Terrain

The Project Road traverses through plain / rolling terrain.

2.5 Abutting Land Use

The Project Road passes through residential and agricultural zones.

2.6 Right of Way

Right of Way is 60 m for the entire length except for Wayside Amenities and Toll Plaza.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services located along the Project Road were shifted out / at the edge of the ROW. The different types of utilities found along the road includes electrical poles, telephone poles, hand pumps, permanent structures, temples etc.

2.8 Service Road

The total length of service road on both sides is 12.908 kms.

2.9 Development as per Schedule-B

The Project Road from Design km. 224.00 at Borgaon to Design km. 276.000 at Watambare (Approx Length is 52.000 kms) has been developed as a four-lane paved carriageway 18.0m wide excluding median. The Project Road passes through rural as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.
b) Operation and maintenance of the Project in accordance with the provisions of this Agreement.
c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of the Concession Agreement and matters incidental thereto or necessary for the performance of any or all the obligations of the Concessionaire under the Concession Agreement.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Particulars	Unit	Scope as per Schedule-B	Constructed as per site
1	O&M of Main Carriageway	km	52.000	51.802*
2	Rail Over Bridge (ROB)	Nos.	00	00
3	Major Bridge	Nos.	04	04
4	Minor Bridge	Nos.	14	14
5	Vehicular Underpass	Nos.	04	04
6	Light Vehicular Underpass	Nos.	16+1 (COS)	17
7	Box Culverts	Nos.	14	14
8	Hume Pipe Culverts	Nos.	115	115

**Project has received Completion Certificate for the length of 51.802 km.*

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The paved carriageway is 18.0 m wide excluding the median. The project is widened to a four lane-carriageway with a width of 18.0 m as per standard cross section including paved shoulders. Service / Slip Road of 7.5 m width has been provided on one side or both sides wherever required in built up area to cater for the local traffic.

The entire stretch of Project Road, Service / Slip Road & Toll Plaza are constructed with rigid pavement. Rigid pavements for Main Carriage way and Service / Slip Roads are designed for a design life of 30 years.

3.1.1 Pavement Condition Survey

A pavement condition survey was carried out from **9th March 2026 to 10th March 2026** through visual inspection for the entire project length. From the visual inspection, the pavement condition of the project road is found to be Good. The total project length of 51.802 kms. is in good condition. During site visits at some location cracks are observed on the pavement, however rectification work is in progress at such locations of the Project Road.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (Main Carriageway)

Pavement Condition at km. 275+090 (LHS)

Pavement Condition at km. 272+500 (RHS)

Pavement Condition at km. 269+000 (LHS)

Pavement Condition at km. 257+600 (RHS)

Pavement condition at km. 256+710 (RHS)

Pavement Condition at km. 257+700 (LHS)

Pavement Condition at km. 253+990 (RHS)

Pavement Condition at km. 252+700 (LHS)

3.2 Service Road / Slip Road

The service / slip road of width 7.5 m is constructed in built-up areas and adjoining underpass locations. The Project Road has total service / slip road length of 12.908 kms. At some locations, service / slip road construction work is balanced and at some place concrete panels are damaged and need to be repaired or replaced.

The photographs taken during the site visit are presented below.

Figure 3-2 Photographs of Service Road

Pavement Condition at km. 274+200 (RHS)

Pavement Condition at km. 270+900 (LHS)

Pavement Condition km. 267+400 (RHS)

Pavement Condition at km. 262+100

Pavement Condition at km. 258+300 (RHS)

Pavement Condition at km. 254+900 (RHS)

3.3 Major / Minor Intersection

There are 01 No. of Major junctions and 49 Nos. of Minor junctions along Project Road.

The photographs taken during site visit are presented as below.

Figure 3-3 Photographs of Major Junction

Major Junction at km. 245+926

Figure 3-4 Photographs of Minor Junctions

Minor Junction at km. 271+950 (RHS)

Minor Junction at km. 256+500 (RHS)

Junction at km. 254+210 LHS

Junction at km. 249+300 RHS

3.4 Inventory and Condition Survey of Structures and Bridges

The inventory of structures including major bridges, minor bridges, underpasses and culverts is presented in table as below:

Table 3-1 Details of Summary for Structures

Sr. No.	Particulars	Unit	Total Number of Structures As per Concession Agreement	Total Number of Structures as per site
1	Rail Over Bridge (ROB)	Nos.	00	00
2	Major Bridge	Nos.	04	04
3	Minor Bridge	Nos.	14	14
4	Vehicular Underpass	Nos.	04	04
5	Light Vehicular Underpass	Nos.	16 + 1 (COS)	17
6	Box Culverts	Nos.	14	14
7	Hume Pipe Culverts	Nos.	115	115

All major structures and CD works were visually inspected. The structures are generally sufficient for storm water drainage. The waterway needs regular cleaning. All the old bridges are 2-lane and widened to 2 additional lanes. The type of foundation for these structures is open foundation. In case of some bridges, settlement in approaches and cracks in the pavement has been observed. New bridges are constructed in 2-lane with footpath keeping a provision of converting into 3-lane in future. The wearing course and expansion joints are found okay. The crash barriers are RCC type and are in sound condition. Return wall are RCC type and pitching has been provided in almost all bridges. RE walls are provided for the approaches of the structures.

The detailed condition survey of major bridges, minor bridges, flyovers and culverts was carried out by visual inspection. The observations and findings are presented below.

3.4.1 Cross Drainage Structures (Culverts)

Box culverts are visually inspected. The quality of concrete of abutment, slab and wing wall / return wall, parapet wall is satisfactory. Minor settlement on approach is observed in few culverts. The slope protection was done at major locations. The slopes are stable. Generally, all the box culverts are found in sound condition. The waterway needs to be

cleaned on both sides of the culverts. The structure number is painted on the parapet wall or crash barrier in most of the culverts. The waterway is clear in most of the culverts and needs to be cleared for a few culverts, particularly in urban areas.

Pipe culverts are visually inspected. The pipe culverts are either newly constructed or reconstructed. Some of the pipe culverts are retained and widened. The widening is either concentric or eccentric. In most of the culverts, the ends are blocked by debris, garbage or vegetation especially in urban areas or buried under the ground. These require regular cleaning of the waterway to avoid damage to the pavement.

The following photographs were taken during the inspection of culverts.

Figure 3-5 Photographs of Culverts

Box culvert at km. 266+530 (RHS)

Pipe culvert at km. 273+090 (RHS)

Box culvert at km. 264+350

Pipe culvert at km. 272+510 (RHS)

Pipe culvert at km. 263+340

3.4.2 Minor Bridges

Table 3-2 Details of New Minor Bridges

Sr. No.	Existing Chainage (km)	Design Chainage (km)	Type of Structure	Proposed Span Arrangement (m)	Remarks	Total Width (m)	FPPM Comments
1	-	246.490	RCC Box type	1 x 10.0	-	16.0 + 3.0 + 16.0	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
2	246.850	250.881	RCC Box type	2 x 9	-	16.0 + 3.0 + 16.0	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
3	250.099	253.998	RCC Girder Type	1 x 15.0	-	16.0 + 3.0 + 16.0	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
4	-	256.749	RCC Girder Type	1 x 14.0	-	16.0 + 3.0 + 16.0	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
5	-	257.568	RCC Box type	3 x 10.0	New Bridges on Service / Slip road also to be constructed	14.5 + 3.0 + 14.5	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
6	221.813	225.858		4 x 5.30	New Bridges on Service / Slip road also to be constructed	14.5 + 3.0 + 14.5	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
7	224.317	228.359		1 x 22.0	New Bridges on Service / Slip road also to be constructed	14.5 + 3.0 + 14.5	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
8	224.830	228.877		2 x 9.40 (Sk.)	New Bridges on Service / Slip road also to be constructed	14.5 + 3.0 + 14.5	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
9	226.719	230.762		2 x 10.0	-	16.0 + 3.0 + 16.0	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
10	228.881	232.939		1 x 16.0	New Bridges on Service / Slip road also to be constructed	14.5 + 3.0 + 14.5	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
11	234.776	238.823		1 x 6.30	New Bridges on Service / Slip road also to be constructed	14.5 + 3.0 + 14.5	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
12	265.066	268.727		1 x 7.5	-	16.0 + 3.0 + 16.0	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.

The following photographs were taken during the inspection of Minor Bridges.

Figure 3-6 Photographs of Minor Bridge

MNB at km. 238+823

MNB at km. 246+490

MNB at km. 250+881

MNB at km. 253+998

MNB at km. 256+749

MNB at km. 257+568

3.4.3 Major Bridge (length > 60 m)

There are 04 Nos. of Major Bridges on Project Road. All the Major Bridges are visually inspected. The structures are generally sufficient for the crossing of river water. The waterway needs regular cleaning. The sub-structures are constructed with RCC piers. Expansion joints on both the bridges need to be cleaned. Minor settlement in approaches and damage on pavement has been observed. New bridges are constructed in 2-lane with footpath. The wearing course and expansion joints are found to be in good condition. W-beam and RCC type crash barriers are in sound condition. Drainage spouts and expansion joints need to be cleaned regularly. Further, vegetation and silt need to be removed from the waterway for smooth flow of water.

Table 3-3 Details of Major Bridges

Sr. No.	Location	Existing Chainage (Km)	Design Chainage (Km)	Type of crossing	Proposed Span Arrangement (m)	Total Width (m)	FPPM Comments
1	Agran River	221.058	225.100	PSC Girder type	4 x 30.0	16.0 + 3.0 + 16.0	The structure is in good condition. RCC crash barriers, W-beam crash barriers, slope protection work, wearing coat is found to be good. Minor settlement on approaches is noticed.
2	-	242.535	246.637	PSC Girder type	3 x 30.0	16.0 + 3.0 + 16.0	The structure is in good condition. RCC railing & Concrete crash barriers are in good condition. Waterway cleaning is required.
3	Bhelwal River	261.462	265.174	PSC Girder type	4 x 30.0	16.0 + 3.0 + 16.0	The structure is in good condition. RCC crash barriers, W-beam crash barriers, slope protection work, wearing coat is found to be good. Minor settlement on approaches is noticed.
4	Vibag River	268.078	271.742	PSC Girder type	4 x 30.0	16.0 + 3.0 + 16.0	The structure is in good condition. RCC railing & Concrete crash barriers are in good condition. Waterway cleaning is required.

The following photographs were taken during the inspection of Major Bridges.

Figure 3-7 Photographs of Major Bridges

Major Bridge at km. 225+100 (New structure)

Slope protection & Return wall of Major Bridge at km. 225+100

Girders of Major Bridge at km. 225+100

Median bottom view of Major Bridge at km. 225+100

Major Bridge at km. 225+100 Bottom view of Major Bridge at km. 246+637

Condition on A2 RHS Bearings at Major Bridge at km. 246+637

Girder condition of Major Bridge at km. 246+637 RHS

Pavement, Footpath condition on Major Bridge at km. 265+170 (RHS)

Median view of MJB at km. 265+170 (RHS)

Median view of Major Bridge at km. 265+170 (LHS)

Railing, Return wall condition on Major Bridge at km. 271+720

Major Bridge at km. 271+720 (LHS & RHS)

Wearing coat of MJB at km. 271+720 (RHS)

3.4.4 Underpasses

Table 3-4 Details of Vehicular Underpasses

Sr. No.	Design Chainage (Km)	Span / Opening (m)	Structure	Construction Scheme	FPPM Comments
1	224.900	1 x 15.0 x 5.5	VUP	New construction	The overall structure condition of all underpasses is found to be good. RCC crash barriers, W-beam crash barriers, slope protection work, wearing coat is found to be good. Minor settlement on approaches is noticed. RE Wall, Lighting arrangement under structures, pavement under structures is in good condition.
2	228.548	1 x 20.0 x 5.5	VUP	New construction	
3	246.400	1 x 20.0 x 5.5	VUP	New construction	
4	274.006	1 x 15.0 x 5.5	VUP	New construction	

The following photographs were taken during the inspection of Underpasses:

Figure 3-8 Photographs of Underpasses

VUP at km. 224+900

Bottom view for VUP at km. 224+900

Side view of VUP at km. 228+548

Girders of VUP at km. 228+548

Girder view of VUP at km. 246+400

Side view of VUP at km. 246+400

VUP at km. 274+006

RE Wall of VUP at km. 274+006

3.4.5 Light Vehicular Underpasses

Table 3-5 Details of Light Vehicular Underpasses

Sr. No.	Design Chainage (Km)	Span / Opening (m)	Structure	Construction scheme	FPPM Comments
1	225.200	1 x 12.0 x 4.0	LVUP	New construction	The overall structure condition of all underpasses is found to be good. RCC crash barriers, W-beam crash barriers, slope protection work, wearing coat is found to be good. At some of the locations RE Wall Pannel bulging noticed and survey and numbering for the same has been done, Lighting arrangement under structures, pavement under structures is in good condition.
2	225.500	1 x 12.0 x 4.5	LVUP	New construction	
3	228.000	1 x 12.0 x 4.5	LVUP	New construction	
4	230.010	1 x 12.0 x 4.0	LVUP	New construction	
5	232.976	1 x 12.0 x 4.5	LVUP	New construction	
6	237.420	1 x 12.0 x 4.5	LVUP	New construction	
7	239.086	1 x 12.0 x 4.0	LVUP	New construction	
8	242.900	1 x 12.0 x 4.5	LVUP	New construction	
9	255.100	1 x 12.0 x 4.0	LVUP	New construction	
10	258.105	1 x 12.0 x 4.5	LVUP	New construction	
11	262.100	1 x 12.0 x 4.5	LVUP	New construction	
12	264.445	1 x 12.0 x 4.5	LVUP	New construction	
13	265.242	1 x 12.0 x 4.0	LVUP	New construction	
14	267.500	1 x 12.0 x 4.5	LVUP	New construction	
15	269.965	1 x 12.0 x 4.5	LVUP	New construction	
16	270.900	1 x 12.0 x 4.0	LVUP	New construction	

The following photographs were taken during the inspection of the Pedestrian Underpass.

Figure 3-9 Photographs of Light Vehicular Underpasses

LVUP at km. 270+900

LVUP at km. 269+965 A1 RHS RE Wall

LVUP at km. 267+500

Side view of LVUP at km. 264+445

LVUP at km. 262+100

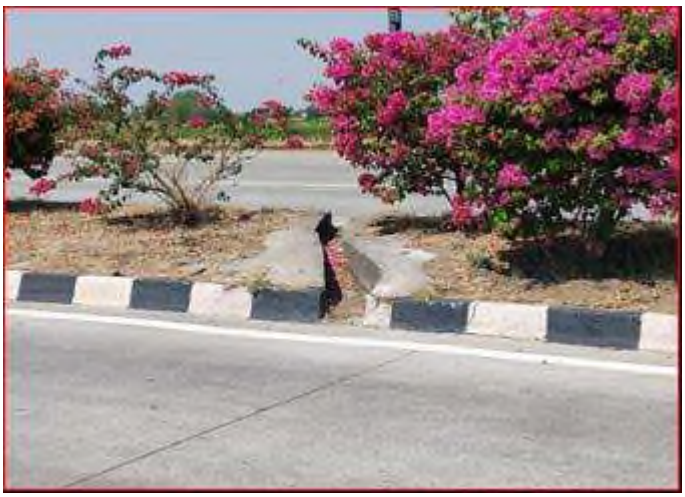
LVUP at km. 258+105

3.5 Drainage

Drains are to be constructed at the Project Road to have good drainage. Covered Lined drains are provided at sides of the service. Median cut drains are provided at superelevation locations. The drainage condition of Project Road is in order. Silt deposits need to be removed during routine maintenance. Earther drains are also provided in rural areas. The condition of the same is good to fair.

Figure 3-10 Photographs of Drainage

RCC Covered Drain at Service Road km. 273+980 (RHS) & 267+400 (RHS)



Median Drain at km.269+010

Chute Drain at km.265+050 (RHS)

3.6 Slope Protection

Slope protection is found on Project Road at some locations. Some of the photographs of slope protection work are presented below.

Figure 3-11 Photographs of Slope Protection

Slope Protection at km.265+050 (RHS)

Slope Protection at km.264+830 (RHS)

Slope Protection at km246+850.

3.7 Road Furniture

3.7.1 Pavement Marking

Pavement marking for the Project Road is done as per the design standard. Pavement marking is faded at some locations which need to be repainted by the Concessionaire. Some of the photographs of road marking are presented below.

Figure 3-12 Photographs of Road Marking

Pavement marking at km. 264+800 RHS

Pavement marking at km. 260+250 RHS

Pavement Marking at km. 258+500

Pavement Marking at km.253+200 RHS

3.7.2 Traffic Signage

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards.

Figure 3-13 Photographs of Traffic Signage

Informatory Sign Board at km.265+050 (RHS)

Pedestrian crossing Ahead Sign Board at km. 264+640 (RHS)

3.7.3 Highway Lighting

Highway Lighting is provided in urban and semi-urban areas of the Project Road. Lighting is provided at the locations of truck lay-bye, rest areas, toll plazas, underpasses, service road stretches and at intersections / interchanges. IS:1944 (Part I and II) is followed for lighting installations. High mast lighting systems are provided at toll plaza.

Figure 3-14 Photographs of Highway Lighting

Highway Lighting at km.264+350

High Mast at Toll Plaza

Highway Lighting at km.257+600

Highway Lighting at km. 255+400 RHS

3.7.4 Road Studs / Cat's Eye

The Concessionaire has provided cat's eye / studs as per Schedule-D on the curves, road junctions, zebra crossings, in municipal area and village settlement and ramps etc. to provide the proper visibility to the road users.

Figure 3-15 Photographs of Road studs / Cat Eyes

Road Studs on Junction at km.270+950 (LHS)

Road Studs on MCW at km.256+710 LHS

3.7.5 Avenue Plantation and Median Plantation

Avenue plantations and median plantations are done along the project length as per IRC specification except at built-up locations. Median plantation too needs proper regular maintenance. Avenue plantation work is in progress at required location as per CA.

Figure 3-16 Photographs of Avenue and Median Plantation

Avenue Plantation at km.266+000 (RHS)

Median Plantation at km.272+500

3.7.6 Traffic Signage / Median kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Median kerb paint is faded at few locations which will be rectified by the Concessionaire.

Some of the photographs of sign boards are presented below.

Figure 3-17 Photographs of Road Signages

Solar blinker at Median opening at km.260+100

Junction ahead sign board at km. 256+710 (LHS)

Kilometre stone at km. 269+000 (LHS)

VMS at km. 269+000 (Median)

Overhead gantry at km. 254+400 LHS

Road Boundary Stone (RBS) on Project Road km.273+090 RHS

3.7.7 Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and at sharp curves. All the crash barriers provided by the Concessionaire are maintained at site.

Some of the photographs of metal beam crash barriers are presented below.

Figure 3-18 Photographs of MBCB / Crash Barrier

MBCB on Project Road at km.265+050 (RHS)

RCC Crash Barrier at km. 237+300 RHS structure locations

3.7.8 Delineators

The traffic delineators are provided by the Concessionaire on the Project Road for road users. The same are maintained by the Concessionaire.

Some of the photographs of delineators are presented below.

Figure 3-19 Photographs of Delineator

Delineators along the Project Road

3.8 Toll Plaza

As per the Concession Agreement, there is one toll plaza on the Project Road at km.274+800. Details of the Toll Plaza are as follows.

Table 3-6 Details of Summary for Toll Plaza Items

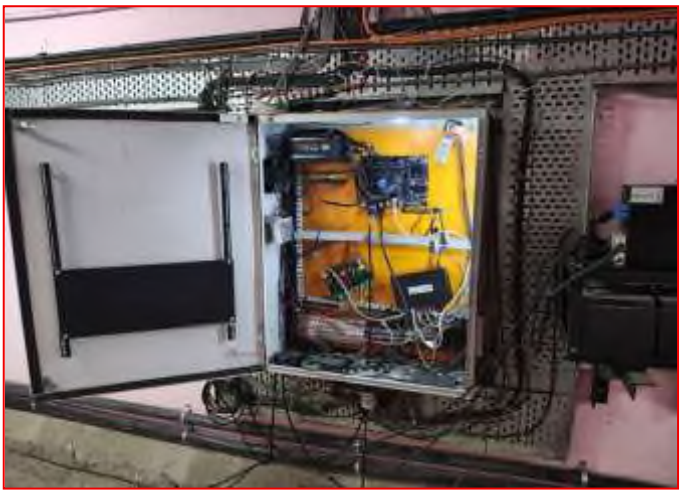
Sr. No.	Particulars	Details		Remarks
		LHS	RHS	
1	Number of Tolling Lanes	8	8	
2	Weigh in Motion Facility (Number of Lanes)	8	8	
3	No. of ETC lanes	8	8	
4	No of Toll booths	15		
5	Canopy	Present		
6	Administrative building	Present		
7	Parking cum Toilet box	Present		
8	Availability of Tunnel or Elevated walkaway for movement between Toll lanes and administrative building	Tunnel / Yes		
9	Availability of static weigh bridge	No		Descoped
10	Availability of Loading/Unloading Facility for Overloading vehicles	No		
11	Storage facility for Overloaded material	No		
12	High mast light	Yes		
13	Streetlight	Yes		
14	Low mast light	No		
15	User fee boards	Yes		
16	Cantilever/Gantry boards	Yes		
17	Automatic boom barrier	Yes		

Figure 3-20 Photographs of Toll Plaza

View of Toll Plaza - km. 274+800

Admin Building

View of Toilet Block at Toll Plaza



Lane Controller at Toll Plaza

Server room at Toll Plaza

View of Tunnel at Toll Plaza

HTMS Display Monitor at Toll Plaza

Control Room at Toll Plaza

Traffic and Medical Aid Post at Toll Plaza

Lab & O&M center at Toll Plaza

Cube Office and Ambulance on Project Road at km.257+050

3.9 Bus Bays and Passenger Shelters

There are 38 Nos. of bus bays / passenger shelters along the Project Road. Some of the photographs of the bus bays are presented below.

Figure 3-21 Photographs of Bus Bays / Passenger Shelter

Bus shelter at km. 267+740 (RHS)

Bus shelter at km. 257+900 (RHS)

3.10 Truck Lay Bye

There are 02 Nos. of Truck Lay Bye along the Project Road. Some of the photographs of the Truck Lay Bye are presented below.

Figure 3-22 Photographs of Truck lay bye

Truck Lay Bye and Toilet Block at km. 273+025

3.11 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) installed for the Project Road is controlled by the ATMS centre at toll plaza location (km. 274+800). The ATMS is provided and being maintained as per the requirement of the Concession Agreement. The ATMS provided are listed below.

- Automatic Traffic Counter cum Classifier (ATCC)
- Emergency Call Box
- Variable message Signs System (Fixed/Portable)
- Mobile communication System
- Mobile Radio Communication System
- Integrated ATMS Software and System Architecture

- ATMS Control Center integrated with above sub-components
- Weigh-in-motion (Portable)
- Vehicle actuated speed detection camera.

Status of these systems at site are described below:

3.11.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is installed at Toll Plaza (km. 278+800).

Figure 3-23 Photographs of ATCC

At Toll Plaza

3.11.2 Emergency Call Boxes (ECB)

ECB is installed on the Project Road. Some of the photographs of the ECB are presented below.

Figure 3-24 Photographs of ECB

ECB at km. 272+400 (RHS)

ECB at km. 263+300

3.11.3 CCTV Surveillance Cameras

Surveillance cameras are installed as per CA requirement along the Project Road. The HTMS control room has video wall to monitor these locations through the cameras installed.

Figure 3-25 Photographs of CCTV Surveillance Camera

On Project Road at km.263+550

At Toll Plaza location

3.12 Video Incident Detection System

CCTV cameras are installed as part of Video incident detection system.

3.13 Balance Work Status

Concessionaire has received Completion Certificate for the length of 51.802 kms with effective from 01st March 2023. Hence, there is no balance work on Project Road.

3.14 Operation and Maintenances

3.14.1 O&M Contract

As per Clause 17.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall conform to all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement.

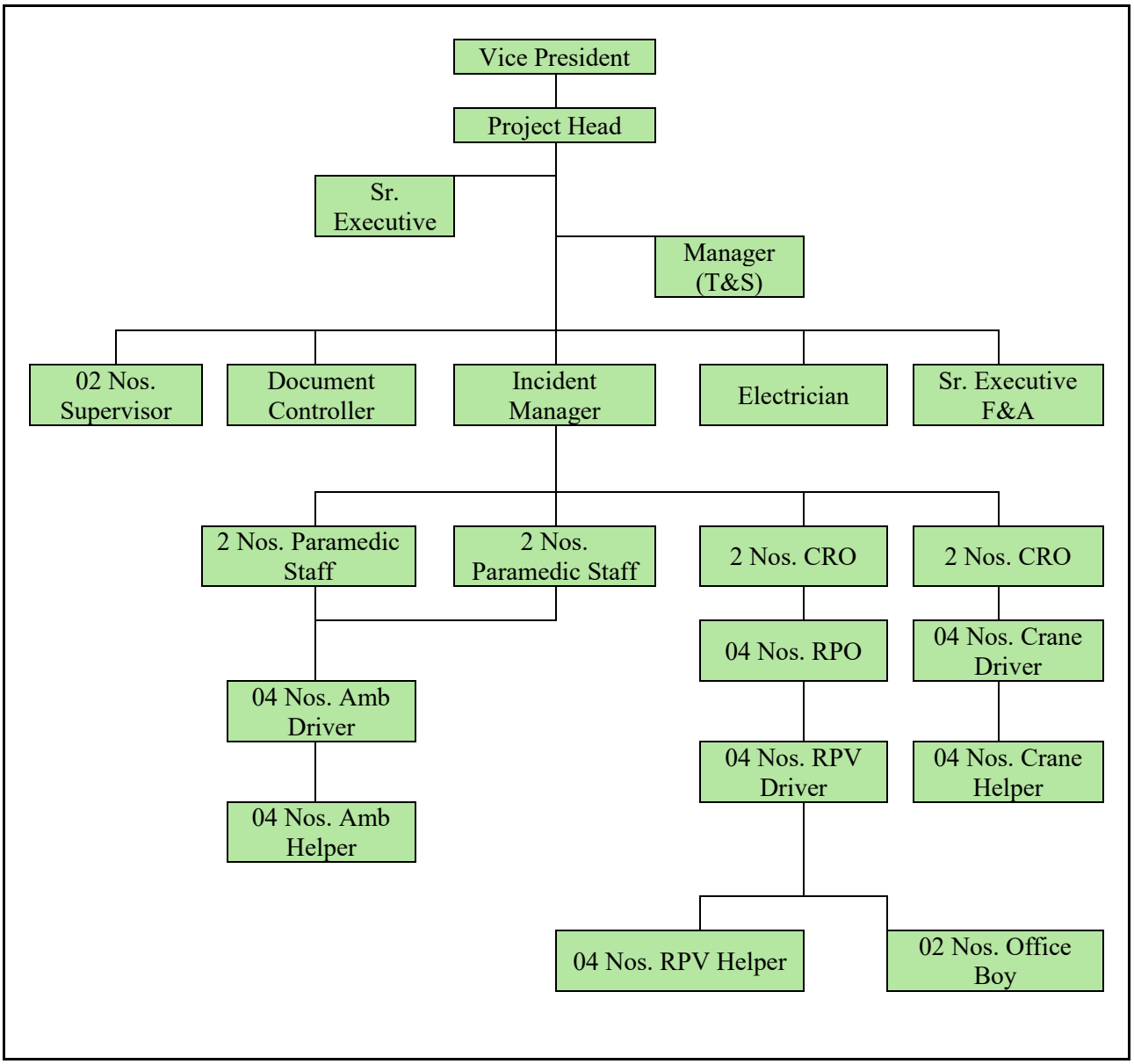
The Concessionaire has outsourced for carrying out activities related to operation and maintenance of the Project Road including security services, Incident management services.

3.14.2 Organization Chart

The Concessionaire has given the Organization Chart at site for Operation and maintenance. Accordingly, there is 01 Project Head, 01 Senior Executive- Maintenance, 02 Supervisor, 01 Electrician, 01 Incident Manager, 01 Document Controller to carry out

O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent subcontractors.

Organization Charts



3.14.3 Operation

Operation cost is comprised of manpower cost, Security cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.14.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Concessionaire as per Scope of Work. The Concessionaire has received the Completion Certificate on 01st March 2023 for the length of 51.802 out of 52.000 kms.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 17 years from the Appointed Date 22nd April 2019 including construction period of 2 years.

4.2 Surveys and Investigation

4.2.1 Pavement Condition Survey

Pavement condition survey was carried out by the Technical Consultant from **9th March 2026 to 10th March 2026** through visual inspection for the project road and for the entire project length.

The summary of pavement condition based on the visual inspection is tabulated below.

Table 4-1 Summary of Pavement Condition

Sr. No.	Chainage (km)		Length (km)	Visual Condition (As per IRC:115-2014)	
	From	To		Left Carriageway	Right Carriageway
1	224+000	276+000	52.000	Good	Good

Observation and Conclusion:

From the above table, it is observed that the overall pavement condition for the entire project stretch is found to be Good. The repair and rectification works are in progress wherever required on the Project Road.

4.2.2 Network Survey Vehicles (NSV) Survey

The Concessionaire has conducted pavement condition survey on each lane of each carriageway with NSV. The NSV survey was conducted on the project corridor on 16th December 2025.

4.2.3 Roughness Survey

Roughness Survey results were provided by the Concessionaire for analysis and to assess the riding quality on each direction (each lane) of the carriageway of Project Road.

The side-wise results of Roughness Survey are presented as below.

Table 4-2 Result of Roughness Survey as per CA

Table 1-3 Roughness summary for Rigid pavement as per Schedule

*Roughness Summary as per Schedule: NH-166: BWHPL: (1km Data)										
S.no	Condition	BI (mm/km)	LHS				RHS			
			Inner Lane		Outer Lane		Inner Lane		Outer Lane	
			Length (km)	Length (%)	Length (km)	Length (%)	Length (km)	Length (%)	Length (km)	Length (%)
1	Limiting value	<=2750	50.200	100.00	52.000	100.00	48.400	96.70	51.500	100.00
2		>2750	0.000	0.00	0.000	0.00	1.650	3.30	0.000	0.00
Total Surveyed length (km)			50.200	100.00	52.000	100.00	50.050	100.00	51.500	100.00

Sr. No.	Condition	BI (mm/Km)	LHS (Km)	LHS (Km)
1	Good & Fair	<=2750	51.100	50.000
2	Poor	>2750	0.000	1.000
		Total Length (Km)	**51.100**	**51.000**

Summary of Roughness on LHS

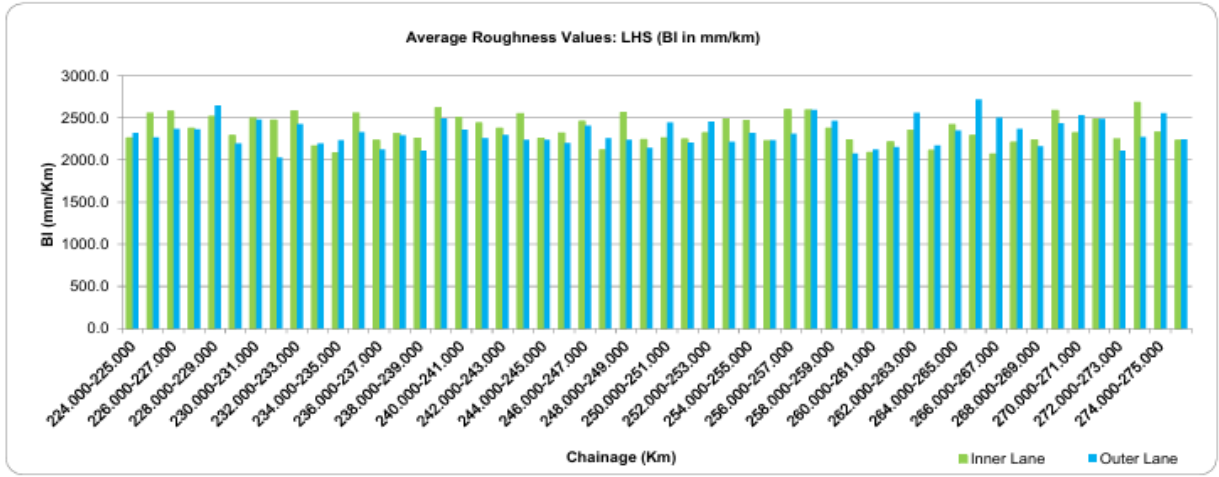


Figure 1-1 Illustrative summary of Roughness on LHS direction

Summary of Roughness on RHS

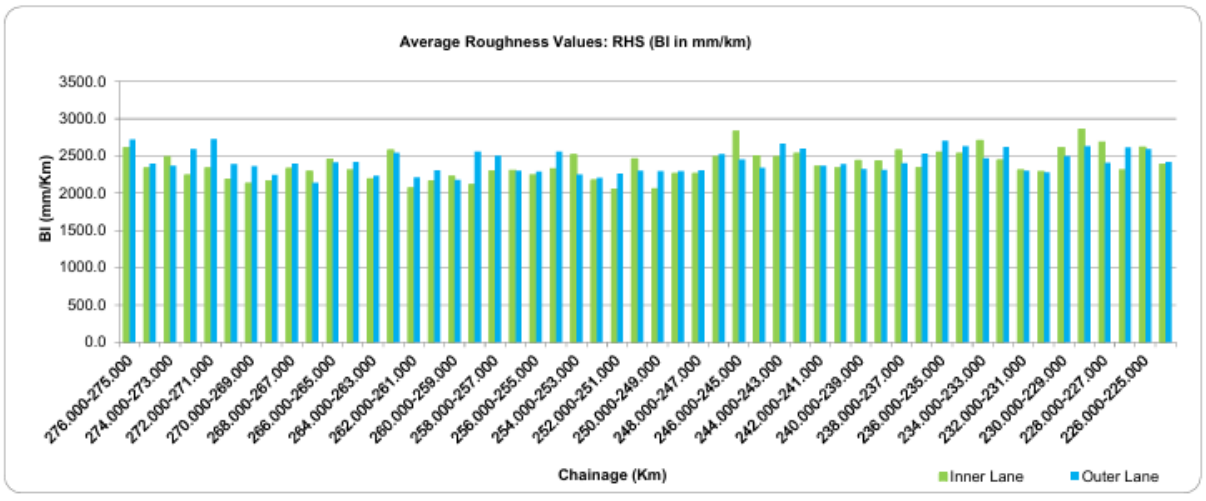


Figure 1-2 Illustrative summary of Roughness on RHS direction

Observation and Conclusion:

As per CA, the roughness value for the project pavement is 2750 mm/km, so that the overall pavement condition for the entire project stretch is found to be Good to Fair condition, except 1 km section of project Road where the Concessionaire has already started repair and rectification work of PQC panels. The cost of panel replacement is considered in routine maintenance cost.

4.2.4 Periodic Maintenance Strategy

As per Schedule-K of Concession Agreement, the riding quality of the pavement shall be ensured by satisfying the minimum requirements given herein under:

- Surface roughness of the Project Road on completion of construction shall not exceed 2750 mm/km as measured by a standard rough meter / bump integrator.

The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-3 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2023 to FY 2028	-	-
2	FY 2029	Major maintenance with Retexturing and Grinding with 40% + Replacement of PQC Panel 2%	Major maintenance with Retexturing and Grinding with 25% + Replacement of PQC Panel 1%
3	FY 2030 to FY 2035	-	-
4	FY 2036	Major maintenance with Retexturing and Grinding with 60% + Replacement of PQC Panel 2%	Major maintenance with Retexturing and Grinding with 25% + Replacement of PQC Panel 1%
5	FY 2037	-	-

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Work Cost (CAPEX)
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

Unit rates of different items (Concrete, PQC, DLC etc.) are calculated as per Govt. of Maharashtra P.W.D. SSR 2022-23. The input rates for SSR were adopted as below.

a. Manpower and Labour: As per applicable minimum wages published by State Schedule of Rates, Government of Maharashtra.

b. Sand and Aggregate: Market rates are considered from the quarry located nearest to the Project Road.

c. Cement: Rate of Cement is taken from MH SSR 2022-23.

d. Steel : Rate of steel is taken from MH SSR 2022-23.

e. Machinery Hire charges: Hire charges for the machinery are considered in accordance with applicable MH SSR 2022-23.

f. Rates of items as per Work Order: The rates of Milling, Road marking, road Stud etc. are considered as per the Work Order issued to Contractor at Site shared by the client.

g. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines**.**

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-1 Summary of Unit Rates

Sr. No.	Description	Unit	Rates (Rs.)
1	Pavement Quality Concrete	Cum	7,381
2	Dry Lean Concrete	Cum	4,381
3	Retexturing and grinding	Sqm	120

Sr. No.	Description	Unit	Rates (Rs.)
4	Joint sealant	Sqm	86
5	Road Marking	Sqm	485
6	Road Studs	Nos.	193

5.3 Balance Work Cost (CAPEX)

As discussed in the previous chapter, there is no balance work on the Project Road.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have been made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Toll Security Services
3. Incident Management Services
4. Electricity
5. HTMS Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Community Development
10. Communication Expenses
11. Conveyance Expenses
12. Insurance Expense
13. IE Fees
14. Horticulture & ROW Maintenance
15. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation Cost is presented as below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-2 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027-36)
1	Salary and Welfare Expenses	48,99,000
2	Security Expenses	15,84,579
3	Incident Management & Emergency Services	2,01,90,775
4	Electricity Charges	2,09,04,021
5	TMS/HTMS/System Expenses	1,07,14,132
6	Office Operating Expenses	32,89,000
7	Vehicle Running Expenses	25,53,000
8	Professional Fees Expense	1,49,50,000
9	Community Development	14,95,000
10	Communication Expenses	3,64,780
11	Conveyance Expenses	3,88,700
12	Insurance Expense	1,13,62,000
13	IE Fees	1,25,84,000
14	Routine Maintenance Cost (Project Highway)	2,04,88,601
15	Horticulture & ROW Maintenance	1,69,35,360
16	Miscellaneous including Contingency	42,11,159
	Total Cost (Rs)	**14,69,14,107**
	Total Cost (Cr)	14.69
	Per km Cost (Lakh)	**28.25**

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2022 to FY 2028	-	
2	FY 2029	25.84	
3	FY 2030 to FY 2035	-	
4	FY 2036	30.33	
5	FY 2037	-	
Total Cost (Cr.)		**56.17**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement cost of major TMS / ATMS system is considered. The same is provided as below:

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2029	4.27	
2	FY 2036	4.27	
Total Cost (Cr.)		**8.55**	

5.7 Escalation Assumption

The following escalation is considered basis discussions with Client and our internal estimates.

Table 5-3 Escalation

Year	Escalation	Year	Escalation
2028	4.86%	**2041**	3.99%
2029	4.44%	**2042**	3.99%
2030	4.24%	**2043**	3.99%
2031	4.13%	**2044**	3.99%
2032	4.08%	**2045**	3.99%
2033	4.01%	**2046**	3.99%
2034	4.00%	**2047**	3.99%
2035	4.03%	**2048**	3.99%
2036	4.01%	**2049**	3.99%
2037	3.98%	**2050**	3.99%
2038	3.98%	**2051**	3.99%
2039	4.00%	**2052**	3.99%
2040	3.99%	**2053**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summarised yearly for remaining concession period along with escalation as mentioned in Clause 5.7.

Escalated O&M Cost (in INR Cr.)

	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37
1	Routine O&M Cost											
1.01	Salary and Welfare Expense	0.49	0.51	0.54	0.56	0.58	0.61	0.63	0.66	0.68	0.71	0.74
1.02	Security Expenses	0.16	0.17	0.17	0.18	0.19	0.20	0.20	0.21	0.22	0.23	0.24
1.03	Incident Management Services	2.02	2.12	2.22	2.31	2.41	2.51	2.61	2.71	2.82	2.93	3.05
1.04	Electricity and Diesel Charges	2.09	2.19	2.29	2.39	2.49	2.59	2.70	2.81	2.92	3.04	3.16
1.05	TMS/HTMS/System Expenses	0.49	0.64	-	0.21	0.22	0.23	0.39	0.66	0.85	-	0.28
1.06	Office Operating Expenses	0.33	0.35	0.36	0.38	0.39	0.41	0.42	0.44	0.46	0.48	0.50
1.07	Vehicle Running Expenses	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.37	0.39
1.08	Professional Fees Expense	1.50	1.57	1.64	1.71	1.78	1.86	1.93	2.01	2.09	2.17	2.26
1.09	Community Development	0.15	0.16	0.16	0.17	0.18	0.19	0.19	0.20	0.21	0.22	0.23
1.10	Communication Expenses	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06
1.11	Conveyance Expenses	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06
1.12	Insurance Expense	1.14	1.19	1.25	1.30	1.35	1.41	1.47	1.53	1.59	1.65	1.72
1.13	IE Fees	1.26	1.32	1.38	1.44	1.50	1.56	1.63	1.69	1.76	1.83	1.90
1.14	Routine Maintenance Cost	2.05	2.15	2.25	2.35	2.44	2.54	2.65	2.75	2.86	2.98	3.10
1.15	Horticulture & ROW Maintenance	1.69	1.78	1.86	1.94	2.02	2.10	2.19	2.27	2.37	2.46	2.56
1.16	Miscellaneous and Contingency	0.40	0.42	0.42	0.44	0.46	0.48	0.50	0.53	0.56	0.55	0.58
1	Subtotal of O&M Cost	14.09	14.91	14.90	15.77	16.42	17.09	17.95	18.92	19.86	19.73	20.80
2	Major Maintenance Cost	-	-	28.25	-	-	-	-	-	-	43.53	-
3	Periodic Cost of TMS/HTMS Replacement	-	-	4.69	-	-	-	-	-	-	6.21	-
4	Balance Works Cost (CAPEX)											
5	Balance Repair / Rectification Works	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**14.09**	**14.91**	**47.85**	**15.77**	**16.42**	**17.09**	**17.95**	**18.92**	**19.86**	**69.46**	**20.80**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Routine Maintenance Cost (with GST)	**2,04,88,601**
(Inclusive of GST)	**= 3.94 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways - Rigid Pavement									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m/2m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Rigid Pavement**		**Project Length (km)**		**Per Year Project Maintenance Cost**	
				Normal	**Urban**				
				More than 4500 CVD	More than 4500 CVD				
				1,62,470	**1,97,081**				
						Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	248579.00	301534.00	-	-	-	-
		Paved shoulder	1.70	276199.00	335038.00	38.38	-	1,06,01,346.22	-
2	Six lane with divided carriageway and service lane on either side	without Paved shoulder	2.90	471163.00	571536.00	-	-	-	-
		with Paved shoulder	3.10	503657.00	610952.00	-	13.62	-	83,19,333.38
3	Panel Replacement Cost								15,67,921.70
TOTAL						**52.000**			**2,04,88,601.30**

Ordinary Repair

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **CC Surface**
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	0.00%
	Volume (cum)			0.00
	Rs/m^3			15635
	Cost in Rupees			0
	ii) Patch repair	100 % Patch less	As & when required	0.00%
	Area (sqm)			10
	Rs/m^2			625
	Cost in Rupees			6,254
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			107
	Cost in Rupees			26,845
	b) Width less than 3 mm	75 % Crack Less	As & when required	1.50%
	Area (sqm)			112.5
	Rs/m^2			81
	Cost in Rupees			9,160
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	0.00%
	Area (sqm)			10
	Rs/m^2			625
	Cost in Rupees			6,254
	v) Road marking	10%		13545

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **CC Surface**
1	**2**	**3**	**4**	**5**
	vi) Joint Sealant Repair/Replacement	7%		21609
	SUB TOTAL			**83,667**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Jungle Clearance	100%	Twice in a Year	2069
	iii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**9,483**
3	**Maintenance of Cross Drainage works:**			
	i) Cleaning of culvert bed	100%	Once in a Year	2793
	ii) Repair of floors	100%	Once in a Year	5055
	iii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			**9,954**
4	**Maintenance of Minor & Major Bridges:**			
	i) Cleaning and removal of dirt & vegetation from pier caps, Bearings, Expansion Joints, Superstructure, Substructure and Retaining wall etc.	100%	As & when required	36,950
	ii) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints			
	iii) Repair of minor washouts, erosion scour and animal holes			
	iv) Sealing Cracks with Cement/ Epoxy Mortar			
	v) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Turfing and Arboriculture		Once in a Year	4926
	ii) Maintenance of gang hut store, sheds, animal & debris		Once in a Year	3695

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				CC Surface
1	**2**	**3**	**4**	**5**
	removal			
	iii) Lettering, Painting of Km stones & kerbs, sign boards, hectometer stone etc.		Once in a Year	3695
	iv) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 5 Years	7390
	v) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232
	vi) Traffic Census		Once in a Year	0
	vii) Provision for roughness measurement		Twice in a Year	1478
	SUB TOTAL			**22,416**
	GRAND TOTAL (Normal)			**1,62,470**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	10%		4805
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**34,611**
	GRAND TOTAL (Urban)			**1,97,081**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity (Cum)**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
A	**Main Carriageway:**									
1	Retexturing and Grinding	Sqm	40%	51,057	20.23		4,13,236	4,13,236	120	4,95,88,351
2	Replacement of PQC Slab	Cum	2%	51,057	20.23	0.30	6,199	6,199	10,492	6,50,35,123
3	Joint sealant (Silicone)	RMT	40%	65,593	4.50	3.50	2,09,898	2,09,898	86	1,81,03,684
4	Retexturing and Grinding For Misc. Location	Sqm	7%	4,13,236			28,927	28,927	120	34,71,185
5	Replacement of PQC Slab For Misc. Location	Cum	7%	6,199			434	434	10,492	45,52,459
6	Joint sealant (Silicone) For Misc. Location	RMT	7%	2,09,898			14,693	14,693	86	12,67,258
7	Filling of Earthen shoulder	Cum	20%	1,53,532.00		0.05	1,535	1,535	601	9,22,727
B	**Service Road**									
8	Retexturing and Grinding	Sqm	25%	25,870	7.50		48,507	48,507	120	58,20,840
9	Replacement of PQC Slab	Sqm	1%	25,870	7.50	0.25	485	485	10,492	50,89,354
10	Joint sealant (Silicone)	Cum	25%	12,319	4.50	3.50	24,638	24,638	86	21,25,069
C	**Structure- Deck Slab**									
11	Milling	Sqm	100%	943	27.00		25,462	25,462	93	23,71,818
12	Tack Coat	Sqm	100%	943	27.00		25,462	25,462	17	4,32,860
13	Bituminous Concrete	Cum	100%	943	27.00	0.05	1,273	1,273	13,316	1,69,52,833
14	Painting of Crash Barrier	Rmt	2.00	943	1.00	1.20	2,263	2,263	111	2,51,229
D	**Miscellaneous**									
15	Kerb Replacement	Rmt	0%	1,27,984			-	-	311	-
16	Painting of Kerbs	Sqm	1	1,27,984		0.32	40,315	40,315	111	44,74,971
17	Painting of Crash Barrier	Sqm	2	25,348		1.12	56,526	56,526	111	62,74,366
18	Thermoplastic paint									
	a) Median & Edge line	Sqm	100%				42,447	42,447	485	2,05,99,345
	Main Carriageway 4L		4	38,383	0.15		23,030			
	Main Carriageway 6L		4	12,674	0.15		7,604			
	Service Road		2	12,935	0.10		2,587			
	b) Lane line									
	Main Carriageway 4L		2	13,434	0.10		2,687			
	Main Carriageway 6L		4	4,436	0.10		1,774			

Major Maintenance (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity (Cum)**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Service Road		2	4,527	0.10		905			
	c) Junction crossing						3,859			
19	Replacement of Road Stud	No	50%				6,396	6,396	193	12,35,707
	Main Carriageway 4L		4	2,133			8,532			
	Main Carriageway 6L		4	705			2,820			
	Service Road		2	720			1,440			
20	Miscellaneous	5%								1,04,28,459
									Total Major Maintenance Cost (Rs.)	**21,89,97,636**
									Total Major Maintenance Cost with 18% GST (Rs.)	**25,84,17,210**
									Total Major Maintenance Cost with GST (Cr.)	**25.84**
									Per km Cost (lakh)	**49.70**
									Escalation Factor for Major Maintenance (FY 2029)	**1.10**
									Total Escalated Cost for Major Maintenance (FY 2029) (Cr.)	**28.25**

Major Maintenance (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity (Cum)**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
A	**Main Carriageway:**									
1	Retexturing and Grinding	Sqm	60%	51,057	20.23		6,19,854	6,19,854	120	7,43,82,527
2	Replacement of PQC Slab	Cum	2%	51,057	20.23	0.30	6,199	6,199	10,492	6,50,35,123
3	Joint sealant (Silicone)	RMT	60%	65,593	4.50	3.50	3,14,847	3,14,847	86	2,71,55,526
4	Retexturing and Grinding For Misc. Location	Sqm	7%	6,19,854			43,390	43,390	120	52,06,777
5	Replacement of PQC Slab For Misc. Location	Cum	7%	6,199			434	434	10,492	45,52,459
6	Joint sealant (Silicone) For Misc. Location	RMT	7%	3,14,847			22,039	22,039	86	19,00,887
7	Filling of Earthen shoulder	Cum	20%	1,53,532.00		0.05	1,535	1,535	601	9,22,727
B	**Service Road**									
8	Retexturing and Grinding	Sqm	25%	25,870	7.50		48,507	48,507	120	58,20,840
9	Replacement of PQC Slab	Sqm	1%	25,870	7.50	0.25	485	485	10,492	50,89,354
10	Joint sealant (Silicone)	Cum	25%	12,319	4.50	3.50	24,638	24,638	86	21,25,069
C	**Structure- Deck Slab**									
11	Milling	Sqm	100%	943	27.00		25,462	25,462	93	23,71,818

Major Maintenance (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity (Cum)**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
12	Tack Coat	Sqm	100%	943	27.00		25,462	25,462	17	4,32,860
13	Bituminous Concrete	Cum	100%	943	27.00	0.05	1,273	1,273	13,316	1,69,52,833
14	Painting of Crash Barrier	Rmt	2.00	943	1.00	1.20	2,263	2,263	111	2,51,229
D	**Miscellaneous**									
15	Kerb Replacement	Rmt	0%	1,27,984			-	-	311	-
16	Painting of Kerbs	Sqm	1	1,27,984		0.32	40,315	40,315	111	44,74,971
17	Painting of Crash Barrier	Sqm	2	25,348		1.12	56,526	56,526	111	62,74,366
18	Thermoplastic paint									
	a) Median & Edge line	Sqm	100%				42,447	42,447	485	2,05,99,345
	Main Carriageway 4L		4	38,383	0.15		23,030			
	Main Carriageway 6L		4	12,674	0.15		7,604			
	Service Road		2	12,935	0.10		2,587			
	b) Lane line									
	Main Carriageway 4L		2	13,434	0.10		2,687			
	Main Carriageway 6L		4	4,436	0.10		1,774			
	Service Road		2	4,527	0.10		905			
	c) Junction crossing						3,859			
19	Replacement of Road Stud	No	50%				6,396	6,396	193	12,35,707
	Main Carriageway 4L		4	2,133			8,532			
	Main Carriageway 6L		4	705			2,820			
	Service Road		2	720			1,440			
20	Miscellaneous	5%								1,22,39,221
Total Major Maintenance Cost (Rs.)										**25,70,23,636**
Total Major Maintenance Cost with 18% GST (Rs.)										**30,32,87,891**
Total Major Maintenance Cost with GST (Cr.)										**30.33**
Per km Cost (lakh)										**58.32**
Escalation Factor for Major Maintenance (FY 2036)										**1.45**
Total Escalated Cost for Major Maintenance (FY 2036) (Cr.)										**43.53**

FP Project Management

Technical Due Diligence of Delhi - Agra Section of NH-2 from km. 20+500 to km. 200+000 in the State of Haryana and Uttar Pradesh on DBFOT (Toll) Mode

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	DKR / RMW	AKA	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Terrain 5
2.4 Abutting Land Use 5
2.5 Right of Way 5
2.6 Existing Utilities 6
2.7 Service Road 6
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 10
3.3 Major / Minor Junctions 11
3.4 Condition Survey of Bridges and Major Structures 12
3.4.1 Flyovers 13
3.4.2 Two-Lane Overpass 15
3.4.3 Vehicular Underpass 15
3.4.4 Cattle / Pedestrian Underpasses 18
3.4.5 Major Bridges 19
3.4.6 Minor Bridges 19
3.4.7 Palwal Elevated Highway (Viaduct) 21
3.4.8 Condition Survey of Culverts 21
3.5 Drainage 23
3.6 Slope Protection 23
3.7 Road Furniture 24
3.8 Avenue Plantation and Median Plantation 28

3.9 Toll Plaza 28
3.10 Lane Equipment 31
3.10.1 RFID ETC Transceiver 31
3.10.2 Lane Controller with Industrial PC 32
3.10.3 Automatic Vehicle Classification (AVC) Sensors 32
3.10.4 Automatic Lane Barrier 32
3.10.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 33
3.10.6 Incident Capture Camera (AVC Camera) 33
3.10.7 License Plate Image Capture Camera (LPIC) 33
3.10.8 Over Head Lane Signal (OHLS) 34
3.10.9 Toll Booth Equipment 34
3.10.10 Medium Speed Weigh in Motion (MSWIM) 35
3.11 Plaza Equipment 36
3.11.1 TMS Server 36
3.11.2 55” LED screen for CCTV monitoring 36
3.11.3 Workstations in Control Room, POS room 36
3.12 Truck Lay-Bye 37
3.13 Bus Bays 37
3.14 Traffic Aid Post and Medical Aid Post 38
3.15 Toilet Block 38
3.16 Balance Work Status 39
3.17 Operation and Maintenance 39
3.17.1 O&M Contract 39
3.17.2 Organization Chart 39
3.17.3 Operation 41
3.17.4 Routine Maintenance 42
4 Pavement Investigation and Assessment 43
4.1 General 43
4.2 Surveys and Investigation 43
4.2.1 Pavement Condition Survey 43
4.3 Axle Load and VDF 43
4.4 Design Traffic 44
4.5 Network Survey Vehicles (NSV) Survey 46
4.5.1 Roughness Survey 46
4.6 Falling Weight Deflectometer (FWD) Survey 47
4.7 Test pit and Subgrade Investigation 49
4.7.1 Existing Granular layers Testing 51

4.7.2 Existing Pavement Composition and Analysis 54
4.8 Periodic Maintenance Strategy 56
5 Cost Estimates 58
5.1 General 58
5.2 Rate Assumption 58
5.3 Balance Work Cost 60
5.4 Routine O&M Cost 60
5.5 Major Maintenance Cost 61
5.6 Periodic Replacement of TMS / ATMS System 62
5.7 Escalation Assumption 62
5.8 Summary of Cost 62
Annexures 64
Annexure I - Routine Maintenance Cost 65
Annexure II - Major Maintenance Cost 69

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Details of Summary for Structures 12
Table 3-2 Details of Condition of Flyovers 13
Table 3-3 Details of Two Lane Overpass 15
Table 3-4 Details of Vehicular Underpass 15
Table 3-5 Details of Cattle/Pedestrian Underpass 18
Table 3-6 Details of Major Bridge 19
Table 3-7 Details of Minor Bridges on MCW 19
Table 3-8 Details of Minor Bridges on Service Road 20
Table 3-9 Details of Elevated Highway (Viaduct) 21
Table 3-10 Details of Summary for Toll Plaza Items at km. 46+000 28
Table 4-1 Summary of Pavement Condition 43
Table 4-2 Vehicle Damage Factor 44
Table 4-3 MSA Calculation 44
Table 4-4 Result of Roughness Survey for Pavement 46
Table 4-5 Summary of Subgrade Test Results 49
Table 4-6 Summary of Granular Layers Tests Results 51
Table 4-7 Summary Pavement Crust Details along the project corridor 54
Table 4-8 Major Maintenance Cycle 56
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST. 58
Table 5-2 Summary of Unit Rates 59
Table 5-3 Summary of O&M Cost 61
Table 5-4 Escalation 62

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start of Project Road 5
Figure 2-3 End of Project Road 5
Figure 3-1 Photographs of Pavement Condition (Main Carriageway) 7
Figure 3-2 Photographs of Service Road 10
Figure 3-3 Photographs of Major Junctions 11
Figure 3-4 Photographs of Minor Junctions 12
Figure 3-5 Photographs of Flyovers 14
Figure 3-6 Photographs of Two-Lane Overpass 15
Figure 3-7 Photographs of Vehicular Underpasses 16
Figure 3-8 Photographs of Pedestrian Underpass 18
Figure 3-9 Photographs of Major bridges 19
Figure 3-10 Photographs of Minor Bridges 20
Figure 3-11 Photographs of Palwal Elevated Highway (Viaduct) 21
Figure 3-12 Photographs of Culverts 22
Figure 3-13 Photographs of Drainage 23
Figure 3-14 Photographs of Slope Protection 24
Figure 3-15 Photographs of Highway Lighting 24
Figure 3-16 Photographs of Pavement Marking 25
Figure 3-17 Photographs of Traffic Signages 26
Figure 3-18 Photographs of MBCB / Crash Barrier 27
Figure 3-19 Photographs of Pedestrian Guard Rail 27
Figure 3-20 Photographs of Avenue Plantation and Median Plantation 28
Figure 3-21 Photographs of Toll Plaza at km. 46+000 29
Figure 3-22 Photographs of Toll Plaza at km. 94+000 30
Figure 3-23 Photographs of Toll Plaza at km. 164+000 31
Figure 3-24 Photographs of Truck lay-Bye 37
Figure 3-25 Photographs of Bus Bays 38

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of The Government of India had entrusted to the Authority the development, maintenance and management of National Highway No. 2 including the section from (km. 20+500 to km. 200+000) on DBFOT (Toll) basis under NHDP Phase V in the State of Haryana and Uttar Pradesh.

DA Toll Road Private Limited (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for development, maintenance, and management of the section from Delhi to Agra of NH-2 from km. 20+500 to km. 200+000 (Length - 179.500 kms) in the state of Haryana / Uttar Pradesh under NHDP Phase-V as BOT (Toll) on DBFO Pattern.

The Date of Concession Agreement is 16th July 2010. The concession period of the project is 26 years commencing from the Appointed Date including implementation period. Appointed Date of the project is 16th October 2012. Provisional Completion Certificate was issued for the length of 179.500 km on 20th May 2022 and the Commercial Operation commenced from 20th May 2022.

Sr. No.	Description	Date
1	Date of Signing the Concession Agreement	16th July 2010
2	Appointed Date	16th October 2012
3	Scheduled Project completion	15th April 2015
4	Scheduled End of Concession	15th October 2038
5	Date of issue of Provisional Completion Certificate	20th May 2022
6	Date of Commencement of Commercial Operation	20th May 2022
7	Date of Issue of Completion Certificate	Not yet Achieved

Presently the project is under operation and maintenance, and the Technical Consultant has undertaken the work of assessment of operation and maintenance(O&M) cost based on site inspections and field investigations. The same is accordingly presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of project road is presented as below:

- A reconnaissance of the project road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on project road like FWD, NSV, Axle load, material investigations etc.
- Formulation of future major maintenance strategy

- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period
- Review of balance work cost for project road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design, and drawings.
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted.
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority.
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyzing the same as per the best engineering / industry practices.

The site visit and inspection was carried out between the period from **9th March 2026 to 13th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features, and overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the project road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on project road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates:** The chapter summarizes the forecast for O&M and major maintenance cost over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **DA Toll Road Private Limited**, a company promoted by Cube Highways or company a Special Purpose Vehicle (SPV) formed for implementing this project on 16th July 2010. The Appointed Date for the project road is 16th October 2012.

2.2 Location

The site of the Six-Lane divided Project Road comprises the section of NH-2 commencing from km. 20+500 at Delhi to km. 200+000 (Approx Length is 179.500 kms) at Agra in the State of Haryana / Uttar Pradesh.

The Location Map of the project road is presented below:

Figure 2-1 Location Map

The photographs taken during the site visit are presented below.

Figure 2-2 Start of Project Road

Start of Project at km. 20+500

Start of Project at km. 20+500

Figure 2-3 End of Project Road

End of Project at km. 200+000

End of Project at km. 200+000

2.3 Terrain

The Project Road traverses through plain / rolling terrain.

2.4 Abutting Land Use

The Project Road passes through residential and agricultural zones.

2.5 Right of Way

The width of the existing Right of Way (ROW) for the Project Road is 60 m to 100 m except Toll Plaza area.

2.6 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC cables, etc.

2.7 Service Road

The total length of service road on both sides is 204.164 kms.

2.8 Development as per Schedule-B

The Project Road from Delhi to Agra Section (from km. 20+500 to km. 200+000) of NH-2 has been developed as a Six-lane divided carriageway, service road and other arrangements. The Project Road passes through rural (agricultural) as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.
b) Tolling, operation, management, maintenance, and transfer of the Project Highway subject to and in accordance with the provisions of this Agreement.
c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Concessionaire under this Agreement.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Total Number of Structures As per Concession Agreement	Remarks
1	O&M of Main Carriageway	179.500 km	
2	Rail Over Bridge (ROB)	08 Nos.	08 Nos. (Descope)
3	Flyover	17 Nos.	
4	Two Lane Over Pass	02 Nos.	
5	Viaduct	01 Nos.	
6	Vehicle Underpass	15 Nos.	
7	Cattle / Pedestrian Underpasses	11 Nos.	
8	Major Bridge	01 Nos.	
9	Minor Bridge	14 Nos.	
10	Culverts	203 Nos.	

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The project is Six lane-carriageway of width of 17.50 m as per standard cross section including paved shoulder. Service road of 7.0 m / 5.5 m width has been provided on one side or both sides wherever required in built up area to cater for the local traffic.

The Project Road is constructed majorly with flexible pavement and partially rigid pavement. The service road is constructed with flexible pavement. The pavement type for the Toll Plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

The pavement condition survey was carried out during the period from **9th March 2026 to 13th March 2026** through visual inspection for the entire project length. From the visual inspection, it is found that the overall pavement condition of the Project Road is found to be Good to Fair, with certain stretches observed to be in Poor condition.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (Main Carriageway)

Poor condition of BC at km. 34+200 (LHS)

Cracks & Sattlement at km. 84+350 (LHS)

Cracks & Rutting at km. 91+900 (LHS)

Cracks & Rutting at km. 115+910 (LHS)

Craks at km. 122+230 (LHS)

Rutting & Reveling at km. 141+600 (LHS)

Pothole at km. 172+950 (LHS)

Good Road condition at km. 182+720 (LHS)

Cracks & Settlement at km. 195+280 (RHS)

Pothole & Settlement at km. 154+300 (RHS)

Pothole & Settlement at km. 153+060 (RHS)

Cracks & Bitumen Bleeding at Km 120+48 (RHS)

Poor condition of PQC at Km 118+440 (RHS)

Poor condition of PQC at Km 116+840 (RHS)

Pothole at Km 96+160 (RHS)

Crack on PQC at Km 81+400 (RHS)

3.2 Service Road / Slip Road

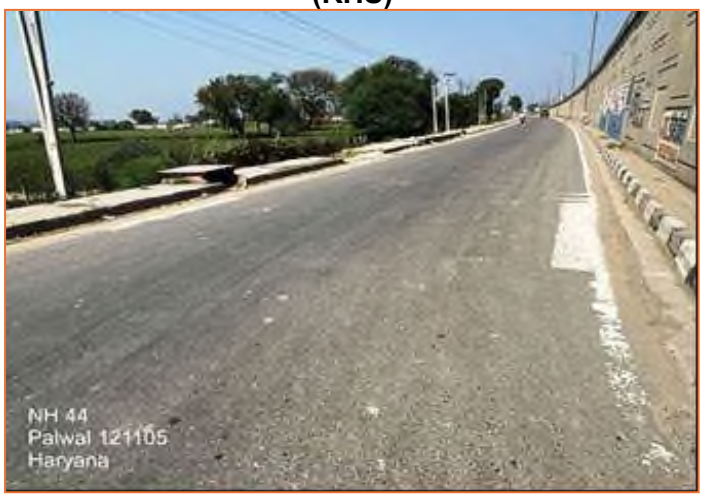
The total length of servicer road is 204.164 km (LHS+RHS) with width of 7.0 / 5.5 m is constructed in built-up area and adjoining underpass locations. The photographs taken during the site visit are presented below.

Figure 3-2 Photographs of Service Road

Condition of Service / Slip road at km. 24+000 (RHS)

Condition of Service / Slip road at km. 77+060 (RHS)

Service / Slip Road at km. 138+680 (RHS)



Service / Slip Road at km. 71+750 (LHS)

Service / Slip Road at km. 87+800 (LHS)

Service / Slip Road at km. 112+100

Service / Slip Road at km. 142+200 (LHS)

Service / Slip Road at km. 157+450 (LHS)

3.3 Major / Minor Junctions

There are 30 nos. of major junctions and 242 nos. of minor junction along Project Road. The photographs taken during the site visit are presented below.

Figure 3-3 Photographs of Major Junctions

Bata Chowk Major Junction at km. 31+100

Amarpur Major Junction at km. 58+070

Hodal Major Junction at km. 88+825

Major Junction at km. 101+300

Figure 3-4 Photographs of Minor Junctions

Minor Junction at km. 68+660

Minor Junction at km. 83+270

Minor Junction at km. 89+480

Minor Junction at km. 112+100

3.4 Condition Survey of Bridges and Major Structures

The inventory of structures including major bridges, minor bridges, ROB's, underpasses and culverts is presented in table as below:

Table 3-1 Details of Summary for Structures

Sr. No.	Type of Structure	Total Number of Structures as per CA
1	Rail Over Bridge (ROB)	08 Nos.
2	Flyover	17 Nos.
3	Two Lane Over Pass	02 Nos.
4	Viaduct	01 Nos.
5	Vehicle Underpass	15 Nos.
6	Cattle / Pedestrian Underpasses	11 Nos.
7	Major Bridge	01 Nos.
8	Minor Bridge	14 Nos.
9	Culverts	203 Nos.

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

3.4.1 Flyovers

Table 3-2 Details of Condition of Flyovers

Sr. No.	Location	Chainage (km)	Proposed structural configuration	Proposed Structure arrangement	Proposed span arrangement (m)	Total width of the structure (m)	Consultant Remarks
1	NHPC Chowk	21+750	6 - Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSC T-Girder with RCC desk Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required.
2	Badhkal lake	25+650	6-lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSC T- Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
3	Old Faridabad Chowk	26+950	6 - Lane Flyover (VC S.5m)	PSC Box Girder for Central span and Precast PSC T- Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
4	Ajronda Chowk	29+500	6 - Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSC T- Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
5	Bata Chowk	31+100	6- Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSC T- Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
6	Ballabgarh	35+050	6- Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSCT Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
7	Amarpur - Palwal Intersection	58+070	6 - Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSCT-Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
8	Sohna Chowk	60+165	6 - Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSC T- Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
9	Hodal Chowk	88+825	6 - Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSC T- Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
10	Kosi City	101+300	6 - Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSC T- Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
11	Goverdhan Chowk	142+575	6 - Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSC T- Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
12	Gokul Chowk	152+000	6 - Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSC T- Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
13	Mathura Refinery	157+775	6 - Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSCT- Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
14	Khandari Chowk (Central Hindi Institute)	195+680	6 - Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSC T Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
15	Sultan Ganj Pulia	198+415	6 - Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSC T Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	25.2	The structure was observed to be in good condition. Cleaning of drain is required
16	Water Works Chowk	199+800	4- Lane Flyover (VC 5.5m)	PSC Box Girder for Central span and Precast PSC T Girder with RCC deck Slab for end Spans with Circular Pier and Pile/Open Foundation	26+46+26	18.2	The structure was observed to be in good condition. Cleaning of drain is required

Figure 3-5 Photographs of Flyovers

Flyover at km. 21+750

Flyover at km. 26+950

Flyover at km. 29+950

Flyover at km. 31+100

Flyover at km. 35+050

Flyover at km. 88+825

Flyover at km. 101+500

Flyover at km. 142+780

Flyover at km. 152+100

Flyover at km. 157+775

Flyover at km. 198+620

Flyover at km. 199+800

3.4.2 Two-Lane Overpass

Table 3-3 Details of Two Lane Overpass

Sr. No.	Location	Chainage (km)	Proposed structural configuration	Proposed Structure type	Proposed span arrangement (m)	Total width of the structure (m)	Consultant Remarks
1	Tarapur Jn.	64+200	6 – Lane Overpass	PSCT-Girder and RCC deck slab with Circular Pier and Pile Foundation	2 x 30	-	The structure was observed to be in good condition
2	Maathura Cantt - Bharatpur	141+500	2 – Lane Overpass	Precast PSCT-Girder and RCC deck slab with Circular Pier and Pile Foundation	2 x 30	-	The structure was observed to be in good condition
3	Gwalior Bypass	176+800	2 – Lane Overpass	Precast PSCT-Girder and RCC deck slab with Circular Pier and Pile Foundation	2 x 30	-	The structure was observed to be in good condition

Figure 3-6 Photographs of Two-Lane Overpass

Overpass at km. 64+200

Overpass at km. 141+500

Overpass at km. 176+800

3.4.3 Vehicular Underpass

Table 3-4 Details of Vehicular Underpass

Sr. No.	Design Chainage (km)	Proposed structural configuration	Proposed Structure type	Proposed span arrangement (m)	Total width of the structure (m)	Consultant's Remarks
1	23+660	6 lane Structure (VC 5.5 m)	RCC T Girder and Deck Slab with circular pier and open foundation	20x1	25.2	The structure was observed to be in good condition
2	32+150					The structure was observed to be in good condition
3	38+200					The structure was observed to be in good condition
4	40+960					The structure was observed to be in good condition
5	54+435					The structure was observed to be in good condition
6	63+170					The structure was observed to be in good condition
7	68+660					The structure was observed to be in good condition
8	71+750					The structure was observed to be in good condition
9	77+300					The structure was observed to be in good condition
10	83+270					The structure was observed to be in good condition
11	112+100					The structure was observed to be in good condition
12	112+700					The structure was observed to be in good condition
13	118+800					The structure was observed to be in good condition
14	122+750					The structure was observed to be in good condition
15	126+250					The structure was observed to be in good condition
16	128+068					The structure was observed to be in good condition

Sr. No.	Design Chainage (km)	Proposed structural configuration	Proposed Structure type	Proposed span arrangement (m)	Total width of the structure (m)	Consultant's Remarks
17	134+555					The structure was observed to be in good condition
18	139+335					The structure was observed to be in good condition
19	145+100					The structure was observed to be in good condition
20	167+600					The structure was observed to be in good condition
21	175+730					The structure was observed to be in good condition
22	183+527					The structure was observed to be in good condition
23	189+900					The structure was observed to be in good condition

Figure 3-7 Photographs of Vehicular Underpasses

VUP at km. 23+660

VUP at km. 32+150

VUP at km. 38+200

VUP at km. 40+960

VUP at km. 54+435

VUP at km. 63+170

VUP at km. 68+660

VUP at km. 71+750

VUP at km. 77+300

VUP at km. 83+270

VUP at km. 112+100

VUP at km. 112+700

VUP at km. 118+800

VUP at km. 122+750

VUP at km. 126+250

VUP at km. 128+068

VUP at km. 134+555

VUP at km. 139+335

VUP at km. 145+100

VUP at km. 167+600

3.4.4 Cattle / Pedestrian Underpasses

Table 3-5 Details of Cattle/Pedestrian Underpass

Sr. No.	Chainage (km)	Location	Proposed Structure configuration	Proposed Structure type	Proposed span arrangement (m) (Clear Width X Clear Height)	Total width of the structure (m)	Remarks
1	63+170	Tikribrahman	6 – Lane Structure (VC 2.5m)	Single Cell Box Structure	4 x 2.5	25.2	The structure was observed to be in good condition
2	87+875	School area, Hodal	6 – Lane Structure (VC 2.5m)	Single Cell Box Structure	4 x 2.5	25.2	The structure was observed to be in good condition
3	90+625	Haryana Roadways Bus Stand, Hodal	6 – Lane Structure (VC 2.5m)	Single Cell Box Structure	4 x 2.5	25.2	The structure was observed to be in good condition
4	107+630	School area Dautana village	6 – Lane Structure (VC 2.5m)	Single Cell Box Structure	4 x 2.5	25.2	The structure was observed to be in good condition
5	116+500	Nanglagiri	6 – Lane Structure (VC 2.5m)	Single Cell Box Structure	4 x 2.5	25.2	The structure was observed to be in good condition
6	122+750	Akrror Inter College	6 – Lane Structure (VC 2.5m)	Single Cell Box Structure	4 x 2.5	25.2	The structure was observed to be in good condition
7	137+370	K D Dental College and Hospital	6 – Lane Structure (VC 2.5m)	Single Cell Box Structure	4 x 2.5	25.2	The structure was observed to be in good condition
8	154+500	Baad village	6 – Lane Structure (VC 2.5m)	Single Cell Box Structure	4 x 2.5	25.2	The structure was observed to be in good condition
9	170+460	Bheem Nagar	6 – Lane Structure (VC 2.5m)	Single Cell Box Structure	4 x 2.5	25.2	The structure was observed to be in good condition
10	172+990	Churmura-Siyarpur village area	6 – Lane Structure (VC 2.5m)	Single Cell Box Structure	4 x 2.5	25.2	The structure was observed to be in good condition

Figure 3-8 Photographs of Pedestrian Underpass

PUP at km. 60+460

PUP at km. 68+470

PUP at km. 87+875

PUP at km. 09+625

PUP at km. 107+630

PUP at km. 115+500

PUP at km. 137+370

PUP at km. 170+460

3.4.5 Major Bridges

Table 3-6 Details of Major Bridge

Sr. No.	Design Chainage (km)	Proposed Structure type	Proposed span arrangement (m)	Total width of the structure	Consultant's Remarks
1	91+900	Pile Foundation, RCC Abutments with Front Counter forts, RCC circular pier with RCC cap & RCC beam and Slab	1 x 34 + 1 x 32	7.90 m	Cleaning of vents is required. Repair of the expansion joint is required. Bearing coat on both sides also needs to be repaired.

Figure 3-9 Photographs of Major bridges

Major Bridge at km. 91+900 (LHS)

Major Bridge at km. 91+900 (RHS)

Major Bridge at km. 91+900 Top View on LHS

3.4.6 Minor Bridges

Table 3-7 Details of Minor Bridges on MCW

Sr. No.	Chainage (km)	Width	Span arrangement & Total length (m)	Type of structure		
				Foundation	Sub-structure	Super-Structure
1	21+860	LHS=8.750 m. RHS=8.750 m.	1 x 20.30	Open	Brick masonry wall type abutment with RCC cap	RCC T-Beam & slab
2	26+065	LHS=7.600m. RHS=9.900m.	4 x 2.1	Open	Brick masonry wall type abutment	RCC T-beam & slab
3	34+530	LHS=8.900 m. RHS=8.300m.	1 x 4.6 + 3 x 5.0 +1 x 4.6	Open	Brick masonry wall type abutment and Pire	RCC slab
4	54+100	LHS=9.450 m. RHS=9.550 m.	1 x 7	Open	Brick masonry wall type	RCC slab
5	84+365	LHS=6.650 m. RHS=6.750 m.	1 x 17.1 + 1 x 16.6 + 1 x 14.75	Open	Brick Masonry type abutment and RCC Wall type pier	RCC T-beam & slab
6	92+960	LHS=10.200 m. RHS=8.600 m.	1 x 8.1 + 1 x 8.3	Open	Brick masonry wall type on RHS (old). RCC all type on LHS (new)	RCC slab
7	104+085	LHS=7.700 m. RHS=7.700 m.	1 x 10.2 + 1 x 16.5 + 1 x 10.2	Open	Brick wall masonry wall type abutment and RCC pier, circular in cross-section	RCC T-beam & slab
8	104+480	LHS=7.800 m. RHS=7.700 m.	1 x 17.2	Open	Brick Masonry wall type abutment	RCC T-beam & slab
9	124+490	LHS=8.850 m. RHS=9.700 m.	Left c/way bridge (2 span brick masonry arch bridge) 2x3.15m, Right c/way bridge (RCC box bridge) 1x6.3m (clear span)	Open	For Left side Brick masonry wall type abutment and Left side RCC Box structure	For Left side Brick masonry arch For Right side Single cell RCC box
10	141+600	LHS=9.700 m. RHS=9.700 m.	1 x 7.6	Open	Brick Masonry wall type abutment (old bridge), RCC Wall type abutment (new bridge)	RCC Slab type
11	154+965	LHS=10.700m RHS=11.900m	1 x 13.2	Open	Brick Wall masonry (LHS) RCC wall type (RHS)	RCC T-beam & slab
12	171+091	LHS=8.000m. RHS=8.500 m.	Left c/way bridge 1 x 46.7m, Right c/way bridge 1 x 3.5 m + 1 x 40.5m + 1 x 3.5m	Not Visible	RCC wall type abutment	For Left Side PSC box girder For Right Side Concrete girder
13	179+110	LHS=10.400 m. RHS=10.00 m.	1 x 7.0 - LHS, 1 x 7.0 - RHS	Open	Stone masonry wall type abutment supporting arch on LHS.	Brick Arch on LHS and RCC slab on RHS

Sr. No.	Chainage (km)	Width	Span arrangement & Total length (m)	Type of structure		
				Foundation	Sub-structure	Super-Structure
					RCC wall type on RHS	
14	198+552	LHS=11.200 m RHS=11.100 m	1 x 7.1	Open	RCC Box type abutment	RCC box

Table 3-8 Details of Minor Bridges on Service Road

Sr. No.	Name of Bridge	Chainage (km)	Type of crossing	Proposed Structure configuration	Proposed Structure type	Proposed span arrangement (m)	Total width of the structure (m)
1	Near NHPC	21+860	Nala	New 2 Lane (Both Side)	RCC T-beam & Slab	1 x 20.30	9.5
2	Near Swastik Steel Industry	26+065	Nala	New 2 Lane (Both Side)	RCC T-beam & Slab	4 x 2.1	9.5
3		34+530	Nala	New 2 Lane (Both Side)	RCC Slab	1 x 4.6 + 3 x 5.0 + 1 x 4.6	9.5
4		54+100	Nala	New 2 Lane (Both Side)	RCC Slab	1 x 7.0	9.5
5	Agra Canal Bridge	104+085	Canal	New 2 Lane (Both Side)	RCC T-beam & Slab	1 x 10.2 + 1 x 16.5 + 1 x 10.2	9.5
6	Sarah Rajwale	104+480	Nala	New 2 Lane (Both Side)	RCC T-beam & Slab	1 x 17.2	9.5
7	Ganeshra Nala	141+600	Nala	New 2 Lane (Both Side)	RCC Slab	1 x 7.6	9.5
8		198+552	Nala	New 2 Lane (Both Side)	RCC Box	1 x 7.1	9.5

Figure 3-10 Photographs of Minor Bridges

MNB at km. 21+860

MNB at km. 34+530

MNB at km. 54+600

MNB at km. 84+365

MNB at km. 92+960

MNB at km. 104+085

MNB at km. 104+480

MNB at km. 124+700

MNB at km. 141+600

MNB at km. 154+965

MNB at km. 171+091

MNB at km. 198+552

3.4.7 Palwal Elevated Highway (Viaduct)

Table 3-9 Details of Elevated Highway (Viaduct)

The Structure was initially Proposed at Sikandra Area of Agra but due to some Archaeological issues the Viaduct has been now constructed at Palwal considering the Traffic in the Town.

Sr. No.	Location	Chainage From (km)	Chainage To (km)	Proposed Structure configuration	Proposed span arrangement (m)	Proposed Structure type	Total width of the structure (m)
1	Palwal	57+300	60+800	4 Lane Viaduct (VC 8.0m)	164x30	Precast PSC T-Girder with RCC deck Slab with Circular Pier and Pile Foundation	18.0

Figure 3-11 Photographs of Palwal Elevated Highway (Viaduct)

Palwal Elevated Highway

Palwal Elevated Highway

Palwal Elevated Highway

Palwal Elevated Highway

3.4.8 Condition Survey of Culverts

There are 203 cross-drainage structures which includes slab culverts, hume pipe culverts and box culverts at various locations along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

In most of culverts, the waterway is clear. However, in urban areas and at few rural locations it is found blocked due to debris, drainage water or bushes, tree growth, which need to be removed by the Concessionaire.

Figure 3-12 Photographs of Culverts

Box Culvert at km. 57+320 (Vent Closed)

Box Culvert at km. 64+020 (Vent Closed)

Box Culvert at km. 73+740 (Partial Functional)

Box Culvert at km. 95+520

Box Culvert at km. 107+460

Box Culvert at km. 115+900

Box Culvert at km. 122+230

Box Culvert at km. 133+730

Box Culvert at km. 169+320

Box Culvert at km. 170+260

3.5 Drainage

There are of existing drain on both side of the project road as per Concession Agreement. However, RCC drains are additionally constructed in built-up areas and locations where service roads are provided.

The photographs taken during site visit is presented as below:

Figure 3-13 Photographs of Drainage

Cover Drain at km. 142+200

Cover Drain at km. 155+600

Median Drain at km. 156+000

Median Drain at km. 171+540

3.6 Slope Protection

The entire Project Road passes through the ground level. Hence, slope protection and chute drains are not found on Project Road. Few of the slope protection found at underpass approaches which are in fair condition. The photographs taken during site visit are presented as below:

Figure 3-14 Photographs of Slope Protection

Slope Protection at the Structure Approach

Slope Protection at the Structure Approach

3.7 Road Furniture

The Concessionaire has provided road furniture along the Project Road as per the standards and specifications mentioned in Schedule-C. Details of the items are provided below.

a) Highway Lighting along Project Road

Highway lighting is provided at Major Bridge, Underpasses, Flyovers, Toll Plaza, ROBs and built-up locations. High mast lighting is provided at Toll Plaza and Major Junction location. Highway lighting is also provided at approaches of Underpass and Flyovers. Some of the photographs of highway lighting are presented below.

Figure 3-15 Photographs of Highway Lighting

Highway Lighting at km. 107+540

Highway Lighting at km. 175+680

b) Pavement Marking

Pavement marking for the Project Road is done as per the design standard. Pavement marking is faded at some locations which need to be rectified by the Concessionaire.

Some of the photographs of road marking are presented below.

Figure 3-16 Photographs of Pavement Marking

Pavement Marking on Project Road

Pavement Marking on Project Road

c) Road Studs / Cat's eyes

Road studs / Cat's eyes for the Project Road are provided as per the design standards. Cat's eyes have been fixed at junction and zebra crossings. However, during site visit it has not been visually seen. Maybe it has damaged which will be rectified by the Concessionaire.

Some of the photographs of road studs are presented below.

Road Studs on Project Road

Road Studs on Project Road

d) Traffic Signages

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standard.

The height, lateral clearance, location and installation are as per design standard. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of project highway and urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards and median kerb found to be not in proper condition at few locations which need to be rectified by the Concessionaire.

Some of the photographs of sign boards are presented below.

Figure 3-17 Photographs of Traffic Signages

Overhead sign board

Chevron sign board

Kilometer Stone

5th Kilometer Stone

e) Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site.

Some of the photographs of metal beam crash barriers are presented below.

Figure 3-18 Photographs of MBCB / Crash Barrier

Concrete Crash Barrier

Metal Beam Crash Barrier

f) Pedestrian Guard Rail

The pedestrian guard rails are provided in the median in the built-up sections. It is maintained by the Concessionaire.

Some of the photographs of pedestrian guard rails are presented below.

Figure 3-19 Photographs of Pedestrian Guard Rail

Pedestrian Guard Rails

Pedestrian Guard Rails

3.8 Avenue Plantation and Median Plantation

Avenue plantations and median plantations are done along the project length as per IRC specification except built-up locations. Some of the photographs of plantation are presented below.

Figure 3-20 Photographs of Avenue Plantation and Median Plantation

Median Plantation

Median Plantation

Avenue Plantation

Avenue Plantation

3.9 Toll Plaza

As per the Concession Agreement, on Project Road there are 3 nos. of toll plazas i.e. at km. 46+000, km. 94+000 and at km. 164+000 with the following infrastructure.

Table 3-10 Details of Summary for Toll Plaza Items at km. 46+000

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 46+000
2	Number of Tolling Lanes	24 lanes for toll operation for vehicles
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	One in each direction
5	Number of Toll Booths	24
6	Canopy	Present

Sr. No.	Particulars	Details
7	Administrative Building	Present
8	Parking cum Toilet Block	Present
9	Availability of Static Weigh Bridge	Yes
10	Availability of Loading / Unloading Facility for Overloaded Vehicles	Yes
11	Storage facility for Overloaded Material	No
12	High mast Light	Yes
13	Streetlight	Yes. 20 nos, 10 each in both direction
14	User Fee Boards	
15	Cantilever / Gantry Boards	Yes
16	Automatic boom barrier	Yes

Figure 3-21 Photographs of Toll Plaza at km. 46+000

Admin Building at km. 46+000

Toll Plaza at km. 46+000

Details of Summary for Toll Plaza Items at km. 94+000

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 94+000
2	Number of Tolling Lanes	16 lanes for toll operation for vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	One in each direction
5	Number of Toll Booths	16
6	Canopy	Present
7	Administrative Building	Present
8	Parking cum Toilet Block	Present
9	Availability of Static Weigh Bridge	Yes
10	Availability of Loading / Unloading Facility for Overloaded Vehicles	Yes
11	Storage facility for Overloaded Material	No
12	High mast Light	Yes
13	Streetlight	Yes. 20 no's, 10 each in both direction
14	User Fee Boards	
15	Cantilever / Gantry Boards	Yes
16	Automatic boom barrier	Yes

Figure 3-22 Photographs of Toll Plaza at km. 94+000

Admin Building at km. 94+000

Toll Plaza at km. 94+000

Details of Summary for Toll Plaza Items at km. 164+000

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 164+000,
2	Number of Tolling Lanes	14 lanes for toll operation for vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	One in each direction
5	Number of Toll Booths	13
6	Canopy	Present
7	Administrative Building	Present
8	Parking cum Toilet Block	Present
9	Availability of Static Weigh Bridge	Yes
10	Availability of Loading / Unloading Facility for Overloaded Vehicles	Yes
11	Storage facility for Overloaded Material	No
12	High mast Light	Yes
13	Streetlight	Yes 20 no's, 10 each in both direction
14	User Fee Boards	
15	Cantilever / Gantry Boards	Yes
16	Automatic boom barrier	Yes

Figure 3-23 Photographs of Toll Plaza at km. 164+000

Admin Building at Toll Plaza at km. 164+000

Toll Plaza at km. 164+000

3.10 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.10.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 8 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

RFID ETC Transceiver

3.10.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data.

3.10.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVCC at Toll Plaza

3.10.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at Toll Plaza

3.10.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at Toll Plaza

3.10.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on the island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

AVC Camara at Toll Plaza

3.10.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

LPIC at Toll Plaza

3.10.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane "Open" and "Close" sign consists of a pair of "GREEN" (arrow) and "RED" (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at Toll Plaza

3.10.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and types of ticket.

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras is provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.10.10 Medium Speed Weigh in Motion (MSWIM)

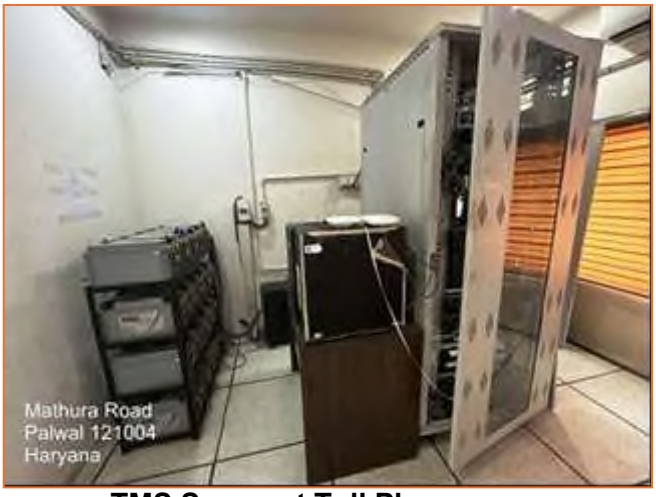
Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

MSWIM at Toll Plaza

3.11 Plaza Equipment

3.11.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio Wi-Fi module. Firewall with Sophos antivirus is provided.



TMS Server at Toll Plaza

3.11.2 55" LED screen for CCTV monitoring

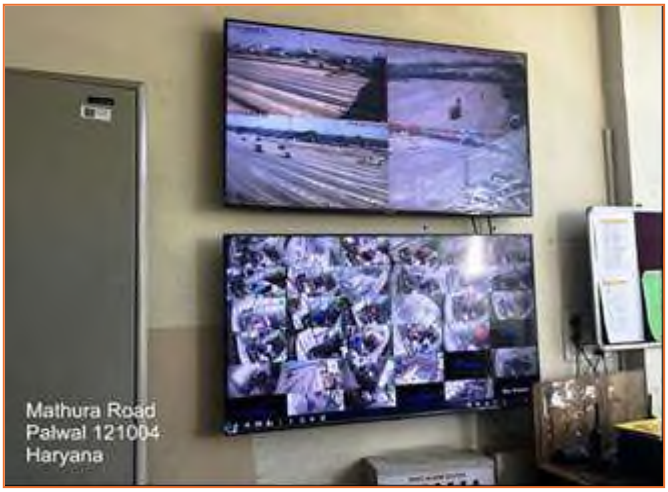
55" LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

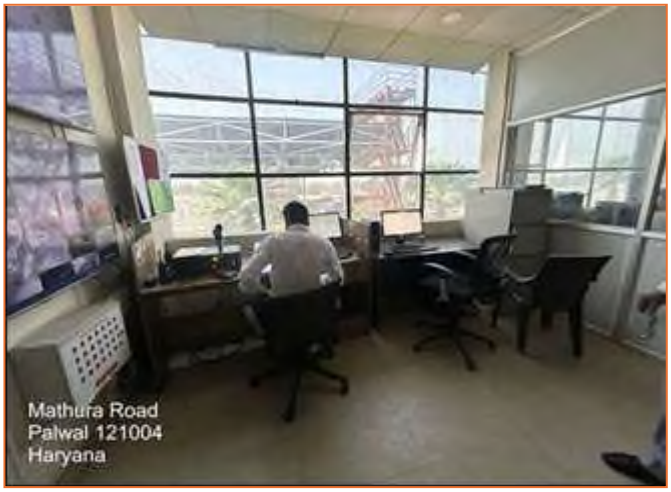
LED Screen at Toll Plaza

The Toll Plaza Manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.11.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.





3.12 Truck Lay-Bye

There are 04 nos. of Truck lay along the Project Road. Some of the photographs of truck lay-bye are presented below.

Figure 3-24 Photographs of Truck lay-Bye

Truck Lay bye at km. 166+000

Truck Lay bye at km. 131+500

3.13 Bus Bays

There are 23 nos. bus bays along the project road. Some photographs taken during the site visit are presented below.

Figure 3-25 Photographs of Bus Bays

Passenger Shelter at km. 25+220

Passenger Shelter at km. 79+200

3.14 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Post have been constructed at the site and the same are maintained by the Concessionaire.

Traffic Aid & Medical Aid post at TP-1

Traffic Aid & Medical Aid post at TP-2

3.15 Toilet Block

There are two nos. of toilet blocks on the Project Road and the same are maintained by the Concessionaire.

Toilet Block at Toll Plaza-1

Toilet Block at Toll Plaza-2

3.16 Balance Work Status

As per review of the IE report for the month of February 2025 shared by the Concessionaire, and as observed during the site visit, about 99.95% of the balance works are completed at the site. About 0.05% of the work is balance, which are pending and perhaps not able to take up due to massive law and order issues and LA / utilities issues in that particular section.

The Cost of Balance Work is presented in the subsequent chapter.

3.17 Operation and Maintenance

3.17.1 O&M Contract

As per Clause 15.1 of the Concession Agreement, the Concessionaire shall operate and maintain the project road by itself, or through O&M Contractors and if required, modify, repair, improve the project road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall meet all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement.

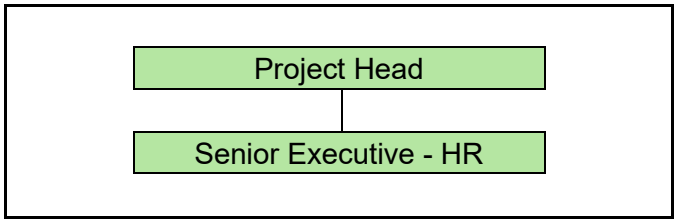
The Concessionaire has outsourced for carrying out activities related to operation and maintenance of the project road including toll operation services, security services, AMC for TMC and AMC for DG set.

3.17.2 Organization Chart

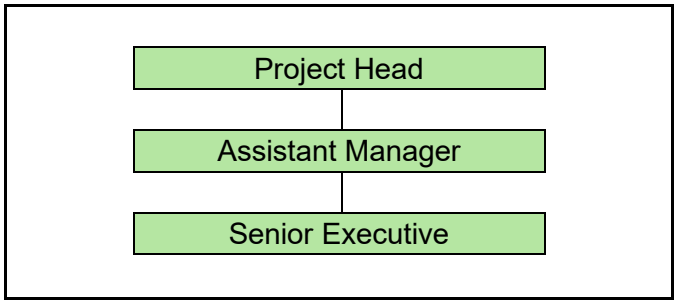
Organization Charts for operation and maintenance of the Project Road is given as follows. Accordingly, there is 01 Project Head, 01 Senior Executive (HR), 01 Assistance Executive (F&A), 01 Executive, 01 Manager Maintenance (Traffic), 01 Senior Executive (Traffic), 01 Assistant Manager (TMS / IT), 06 Executive (TMS / IT), 02 Manager (MM), 02 Electrical Engineer, 04 Electrician, 06 Executive, 10 Supervisor, 03 Plaza Manager, 03 Assistance Plaza Manager, 03 MIS Executive, 01 Document Controller, 09 Cashiers and 12 validators to carry out O&M activities. Maintenance work is undertaken and executed through competent subcontractors and the team controls all the maintenance activities.

Organization Chart

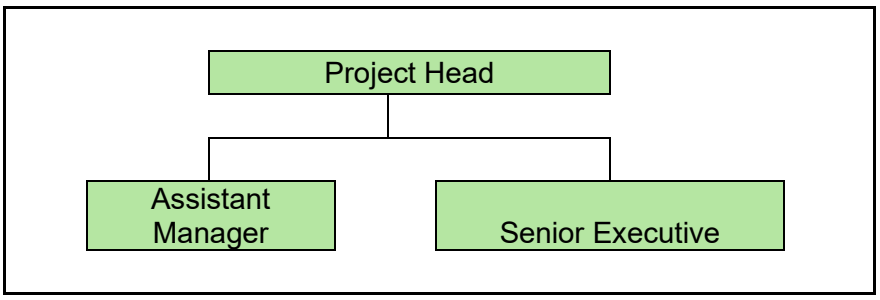
Human Resources - Site



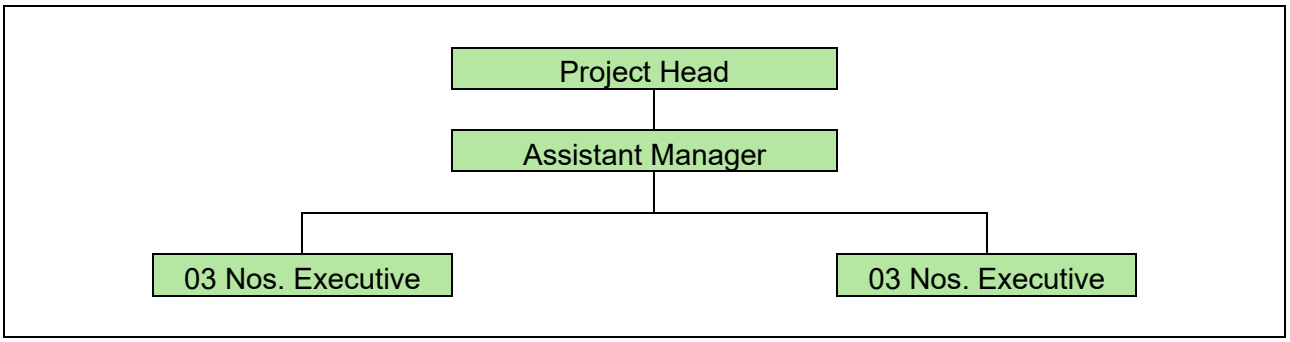
Finance & Accounts - Site



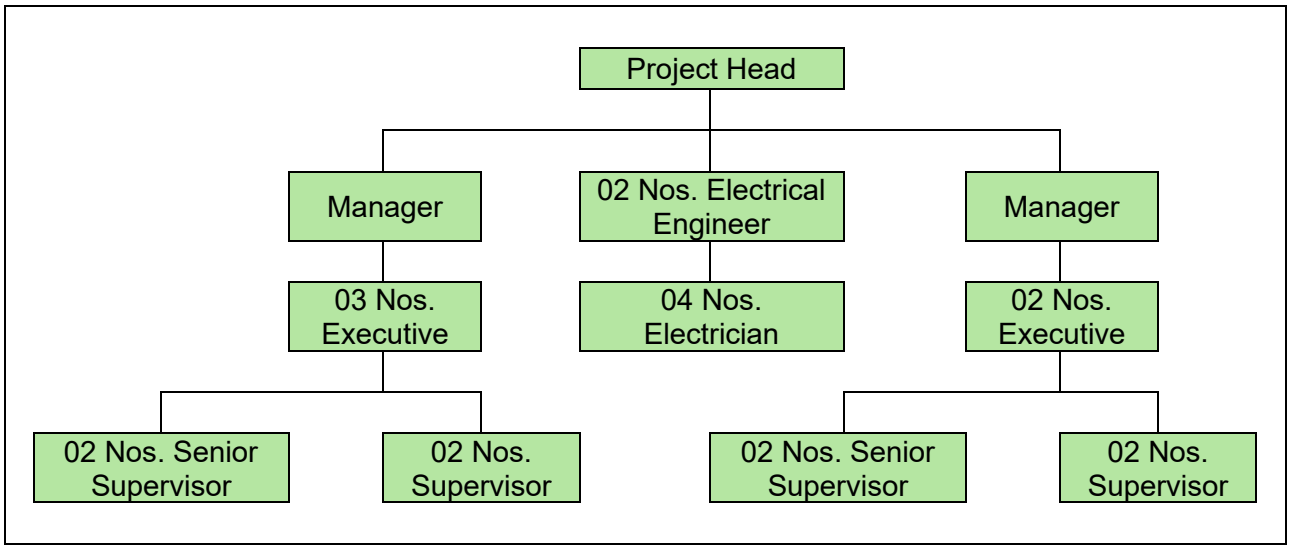
Traffic & Road Safety - Site



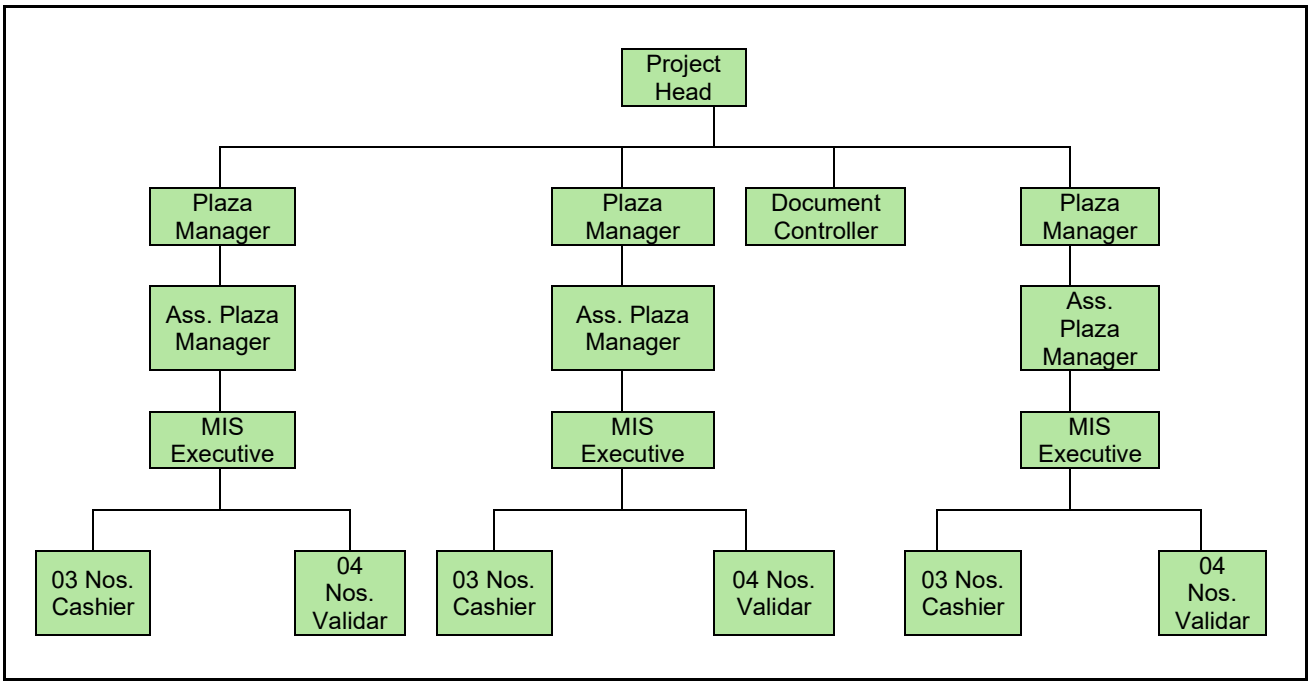
Operation System - Site



Maintenance - Site



Operation - Site



3.17.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses incurred towards the operation expenses for the past few years. Same has been reviewed and also necessary assumptions have been made about the expenses of similar types of projects to arrive the operation cost. The estimates are projected based on the best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.17.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Concessionaire as per scope of work. The Concessionaire has received a Provisional Completion Certificate for the length of 179.50 km on **20th May 2022**.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 26 years i.e. up to 15th October 2038 from the Appointed Date of 16th October 2012 including construction period of 2.5 years. As informed by the Concessionaire, the concession period of the Project Road is likely to extend up to March 2044 on the basis of the traffic data.

4.2 Surveys and Investigation

4.2.1 Pavement Condition Survey

Pavement condition survey was carried out by the Technical Consultant during the period from **9th March 2026 to 13th March 2026** through visual inspection of the total Project Road. From the visual inspection, it is found that the overall pavement condition of the Project Road is found to be Good to Fair, with certain stretches observed to be in Poor condition.

The summary of pavement condition based on the visual inspection is tabulated below.

Table 4-1 Summary of Pavement Condition

Visual Condition (As per IRC:115-2014)			
Carriageway (LHS)		**Carriageway (RHS)**	
Length (km)	**Pavement Condition**	**Length (km)**	**Pavement Condition**
101.00	Good	97.00	Good
71.50	Fair	76.50	Fair
7.00	Poor	6.00	Poor
Summary			
Good		**99.00 kms**	
Fair		**74.00 kms**	
Poor		**6.500 kms**	

4.3 Axle Load and VDF

In order to estimate the vehicle-loading pattern in the project area, and to determine vehicle damage factor for the commercial vehicles, Axle Load Survey of the vehicles plying on the project road stretch was carried out at three different locations of project stretch.

The Axle Load Survey was conducted at three locations, first at Toll Plaza-1 (km. 46+000) and second at Toll Plaza-2 (km. 94+00) and Third at Toll Plaza-3 (km. 164+000) in the month of September 2021. The survey was carried out for both directions (LHS and RHS) simultaneously and for 24 hours using standard weigh pads. The survey was carried out using random sample method for goods vehicles i.e. LCV, Bus, Trucks and Multi-axle vehicles with special axle configuration count. Vehicle damage factors for various categories of vehicles were computed.

Summary of VDF calculation is shown in below table for TP-1, TP-2, TP-3 locations.

Table 4-2 Vehicle Damage Factor

Toll Plaza at km. 46+000				Toll Plaza at km. 94+000			Toll Plaza at km. 164+000		
Sr. No.	Vehicle Type	Direction		Vehicle Type	Direction		Vehicle Type	Direction	
		From Delhi-Agra	From Agra-Delhi		From Delhi-Agra	From Agra-Delhi		From Delhi-Agra	From Agra-Delhi
1	BUS	0.840	0.937	BUS	0.950	0.923	BUS	0.914	1.033
2	LCV	0.543	0.622	LCV	0.513	0.443	LCV	0.634	0.495
3	2-Axle	2.041	2.475	2-Axle	3.227	3.207	2-Axle	3.079	2.595
4	3-Axle	4.089	4.184	3-Axle	5.522	5.882	3-Axle	5.714	4.870
5	MAV	5.019	13.119	MAV	8.524	8.318	MAV	9.874	14.105

4.4 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data provided by the Concessionaire, FY 2023-24 traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-3 MSA Calculation

Toll Plaza-1 (km. 46+000)					
Year	LHS (Delhi to Agra)		RHS (Agra to Delhi)		Remarks
	MSA	Cumulative MSA	MSA	Cumulative MSA	
2026-27	1.75	**1.75**	3.23	**3.23**	
2027-28	1.79	**3.54**	3.33	**6.56**	
2028-29	1.87	**5.41**	3.49	**10.05**	
2029-30	1.94	**7.35**	3.65	**13.70**	
2030-31	2.02	**9.37**	3.82	**17.52**	
2031-32	2.10	**11.47**	3.99	**21.51**	
2032-33	2.19	**13.66**	4.18	**25.69**	
2033-34	2.28	**15.94**	4.38	**30.07**	
2034-35	2.37	**18.31**	4.58	**34.65**	
2035-36	2.47	**20.78**	4.79	**39.44**	
2036-37	2.57	**23.35**	5.02	**44.46**	
2037-38	2.68	**26.03**	5.25	**49.71**	
2038-39	2.79	**28.82**	5.48	**55.19**	End of Concession Period as per CA
2039-40	2.90	**31.72**	5.73	**60.92**	
2040-41	3.01	**34.73**	5.99	**66.91**	
2041-42	3.14	**37.87**	6.26	**73.17**	
2042-43	3.26	**41.13**	6.53	**79.70**	
2043-44	3.39	**44.52**	6.82	**86.52**	End of Extended Concession Period

Toll Plaza-2 (km. 94+000)					
Year	LHS (Delhi to Agra)		RHS (Agra to Delhi)		Remarks
	MSA	Cumulative MSA	MSA	Cumulative MSA	
2026-27	6.11	**6.11**	6.09	**6.09**	
2027-28	6.10	**12.21**	6.08	**12.17**	
2028-29	6.45	**18.66**	6.41	**18.58**	
2029-30	6.82	**25.48**	6.78	**25.36**	
2030-31	7.17	**32.65**	7.12	**32.48**	
2031-32	7.53	**40.18**	7.48	**39.96**	
2032-33	7.92	**48.10**	7.87	**47.83**	
2033-34	8.33	**56.43**	8.27	**56.10**	
2034-35	8.75	**65.18**	8.68	**64.78**	
2035-36	9.19	**74.37**	9.12	**73.90**	
2036-37	9.65	**84.02**	9.57	**83.47**	
2037-38	10.13	**94.15**	10.04	**93.51**	
2038-39	10.63	**104.78**	10.53	**104.04**	End of Concession Period as per CA
2039-40	11.16	**115.94**	11.05	**115.09**	
2040-41	11.70	**127.64**	11.58	**126.67**	
2041-42	12.27	**139.91**	12.14	**138.81**	
2042-43	12.87	**152.78**	12.72	**151.53**	
2043-44	13.48	**166.26**	13.33	**164.86**	End of Extended Concession Period

Toll Plaza-3 (km. 164+000)					
Year	LHS (Delhi to Agra)		RHS (Agra to Delhi)		
	MSA	Cumulative MSA	MSA	Cumulative MSA	Remarks
2026-27	7.50	**7.50**	9.04	**9.04**	
2027-28	7.54	**15.04**	9.13	**18.17**	
2028-29	7.98	**23.02**	9.69	**27.86**	
2029-30	8.45	**31.47**	10.29	**38.15**	
2030-31	8.89	**40.36**	10.86	**49.01**	
2031-32	9.36	**49.72**	11.45	**60.46**	
2032-33	9.86	**59.58**	12.11	**72.57**	
2033-34	10.39	**69.97**	12.78	**85.35**	
2034-35	10.92	**80.89**	13.48	**98.83**	
2035-36	11.49	**92.38**	14.20	**113.03**	
2036-37	12.07	**104.45**	14.96	**127.99**	
2037-38	12.69	**117.14**	15.76	**143.75**	
2038-39	13.33	**130.47**	16.59	**160.34**	End of Concession Period as per CA
2039-40	14.00	**144.47**	17.47	**177.81**	
2040-41	14.71	**159.18**	18.38	**196.19**	
2041-42	15.44	**174.62**	19.33	**215.52**	
2042-43	16.20	**190.82**	20.32	**235.84**	
2043-44	17.00	**207.82**	21.35	**257.19**	End of Extended Concession Period

4.5 Network Survey Vehicles (NSV) Survey

4.5.1 Roughness Survey

The Roughness Survey results were provided by the Concessionaire for analysis and to assess the riding quality in each direction (each lane) of the project road carriageway. The tests were carried out in September 2025.

The survey covered a project length of 156.370 km out of the total 165.484 km. Approximately 9.13 km of the stretch was not covered under the NSV test due to ongoing work / maintenance activities at the project site.

The Roughness Survey results (sidewise) are presented as below.

Table 4-4 Result of Roughness Survey for Pavement

Roughness Summary for Delhi to Agra Section								
Sr. No.	Condition	BI (mm/ km)	LHS			RHS		
			Outer	Middle	Inner lane	Outer	Middle	Inner lane
			Length (km)	Length (km)	Length (km)	Length (km)	Length (km)	Length (km)
1	Satisfactory	<2500	142.59	155.37	147.01	142.45	156.08	148.66
2	Unsatisfactory	>2500	2.05	1.00	5.45	2.00	0.00	3.00

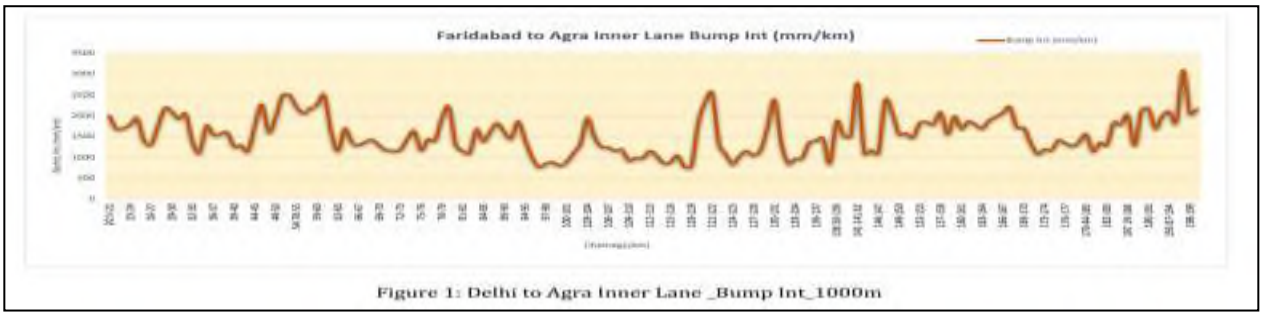
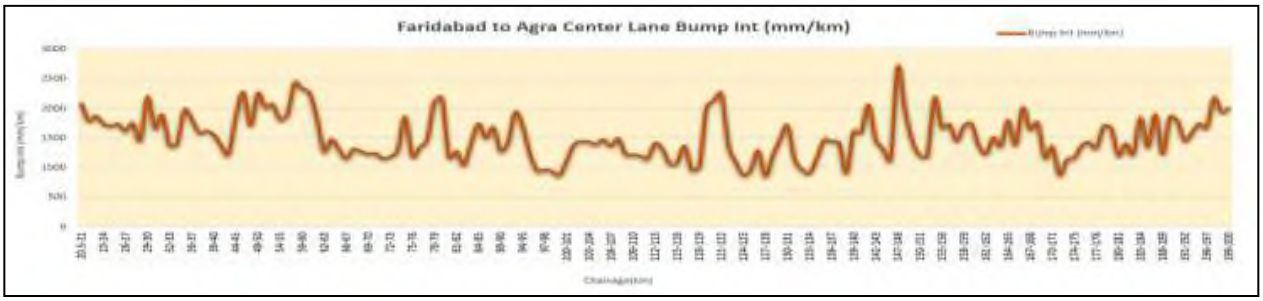
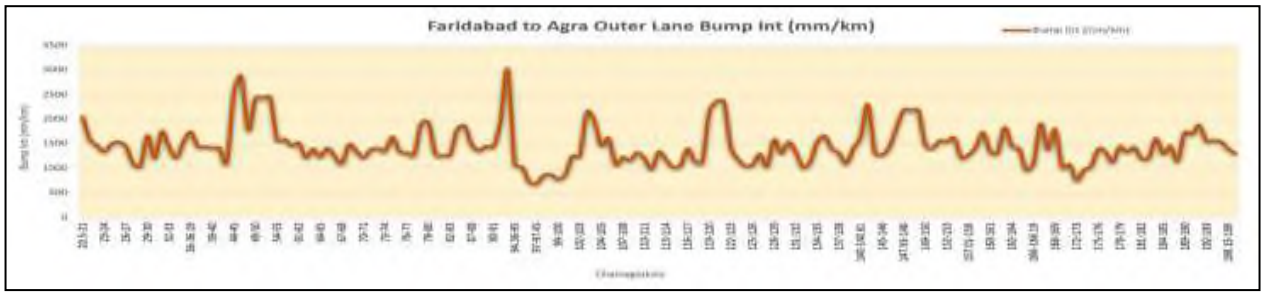
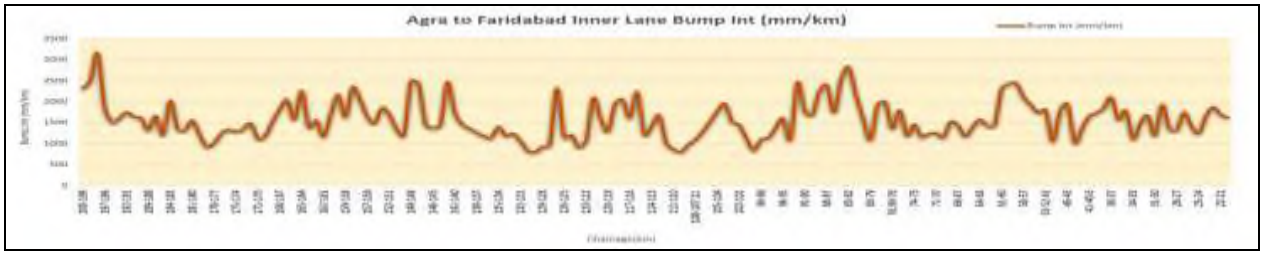
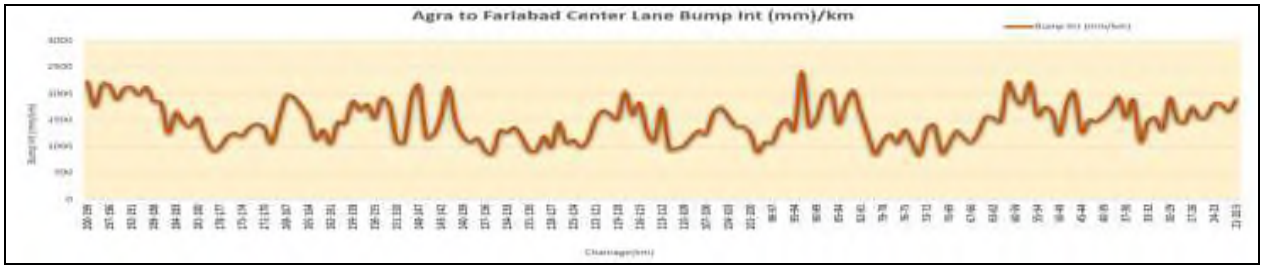


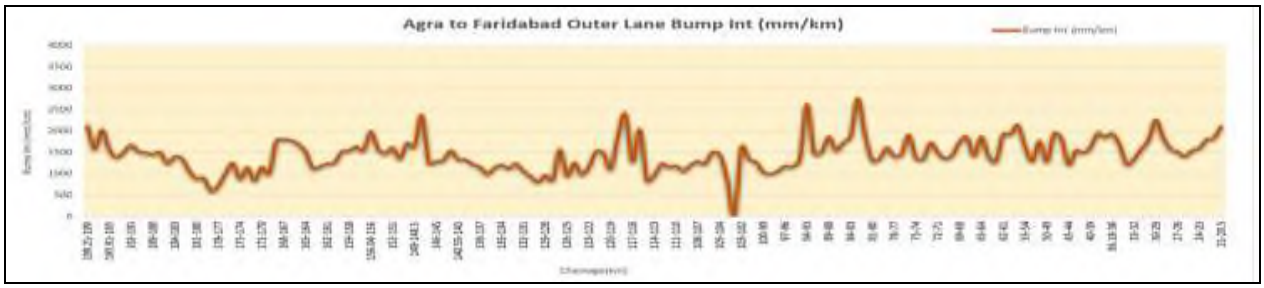
Figure 1: Delhi to Agra Inner Lane _Bump Int_1000m











Observation and Conclusion:

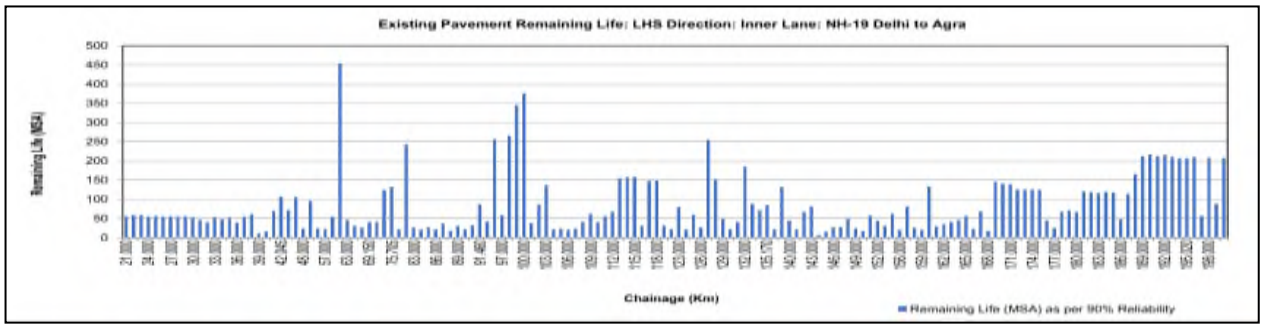
As per NSV test carried out in the month of September 2025 and the related Roughness Tests results provided by the Concessionaire, it is observed that the overall pavement condition for the Project Road is found to be Satisfactory for 148.69 Km, and Unsatisfactory for 2.25 Km. Accordingly, the Concessionaire is required to carry out repair and/or overlay works for the identified unsatisfactory stretch of 2.25 km.

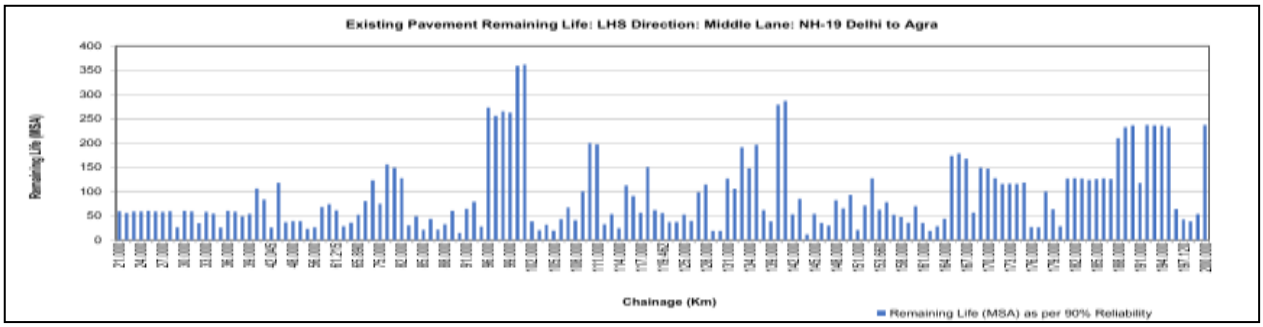
4.6 Falling Weight Deflectometer (FWD) Survey

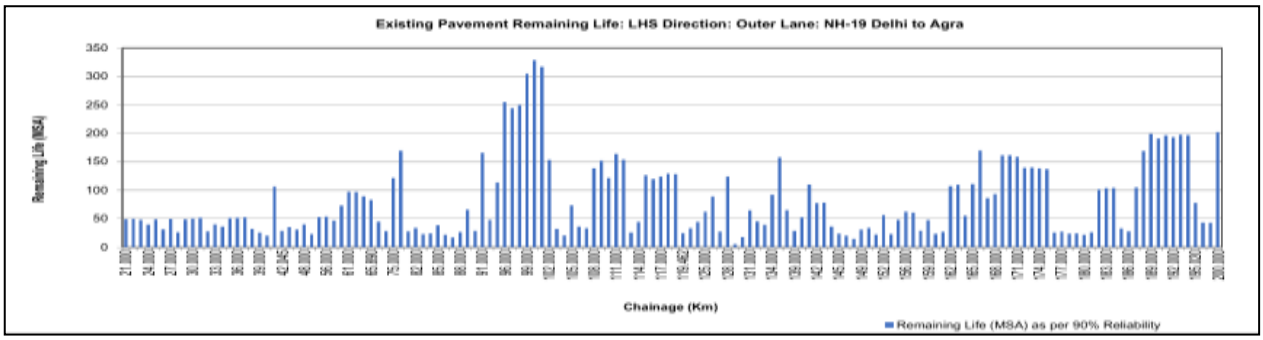
The structural evaluation and analysis of the remaining life of the Project was carried out in conformity with IRC:115-2014 "Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique".

The FWD survey was conducted on the Project Road on 16th May 2025 to 26th May 2025. The summary of the same is presented below.

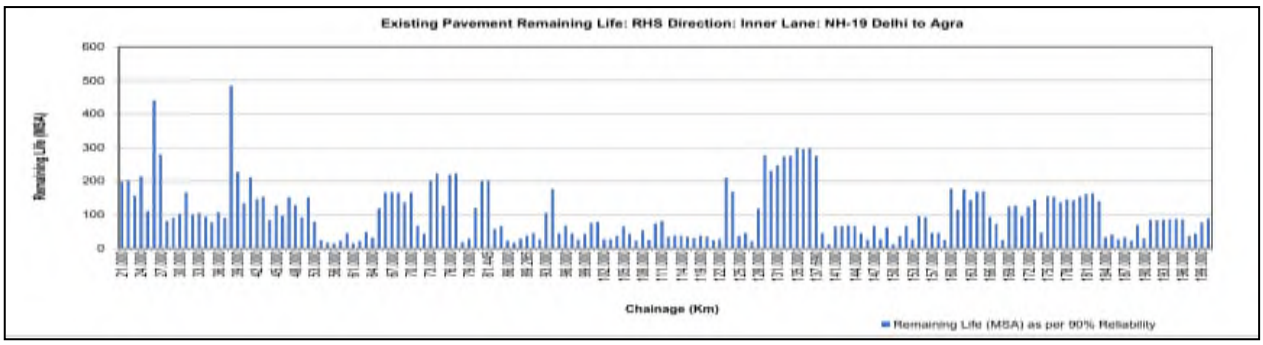
LHS side Remaining Life

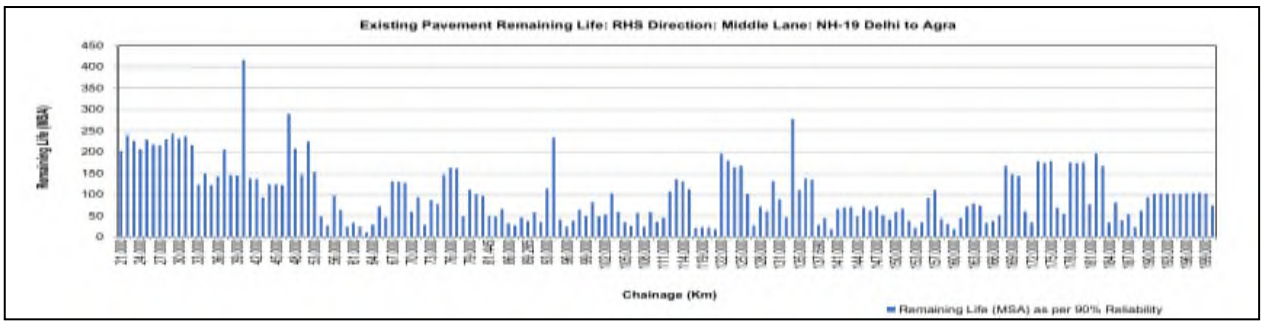


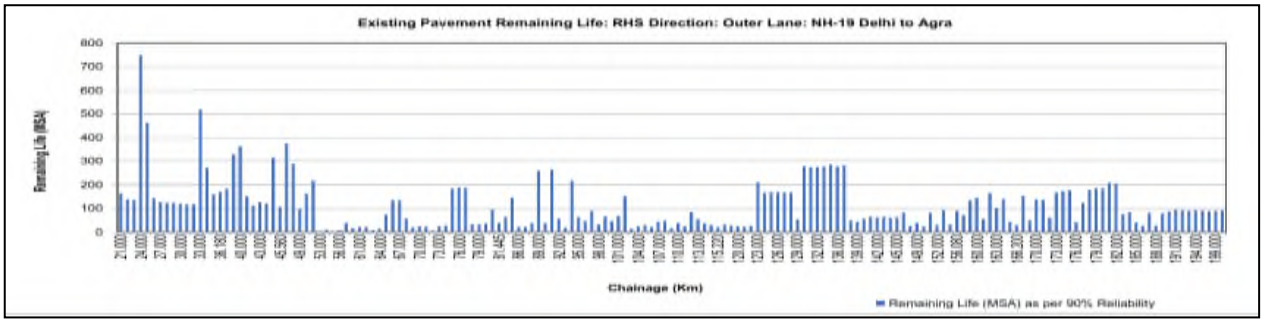




RHS side Remaining Life







After review of the test results, we found that as per the test results, MSA value is found to be low at some locations though at these locations the pavement is observed to be in fair to poor condition. Accordingly, the Concessionaire is required to carry out repair and/or overlay works for the low MSA location to increase the remaining life of the pavement.

However, the maintenance can be carried out on, as and when required basis, and to the compliance of Schedule-K requirement to maintain the road in serviceable condition. However, improvement in Riding Quality is expected if the roughness value exceeds 2500 mm/km.

4.7 Test pit and Subgrade Investigation

The Concessionaire has carried out a subgrade investigation for project road. The results of the same as provided by the Concessionaire are tabulated as below.

Table 4-5 Summary of Subgrade Test Results

Sr. No.	Chainage (Km)	Carriage way	Side (LHS/RHS)	Soil Classification as per IS: 1498	% by weight passing through the Sieve		Clay & silt content %	Atterberg Limits			Modified Proctor Test		4-Days Soaked CBR (%)	Free Swell Index
					19.0 mm	4.75 mm		LL (%)	PL (%)	PI	MDD (gm/cc)	OMC (%)		
1	23+700	Service Road	RHS	ML	100.0	98.7	58.9	23	NP	NP	1.94	9.4	10.9	0.0
2	24+140	Service Road	LHS	ML	99.0	91.7	67.0	23	NP	NP	1.92	9.7	9.1	0.0
3	27+220	Service Road	RHS	ML	98.0	95.4	79.1	26	NP	NP	1.89	10.5	8.1	12.5
4	29+300	Service Road	LHS	SM	98.3	97.4	32.5	19	NP	NP	2.04	8.7	13.1	0.0
5	31+360	Service Road	RHS	ML	99.0	92.7	85.5	27	NP	NP	1.86	10.8	7.3	12.5
6	35+640	Service Road	RHS	ML	95.2	90.2	80.6	26	NP	NP	1.88	10.5	7.0	10.0
7	35+920	MCW	LHS	ML	100.0	92.5	72.6	25	NP	NP	1.86	9.9	8.7	9.2
8	39+600	MCW	LHS	SM	88.3	82.5	43.4	23	NP	NP	2.01	9.8	15.3	0.0
9	42+020	Service Road	RHS	ML	100.0	99.9	58.8	24	NP	NP	1.94	9.2	11.3	0.0
10	44+100	MCW	LHS	ML	81.6	75.0	51.0	23	NP	NP	2.02	8.8	11.7	0.0
11	49+550	MCW	LHS	SM	98.3	95.9	47.7	24	NP	NP	1.97	9.0	11.3	0.0
12	49+950	MCW	RHS	ML	100.0	99.3	51.1	23	NP	NP	1.92	10.1	12.1	0.0
13	52+540	MCW	LHS	ML	98.0	92.4	54.3	24	NP	NP	1.94	9.3	10.8	5.3
14	54+800	MCW	RHS	SM	93.3	88.1	40.1	22	NP	NP	1.98	9.2	15.1	0.0
15	60+400	MCW	RHS	SM	88.6	83.5	41.0	21	NP	NP	1.96	9.0	12.0	0.0
16	63+700	MCW	LHS	ML	97.4	91.4	73.7	24	NP	NP	1.88	9.7	7.4	11.1
17	66+310	MCW	RHS	ML	100.0	99.0	89.1	26	NP	NP	1.86	9.6	7.1	11.1
18	68+200	MCW	LHS	ML	93.6	85.7	58.8	20	NP	NP	1.95	9.0	12.3	0.0
19	69+010	MCW	RHS	ML	100.0	98.3	60.3	23	NP	NP	1.94	9.3	12.6	0.0
20	73+410	MCW	LHS	ML	99.4	92.7	65.5	23	NP	NP	1.98	9.1	12.4	0.0
21	75+400	MCW	LHS	ML	86.8	73.2	54.9	20	NP	NP	1.94	9.2	11.6	0.0
22	75+500	MCW	RHS	ML	98.1	92.4	66.2	23	NP	NP	1.91	10.0	10.5	0.0
23	78+150	MCW	LHS	SM	100.0	99.4	46.4	25	NP	NP	2.01	8.7	14.2	0.0
24	80+040	MCW	RHS	ML	99.1	92.6	60.0	23	NP	NP	1.97	9.5	11.5	0.0
25	82+100	MCW	RHS	SM	97.9	92.4	43.9	21	NP	NP	2.02	8.5	13.4	0.0
26	82+200	MCW	LHS	SM	100.0	98.1	45.8	22	NP	NP	1.95	9.2	10.1	0.0
27	84+970	MCW	LHS	ML	97.9	92.9	72.6	25	NP	NP	1.91	9.6	9.7	0.0
28	87+410	MCW	RHS	SM	100.0	98.6	46.5	23	NP	NP	1.99	8.9	11.6	0.0
29	89+250	MCW	LHS	ML	93.8	80.7	56.6	23	NP	NP	1.96	9.0	10.3	0.0
30	91+030	MCW	LHS	ML	100.0	97.8	78.1	25	NP	NP	1.92	9.5	8.2	0.0
31	92+980	MCW	LHS	ML	97.6	94.5	51.3	23	NP	NP	1.98	9.3	11.4	0.0
32	95+100	MCW	RHS	ML	100.0	96.6	52.0	23	NP	NP	2.02	8.4	11.6	0.0
33	95+400	MCW	LHS	ML	100.0	98.7	58.9	21	NP	NP	1.93	10.3	8.9	7.1
34	97+300	MCW	LHS	ML	100.0	96.7	51.9	23	NP	NP	1.94	9.5	11.6	0.0

Sr. No.	Chainage (Km)	Carriage way	Side (LHS/RHS)	Soil Classification as per IS: 1498	% by weight passing through the Sieve		Clay & silt content %	Atterberg Limits			Modified Proctor Test		4-Days Soaked CBR (%)	Free Swell Index
					19.0 mm	4.75 mm		LL (%)	PL (%)	PI	MDD (gm/cc)	OMC (%)		
35	99+020	MCW	LHS	ML	98.5	97.8	51.8	22	NP	NP	1.95	9.6	10.8	8.3
36	99+850	MCW	RHS	ML	98.3	94.2	68.2	19	NP	NP	2.01	8.7	12.1	0.0
37	105+030	MCW	RHS	ML	100.0	99.4	68.3	23	NP	NP	1.99	8.9	13.2	0.0
38	105+640	MCW	LHS	ML	95.0	87.6	65.4	25	NP	NP	1.94	9.1	10.1	0.0
39	107+210	MCW	LHS	ML	100.0	97.0	72.0	25	NP	NP	1.96	10.0	8.7	0.0
40	108+690	MCW	RHS	ML	93.3	83.4	59.8	24	NP	NP	2.02	8.9	14.7	0.0
41	109+270	MCW	LHS	ML	98.5	92.9	76.3	26	NP	NP	1.89	10.2	7.6	12.5
42	114+070	MCW	LHS	ML	96.1	91.9	69.1	21	NP	NP	1.93	9.3	8.7	0.0
43	114+980	MCW	RHS	ML	98.1	97.7	58.4	20	NP	NP	1.96	9.1	9.4	0.0
44	117+200	MCW	LHS	ML	100.0	97.7	76.6	25	NP	NP	1.88	10.0	6.9	0.0
45	120+250	MCW	RHS	ML	95.6	90.5	62.5	23	NP	NP	1.93	9.5	9.9	0.0
46	120+270	MCW	LHS	ML	89.2	75.9	64.0	23	NP	NP	1.95	9.1	10.6	0.0
47	122+450	MCW	LHS	ML	90.5	85.5	68.9	24	NP	NP	2.00	9.5	11.3	7.1
48	124+260	MCW	LHS	SM	83.9	65.4	45.6	21	NP	NP	2.03	8.6	15.9	0.0
49	125+020	MCW	RHS	ML	100.0	97.1	80.1	26	NP	NP	1.86	9.9	8.3	0.0
50	127+280	MCW	LHS	ML	93.9	82.2	65.4	20	NP	NP	1.99	8.8	10.2	0.0
51	129+870	MCW	LHS	ML	91.0	81.7	57.6	21	NP	NP	1.98	8.6	12.4	11.1
52	131+020	MCW	RHS	ML	100.0	90.3	78.2	25	NP	NP	1.87	9.8	8.1	0.0
53	132+780	MCW	LHS	ML	98.9	89.4	65.0	23	NP	NP	2.01	8.8	12.7	0.0
54	135+570	MCW	RHS	ML	93.8	83.4	66.2	27	NP	NP	1.89	10.1	8.4	8.3
55	137+830	MCW	LHS	ML	97.5	86.8	52.5	23	NP	NP	1.94	9.6	9.2	0.0
56	138+620	MCW	RHS	ML	100.0	94.1	57.4	20	NP	NP	2.02	8.7	14.6	0.0
57	141+200	MCW	RHS	ML	97.7	93.9	81.4	26	NP	NP	1.85	10.2	7.1	11.1
58	147+100	MCW	LHS	ML	92.6	83.6	57.1	21	NP	NP	2.02	8.8	14.8	0.0
59	149+130	MCW	RHS	SM	90.2	77.9	45.8	25	NP	NP	2.05	8.8	15.1	0.0
60	151+700	MCW	LHS	SM	100.0	85.7	33.5	22	NP	NP	2.08	8.7	17.3	0.0
61	154+890	MCW	LHS	ML	86.9	70.5	53.3	23	NP	NP	2.03	8.6	15.6	0.0
62	155+300	MCW	RHS	ML	91.1	81.4	63.3	23	NP	NP	1.96	9.0	12.1	0.0
63	161+170	MCW	RHS	SM	96.8	92.2	47.6	22	NP	NP	1.99	8.9	13.1	5.3
64	161+500	MCW	LHS	SM	89.8	79.2	45.1	22	NP	NP	2.02	8.6	13.9	0.0
65	163+610	MCW	LHS	ML	91.3	88.4	65.3	22	NP	NP	1.93	9.7	10.3	0.0
66	165+050	MCW	RHS	ML	98.8	94.0	58.0	25	NP	NP	1.99	8.6	14.7	0.0
67	166+100	MCW	LHS	ML	91.9	80.7	58.5	20	NP	NP	2.00	8.5	12.4	10.0
68	169+080	MCW	LHS	ML	98.7	94.0	88.7	28	NP	NP	1.86	10.7	6.7	12.5
69	170+020	MCW	RHS	ML	99.3	98.7	82.5	26	NP	NP	1.87	10.2	7.3	0.0
70	172+500	MCW	LHS	ML	97.6	91.2	82.8	26	NP	NP	1.85	10.6	6.8	11.1
71	174+200	MCW	RHS	ML	94.7	89.5	83.8	27	NP	NP	1.87	11.0	7.3	8.3
72	177+400	MCW	LHS	ML	100.0	96.1	78.7	22	NP	NP	1.91	10.1	10.5	0.0
73	180+020	MCW	RHS	ML	97.4	90.2	77.2	25	NP	NP	1.86	9.6	9.0	0.0
74	182+450	MCW	LHS	ML	99.2	94.9	83.9	27	NP	NP	1.85	9.9	7.1	0.0
75	185+530	MCW	RHS	ML	94.3	88.3	62.9	24	NP	NP	1.94	9.0	11.3	0.0
76	186+700	Service Road	LHS	ML	98.9	94.6	87.6	26	NP	NP	1.90	10.5	8.0	10.0
77	192+200	MCW	LHS	CL	100.0	98.4	88.4	29	18	11	1.91	11.3	5.6	22.2
78	193+500	MCW	RHS	ML	97.6	93.1	75.3	23	NP	NP	1.93	9.0	7.9	0.0
79	197+200	Service Road	RHS	ML	99.1	95.6	83.8	26	NP	NP	1.88	10.1	7.0	8.3
80	197+400	Service Road	LHS	ML	100.0	97.8	85.4	24	NP	NP	1.90	9.8	7.5	0.0

4.7.1 Existing Granular layers Testing

Table 4-6 Summary of Granular Layers Tests Results

Sr. No.	Chainage (km)	Carriage way	Side (LHS/RHS)	Type of Layer	MoRTH 5th Revision	Atterberg Limits			Specific Gravity	W.A (%)	AIV (%)
						LL (%)	PI (%)	PI			
1	23+700	Service Road	RHS	WMM	Conforming to WMM Gradation	23	NP	NP	2.636	0.81	26.0
2	24+140	Service Road	LHS	WMM	45.0 mm,22.4mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	21	NP	NP	2.655	0.91	27.1
3	27+220	Service Road	RHS	GSB	Conforming to GSB- I	19	NP	NP	2.621	0.78	23.4
4	29+300	Service Road	LHS	GSB	Conforming to GSB- I	21	NP	NP	2.648	0.72	28.0
5	31+360	Service Road	RHS	WMM	22.4mm,11.2mm,4.75mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	21	NP	NP	2.623	1.04	26.0
6	35+640	Service Road	RHS	GSB	0.425mm IS Sieve Material is Slightly coarser Side in GSB I	21	NP	NP	2.611	0.89	25.3
7	35+920	MCW	LHS	WMM	45.0 mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	22	NP	NP	2.640	0.86	25.0
8	39+600	MCW	LHS	GSB	Conforming to GSB- III & IV	22	NP	NP	2.647	0.78	24.3
9	42+020	Service Road	RHS	GSB	26.5 mm IS Sieve Material is Slightly Finer Side in GSB -I Gradation	22	NP	NP	2.656	0.88	34.8
10	44+100	MCW	LHS	WMM	Conforming to WMM Gradation	20	NP	NP	2.605	0.67	25.6
11	49+550	MCW	LHS	GSB	Conforming to GSB- I	21	NP	NP	2.606	0.84	29.5
12	49+950	MCW	RHS	WMM	Not Confirming to WMM Gradation	22	NP	NP	2.643	0.69	27.2
13	52+540	MCW	LHS	WMM	45.0 mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	19	NP	NP	2.598	0.94	24.7
14	54+800	MCW	RHS	GSB	Conforming to GSB- III & IV	19	NP	NP	2.603	0.85	25.1
15	60+400	MCW	RHS	WMM	45.0 mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	23	NP	NP	2.598	0.76	32.0
16	63+700	MCW	LHS	WMM	4.75 mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	21	NP	NP	2.595	1.03	25.4
17	66+310	MCW	RHS	GSB	53.0mm, 26.5mm IS Sieve Material is Slightly coarser Side in GSB III & IV	19	NP	NP	2.626	1.08	34.0
18	68+200	MCW	LHS	GSB	53.0mm IS Sieve Material is Slightly coarser Side in GSB III	20	NP	NP	2.640	0.83	27.6
19	69+010	MCW	RHS	WMM	Not Confirming to WMM Gradation	22	NP	NP	2.616	1.07	28.7
20	73+410	MCW	LHS	GSB	53.0mm IS Sieve Material is Slightly coarser Side in GSB IV	23	NP	NP	2.634	1.36	29.8
21	75+400	MCW	LHS	GSB	0.425mm IS Sieve Material is Slightly Finer Side in GSB I	20	NP	NP	2.618	0.74	30.1
22	75+500	MCW	RHS	GSB	0.425mm IS Sieve Material is Slightly Finer Side in GSB I	22	NP	NP	2.604	0.95	26.7
23	78+150	MCW	LHS	GSB	0.425mm IS Sieve Material is Slightly Finer Side in GSB I	19	NP	NP	2.596	0.87	25.3
24	80+040	MCW	RHS	WMM	Conforming to WMM Gradation	18	NP	NP	2.600	1.04	24.9

Sr. No.	Chainage (km)	Carriage way	Side (LHS/RHS)	Type of Layer	MoRTH 5th Revision	Atterberg Limits			Specific Gravity	W.A (%)	AIV (%)
						LL (%)	PI (%)	PI			
25	82+100	MCW	RHS	GSB	Conforming to GSB- IV	21	NP	NP	2.642	1.05	27.0
26	82+200	MCW	LHS	WMM	Conforming to WMM Gradation	23	NP	NP	2.623	1.13	24.6
27	84+970	MCW	LHS	WMM	45.0 mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	22	NP	NP	2.625	0.78	25.3
28	87+410	MCW	RHS	WMM	45.0 mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	21	NP	NP	2.594	0.94	28.7
29	89+250	MCW	LHS	GSB	Conforming to GSB- III & IV	20	NP	NP	2.583	0.75	25.3
30	91+030	MCW	LHS	GSB	26.5 mm,4.75mm IS Sieve Material is Slightly Coarser Side in GSB-III & IV	20	NP	NP	2.599	0.67	27.8
31	92+980	MCW	LHS	WMM	Conforming to WMM Gradation	19	NP	NP	2.632	0.88	26.8
32	95+100	MCW	RHS	GSB	Conforming to GSB- I	21	NP	NP	2.644	0.93	24.3
33	95+400	MCW	LHS	WMM	Conforming to WMM Gradation	22	NP	NP	2.648	0.84	26.0
34	97+300	MCW	LHS	GSB	Conforming to GSB- I	23	NP	NP	2.643	0.67	28.9
35	99+020	MCW	LHS	GSB	53.0 mm,26.5 mm IS Sieve Material is Slightly Coarser Side in GSB-III & IV Gradation	22	NP	NP	2.643	0.68	28.6
36	99+850	MCW	RHS	WMM	Not Confirming to WMM Gradation	24	NP	NP	2.651	0.74	24.0
37	105+030	MCW	RHS	GSB	53.0mm, 26.5mm IS Sieve Material is Slightly coarser Side in GSB III	23	NP	NP	2.634	1.01	30.1
38	105+640	MCW	LHS	WMM	45.0 mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	21	NP	NP	2.633	0.86	26.7
39	107+210	MCW	LHS	GSB	Conforming to GSB- I	20	NP	NP	2.638	0.81	28.9
40	108+690	MCW	RHS	WMM	Conforming to WMM Gradation	20	NP	NP	2.650	0.94	25.4
41	109+270	MCW	LHS	WMM	45.0 mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	19	NP	NP	2.614	0.68	24.3
42	114+070	MCW	LHS	WMM	45.0 mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	20	NP	NP	2.656	0.94	28.0
43	114+980	MCW	RHS	GSB	53.0mm, 26.5mm IS Sieve Material is Slightly coarser Side in GSB III	20	NP	NP	2.654	0.72	28.0
44	117+200	MCW	LHS	GSB	26.5mm IS Sieve Material is Slightly Finner Side in GSB I	22	NP	NP	2.645	0.88	28.5
45	120+250	MCW	RHS	WMM	11.2mm,4.75mm IS Sieve Material is Slightly Finer Side in WMM Gradation	19	NP	NP	2.587	0.75	29.7
46	120+270	MCW	LHS	GSB	26.5mm IS Sieve Material is Slightly Finner Side in GSB I	20	NP	NP	2.567	0.58	30.7
47	122+450	MCW	LHS	WMM	Conforming to WMM Gradation	22	NP	NP	2.589	0.68	25.4
48	124+260	MCW	LHS	WMM	45.0 mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	19	NP	NP	2.643	0.78	27.6
49	125+020	MCW	RHS	GSB	53.0mm, 26.5mm IS Sieve Material is Slightly coarser Side in GSB III &IV	21	NP	NP	2.619	0.69	32.1
50	127+280	MCW	LHS	GSB	53.0mm, 26.5mm IS Sieve Material is Slightly coarser Side in GSB III & IV	21	NP	NP	2.641	0.53	27.4
51	129+870	MCW	LHS	GSB	Conforming to GSB- I	23	NP	NP	2.637	0.85	30.2

Sr. No.	Chainage (km)	Carriage way	Side (LHS/RHS)	Type of Layer	MoRTH 5th Revision	Atterberg Limits			Specific Gravity	W.A (%)	AIV (%)
						LL (%)	PI (%)	PI			
52	131+020	MCW	RHS	WMM	11.2mm IS Sieve Material is Slightly Finer Side in WMM Gradation	21	NP	NP	2.628	0.67	24.6
53	132+780	MCW	LHS	WMM	4.75 mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	20	NP	NP	2.645	0.44	21.0
54	135+570	MCW	RHS	GSB	53.0mm, 26.5mm IS Sieve Material is Slightly coarser Side in GSB III	22	NP	NP	2.644	0.85	28.6
55	137+830	MCW	LHS	GSB	53.0mm, 26.5mm IS Sieve Material is Slightly coarser Side in GSB III	21	NP	NP	2.638	0.87	26.5
56	138+620	MCW	RHS	WMM	Conforming to WMM Gradation	20	NP	NP	2.589	0.89	23.8
57	141+200	MCW	RHS	GSB	53.0mm, IS Sieve Material is Slightly coarser Side in GSB III	20	NP	NP	2.590	1.03	26.0
58	147+100	MCW	LHS	WMM	Not Confirming to WMM Gradation	23	NP	NP	2.636	0.61	26.0
59	149+130	MCW	RHS	WMM	45.0mm,22.4mm IS Sieve Material is Slightly coarser Side in WMM Gradation	20	NP	NP	2.641	1.24	26.3
60	151+700	MCW	LHS	GSB	53.0mm,26.5mm IS Sieve Material is Slightly coarser Side in GSB III	22	NP	NP	2.594	1.52	27.8
61	154+890	MCW	LHS	WMM	45.0mm,22.4mm IS Sieve Material is Slightly coarser Side in WMM Gradation	20	NP	NP	2.636	1.36	25.7
62	155+300	MCW	RHS	GSB	53.0mm,26.5mm IS Sieve Material is Slightly coarser Side in GSB III	22	NP	NP	2.592	1.39	27.0
63	161+170	MCW	RHS	WMM	Conforming to WMM Gradation	22	NP	NP	2.634	1.35	28.4
64	161+500	MCW	LHS	GSB	53.0mm,26.5mm IS Sieve Material is Slightly coarser Side in GSB III & IV	20	NP	NP	2.582	1.53	27.4
65	163+610	MCW	LHS	WMM	22.4mm,11.2mm IS Sieve Material is Slightly Finner Side in WMM Gradation	19	NP	NP	2.588	1.47	28.2
66	165+050	MCW	RHS	GSB	53.0mm,26.5mm IS Sieve Material is Slightly coarser Side in GSB III	21	NP	NP	2.575	1.53	31.0
67	166+100	MCW	LHS	WMM	Conforming to WMM Gradation	20	NP	NP	2.613	1.27	26.3
68	169+080	MCW	LHS	GSB	53.0mm, IS Sieve Material is Slightly coarser Side in GSB III	21	NP	NP	2.635	1.31	29.0
69	170+020	MCW	RHS	WMM	Conforming to WMM Gradation	19	NP	NP	2.584	1.31	29.3
70	172+500	MCW	LHS	WMM	Conforming to WMM Gradation	22	NP	NP	2.587	1.04	28.6
71	174+200	MCW	RHS	GSB	53.0mm,26.5mm IS Sieve Material is Slightly coarser Side in GSB III & IV	21	NP	NP	2.588	1.50	30.0
72	177+400	MCW	LHS	GSB	Not Conforming to GSB Gradation	20	NP	NP	2.584	1.33	29.4
73	180+020	MCW	RHS	WMM	22.4mm,11.2mm IS Sieve Material is Slightly Finer Side in WMM Gradation	20	NP	NP	2.616	0.91	26.0

Sr. No.	Chainage (km)	Carriage way	Side (LHS/RHS)	Type of Layer	MoRTH 5th Revision	Atterberg Limits			Specific Gravity	W.A (%)	AIV (%)
						LL (%)	PI (%)	PI			
74	182+450	MCW	LHS	WMM	11.2mm,4.75mm,2.36mm IS Sieve Material is Slightly coarser Side in WMM Gradation	18	NP	NP	2.606	0.87	25.0
75	185+530	MCW	RHS	GSB	53.0mm,26.5mm IS Sieve Material is Slightly coarser Side in GSB III & IV	20	NP	NP	2.585	1.53	26.0
76	186+700	Service Road	LHS	GSB	53.0mm,26.5mm IS Sieve Material is Slightly coarser Side in GSB III	21	NP	NP	2.579	1.37	28.0
77	192+200	MCW	LHS	WMM	45.0mm,22.4mm IS Sieve Material is Slightly coarser Side in WMM Gradation	19	NP	NP	2.627	0.95	25.0
78	193+500	MCW	RHS	GSB	26.5mm IS Sieve Material is Slightly coarser Side in GSB III	20	NP	NP	2.569	1.12	27.0
79	197+200	Service Road	RHS	WMM	Conforming to WMM Gradation	19	NP	NP	2.650	0.85	24.0
80	197+400	Service Road	LHS	GSB	26.5mm IS Sieve Material is Slightly Finer Side in GSB I	21	NP	NP	2.581	1.12	28.0

4.7.2 Existing Pavement Composition and Analysis

The Concessionaire has carried out the existing pavement investigation for the Project Road. The test results of the same, as provided by the Concessionaire, are tabulated below.

Table 4-7 Summary Pavement Crust Details along the project corridor

Sr. No.	Location (Km)	Carriage way	Side (RHS/LHS)	Pavement Composition (mm)					
				Flexible Pavement		Rigid Pavement			Total Thickness (mm)
				Bituminous Layer	Granular Layer	PQC	DLC	GSB	
1	23+700	Service Road	RHS	70	490				560
2	24+140	Service Road	LHS	90	380				470
3	27+220	Service Road	RHS	100	400				500
4	29+300	Service Road	LHS	130	340				470
5	31+360	Service Road	RHS	120	430				550
6	35+640	Service Road	RHS	130	400				530
7	35+920	MCW	LHS	140	390				530
8	39+600	MCW	LHS	165	530				695
9	42+020	Service Road	RHS	100	320				420
10	44+100	MCW	LHS			310	140	210	660
11	49+550	MCW	LHS			310	180	170	660
12	49+950	MCW	RHS	400	370				770
13	52+540	MCW	LHS			290	160	260	710
14	54+800	MCW	RHS	180	510				690
15	60+400	MCW	RHS	130	430				560
16	63+700	MCW	LHS			300	140	150	590
17	66+310	MCW	RHS	140	620				760
18	68+200	MCW	LHS	250	510				760
19	69+010	MCW	RHS	145	440				585
20	73+410	MCW	LHS			290	130	310	730
21	75+400	MCW	LHS	150	390				540
22	75+500	MCW	RHS	160	450				610
23	78+150	MCW	LHS			285	140	210	635
24	80+040	MCW	RHS	150	540				690
25	82+100	MCW	RHS			300	130	150	580

Sr. No.	Location (Km)	Carriage way	Side (RHS/LHS)	Pavement Composition (mm)					
				Flexible Pavement		Rigid Pavement			Total Thickness (mm)
				Bituminous Layer	Granular Layer	PQC	DLC	GSB	
26	82+200	MCW	LHS	180	430				610
27	84+970	MCW	LHS	150	400				550
28	87+410	MCW	RHS			320	150	160	630
29	89+250	MCW	LHS	130	310				440
30	91+030	MCW	LHS	160	460				620
31	92+980	MCW	LHS			310	130	270	710
32	95+100	MCW	RHS	165	600				765
33	95+400	MCW	LHS	170	610				780
34	97+300	MCW	LHS	170	560				730
35	99+020	MCW	LHS	185	610				795
36	99+850	MCW	RHS	140	450				590
37	105+030	MCW	RHS	140	550				690
38	105+640	MCW	LHS	120	420				540
39	107+210	MCW	LHS	150	440				590
40	108+690	MCW	RHS	170	610				780
41	109+270	MCW	LHS	160	430				590
42	114+070	MCW	LHS	140	510				650
43	114+980	MCW	RHS	135	520				655
44	117+200	MCW	LHS	140	480				620
45	120+250	MCW	RHS	165	460				625
46	120+270	MCW	LHS			310	150	400	860
47	122+450	MCW	LHS	150	500				650
48	124+260	MCW	LHS	145	450				595
49	125+020	MCW	RHS	140	610				750
50	127+280	MCW	LHS	170	410				580
51	129+870	MCW	LHS	150	450				600
52	131+020	MCW	RHS	170	500				670
53	132+780	MCW	LHS	150	510				660
54	135+570	MCW	RHS	170	580				750
55	137+830	MCW	LHS	180	420				600
56	138+620	MCW	RHS			300	130	310	740
57	141+200	MCW	RHS	100	605				705
58	147+100	MCW	LHS	130	425				555
59	149+130	MCW	RHS	120	390				510
60	151+700	MCW	LHS	130	480				610
61	154+890	MCW	LHS	190	600				790
62	155+300	MCW	RHS	120	570				690
63	161+170	MCW	RHS	160	430				590
64	161+500	MCW	LHS	140	450				590
65	163+610	MCW	LHS	150	500				650
66	165+050	MCW	RHS	155	540				695
67	166+100	MCW	LHS	150	510				660
68	169+080	MCW	LHS	145	490				635
69	170+020	MCW	RHS	140	560				700
70	172+500	MCW	LHS	140	460				600
71	174+200	MCW	RHS	150	640				790
72	177+400	MCW	LHS	135	600				735
73	180+020	MCW	RHS	165	460				625
74	182+450	MCW	LHS	140	500				640
75	185+530	MCW	RHS	120	460				580
76	186+700	Service Road	LHS	70	430				500
77	192+200	MCW	LHS	175	470				645
78	193+500	MCW	RHS	125	640				765
79	197+200	Service Road	RHS	240	450				690
80	197+400	Service Road	LHS	70	470				540

4.8 Periodic Maintenance Strategy

The Project Road is taken over by the Concessionaire in FY 2022. After taking over, the Concessionaire has done overlay in FY 2022 with 30 mm / 40 mm BC, in the sections wherever the Roughness value is exceeding as mentioned in the Concession Agreement. The Concessionaire has also done overlay with 50 mm DBM and 30 mm / 40 mm BC in FY 2022 for the distressed portion. This portion of the Project Road constitutes 70% of the flexible pavement of the Project Road. Hence, major maintenance for this stretch is considered in FY 2029.

For the rest of the Project Road of about 30%, minor rectification works are carried out as there was no major distress found. The traffic volume and VDF are also found considerably less for this section. Hence, Major Maintenance for this stretch is considered in FY 2027.

As per the present condition of the rigid pavement, the surface roughness on the rigid pavement is required to be reduced. Hence, to achieve this, the Concessionaire has proposed to overlay a Bituminous Concrete (BC) layer over the existing rigid pavement, as complete panel replacement of the rigid pavement is not feasible due to heavy traffic movement on the corridor.

Furthermore, the National Highways Authority of India (NHAI) has awarded certain portion of the project stretch to various contractors, including Gawar Construction Limited, Chaudhary Construction Company Private Limited, and Atlas Construction Pvt. Ltd. Hence, the total length of this particular stretch, which is about **14.016 km**, has been descoped from the Concessionaire's scope. Consequently, this length is also excluded from the Concessionaire's maintenance obligations for the remaining Concession period.

Earlier on the service roads, a Bituminous Concrete (BC) overlay of 30 mm / 40 mm thickness was provided on both sides at distressed locations during FY 2022. However, during the recent site visit, it was observed that several portions of the service road are deteriorated due to waterlogging during the rains. The Concessionaire is responsible for maintaining the service roads in good condition and, therefore, will be required to carry out BC overlay over a length of **38.0 km**, out of the total **102.0 km** of service road, during **FY 2027**.

The maintenance can be carried out as and when required basis and to the compliance of Schedule-K requirement to maintain the road in serviceable condition. Only improvement in Riding Quality is expected if the roughness value exceeds 2500 mm/km.

The table below shows the Major / Periodic maintenance cycle throughout the concession period for the project road.

Table 4-8 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2022	Major Maintenance completed at Site	
2	FY 2024 to FY 2026	-	-
3	FY 2027	Major maintenance with 30 mm PMB (100%) + Milling & 50 mm DBM (7%) (For section from km. 20.500 to km. 64.500)	Major maintenance with 30 mm BC (40%) + Micro-surfacing (60%) for 38.0 Km Length
4	FY 2028	-	-

Sr. No.	Year	Main Carriageway	Service Road
5	FY 2029	Major maintenance with 40 mm PMB (100%) + Milling & 50 mm DBM (5%) (For section from km. 64.500 to km. 200.000)	Major maintenance with 30 mm BC (50%) + Micro-surfacing (50%) for 64.0 Km Length
6	FY 2030 to FY 2033	-	-
7	FY 2034	Major maintenance with 30 mm PMB (100%) + Milling & 50 mm DBM (7%) (For section from km. 20.500 to km. 64.500)	-
7	FY 2035	-	-
8	FY 2036	Major maintenance with 40 mm PMB (86%) & 30 mm PMB (14%) + Milling & 50 mm DBM (5%) (For section from km. 64.500 to km. 200.000)	Major maintenance with 30 mm BC (45%) + Micro-surfacing (55%)
9	FY 2037 to FY 2040	-	-
10	FY 2041	Major maintenance with 30 mm PMB (100%) + Milling & 50 mm DBM (1%) (For section from km. 20.500 to km. 64.500)	-
11	FY 2042	-	-
12	FY 2043	Major maintenance with 30 mm BC (100%) (For section from km. 64.500 to km. 200.000)	Major maintenance with 30 mm BC (45%) + Micro-surfacing (55%)

**Actual end of concession period as per Concession Agreement is October 2038. As informed by Concessionaire, the revised concession period is up to March 2044*

**About 14.016 Km of the project length has been descoped from the total project length of 179.50 Km. Thus, 165.484 Km is the remaining length of project, considered under the Concessionaire's scope and under Tollable length.*

The projected cost for Periodic / Major Maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine Maintenance (O&M) Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

   a. **Manpower and labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

   b. **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

      Therefore, bitumen prices are considered as per the forecast of the Client. Current published rates of bitumen are considered for unit rate calculation for FY 2027. Average bitumen price for 10 years is considered for unit rate calculation for FY 2028 and onwards. Polymer and modification costs are provided by the Client to work out the BC rate with PMB.

      Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST.

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY 2027 (Rs. / MT)	Rate for FY 2028 onwards (Rs. / MT)
1	Mathura	All States	VG-10	45,102	35,125
2			VG-30	46,402	36,137
3			VG-40	48,962	38,131
4	Panipat	All States	VG-10	45,102	35,125
5			VG-30	46,402	36,137
6			VG-40	48,962	38,131
7	Koyali	All States	VG-10	47,102	37,125
8			VG-30	48,402	38,137
9			VG-40	51,082	40,251
10	Haldia	All States	VG-10	46,602	35,683

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY 2027 (Rs. / MT)	Rate for FY 2028 onwards (Rs. / MT)
11			VG-30	47,402	36,295
12			VG-40	49,962	38,256
13	Barauni	All States	VG-10	47,132	36,213
14			VG-30	48,432	37,325
15			VG-40	50,992	39,286
16	CPCL	Kerala	VG-10	47,402	35,519
17			VG-30	48,402	36,395
18			VG-40	50,762	38,120
19	CPCL	Tamil Nadu	VG-10	47,902	36,019
20			VG-30	48,402	36,395
21			VG-40	50,962	38,320
22	CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
23			VG-30	45,402	33,395
24			VG-40	47,962	35,320
25	CPCL	Karnataka	VG-10	44,602	32,719
26			VG-30	45,402	33,395
27			VG-40	47,962	35,320

c. Sand and Aggregate: Market rates are considered from the quarry located nearest to Project road.

d. Cement: Market rates are considered from the nearest local market.

e. Steel : Market rates are considered from the nearest local market.

f. Machinery Hire charges: Hire charges for the machinery are considered in accordance with applicable PWD SOR.

g. Rates of items as per Work Order: The rates of items such as kerb raising, micro-surfacing, milling, road marking, road stud etc. are based on the actual rates at which the work to be executed and thus are considered as per the Work Orders shared by the Client which is issued to the Contractors executing these works at the site.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.) for FY 2027	Rates (Rs.) for FY 2028
1	Dense Bituminous Macadam	Cum	10,734	9,396
2	Bituminous Concrete	Cum	12,363	10,723
3	Bituminous Concrete with PMC	Cum	14,471	12,968
4	Milling	Sqm	93	93
5	Micro-surfacing	Sqm	163	163
6	Kerb raisings	Rm	316	316
7	Road Marking	Sqm	485	485

Sr. No.	Item Description	Unit	Rates (Rs.) for FY 2027	Rates (Rs.) for FY 2028
8	Road Studs	Nos.	193	193

5.3 Balance Work Cost

As discussed in the previous chapter, an approximate cost of balance works is about **Rs. 3.97 Crores**. These works are mainly in the sections where there is LA / utility issue; and thus, these works are pending and not taken up due to massive law & order and LA / utilities issues. These works are expected to be taken up as & when the land is made available by NHAI to the Concessionaire. Concessionaire has already informed to NHAI for considering all the balance works under Punch list B.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power & electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Toll Security Services
4. Incident Management Services
5. Electricity and Diesel Charges
6. TMS / HTMS / System Expenses
7. Office Operating Expenses
8. Vehicle Running Expenses
9. Professional Fees Expense
10. Community Development
11. Communication Expenses
12. Conveyance Expenses
13. Insurance Expense
14. IE Fees
15. Horticulture & ROW Maintenance
16. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation Cost is presented as below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of O&M Cost

Sr. No.	Particulars	Amount (Rs.) (FY 2027-44)
1	Salary and Welfare Expenses	3,14,64,000
2	Tolling Operations Services	13,68,84,063
3	Toll Security Services	1,81,94,906
4	Incident Management & Emergency Services	5,36,04,360
5	Electricity and Diesel Charges	3,59,11,022
6	TMS/HTMS/System Expenses	1,27,95,221
7	Office Operating Expenses	81,63,971
8	Vehicle Running Expenses	61,41,000
9	Professional Fees Expense	1,29,20,319
10	Community Development	65,35,374
11	Communication Expenses	10,95,806
12	Conveyance Expenses	3,98,475
13	Insurance Expense	17,37,707
14	IE Fees	1,39,16,091
15	Routine Maintenance Cost (Project Road)	10,54,98,903
16	Horticulture & ROW Maintenance	6,52,58,990
17	Miscellaneous including Contingency	1,35,90,493
	Total Cost (Rs.)	**52,41,10,702**
	Total Cost (in Crores.)	**52.41**
	Per km Cost (in Lakhs)	29.20

5.5 Major Maintenance Cost

The Concessionaire has completed an overlay on both sides of the project MCW in about 70% of the flexible road part of the project length. As per the Concessionaire, 30mm / 40 mm BC overlay has been laid and at distress portion 50 mm DBM has been laid at the site in FY 2022.

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II.**

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2024 to FY 2026	-	
2	FY 2027	81.39	
3	FY 2028	-	
4	FY 2029	277.42	
5	FY 2030 to FY 2033	-	
6	FY 2034	53.79	
7	FY 2035	-	
8	FY 2036	280.81	
9	FY 2037 to FY 2040	-	
10	FY 2041	54.48	
11	FY 2042	-	
12	FY 2043	206.41	
	Total Cost	**954.29**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, Replacement Cost of major TMS/ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2027	2.30	
2	FY 2034	2.30	
3	FY 2041	2.30	
Total Cost (Cr.)		**6.90**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-4 Escalation

Year	Escalation	Year	Escalation
2028	4.86%	**2041**	3.99%
2029	4.44%	**2042**	3.99%
2030	4.24%	**2043**	3.99%
2031	4.13%	**2044**	3.99%
2032	4.08%	**2045**	3.99%
2033	4.01%	**2046**	3.99%
2034	4.00%	**2047**	3.99%
2035	4.03%	**2048**	3.99%
2036	4.01%	**2049**	3.99%
2037	3.98%	**2050**	3.99%
2038	3.98%	**2051**	3.99%
2039	4.00%	**2052**	3.99%
2040	3.99%	**2053**	3.99%

5.8 Summary of Cost

Routine Maintenance (O&M) costs and the Periodic Maintenance costs have been worked out based on the investigations and assessment carried out for the Project Road. Cost for each of the category has already been discussed in previous sections. Since the forecasting has been carried out for the remaining Concession Period, the cost is summarised year wise in the following table for the remaining Concession Period along with the escalation as mentioned in Clause 5.7.

Escalated O&M Cost (Cr.)

	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41	FY42	FY43	FY44
1	Routine O&M Cost																		
1.01	Salary and Welfare Expense	3.15	3.30	3.45	3.59	3.74	3.89	4.05	4.21	4.38	4.56	4.74	4.93	5.12	5.33	5.54	5.76	5.99	6.23
1.02	Tolling Operations Services	13.69	14.35	14.99	15.63	16.27	16.94	17.61	18.32	19.06	19.82	20.61	21.43	22.29	23.18	24.10	25.06	26.06	27.10
1.03	Toll Security Services	1.82	1.91	1.99	2.08	2.16	2.25	2.34	2.44	2.53	2.63	2.74	2.85	2.96	3.08	3.20	3.33	3.46	3.60
1.04	Incident Management Services	5.36	5.62	5.87	6.12	6.37	6.63	6.90	7.17	7.46	7.76	8.07	8.39	8.73	9.08	9.44	9.82	10.21	10.61
1.05	Electricity and Diesel Charges	3.59	3.77	3.93	4.10	4.27	4.44	4.62	4.81	5.00	5.20	5.41	5.62	5.85	6.08	6.32	6.58	6.84	7.11
1.06	TMS/HTMS/System Expenses	0.97	1.01	1.06	1.10	1.15	1.20	1.24	1.29	1.35	1.40	1.46	1.51	1.57	1.64	1.70	1.77	1.84	1.91
1.07	Office Operating Expenses	0.82	0.86	0.89	0.93	0.97	1.01	1.05	1.09	1.14	1.18	1.23	1.28	1.33	1.38	1.44	1.49	1.55	1.62
1.08	Vehicle Running Expenses	0.61	0.64	0.67	0.70	0.73	0.76	0.79	0.82	0.85	0.89	0.92	0.96	1.00	1.04	1.08	1.12	1.17	1.22
1.09	Professional Fees Expense	1.29	1.35	1.41	1.47	1.54	1.60	1.66	1.73	1.80	1.87	1.95	2.02	2.10	2.19	2.28	2.37	2.46	2.56
1.10	Community Development	0.65	0.69	0.72	0.75	0.78	0.81	0.84	0.87	0.91	0.95	0.98	1.02	1.06	1.11	1.15	1.20	1.24	1.29
1.11	Communication Expenses	0.11	0.11	0.12	0.13	0.13	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.18	0.19	0.19	0.20	0.21	0.22
1.12	Conveyance Expenses	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08
1.13	Insurance Expense	0.17	0.18	0.19	0.20	0.21	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.31	0.32	0.33	0.34
1.14	IE Fees	1.39	1.46	1.52	1.59	1.65	1.72	1.79	1.86	1.94	2.02	2.10	2.18	2.27	2.36	2.45	2.55	2.65	2.76
1.15	Routine Maintenance Cost	10.55	11.06	11.55	12.04	12.54	13.05	13.58	14.12	14.69	15.28	15.88	16.52	17.18	17.86	18.58	19.32	20.09	20.89
1.16	Horticulture & ROW Maintenance	6.53	6.84	7.15	7.45	7.76	8.07	8.40	8.73	9.09	9.45	9.83	10.22	10.63	11.05	11.49	11.95	12.43	12.92
1.17	Miscellaneous and Contingency	1.36	1.43	1.49	1.55	1.62	1.68	1.75	1.82	1.89	1.97	2.05	2.13	2.21	2.30	2.39	2.49	2.59	2.69
	Subtotal of O&M Cost	52.10	54.63	57.06	59.48	61.93	64.46	67.04	69.73	72.53	75.44	78.44	81.57	84.83	88.22	91.74	95.40	99.20	103.16
2	Major Maintenance Cost	81.39	-	292.72	-	-	-	-	63.76	-	355.09	-	-	-	-	79.30	-	330.08	-
3	Periodic Cost of TMS/HTMS Replacement	2.30	-	-	-	-	-	-	3.08	-	-	-	-	-	-	4.05	-	-	-
4	Balance Works Cost	3.97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**139.75**	**54.63**	**349.78**	**59.48**	**61.93**	**64.46**	**67.04**	**136.57**	**72.53**	**430.53**	**78.44**	**81.57**	**84.83**	**88.22**	**175.09**	**95.40**	**429.28**	**103.16**

* Cost of the Balance works is approximately **Rs. 3.97 Cr.** These balance works are expected to be executed as and when NHAI makes the land available for the construction.

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Delhi Agra Project	
Ordinary Repair Cost for year 2026-27	**10,54,98,903**
(Inclusive of GST)	**= 6.24 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 2.5m wide shoulders - Flexible Pavement									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description**		**Factor**	**Cost Per km. as per Traffic Intensity**		**Project Length (km)**		**Per Year Project Maintenance Cost**	
				Normal	**Urban**				
				More than 4500 CVD	More than 4500 CVD				
				2,31,779	**2,75,452**				
						Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	354622.00	4,21,442.00	-	-	-	-
		Paved shoulder	1.70	394024.00	4,68,268.00	3.55	-	13,99,573	-
2	Six lane with divided carriageway	without Paved shoulder	2.09	484418.00	5,75,695.00	-	-	-	-
		with Paved shoulder	2.26	523821.00	6,22,522.00	63.40	-	3,32,12,347	-
3	Six lane with divided carriageway and service lane on either side	without Paved shoulder	2.56	593354.00	7,05,157.00	-	-	-	-
		with Paved shoulder	2.76	639710.00	7,60,247.00	96.98	5.10	6,20,36,517	38,80,301
4	PQC Panel Replacement Cost							49,70,165	
					TOTAL		**169.036**		**10,54,98,903**

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	0.50%
	Volume (cum)			2.5
	Rs/m^3			12803
	Cost in Rupees			32,008
	ii) Patch repair	100 % Patch less	As & when required	0.50%
	Area (sqm)			50
	Rs/m^2			512
	Cost in Rupees			25,600
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			100
	Cost in Rupees			25,000
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.00%
	Area (sqm)			150
	Rs/m^2			67
	Cost in Rupees			10,050
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			512
	Cost in Rupees			38,400
	v) Road marking	15.00%	Once in 7th year & @	21917

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
			Repaired location	
	SUB TOTAL			**1,52,975**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Jungle Clearance	100%	Twice in a Year	2069
	iii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**9,483**
3	**Maintenance of Cross Drainage works:**			
	i) Cleaning of culvert bed	100%	Once in a Year	2793
	ii) Repair of floors	100%	Once in a Year	5055
	iii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			**9,954**
4	**Maintenance of Minor & Major Bridges:**			
	i) Cleaning and removal of dirt & vegetation from pier caps, Bearings, Expansion Joints, Superstructure, Substructure and Retaining wall etc.	100%	As & when required	36,950
	ii) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints			
	iii) Repair of minor washouts, erosion scour and animal holes			
	iv) Sealing Cracks with Cement/ Epoxy Mortar			
	v) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Turfing and Arboriculture		Once in a Year	2463
	ii) Maintenance of gang hut store, sheds, animal & debries removal		Once in a Year	3695

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	iii) Lettering, Painting of Km stones, sign boards, hectometer stone etc.		Once in a Year	3695
	iv) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 5 Years	7390
	v) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232
	vi) Traffic Census		Once in a Year	2464
	vii) Provision for roughness measurement		Twice in a Year	1478
	SUB TOTAL			**22,417**
	GRAND TOTAL (Normal)			**2,31,779**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	1550
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	100%	As & when required	12317
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**43,673**
	GRAND TOTAL (Urban)			**2,75,452**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY-2027)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
Main Carriageway - Flexible Pavement										
1	Tack coat	Sqm						9,54,924	10	97,21,122
	For BC PMB	Sqm	2	34,480	12.50		8,62,000	8,62,000		
	For DBM	Sqm	2	2,414	10.50		50,686	50,686		
	For Misc. Location	Sqm	2	1,690	12.50		42,238	42,238		
2	BC PMB with 30 mm	Cum	2	36,170	12.50	0.03	27,127	27,127	14,472	39,25,79,358
3	DBM with 50 mm	Cum	2	2,414	10.50	0.05	2,534	2,534	10,734	2,72,01,922
4	Milling	Sqm	2	2,414	10.50		50,686	50,686	93	47,21,364
5	Milling at Above Palval Bridge Portion	Sqm	2	3,552	7.50		53,280	53,280	93	49,63,032
6	BC PMB with 30 mm	Cum	2	3,552	7.50	0.03	1,598	1,598	14,472	2,31,31,773
	Construction Cost of PQC Road at SR									
6	PQC Construction	Cum	1	412	8.250	0.25	850	850	8,524	72,43,515
7	DLC Construction	Cum	1	412	9.000	0.15	556	556	4,812	26,76,179
8	WMM layer Replacement / Reconpaction	Cum	1	412	9.000	0.13	464	464	3,372	15,62,723
	Service Road									
9	Tack coat	Sqm	2	15,200	6.70		2,03,680	2,03,680	10	20,73,462
10	BC with 30 mm	Cum	2	15,200	6.70	0.03	6,110	6,110	11,936	7,29,32,146
11	Micro Surfacing	Sqm	2	22,800	6.70		3,05,520	3,05,520	163	4,98,91,416
12	Glass Gird used for Concrete pavement	Sqm	2	6.242	5,500.00	0.80	54,925	54,925	100	54,92,520
	Other Works									
5	Raising of Road Kerb	Rmt	2	34,480			68,960	68,960	316	2,18,08,600
6	Replacement of Road Stud									
	Normal Road Stud	Nos	2	4,215			8,430	8,430	193	16,28,676
7	Painting of Kerb	Sqm	2	34,480		0.315	21,722	21,722	104	22,59,130
8	Road Marking	Sqm					54,160	54,160	485	2,62,84,039
	MCW									
	a) Median & Edge line	Sqm	4	36,204	0.15		21,722			
	b) Lane line	Sqm	4	11,947	0.10		4,779			
	Service road									

Major Maintenance Cost (FY-2027)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	a) Median & Edge line	Sqm	4	39,900	0.15		23,940			
	b) Lane line	Sqm	2	11,970	0.10		2,394			
	Junction crossing	Sqm					1,325			
9	Filling of Earthen shoulder	Cum					1,407	1,407	491	6,90,696
	MCW		2	5,500	1.50	0.03	495			
	Service Road		2	15,200	1.00	0.03	912			
10	Miscellaneous	5%								3,28,43,084
Total Major Maintenance Cost (Rs.)										**68,97,04,758**
Total Major Maintenance Cost with 18% GST (Rs.)										**81,38,51,614**
Total Major Maintenance Cost with GST (Cr.)										**81.39**
Per km Cost (lakh)										**45.34**
Escalation Factor for Major Maintenance Cost (FY-2027)										**1.00**
Total Escalated Cost for Major Maintenance Cost (FY-2027) (Cr.)										**81.39**

Major Maintenance Cost (FY - 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
Main Carriageway - Flexible Pavement										
1	Tack coat	Sqm						34,52,453	10	3,51,45,974
	For BC PMB	Sqm	2	1,28,128	12.50		32,03,200	32,03,200		
	For DBM	Sqm	2	6,406	10.50		1,34,534	1,34,534		
	For Misc. Location	Sqm	2	4,589	12.50		1,14,719	1,14,719		
2	BC PMB with 40 mm	Cum	2	1,32,717	12.50	0.04	1,32,717	1,32,717	12,968	1,72,11,10,655
3	DBM with 50 mm	Cum	2	6,406	10.50	0.05	6,727	6,727	9,396	6,32,04,530
4	Milling	Sqm	2	6,406	10.50		1,34,534	1,34,534	93	1,25,31,879
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 10% length	Rmt	10%	8,406	3.50	4.50	6,725	6,725	64	4,30,395
6	Dismantling of CC Panels @ 1.5% area	Cum	2%		1,32,397	0.30	596	596	1,030	6,13,540
7	Replacement of Panels - PQC @ 1.5% area	Cum	2%		1,32,397	0.30	596	596	8,334	49,65,110
	Service Road									

Major Maintenance Cost (FY - 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
8	Tack coat	Sqm	2	32,040	6.70		4,29,336	4,29,336	10	43,70,640
9	BC with 30 mm	Cum	2	32,040	6.70	0.03	12,880	12,880	10,723	13,81,11,552
10	Micro Surfacing	Sqm	2	32,040	6.70		4,29,336	4,29,336	163	7,01,10,569
	Other Works									
11	Raising of Road Kerb	Rmt	2	1,60,168			3,20,336	3,20,336	316	10,13,06,260
12	Replacement of Road Stud									
	Normal Road Stud	Nos	2	17,726			35,452	35,452	193	68,49,326
13	Painting of Kerb	Sqm	2	2,09,100		0.315	1,31,733	1,31,733	104	1,37,00,232
14	Road Marking	Sqm					1,31,401	1,31,401	485	6,37,69,023
	MCW									
	a) Median & Edge line	Sqm	4	1,28,128	0.15		76,877			
	b) Lane line	Sqm	4	42,282	0.10		16,913			
	Service Road									
	a) Edge line	Sqm	4	67,284	0.10		26,914			
	b) Lane line	Sqm	2	22,204	0.10		4,441			
	Junction crossing	Sqm					6,257			
15	Filling of Earthen shoulder	Cum					5,765	5,765	491	28,30,176
	MCW		2	64,048	1.00	0.03	3,843			
	Service Road		2	32,040	1.00	0.03	1,922			
16	Miscellaneous	5%								11,19,52,493
Total Major Maintenance Cost (Rs.)										**2,35,10,02,355**
Total Major Maintenance Cost with 18% GST (Rs.)										**2,77,41,82,779**
Total Major Maintenance Cost with GST (Cr.)										**277.42**
Per km Cost (lakh)										**154.55**
Escalation Factor for Major Maintenance Cost (FY - 2029)										**1.10**
Total Escalated Cost for Major Maintenance Cost (FY - 2029) (Cr.)										**292.72**

Major Maintenance Cost (FY - 2034)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
Main Carriageway - Flexible Pavement										
1	Tack coat	Sqm						9,54,924	10	97,21,122
	For BC PMB	Sqm	2	34,480	12.50		8,62,000	8,62,000		
	For DBM	Sqm	2	2,414	10.50		50,686	50,686		
	For Misc. Location	Sqm	2	1,690	12.50		42,238	42,238		
2	BC PMB with 30 mm	Cum	2	36,170	12.50	0.03	27,127	27,127	12,968	35,17,92,890
3	DBM with 50 mm	Cum	2	2,414	10.50	0.05	2,534	2,534	9,396	2,38,12,196
4	Milling	Sqm	2	2,414	10.50		50,686	50,686	93	47,21,364
5	BC PMB with 40 mm over Palval Flyover	Cum	2	3,552	7.50	0.03	1,598	1,598	12,968	2,07,28,531
6	Milling over the Palval Flyover	Sqm	2	3,552	7.50		53,280	53,280	93	49,63,032
	Other Works									
1	Raising of Road Kerb	Rmt	-	34,480			-	-	316	-
1	Replacement of Road Stud									
	Normal Road Stud	Nos	2	4,215			8,430	8,430	193	16,28,676
2	Painting of Kerb	Sqm	2	34,480		0.315	21,722	21,722	104	22,59,130
3	Road Marking	Sqm					27,826	27,826	485	1,35,04,149
	MCW									
	a) Median & Edge line	Sqm	4	36,204	0.15		21,722			
	b) Lane line	Sqm	4	11,947	0.10		4,779			
	Junction crossing	Sqm					1,325			
4	Filling of Earthen shoulder	Cum					2,069	2,069	491	10,15,574
	MCW		2	34,480	1.00	0.03	2,069			
5	Miscellaneous	5%								2,17,07,333
Total Major Maintenance Cost (Rs.)										**45,58,53,996**
Total Major Maintenance Cost with 18% GST (Rs.)										**53,79,07,716**
Total Major Maintenance Cost with GST (Cr.)										**53.79**
Per km Cost (lakh)										**29.97**
Escalation Factor for Major Maintenance Cost (FY - 2034)										**1.34**
Total Escalated Cost for Major Maintenance Cost (FY - 2034) (Cr.)										**63.76**

Major Maintenance Cost (FY - 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
Main Carriageway - Flexible Pavement										
1	Tack coat	Sqm						35,11,940	10	3,57,51,549
	For BC PMB	Sqm	2	1,30,309	12.50		32,57,725	32,57,725		
	For DBM	Sqm	2	6,515	10.50		1,36,824	1,36,824		
	For Misc. Location	Sqm	2	4,696	12.50		1,17,391	1,17,391		
2	BC PMB with 40 mm	Cum	2	1,13,059	12.50	0.04	1,13,059	1,13,059	12,968	1,46,61,76,546
3	BC PMB with 30 mm		2	21,946	10.50	0.03	13,826	13,826	12,968	17,93,00,445
3	DBM with 50 mm	Cum	2	6,515	10.50	0.05	6,841	6,841	9,396	6,42,80,400
4	Milling	Sqm	2	6,515	10.50		1,36,824	1,36,824	93	1,27,45,198
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 10% length	Rmt	10%	8,406	3.50	4.50	6,725	6,725	64	4,30,395
6	Dismantling of CC Panels @ 1.5% area	Cum	2%		1,32,397	0.30	596	596	1,030	6,13,540
7	Replacement of Panels - PQC @ 1.5% area	Cum	2%		1,32,397	0.30	596	596	8,334	49,65,110
	Service Road									
8	Tack coat	Sqm	2	45,936	6.70		6,15,542	6,15,542	10	62,66,222
9	BC with 30 mm	Cum	2	45,936	6.70	0.03	18,466	18,466	10,723	19,80,11,619
10	Micro Surfacing	Sqm	2	56,144	6.70		7,52,330	7,52,330	163	12,28,55,424
	Other Works									
11	Raising of Road Kerb	Rmt	2	1,30,309			2,60,618	2,60,618	316	8,24,20,443
11	Replacement of Road Stud									
	Normal Road Stud	Nos	2	17,726			35,452	35,452	193	68,49,326
12	Painting of Kerb	Sqm	2	1,45,020		0.315	91,363	91,363	104	95,01,710
13	Road Marking	Sqm					1,52,601	1,52,601	485	7,40,57,085
	MCW									
	a) Median & Edge line	Sqm	4	1,30,309	0.15		78,185			
	b) Lane line	Sqm	4	43,002	0.10		17,201			
	Service Road									
	a) Edge line	Sqm	4	1,07,184	0.10		42,874			
	b) Lane line	Sqm	2	35,371	0.10		7,074			
	Junction crossing	Sqm					7,267			
14	Filling of Earthen shoulder	Cum					4,450	4,450	491	21,84,456

Major Maintenance Cost (FY - 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	MCW		2	28,229	1.00	0.03	1,694			
	Service Road		2	45,936	1.00	0.03	2,756			
15	Miscellaneous	5%								11,33,20,473
									Total Major Maintenance Cost (Rs.)	**2,37,97,29,940**
									Total Major Maintenance Cost with 18% GST (Rs.)	**2,80,80,81,329**
									Total Major Maintenance Cost with GST (Cr.)	**280.81**
									Per km Cost (lakh)	**156.44**
									Escalation Factor for Major Maintenance Cost (FY - 2036)	**1.45**
									Total Escalated Cost for Major Maintenance Cost (FY - 2036) (Cr.)	**355.09**

Major Maintenance Cost (FY - 2041)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
Main Carriageway - Flexible Pavement										
1	Tack coat	Sqm						9,12,341	10	92,87,629
	For BC PMB	Sqm	2	34,480	12.50		8,62,000	8,62,000		
	For DBM	Sqm	2	345	10.50		7,241	7,241		
	For Misc. Location	Sqm	2	1,724	12.50		43,100	43,100		
2	BC PMB with 30 mm	Cum	2	36,204	12.50	0.03	27,153	27,153	12,968	35,21,28,250
3	DBM with 50 mm	Cum	2	345	10.50	0.05	362	362	9,396	34,01,742
4	Milling	Sqm	2	345	10.50		7,241	7,241	93	6,74,481
5	BC PMB with 30 mm over Palval Flyover	Cum	2	3,552	7.50	0.03	1,598	1,598	12,968	2,07,28,531
6	Milling over the Palval Flyover	Sqm	2	3,552	7.50		53,280	53,280	93	49,63,032
7	Milling below Palval Flyover	Sqm	2	3,552	12.50		88,800	88,800	93	82,71,720
	Other Works									
5	Raising of Road Kerb	Rmt	2	34,480			68,960	68,960	316	2,18,08,600
6	Replacement of Road Stud									
	Normal Road Stud	Nos	2	4,215			8,430	8,430	193	16,28,676
7	Painting of Kerb	Sqm	2	34,480		0.315	21,722	21,722	104	22,59,130
8	Road Marking	Sqm					27,826	27,826	485	1,35,04,149
	MCW									

Major Maintenance Cost (FY - 2041)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	a) Median & Edge line	Sqm	4	36,204	0.15		21,722			
	b) Lane line	Sqm	4	11,947	0.10		4,779			
	Junction crossing	Sqm					1,325			
9	Filling of Earthen shoulder	Cum					2,069	2,069	491	10,15,574
	MCW		2	34,480	1.00	0.03	2,069			
10	Miscellaneous	5%								2,19,83,576
Total Major Maintenance Cost (Rs.)										**46,16,55,089**
Total Major Maintenance Cost with 18% GST (Rs.)										**54,47,53,005**
Total Major Maintenance Cost with GST (Cr.)										**54.48**
Per km Cost (lakh)										**30.35**
Escalation Factor for Major Maintenance Cost (FY - 2041)										**1.76**
Total Escalated Cost for Major Maintenance Cost (FY - 2041) (Cr.)										**79.30**

Major Maintenance Cost (FY - 2043)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
Main Carriageway - Flexible Pavement										
1	Tack coat	Sqm						34,82,100	10	3,54,47,778
	For BC	Sqm	2	1,30,309	12.50		32,57,725	32,57,725		
	For DBM	Sqm	2	-	10.50		-	-		
	For Misc. Location	Sqm	2	8,975	12.50		2,24,375	2,24,375		
2	BC with 30 mm	Cum	2	1,39,284	12.50	0.03	1,04,463	1,04,463	10,723	1,12,01,44,213
3	DBM with 50 mm	Cum	2	-	10.50	0.05	-	-	9,396	-
4	Milling	Sqm	2	-	10.50		-	-	93	-
	Main Carriageway - Rigid Pavement									
3	Joint Sealant Replacement @ 5% length	Rmt	5%	8,406	3.50	4.50	3,362	3,362	64	2,15,197
4	Dismantling of CC Panels @ 1.5% area	Cum	2%		1,32,397	0.30	596	596	1,030	6,13,540
5	Replacement of Panels - PQC @ 1.5% area	Cum	2%		1,32,397	0.30	596	596	8,334	49,65,110
	Service Road									
6	Tack coat	Sqm	2	45,936	6.70		6,15,542	6,15,542	10	62,66,222
7	BC with 30 mm	Cum	2	45,936	6.70	0.03	18,466	18,466	10,723	19,80,11,619

Major Maintenance Cost (FY - 2043)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
8	Micro Surfacing	Sqm	2	56,144	6.70		7,52,330	7,52,330	163	12,28,55,424
	Other Works									
9	Raising of Road Kerb	Rmt	2	1,30,309			2,60,618	2,60,618	316	8,24,20,443
10	Replacement of Road Stud									
	Normal Road Stud	Nos	2	17,726			35,452	35,452	193	68,49,326
11	Painting of Kerb	Sqm	2	1,45,020		0.315	91,363	91,363	104	95,01,710
12	Road Marking	Sqm					1,57,608	1,57,608	485	7,64,87,358
	MCW									
	a) Median & Edge line	Sqm	4	1,36,824	0.15		82,095			
	b) Lane line	Sqm	4	45,152	0.10		18,061			
	Service Road									
	a) Edge line	Sqm	4	1,07,184	0.10		42,874			
	b) Lane line	Sqm	2	35,371	0.10		7,074			
	Junction crossing	Sqm					7,505			
13	Filling of Earthen shoulder	Cum					4,450	4,450	491	21,84,456
	MCW		2	28,229	1.00	0.03	1,694			
	Service Road		2	45,936	1.00	0.03	2,756			
14	Miscellaneous	5%								8,32,98,120
Total Major Maintenance Cost (Rs.)										**1,74,92,60,516**
Total Major Maintenance Cost with 18% GST (Rs.)										**2,06,41,27,409**
Total Major Maintenance Cost with GST (Cr.)										**206.41**
Per km Cost (lakh)										**114.99**
Escalation Factor for Major Maintenance Cost (FY - 2043)										**1.90**
Total Escalated Cost for Major Maintenance Cost (FY - 2043) (Cr.)										**330.08**

FP Project Management

Technical Due Diligence of Farakka-Raiganj Section of NH-34 (New NH-12) from km. 294+800 to km. 394+980 in the State of West Bengal on DBFOT (Toll) Mode

Final Report

May 2026

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited

315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	RMW / TSM	AKA	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 6
2.5 Abutting Land Use 6
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 8
3.3 Major / Minor Junctions 9
3.4 Condition Survey of Bridge & Major Structures 11
3.5 Condition Survey of Culverts 38
3.6 Drainage 39
3.7 Slope Protection 41
3.8 Road Furniture 41
3.9 Avenue Plantation and Median Plantation 47
3.10 Toll Plaza 48
3.10.1 Lane Equipment 51
3.10.2 RFID ETC Transceiver 51
3.10.3 Lane Controller with Industrial PC 52
3.10.4 Automatic Vehicle Classification (AVC) Sensors 52
3.10.5 Automatic Lane Barrier 52
3.10.6 Lane Traffic Light (LTL) & User Fare Display (UFD) 53

3.10.7 Incident Capture Camera (AVC Camera) 53
3.10.8 License Plate Image Capture Camera (LPIC) 53
3.10.9 Over Head Lane Signal (OHLS) 54
3.10.10 Medium Speed Weigh in Motion (MSWIM) 54
3.10.11 Toll Booth Equipment 55
3.11 Toll Plaza Equipment 55
3.11.1 TMS Server 55
3.11.2 LED screen for CCTV monitoring 56
3.11.3 Workstations in Control Room, POS room 56
3.12 Advanced Traffic Management System (ATMS) 57
3.12.1 Automatic Traffic Counter cum classifier (ATCC) 57
3.12.2 Emergency Call Boxes (ECB) 57
3.12.3 MET System 58
3.12.4 Variable Message Signboards (VMS) 58
3.12.5 CCTV Surveillance Cameras 58
3.12.6 Video Incident Detection System 59
3.12.7 Adequacy of Toll Collection System and ATMS 59
3.13 Truck Lay-Bye 59
3.14 Traffic Aid Post and Medical Aid Post 60
3.15 Toilet Block 60
3.16 Bus Bays and Passenger Shelters 61
3.17 Balance Work Status 61
3.18 Operation and Maintenance 62
3.18.1 O&M Contract 62
3.18.2 Organization Chart 62
3.18.3 Operation 64
3.18.4 Routine Maintenance 64
4 Pavement Investigation and Assessment 65
4.1 General 65
4.2 Surveys and Investigation 65
4.2.1 Pavement Condition Survey 65
4.2.2 Axle Load Survey 66
4.2.3 Design Traffic 66
4.2.4 Network Survey Vehicles (NSV) Survey 67
4.2.5 Structural Evaluation 68
4.2.6 Test Pit and Subgrade Investigation 71
4.2.7 Existing Granular layers Testing 71

4.2.8 Periodic Maintenance Strategy 72
5 Cost Estimates 73
5.1 General 73
5.2 Rate Assumption 73
5.3 Balance Work Cost 75
5.4 Routine O&M Cost 75
5.5 Major Maintenance Cost 76
5.6 Periodic Replacement of TMS / ATMS System 76
5.7 Escalation Assumption 77
5.8 Summary of Cost 77
Annexures 79
Annexure I - Routine Maintenance Cost 80
Annexure II - Major Maintenance Cost 84

List of Tables

Table 2-1 Scope of Work as per Schedule-B of CA 6
Table 3-1 Details of Major Intersections (Junctions / Intersections) 9
Table 3-2 Details of Summary for Structures 11
Table 3-3 Condition Survey of Major Structure 12
Table 3-4 Details of Summary for Toll Plaza Items 48
Table 3-5 Details of Truck Lay-bye 59
Table 3-6 Details of Toilet Block 60
Table 4-1 Summary of Pavement Condition 65
Table 4-2 Summary of VDF 66
Table 4-3 MSA Calculation 66
Table 4-4 Result of Roughness Survey 67
Table 4-5 Summary of Subgrade Test Results 71
Table 4-6 Summary of Granular Layers Tests Results 71
Table 4-7 Major Maintenance Cycle 72
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 73
Table 5-2 Summary of Unit Rates 74
Table 5-3 Summary of Operation Cost 76
Table 5-4 Escalation 77

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start of the Project Road 5
Figure 2-3 End of Project Road 5
Figure 3-1 Photographs of Pavement Condition - Good (MCW) 7
Figure 3-2 Photographs of Pavement Condition - Fair (MCW) 8
Figure 3-3 Photographs of Service / Slip Road 9
Figure 3-4 Photographs of Major Junctions 10
Figure 3-5 Photographs of Minor Junctions 11
Figure 3-6 Photographs of Major Structures 30
Figure 3-7 Photographs of Box Culverts 39
Figure 3-8 Photograph of HP Culverts 39
Figure 3-9 Photographs of Drainage 40
Figure 3-10 Photographs of Slope Protection and Chute Drain 41
Figure 3-11 Photographs of Street Lighting 42
Figure 3-12 Photographs of Pavement Marking 43
Figure 3-13 Photographs of Road Studs 44
Figure 3-14 Photographs of Road Signages 45
Figure 3-15 Photographs of MBCB / Crash Barrier 46
Figure 3-16 Photographs of Pedestrian Guard Rail 47
Figure 3-17 Photographs of Avenue Plantation and Median Plantation 48
Figure 3-18 Photographs of Toll Plaza 49
Figure 3-19 Photographs of Truck Lay Bye 60
Figure 3-20 Photographs of Toilet Block 61
Figure 3-21 Photographs of Bus Bays and Passenger Shelters 61

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Farakka - Raiganj Section of NH-34 (New NH-12) from km. 294.800 to km. 394.980 in the State of West Bengal. The project is to be developed on Design, Build, Finance, Operate and Transfer (DBFOT) basis (the "Project") under NHDP Phase-III.

Farakka Raiganj Highways Limited (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance and transfer of Farakka to Raiganj Section (from km. 294.800 to km. 394.975) of NH-34 (New NH-12). The project is to be developed on Design, Build, Finance, Operate and Transfer (DBFOT) basis (the "Project") under NHDP Phase-III. The project was awarded to Concessionaire on 3rd February 2011 with a concession period of 30 years by National Highway Authority of India (NHAI). The length of Project Road is 99.995 kms with two Toll Plazas at km. 297+867 and at km. 351+440.

The Date of Concession Agreement is 19th July 2010. The concession period of the project is 30 years commencing from the Appointed Date. Appointed Date of the project is 03rd February 2011. Provisional Completion Certificate for the project was issued on 17th October 2016 and the Commercial Operation commenced from 19th October 2016. Completion Certificate was issued on 03rd May 2021 for the project length of 99.995 kms.

Sr. No.	Description	Date
1	Date of Signing the Concession Agreement	19th July 2010
2	Appointed Date	03rd February 2011
3	Scheduled Project Completion Date	01st August 2013
4	Scheduled End of Concession	02nd February 2041
5	Date of Issue of Provisional Completion	17th October 2016
6	Date of Commencement of Commercial	19th October 2016
7	Date of Issue of Completion Certificate	03rd May 2021

Presently, the project is under operation and maintenance and the Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is accordingly presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.

- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.
- Formulation of future major maintenance strategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period
- Review of balance work cost for Project Road including estimation of quantities and item rates.

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment
- The condition assessment of major structures by visual inspection

- The information like material sources and the probable cost is collected for the purpose of cost estimate

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyzing the same as per the best engineering / industry practices.

The site visit of the project highway and inspection were carried out during the period from **19th February 2026 to 22nd February 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features, and overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates:** The chapter summarizes the forecast for O&M and major maintenance cost over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **Farakka Raiganj Highway Limited**, a company promoted by Cube Highways or company a Special Purpose Vehicle (SPV) formed for implementing this project on 19th July 2010. The Appointed Date for the Project Road is 03rd February 2011.

2.2 Location

The Project Road is part of National Highway No. 34 of Farakka - Raiganj section in the State of West Bengal. The total project length is 99.995 kms.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map

The photographs taken during the site visit are presented below.

Figure 2-2 Start of the Project Road

Start of the Project at km. 294+800 (LHS merging lane)

Start of the Project at km. 294+800 (RHS merging lane)

Figure 2-3 End of Project Road

End of the Project at km. 394+975 (LHS)

End of the Project at km. 394+975 (RHS)

2.3 Climate

There are mainly five seasons in the West Bengal region: spring, summer, rainy season, a short autumn, and winter. A short spring is expected in some parts of the state, especially in the northern parts of North Bengal. The summer season extends from the first week of March to June. The average temperature is 30 degrees Celsius. The rainy season stretches from July to the end of September. Most of the annual average rainfall of about 125cm to 175cm occurs during this period. Autumn season is experienced in West Bengal for a very short period, from beginning of October to the middle of November. Winter season is experienced in the state from mid-November to February, with January being the coldest month. Winter is cold to mild over the plains with average minimum temperatures of 9 to 16 °C.

2.4 Terrain

The Project Road traverses through plain / rolling terrain.

2.5 Abutting Land Use

Land use along the Project Road is mostly agricultural except some part of the road stretches which passes through Built up areas.

2.6 Right of Way

The width of the existing Right of Way (RoW) throughout the project stretch is 60.0 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, hand pumps etc.

2.8 Development as per Schedule-B

The Project Road from Farakka to Raiganj Section (from km. 294.800 to km. 394.975) of NH-34 (New NH-12). has been developed as a four-lane divided carriageway with bypasses, service road and other arrangements. The Project Road passes through rural (agricultural) as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.
b) Tolling, operation, management, maintenance, and transfer of the Project Highway subject to and in accordance with the provisions of this Agreement.
c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of the Concession Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Concessionaire under the Concession Agreement.

Following is the Scope of Work as per Schedule-B of Concession Agreement as per which the project highway has been developed.

Table 2-1 Scope of Work as per Schedule-B of CA

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km.	99.995	
2	Construction of Service Road	km.	8.34	LHS+RHS
3	Rail Over Bridge	No	01	
5	Fly Over	No	03	
6	Vehicular Underpass	No	05	
7	Major Bridges	No	03	
8	Minor Bridges	No	22	
9	Culverts	No	92	

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 8.75 m with earthen shoulder of 2.0 m on either side. The Project Road has suitable median width throughout its length. Service Road of 7.0 / 5.50 m width has been provided on one side or both sides wherever required in built up area to cater for the local traffic.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the toll plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

Pavement condition survey was carried out during the period from **19th February 2026 to 22nd February 2026** through visual inspection for the entire project length. From the visual inspection, it is found that the overall pavement condition of the Project Road is found to be Good to Fair.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition - Good (MCW)

Pavement Condition at km. 331+550 (LHS)

Pavement Condition at km. 318+270 (RHS)

Pavement Condition at km. 387+550 (LHS)

Pavement Condition at km. 316+000 (LHS)

Figure 3-2 Photographs of Pavement Condition - Fair (MCW)

Pavement Condition at km. 310+330 (LHS)

Pavement Condition at km. 318+240 (LHS)

Pavement Condition at km. 366+760 (LHS)

Pavement Condition at km. 388+000 (RHS)

3.2 Service Road / Slip Road

The service road of width 7.0 m / 5.5 m is constructed in built-up areas and adjoining underpass locations. The project road has total service road length of 8.34 kms on both sides. The photographs taken during the site visit are presented below.

Figure 3-3 Photographs of Service / Slip Road

Service Road at VUP km. 326+147 (A1-LHS)

Service Road at VUP km 334+820 COS (A1-RHS)

Service Road at km. 351+800 LHS

Service Road at VUP km. 334+820 under COS (A2-RHS)

3.3 Major / Minor Junctions

There are 13 nos. of major junctions and 209 nos. of minor junctions along project road. The junction details are presented in the table below.

Table 3-1 Details of Major Intersections (Junctions / Intersections)

Sr. No.	Existing Chainage (km)	Design Chainage (km)	Category of Road	Type of Junction	Remarks
1	297.740	395.637	Township Road	4-legged	NTPC Township More
2	302.550	300.480	ODR	4-legged	Nutan 16 Mile More
3	313.250	311.425	ODR	4-legged	Jalalpur More
4	315.900	314.167	ODR	4-legged	Sujapur More
5	322.220	320.437	MDR	3-legged	Sustani More
6	Maldah Bypass	326.147	MDR	4-legged	Bulbulchandi More
7	348.755	348.340	ODR	3-legged	Alampur More
8	352.900	352.487	SH-31	3-legged	Gajol More

Sr. No.	Existing Chainage (km)	Design Chainage (km)	Category of Road	Type of Junction	Remarks
9	354.145	353.729	NH-80	4-legged	Kadubari More
10	356.770	362.418	ODR	4-legged	Moina More
11	375.755	372.550	ODR	4-legged	Baliapara More
12	384.075	381.049	MDR	4-legged	Itahar More
13	392.920	390.090	MDR	4-legged	Durgapur More

The photographs taken during site visit are presented as below:

Figure 3-4 Photographs of Major Junctions

Start at Malda Bypass at km. 320+437

End of Malda Bypass at km. 331+400

Junction at Sujapur at km. 314+167

Junction at New Farakka / Ganga MJB Junction WIP at km. 296+000 (RHS)

Figure 3-5 Photographs of Minor Junctions

Junction at km. 302+850 (RHS)

Junction at km. 309+000 (LHS)

3.4 Condition Survey of Bridge & Major Structures

The inventory of Structures including major bridges, minor bridges, ROB's, flyover, underpasses and culverts is presented in table below.

Table 3-2 Details of Summary for Structures

Type of Structure	Total Number of Structures
Rail Over Bridge (ROB)	01
Fly Over	03
Vehicular Underpass	05
Major Bridges	03
Minor Bridges	22
Culverts	92
Total	**126**

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-3 Condition Survey of Major Structure

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
1	**296.923**	**Minor Bridge**	**Age**	Old 2 lane Low level (1 x 6.10 m)	New (1 x 7.4 m)	The old and new bridges are in sound condition. Wearing course of the old bridge repairing completed.
			Foundation	Open foundation	Open foundation	
			Sub structure/ Abutment / Pier	RCC Wall	RCC Wall	
			Super Structure	RCC slab	RCC slab, Box type	
			Slope Protection	RCC wing wall is provided. Pitching is found	RCC return & pitching is found	
			Nalla Bed	Bushes is developed		
			Parapet / Railing	RCC railing is provided	RCC parapet is provided	
			Expansion Joints	No	No	
			Wearing Coat Surface	BC Surface is found crack. No joint is found. Cracks at approach joint repairing completed	BC is in good condition	
			Approach Slope	Stable condition	Stable condition	
			Drainage	No problem	No problem	
2	**302.251**	**Major Bridge (Pagala River)**	**Age**	New 2 lane + footpath Span - 4 x 40 m +2 x20m	Existing 2 lane + footpath Low level by 8' Span - 12 x 8m + 2 x 5m	The old and new bridges are in sound condition. Some settlements are noticed at approach road A1&A2 LHS.
			Foundation	Pile foundation	Open foundation	
			Sub structure / Abutment / Pier	Circular RCC pier	RCC wall	
			Super Structure	Segmental box girder Slab	RCC solid slab minor damage noticed P4-P5	
			Bearing	No problem	-	
			Slope Protection	RCC return & pitching is provided	RCC return & pitching is provided	
			Nalla Bed	Water logging noticed	Water logging noticed	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
			Parapet / Railing	RCC parapet & railing for footpath	RCC railing	
			Expansion Joints	Strip seal – No problem		
			Wearing Coat Surface	BC – Minor pot holes noticed	BC – No problem	
			Approach Slope	Turfing & pitching stable	Turfing & pitching stable	
			Drainage	No problem	Blocked	
3	**303.941**	**Minor Bridge (3 x 5) m**	**Age**	New 2 lane + footpath	New 2 lane + footpath	The structures are in sound condition. Bed cleaning required at up-stream and down-stream side.
			Foundation	RCC open type	RCC open type	
			Sub structure/ Abutment / Pier	RCC wall & pardi	RCC wall & pardi	
			Super Structure	RCC slab Box type Median covered	RCC slab Box type	
			Slope Protection	RCC return & pitching. No problem.	RCC return & pitching. No problem	
			Nalla Bed	Water Clear	Water Clear	
			Parapet / Railing	RCC parapet & railing	RCC parapet & railing	
			Expansion Joints			
			Wearing Coat Surface	BC – Repairing required at A1 & A2 Approach slab		
			Approach Slope	Repairing done	Repairing done	
			Drainage	No problem	No problem	
4	**304.455**	**Minor Bridge**	**Age**	New 2 lane + footpath Span - 1 x 40m	Old 2 lane - 3 span	The old and new structures and in sound condition. In urban areas cleaning the bed is required. Downstream is totally blocked by garbage.
			Foundation	Open type	RCC Open Foundation	
			Sub structure/ Abutment / Pier	RCC wall	RCC wall & piers	
			Super Structure	RCC slab	RCC Arch Brick masonry solid slab	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Blocked	P2-A2 & A1-P1 Waterway	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
				Cleaning done	Blocked by garbage Cleaning done	Cleaning done
			Parapet / Railing	RCC parapet & railing	RCC railing work is completed	
			Expansion Joints	2 nos.		
			Wearing Coat Surface	BC – Distress noticed at approach road	BC	
			Approach Slope	Stable	Stable	
			Drainage	No problem	No problem	
5	**308.489**	**Minor Bridge Skew**	**Age**	New 2 lane + footpath Span 2 x 7.40 m x 3 m	Old 2 lane + footpath Span 2 x 7.40 m x 3 m	The old and new structures are in sound condition. At P1-A2 RHS span wearing coat pavement distress patch work done
			Foundation	RCC open type	RCC open type	
			Sub structure/ Abutment / Pier	RCC wall and pardi	Abutment - Brick wall Centre RCC pier & cap	
			Super Structure	RCC slab type	RCC solid slab type	
			Slope Protection	RCC return & pitching at A1 side	RCC return & pitching cleaning required.	
			Nalla Bed	Water & bushes is present.	Water & bushes is present.	
			Parapet / Railing	RCC parapet & railing is provided.	Parapet is provided	
			Wearing Coat Surface	Balance work of BC is done. A2 side Approach joint small crack is noticed.	On BC Crack at approach slab joint is noticed.	
			Approach Slope	Stable condition	Stable condition	
			Drainage	No problem	No problem	
6	**311.654**	**Minor Bridge**	**Age**	New 2 lane + footpath Span – 2x5.00m	New 2 lane + footpath Span – 2x5.00m	The structures are in sound condition. At A2 LHS approach slab Crack on pavement & RCC railing repairing done.
			Foundation	RCC Open type	RCC Open type	
			Sub structure/ Abutment / Pier	RCC wall & pardi	RCC wall & pardi	
			Super Structure	RCC slab Box type	RCC slab Box type	
			Slope Protection	Return & pitching is provided	Return & pitching is provided	
			Nalla Bed	Water Temporary closed by local	Water Temporary closed by	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
				villagers for fishing	local villagers for fishing	
			Parapet / Railing	RCC parapet + railing	RCC parapet + railing	
			Expansion Joints	NA	NA	
			Wearing Coat Surface	BC is in good condition. Approach crack at joint repairing done.	BC is in good condition.	
			Approach Slope	Stable condition	Approach work is done.	
			Drainage	No problem	No problem	
7	**315.318**	**Minor Bridge (4 x 5) m**	**Age**	New 2 lane + footpath	New New lane + footpath	The structure is in sound condition. Cracks observed at A2 BHS approach slab. Waterspout cleaning required
			Foundation	RCC open foundation	RCC open foundation	
			Sub structure/ Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab Box type	RCC slab Box type	
			Slope Protection	RCC return & pitching is provided.	RCC return & pitching is provided.	
			Nalla Bed	Cleaning is reqd.	Cleaning is reqd	
			Parapet / Railing	RCC parapet	RCC parapet	
			Expansion Joints	-	-	
			Wearing Coat Surface	BC is in good condition.	BC is in good condition.	
			Approach Slope	Stable condition	Stable condition	
			Drainage	No problem	No problem	
8	**316.155**	**Major Bridge 3 span (20+25+20) m**	**Age**	Old 2 lane	New 2 lane+ Footpath	The old and new structure is in sound condition. P1& P2 RHS pile cap PCC with back filling matl. totally damaged/ wash
			Foundation	RCC open foundation	Pile foundation	
			Sub structure/ Abutment / Pier	RC wall RCC piers	RC wall RCC piers	
			Super Structure	Segmental Arches Balance condition 5 span	4 girders & slab	
			Bearing	Rocker & Roller Bearing 6 nos. - No problem	Elastomeric Bearing 4 nos. No problem	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
			Slope Protection	RCC return & pitching	RCC return & pitching	out.
			Nalla Bed	Clear Water	Clear Water	
			Parapet / Railing	RCC railing	RCC Parapet	
			Expansion Joints	-	No problem	
			Wearing Coat Surface	Condition of BC is fair	Condition of BC is good	
			Approach Slope	Stable condition	Stable condition	
			Drainage	No problem	No problem	
9	**320.335**	**Minor Bridge (4x5) m**	**Age**	New 2 lane + Footpath	New 2 lane + Footpath	The structure is in sound condition. Repair for honey combing at RCC wall is done. Repair of BC surface, settlement at Approach repair work is done.
			Foundation	RCC open foundation	RCC open foundation	
			Sub Structure Abutment/Pier	RCC wall RCC pardi Repairing done	RCC wall RCC pardi Repairing done	
			Super Structure	RCC slab Box type	RCC slab Box type	
			Bearing	-	-	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Water & Bushes observed	Water & Bushes observed	
			Parapet /Railing	RCC parapet	RCC parapet	
			Expansion Joint	-	-	
			Wearing Coat / Surface	BC - Approach Settlement repair is done.	BC – Repairing done.	
			Approach Slope	Stable condition	Stable condition	
			Drainage	No problem	No problem	
10	**321.700**	**Minor Bridge Bypass Malda (3x5.75) m**	**Age**	New 2 lane + Footpath	New 2 lane + Footpath	The structure is in sound condition. Minor settlement noticed at approach slab at BHS. Waterspouts Cleaning is
			Foundation	RCC open Foundation	RCC open Foundation	
			Sub structure Abutment / Pier	RCC wall & pardi	RCC wall & pardi	
			Super Structure	RCC slab	RCC slab	
			Slope Protection	RCC wing wall & pitching	RCC wing wall & pitching	
			Parapet / Railing	RCC parapet	RCC parapet	
			Wearing Coat /	BC - Completed	BC – No problem	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
			Surface			required.
			Approach Slope	Stable condition	Stable condition	
			Drainage	No problem	No problem	
11	**323.180**	**Minor Bridge (6 x 5) m**	**Age**	New Footpath + 2 lane	New Footpath + 2 lane	Waterspout cleaning is required at Footpath. The structure is in sound condition. Minor settlement noticed at A2 BHS Approach slab
			Foundation	Open foundation	Open foundation	
			Sub structure Abutment/Pier	RCC wall type	RCC wall type	
			Super Structure	RCC solid slab	RCC solid slab	
			Slope Protection	RCC wing wall Pitching is provided	RCC wing wall Pitching is provided	
			Nalla Bed	Cleaning is required	Cleaning is required	
			Parapet /Railing	RCC wing wall Pitching	RCC wing wall Pitching	
			Wearing Coat/ Surface	BC completed	BC completed	
			Approach Slope	Stable	Stable	
			Drainage	No problem	No problem	
12	**325.223**	**Major Bridge Span - (5 x 28) + (6 x 48) m Mahananda River Bypass Malda**	**Age**	New 2 lane + footpath	New 2 lane + footpath	The structures are in sound condition. Span P8-P9 & P9-A2 cross crack observed on wearing coat. A1-P1-P2 LHS span 1st lane damage BC milling and relaying work completed. A1-P1 LHS 2nd lane
			Foundation	Pile foundation	Pile foundation	
			Sub Structure Abutment/ Pier	RCC wall RCC circular piers	RCC wall RCC circular piers	
			Super Structure	RCC girders – 5 nos. RCC slab Pre-stress Box girder	RCC girders – 5 nos. RCC slab	
			Bearing	POT PTFE	POT PTFE	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Clear Water	Clear Water	
			Parapet /Railing	RCC parapet	RCC parapet	
			Expansion Joint	Strip seal type No problem	Strip seal type No problem	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
			Wearing Coat/ Surface	Mastic & BC completed.	Mastic & BC completed.	BC crack, rutting observed. At all approach slab settlement observed On P8 (P4) LHS Expansion Joint gap noticed more than usual. P3 & P4 Pile rectification work in progress.
			Approach Slope	Retaining wall completed	Retaining wall completed	
			Drainage	Provided	Provided	
13	**326.147**	**VUP (1x 12x 7.50) m**	**Age**	New	New	The structure is in sound condition. The balance work is completed. RCC built up drain is constructed at A1 both hand side service road. Waterspouts cleaning is required
			Foundation	RCC open foundation	RCC open foundation	
			Sub Structure Abutment/Pier	Abutment - RE Wall RCC pier	Abutment - RE Wall RCC pier	
			Super Structure	4 RCC girder RCC slab Median open	4 RCC girder RCC slab Median open	
			Bearing	4 PTFE	4 PTFE	
			Slope Protection	R.E. Wall	R.E. Wall	
			Nalla Bed	Road	Road	
			Parapet /Railing	RCC parapet Completed	RCC parapet Completed	
			Wearing Coat/ Surface	BC - Completed	BC - Completed	
			Approach Slope	Completed	Completed	
			Drainage	A1 side RCC Drain	Proposed	
14	**328.540**	**VUP (COS) (1 x 12.1 x 5.50) m**	**Age**	New 2 lane + footpath	New 2 lane + footpath	Embankment is very high The structure is in sound condition.
			Foundation	RCC open foundation	RCC open foundation	
			Sub Structure Abutment/Pier	RCC wall	RCC wall	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
			Super Structure	RCC slab Box type	RCC slab Box type	
			Slope Protection	Wing wall & pitching	Wing wall & pitching	
			Nalla Bed	Road	Road	
			Parapet /Railing	RCC parapet is not reqd.as structure is buried	RCC parapet is not reqd.as structure is buried	
			Wearing Coat/ Surface	BC – Completed	BC – Completed	
			Approach Slope	Slope Toe wall Pitching	Slope Toe wall Pitching done	
			Drainage	Not reqd. as Toe wall provided	Not reqd. as Toe wall provided	
15	**328.747**	**ROB Skew 5 spans Central Railway Span (5x40) m**	**Age**	New 2 lane + footpath	New 2 lane + footpath	The structure is in sound condition. At Approach slab settlement observed at BHS and both ends. Encroachment noticed below non railway spans.
			Foundation	Pile foundation	Pile foundation	
			Sub Structure Abutment/Pier	RCC circular piers – Twin Abutment RCC wall	RCC circular piers – Twin Abutment RCC wall	
			Super Structure	PSC girder Railway MS girder	PSC girder Railway MS girder	
			Bearing	POT PTFE	POT PTFE	
			Slope Protection	RVV return pitching completed.	RVV return pitching completed.	
			Nalla Bed	Rail Track	Rail Track	
			Parapet /Railing	RCC parapet & railing	RCC parapet & railing	
			Expansion Joint	completed	Completed	
			Wearing Coat / Surface	BC – completed	BC – completed	
			Approach Slope	Retaining wall completed. Filling completed. Pitching completed.	Retaining wall completed. Filling completed. Pitching completed.	
16	**329.029**	**Minor Bridge 3 span (18**	**Age**	New 2 lane + footpath	New 2 lane + footpath	The structure is in sound condition. At
			Foundation	RCC open foundation & pile	RCC open foundation & pile	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
		+ 23 + 18) m (Near to ROB) **Skew Crossing**		foundation	foundation	Approach slab settlement observed at BHS and both ends. On RHS A1side RCC crash barrier vertical crack repairing done.
			Sub Structure Abutment/Pier	Abutment – RCC wall circular pier	Abutment – RCC wall circular pier	
			Super Structure	4 RCC girders & RCC slab	RCC girders & RCC slab	
			Bearing	POT PTFE	POT PTFE	
			Slope Protection	RCC return Pitching completed.	RCC return Pitching completed.	
			Nalla Bed	Clear	Clear	
			Parapet /Railing	RCC parapet & railing	RCC parapet & railing	
			Expansion Joint	4 nos. provided	4 nos. provided	
			Wearing Coat / Surface	BC completed.	BC completed.	
			Approach Slope	completed.	completed.	
			Drainage	Spout provided.	Spout provided.	
17	**329.961**	**Minor Bridge 3 spans (18 + 23 + 18) m**	**Age**	New	New	The structure is in sound condition. Expansion joint rubber packing damaged at P1 & A2 LHS
			Foundation	Pile foundation	Pile foundation	
			Sub Structure Abutment/Pier	Abutment RCC wall Circular pier	Abutment RCC wall Circular pier	
			Super Structure	RCC girders - 4 nos. & RCC slab	RCC girders - 4 nos. & RCC slab	
			Bearing			
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Water Clear	Water Clear	
			Parapet /Railing	RCC parapet	RCC parapet	
			Expansion Joint	4 nos. provided Strip seal	4 nos. provided Strip seal	
			Wearing Coat / Surface	BC – completed.	BC – completed.	
			Approach Slope	Pitching completed.	Pitching completed.	
			Drainage	Spout provided.	Spout provided.	
18	**334.889**	**VUP (COS)**	**Age**	New	New	The structure is

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
		(1 x 12 x 5.50) m	**Foundation**	RCC open foundation	RCC open foundation	in sound condition. Drainage down take PVC pipe at A1 RHS approach not found
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab Box type Median Covered	RCC slab Box type Median Covered	
			Slope Protection	RCC return	RCC return	
			Nalla Bed	Road and Service Road	Road and Service Road	
			Parapet /Railing	RCC parapet	RCC parapet	
			Expansion Joint	NA	NA	
			Wearing Coat / Surface	BC – No problem	BC – No problem	
			Approach Slope	RE wall	RE wall	
			Drainage	No problem	No problem	
19	**345.221**	**Minor Bridge Span Old - (1x6.10) m New - (2x5) m**	**Age**	Old Low level Both side widening 2 lane + footpath	New 2 lane + footpath	The old and new structures are in sound condition. On LHS A2 & A1 slope protection work damaged.
			Foundation	RCC open type	RCC open type	
			Sub Structure Abutment / Pier	RCC wall	RCC wall and RCC Pardi	
			Super Structure	RCC slab	RCC slab Box type	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Water Clear	Water Clear	
			Parapet /Railing	RCC parapet & railing	RCC parapet & railing	
			Expansion Joint	NA	NA	
			Wearing Coat / Surface	BC – Potholes repaired	BC – no problem	
			Approach Slope	Stable	Stable	
			Drainage	No problem	No problem	
20	**350.638**	**Minor Bridge**	**Age**	Old – Low Widening 2 lane + footpath Span	New 2 lane + footpath	The structures, both old and new

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
		span (1 x 6.10) m	**Foundation**	RCC open type	RCC open type	are in sound condition. Cracks on pavement observed at A1 & A2 RHS Approach.
			Sub Structure Abutment/Pier	RCC wall (Honey combing) Repairing done	RCC wall	
			Super Structure	RCC slab	RCC slab Box type	
			Bearing	NA	NA	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Waterway Clearing Required	Waterway Clearing Required	
			Parapet /Railing	RCC parapet		
			Expansion Joint	NA		
			Wearing Coat / Surface	BC – No problem	BC – No problem	
			Approach Slope	Stable	Stable	
			Drainage	No problem	No problem	
21	**352.782**	**VUP (2 x 11 x 5.50) m Super elevation**	**Age**	New	New	The structure is in sound condition.
			Foundation	RCC open type and pile foundation	RCC open Type and pile foundation	
			Sub Structure Abutment / Pier	Abutment – RE wall RCC piers	Abutment – RE wall RCC pier	
			Super Structure	RCC girder 4 nos. RCC slab	RCC girder 4 nos. RCC slab	
			Bearing	4 Nos.	4 Nos.	
			Slope Protection	RE wall	RE wall	
			Nalla Bed	Road BC Overlaying done on Service Road	Road BC Overlaying done on Service Road	
			Parapet / Railing	RCC parapet	RCC parapet	
			Expansion Joint	3 nos. No problem	3 nos. No problem	
			Wearing Coat / Surface	BC -No problem	BC -No problem	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
			Approach Slope	Stable	Stable	
			Drainage	Cleaning done	Down take Pipe provided & Cleaning done	
22	**357.782**	**Minor Bridge (4 x 4.8) m + (2 x 4.8) m Approach Abutment slab**	**Age**	Old 2 lane (No footpath)	New 2 lane + footpath	The old and new structures are in sound condition.
			Foundation	RCC open type	RCC open type	
			Sub Structure Abutment/Pier	RCC wall & pier	RCC wall & RCC pier	
			Super Structure	RCC solid slab	RCC solid slab (skew)	
			Bearing			
			Slope Protection	RCC return & pitching. Bushes to be removed	RCC return & pitching	
			Nalla Bed	Clear Bushes	Clear Bushes	
			Parapet /Railing	RCC railing	RCC parapet & railing	
			Expansion Joint	NA	NA	
			Wearing Coat / Surface	BC - No problem	BC - No problem	
			Approach Slope	Stable	Stable	
			Drainage	No problem	No problem	
23	**360.132**	**Major Bridge Span (3 x 40) m**	**Age**	New 2 Lane + Footpath	New 2 Lane + Footpath	The structure is in sound condition. The quality of RCC is good. Span A1-P1, P1-P2 & P2-A2 LHS wearing coat rutting ,Cracks & pot holes observed.
			Foundation	Pile Foundation	Pile Foundation	
			Sub Structure Abutment / Pier	Abutment RCC – Wall Centre	Abutment RCC Wall	
			Super Structure	PSC – girder RCC – Slab	PSC – girder RCC – Slab	
			Bearing	PoT PTFE	PoT PTFE	
			Slope Protection	RCC return Pitching	RCC return Pitching	
			Nalla Bed	No water clear	No water clear	
			Parapet / Railing	RCC Parapet	RCC Parapet	
			Expansion Joint	3 Nos. rubber damaged	4 Nos. No Problem	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
					Cleaning is done.	
			Wearing Coat / Surface	BC – Approach pavement cracks & pot holes observed.	BC – Longitudinal cracks observed at shoulder side.	
			Approach Slope	A2 side some settlement observed	Stable	
			Drainage	No Problem	No Problem	
24	**364.149**	**Minor Bridge Span (1 x 18 + 1 x 23 + 1 x 18) m**	**Age**	New 2 Lane + Footpath	New 2 Lane + Footpath	Expansion joint rubber damaged. The structure is in sound condition. The quality of RCC is good. Waterspouts & Expansion joint cleaning to be done. Span P2-A2 RHS 1st Lane wearing coat some rutting, & Cracks observed
			Foundation	Pile Foundation	Pile Foundation	
			Sub Structure Abutment/Pier	RCC Wall RCC Circular pier	RCC Wall RCC Circular pier	
			Super Structure	RCC girder 4 Nos RCC Slab	RCC girder 4 Nos RCC Slab	
			Bearing	POT - PTFE	POT – PTFE	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Water Clear	Water Clear	
			Parapet /Railing	RCC Parapet	RCC Parapet	
			Expansion Joint	3 Nos. damaged 1 no is ok	2 Nos. damaged 2 nos. is ok	
			Wearing Coat / Surface	BC – No Problem	BC – No Problem	
			Approach Slope	Stable	Stable	
			Drainage	Grating Approach No Problem	Grating Approach No Problem	
25	**371.740**	**Minor Bridge**	**Age**	Old (9 No. x 3m x 3m) Low Level No widening-2 Lane Repaired	New 2 Lane + Footpath Span – 2 x 26.6m x 4m	The structures old and new are in sound condition. RCC Railing reconstruction work is completed at LHS. Crash
			Foundation	Open Foundation	RCC – piles	
			Sub Structure Abutment/Pier	RCC Wall RCC Pardi	RCC Wall RCC Circular Pier	
			Super Structure	RCC Solid Slab	RCC Girders 4 nos. & RCC slab	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
			Bearing	--	4 Nos. POT PTFE	barrier painting in progress.
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Water Clear	Water Clear	
			Parapet /Railing	RCC Railing	RCC Railing	
			Expansion Joint	--	No problem	
			Wearing Coat / Surface	BC – No Problem	BC – No Problem	
			Approach Slope	Stable	Stable	
			Drainage	No Problem Cleaning required.	No Problem Cleaning required.	
26	**375.885**	**Major Bridge Span - (20 + 26 + 26 x+20) m**	**Age**	New 2 Lane + Footpath	New 2 Lane + Footpath	The structure is in sound condition. LHS BC patch work done..
			Foundation	RCC Pile Foundation	RCC Pile Foundation	
			Sub Structure Abutment/Pier	RCC Wall RCC Circular Pier	RCC Wall RCC Circular Pier	
			Super Structure	RCC girder – 4 Nos. RCC Slab	RCC girder – 4 Nos. RCC Slab	
			Bearing	POT - PTFE	POT – PTFE	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Water Clear	Water Clear	
			Parapet /Railing	RCC Parapet	RCC Parapet	
			Expansion Joint	2 Nos is ok 2 nos. are damaged	4 Nos.	
			Wearing Coat / Surface	BC – P3-A2 Minor crack noticed	BC – Repairing done	
			Approach Slope	Stable	Stable	
			Drainage	Cleaning required	Cleaning required	
27	**km. 378.149**	**Minor Bridge Span – (4 x 4.60) m at LHS**	**Age**	New 2 Lane + Footpath	Old 2 Lane (No Footpath)	The old and new structure is in sound condition
			Foundation	RCC open foundation	RCC open foundation	
			Sub Structure Abutment/Pier	RCC Wall and pardi	RCC wall and wall type pier Abutment sloping wall both	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
		& RHS 2 x 4.60 m + 2 x 4.60 m Abutment Approach slab			side Honey Combing repairing done.	
			Super Structure	RCC Slab Box Type	RC Solid Slab	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Waterway not Clear Bushes available	Waterway not Clear Bushes available	
			Parapet /Railing	RCC parapet & footpath	RCC railing & footpath	
			Wearing Coat / Surface	BC - No Problem	BC - Approach Repairing done	
			Approach Slope	Stable	Stable	
			Drainage	No Problem	No Problem	
28	**km. 379.963**	**Minor Bridge Span - (4 x 4.60) m at LHS & RHS 2 x 4.6 m + 2 x 4.6 m Abutment Approach slab**	**Age**	New 2 Lane + footpath	Old 2 Lane Low Level	The structures old and new are in sound condition. At LHS return wall some honeycombing is observed.
			Foundation	RCC Open Type	RCC Footing	
			Sub Structure Abutment / Pier	RCC Wall and Pardi	RCC Wall and Centre RCC Wall type pier	
			Super Structure	Span 4 x 4.60 RCC Slab Box Type	RCC Solid Slab seen 4 x 4.6	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Water Clear	Water Clear	
			Parapet / Railing	RCC parapet & Railing	RCC Railing & Footpath	
			Expansion Joint	-	-	
			Wearing Coat / Surface	BC – No Problem Approach repairing done	BC – No Problem	
			Approach Slope	Stable	Stable	
			Drainage	Some garbage noticed	Some garbage noticed	
29	**381.333 (Urban Area)**	**Major Bridge Span - (20 +26 + 26 +20) m**	**Age**	New 2 Lane with Footpath	Old 2 Lane – repaired	The structures old and new are in sound condition.
			Foundation	RCC open type Abutment	RCC Open Type Abutment	
			Sub Structure Abutment/Pier	RCC Wall Centre – 3 Circular	Abutment RCC Wall Centre RCC Wall	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
				RCC Piers – 3 Nos.	Abutment Standard Support	
			Super Structure	RCC Girder Span – 4 (20+26+26+20)	RCC Solid Slab (Span – 12 Nos. x 3m) With 2 nos. in abutment approach slab.	
			Bearing	4 Nos.	-	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	A1-P1 LHS Span Waterway not clear, completely blocked by filling soil.	Water, Bushes Not clean due to Urban area	
			Parapet /Railing	RCC parapet and railing	RCC parapet and railing with footpath	
			Expansion Joint	4 Nos.	--	
			Wearing Coat / Surface	BC – No Problem Approach settlement crack	BC – No Problem Settlement crack in Approach Water Supply pipe – 8" CI is removed.	
			Approach Slope	Cleaning Required	Stable	
			Drainage	No Problem	No Problem	
30	**383.309**	**Minor Bridge (New) Span (4 x 5.0) m**	**Age**	New 2 Lane + Footpath	New 2 Lane + Footpath	The structure is in sound condition.
			Foundation	RCC Open Type	RCC Open Type	
			Sub Structure Abutment/ Pier	RCC Wall RCC Pardi	RCC Wall RCC Pardi	
			Super Structure	RCC Slab Box Type	RCC Slab Box Type	
			Bearing	-	-	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Waterway not Clear, bushes observed.	Waterway not Clear, bushes observed	
			Parapet /Railing	RCC parapet & railing	RCC parapet & railing	
			Expansion Joint	-	-	
			Wearing Coat /	BC – minor cracks noticed.	BC – minor cracks noticed at	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
			Surface		Lane-1	
			Approach Slope	Stable	Stable	
			Drainage	Cleaning Required	Cleaning Required	
31	**386.075**	**Minor Bridge Six Span (6 x 5) m at LHS And RHS 4 x 5 + 2 x 5 m at Abutment approach slab**	**Age**	New 2 Lane + footpath	Old 2 Lane	The structures old and new both in sound condition. At A1-A2 LHS approach some cracks are observed on pavement. Honey combing observed on P3, P4 & P5 LHS
			Foundation	RCC Open Type	RCC Open Type	
			Sub Structure Abutment/Pier	RCC Wall & RCC Pardi	RCC Wall RCC pier Wall Type	
			Super Structure	RCC Slab Box Type	RCC Solid Slab	
			Slope Protection	RCC return and pitching	RCC return and pitching	
			Nalla Bed	Water Bucher	Water Bucher	
			Parapet /Railing	Footpath, RCC Parapet & Railing	RCC Railing & Footpath on BHS	
			Expansion Joint	NA	NA	
			Wearing Coat / Surface	BC – No Problem	BC – No Problem	
			Approach Slope	Stable	Stable	
			Drainage	Cleaning Required	Cleaning Required	
32	**390.239**	**Major Bridge Span - (20 +26 + 26 + 20) m**	**Age**	New 2 Lane + footing Span (20+26+26+20m)	Old – (Low Level) Repaired Span 12 x 3.00m with 2 nos. Abut. Approach slab	The structures, both old and new, are in sound condition. Cleaning is required at U/S & D/S
			Foundation	Pile Foundation	RCC Open Type	
			Sub Structure Abutment/Pier	RCC Wall Centre – RCC circular piers.	RCC Wall RCC pier wall Type	
			Super Structure	RCC girder – 4 nos. RCC slab	RCC solid slab	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Standing water Bushes	Standing water Bushes	
			Parapet /Railing	RCC parapet & wall	RCC railing with footpath on both side	
			Expansion Joint	3 Nos. Rubber packing damaged	Nil	
			Wearing Coat /	BC –Minor cracks observed.	BC – Surface cracks	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
			Surface		observed.	
			Approach Slope	Stable	Stable	
			Drainage	Some garbage noticed.	No Problem	
33	**391.392**	**Minor Bridge 2 Span (2 x 26 m)**	**Age**	New 2 Lane + Footpath	New 2 Lane + Footpath	The structure is in sound condition.
			Foundation	Pile Foundation	Pile Foundation	
			Sub Structure Abutment/Pier	Abutment, RCC Wall Centre – pier – wall type	Abutment – RCC Wall Centre – pier – wall type	
			Super Structure	RCC girder 4 Nos. Slab	RCC girder 4 Nos. Slab	
			Bearing	4 Nos.	4 Nos.	
			Slope Protection	RCC return Toe Wall pitching	RCC return Toe Wall Pitching	
			Nalla Bed	Dry Clear	Dry Clear	
			Parapet /Railing	RCC Parapet & railing	RCC Parapet & railing	
			Expansion Joint	Rubber damaged and cleaning is required.	Cleaning is required.	
			Wearing Coat / Surface	BC – Surface crack ceiling done.	BC – No problem	
			Approach Slope	Stable	Stable	
			Drainage	Cleaning Required	No Problem	

Figure 3-6 Photographs of Major Structures

Side View of ROB at km. 328+747 (A1-LHS)

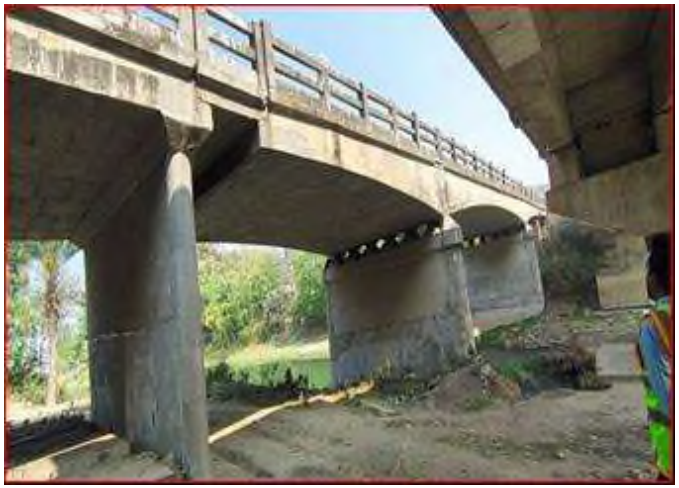
Median View of ROB at km. 328+747 (A1 Side)

Approach View of ROB at km. 328+747 (A1-RHS)

RHS A1 Side view of Major Bridge at km. 302+251

A1 LHS Bearing View of Major Bridge at km. 302+251

Bottom side view of New Major Bridge at km. 302+251 (LHS)



Bottom view of Old Major Bridge at km. 316+155 LHS

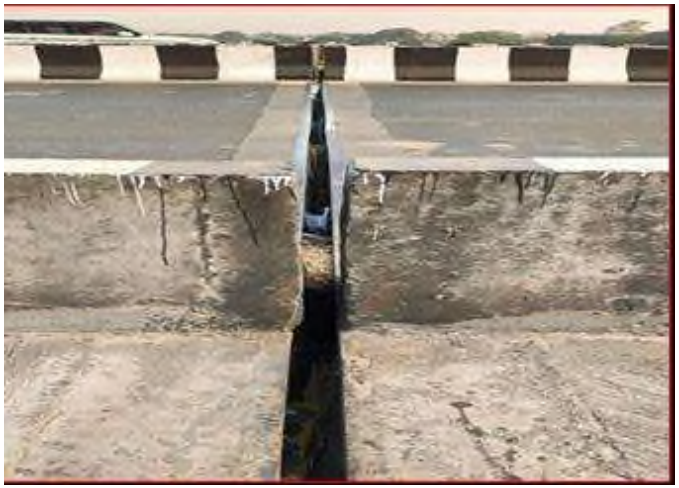
Median view of Major Bridge at km. 316+155

A1 Bearing View of New Major Bridge at km. 316+155 (RHS)

View of Major Bridge at km. 325+223 (A2-RHS)

Bottom View of Major Bridge at km. 325+223

P3&P4 BHS Pile Rectification WIP of Major Bridge at km. 325+223



Expansion joint View of P4 Major Bridge at km.325+223

A1 BHS Bearings view of Major Bridge at km.360+132

Bottom view of Major Bridge at km. 360+132 (LHS)

Median View of Major Bridge at km. 375+885

P3 BHS Bearings view of Major Bridge at km.375+885

A1 LHS Bearings of Major Bridge at km.381+333

Median view of Major Bridge at km. 381+333

Side view of Major Bridge at km. 390+239

Median view of Major Bridge at km. 390+239

RHS view of Minor Bridge at km. 296+923

RHS View of Minor Bridge at km. 303+941

RHS View of Minor Bridge at km. 304+455

Minor Bridge at km. 308+489

LHS Railing & wearing coat of Minor Bridge at km. 311+654

RHS View at Minor Bridge at km. 311+654

Side View of Minor Bridge at km. 315+318

Median View of Minor Bridge at km. 315+318

Minor Bridge at km. 320+335

Side View of Minor Bridge at km. 321+700

Median view of Minor Bridge at km. 321+700

Median View of Minor Bridge at km. 323+180

Wearing coat View of Minor Bridge at km. 323+180

Median View of Minor Bridge at km. 329+029

Crash barrier & wearing coat View of Minor Bridge at km. 329+029

Side View of Minor Bridge at km. 329+966

Median View of Minor Bridge at km. 329+966

Minor Bridge at km. 345+221

Minor Bridge at km. 350+638

LHS Side View of Old Minor Bridge at km. 357+782

Crash barrier & wearing coat View of Minor Bridge at km. 364+149 LHS

Minor Bridge at km. 371+740

Minor Bridge at km. 379+963

Minor Bridge at km. 383+309

Minor Bridge at km. 391+392

Minor Bridge at km. 378+149

Minor Bridge at km. 386+075

3.5 Condition Survey of Culverts

The cross-drainage structures include hume pipe culverts and box culverts at various locations. There is total 92 culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts is satisfactory. The RCC parapet, crash barrier or RCC railing has been provided at culvert locations, which is maintained properly.

In most of culverts, the waterway is clear. However, near to urban area and at some locations found blocked due to debris, drainage water or bushes, tree growth, which will be removed by the Concessionaire. The cement concrete pitching or stone pitching has been provided for slope protection.

The culverts are maintained by the Concessionaire during O&M period. However, for some culverts, pitching, apron etc. are found to be damaged which is being rectified under routine repair work.

Figure 3-7 Photographs of Box Culverts

Box culvert at km. 326+360 (LHS)

Box culvert at km. 333+580 (LHS)

Box culvert at km. 334+080 (RHS)

Box culvert at km. 354+520 (LHS)

Box culvert at km. 366+650 (LHS)

Box culvert at km. 323+850 (RHS)

Figure 3-8 Photograph of HP Culverts

Pipe culvert at km. 354+100 (RHS)

3.6 Drainage

RCC drain is constructed in built-up area and locations where service roads are provided. The photographs taken during site visit is presented as below.

Figure 3-9 Photographs of Drainage

Built-up Drain at km. 337+180 (LHS)

Built-up Drain at km. 351+490 (RHS)

Median Cross Drain at km. 318+260

Median Longitudinal Drain at km. 319+000

New Median Drainage work in progress at km. 321+450 (LHS) & at km. 317+500 (LHS)

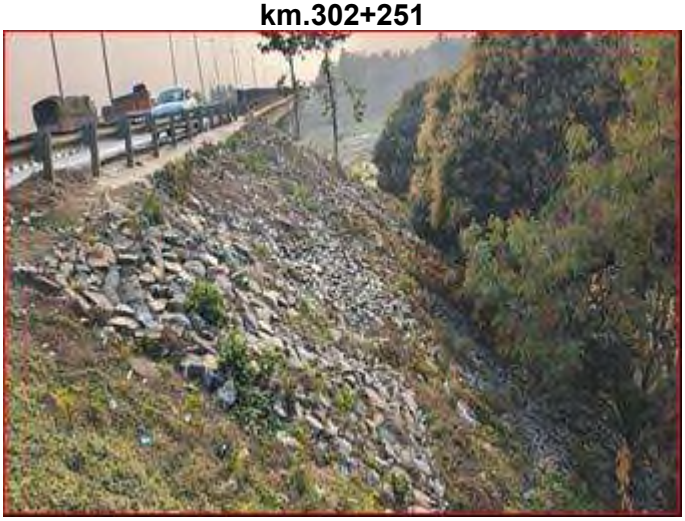
3.7 Slope Protection

Slope protection and chute drains are found on project roads at required locations. A few of the slope protection and chute drains are damaged which are being rectified by the Concessionaire. The photographs taken during site visit is presented as below.

Figure 3-10 Photographs of Slope Protection and Chute Drain

Slope Protection at A1 RHS Approach MJB km.302+251

Slope Protection at MNB km. 321+700 (A2-LHS)



Slope Protection at MJB km. 325+223 (A2-LHS)

Slope Protection at MJB km. 325+223 (A2-RHS)

3.8 Road Furniture

The Concessionaire has provided road furniture along the Project Road as per the standards and specifications mentioned in Schedule-C. Details of the items are provided below.

a) Highway Lighting Along the Project Road

Highway lighting is provided at major bridge, underpasses, flyovers, toll plaza, ROBs and built-up locations. High mast lighting is provided at toll plaza and at major junction locations. Highway lighting is also provided at approaches of underpass and flyovers. Some of the photographs of highway lighting are presented below.

Figure 3-11 Photographs of Street Lighting

Highway Lighting at km. 324+800

Highway Lighting at km. 326+150 (Median)

Highway Lighting at km. 340+400 (Median)

High Mast Lighting at km. 351+400

b) Pavement Marking

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Pavement marking is faded at some locations which needs to be rectified by the Concessionaire. Some of the photographs of road marking are presented below.

Figure 3-12 Photographs of Pavement Marking

km. 296+923

km. 319+000

At km. 328+540 (LHS) and at km. 337+200 LHS - Merging lane Marking

c) Road Studs / Cat's eyes

Road studs / Cat's eyes for the Project Road are provided as per the design standards indicated in Section 12 of Schedule-D. Cat's eye have been fixed at junction and zebra crossings. However, at few locations some studs / cat's eye have damaged which will be rectified by the Concessionaire.

Some of the photographs of road studs are presented below.

Figure 3-13 Photographs of Road Studs

Studs at Major Junction Gajol at km. 352+782

Studs & Pedestrian crossing marking at Minor Junction at km. 302+850

d) Traffic Signages

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards and median kerb paint are faded at few locations which will be rectified by the Concessionaire. Some of the photographs of sign boards are presented below.

Figure 3-14 Photographs of Road Signages

Overhead full gantry at km. 353+950

Speed Limit Sign at km. 319+050 (LHS)

Overhead Half Gantry Sign at km. 286+875

U-Turn Prohibited Sign at km. 326+410 LHS

Hazard marker Sign at km. 379+963 MNB (LHS)

Kilometre Stone at km. 296+000 (LHS)

e) Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site. Some of the photographs of metal beam crash barriers are presented below.

Figure 3-15 Photographs of MBCB / Crash Barrier

MBCB at km. 316+000 (LHS)

MBCB at km. 319+580 (LHS)

MBCB at km. 355+600 (RHS Shoulder)

MBCB at km. 328+650 (LHS Shoulder)

f) Pedestrian Guard Rail

The pedestrian guard rails are provided in the median in the built-up sections. It is maintained by the Concessionaire.

Some of the photographs of pedestrian guard rails are presented below.

Figure 3-16 Photographs of Pedestrian Guard Rail

Pedestrian Guard Rail at km. 302+690 to km. 302+840

Pedestrian Guard Rail at km. 331+500

Pedestrian Guard Rail at Median km. 348+450

g) Road Boundary stone

Road boundary stone not found / available along the Project Road.

3.9 Avenue Plantation and Median Plantation

Avenue plantations and median plantations are provided along the Project Road except at built-up locations as per IRC specification.

The photographs taken during site visit is presented as below.

Figure 3-17 Photographs of Avenue Plantation and Median Plantation

Median Plantation at km. 318+260

Avenue Plantation at km. 376+000

Median Plantation at km. 311+720

Avenue Plantation at km. 320+700 (LHS)

3.10 Toll Plaza

The Concession Agreement requires construction of Toll Plaza at 2 nos. of locations. Accordingly, the Concessionaire has constructed 2 nos. of Toll Plaza at the following locations.

1. Toll Plaza-1 at km. 297+867
2. Toll Plaza-2 at km. 351+440

Table 3-4 Details of Summary for Toll Plaza Items

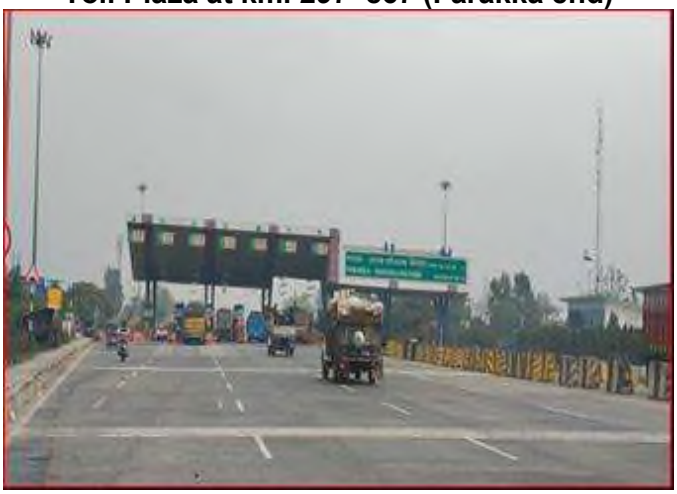
Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 297+867 & km. 351+440
2	Number of Tolling Lanes	12 lanes for toll operation plus 2 lanes for over dimensional vehicles at each toll plaza.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	in each direction
5	Number of Toll Booths	9 singles
6	Canopy	Present
7	Administrative Building	Present

Sr. No.	Particulars	Details
8	Parking cum Toilet Block	Present
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	Tunnel / Yes
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading / Unloading Facility for Overloaded Vehicles	Yes
12	Storage facility for Overloaded Material	Yes
13	High mast Light	Yes
14	Streetlight	Yes
15	Low mast Light	No
16	User Fee Boards	Yes
17	Cantilever / Gantry Boards	Yes
18	Automatic boom barrier	Yes

Figure 3-18 Photographs of Toll Plaza

Toll Plaza at km. 297+867 (Farakka end)

Toll Plaza at km. 297+867 (Raiganj end)



Toll Plaza at km. 351+440 (Farakka end)

Toll Plaza at km. 351+440 (Raiganj end)

Operation building & Maintenance Yard at Toll Plaza at km. 351+440

Administrative and Operation Building at Toll Plaza at km. 297+867

Medical & Traffic Aid Post of Toll Plaza at km. 297+867

Nursery at Toll Plaza at km. 351+440

Admin building of Toll Plaza at km. 351+440

Staff Bus & Ambulance at Toll Plaza km. 297+867

3.10.1 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.10.2 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

RFID at Toll Plaza at km. 297+867

3.10.3 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data.

Lane Controller & WEM Controller in Tunnel at Toll Plaza at km. 297+867

3.10.4 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

Automatic Vehicle Classification & Counting (AVCC) at Toll Plaza at km. 297+867

3.10.5 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity.

Automatic Lane Barrier (ALB) at Toll Plaza at km. 297+867

3.10.6 Lane Traffic Light (LTL) & User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane.

LTL & UFD at Toll Plaza at km. 297+867

3.10.7 Incident Capture Camera (AVC Camera)

The incident capturing camera is installed on island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

3.10.8 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

LPIC at Toll Plaza at km. 297+867

3.10.9 Over Head Lane Signal (OHLS)

The Overhead Lane Signal (OHLS) for lane “Open” and “Close” sign consists of a pair of “GREEN” (arrow) and “RED” (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at Toll Plaza at km. 297+867

3.10.10 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

Medium Speed Weigh in Motion (MSWIM) at Toll Plaza at km. 297+867

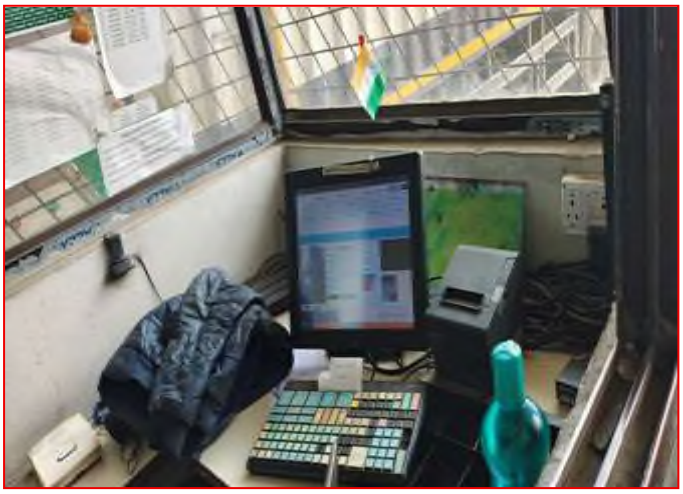
3.10.11 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and type of ticket.



Toll Booth & Tunnel at TP-1 km 297+867

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

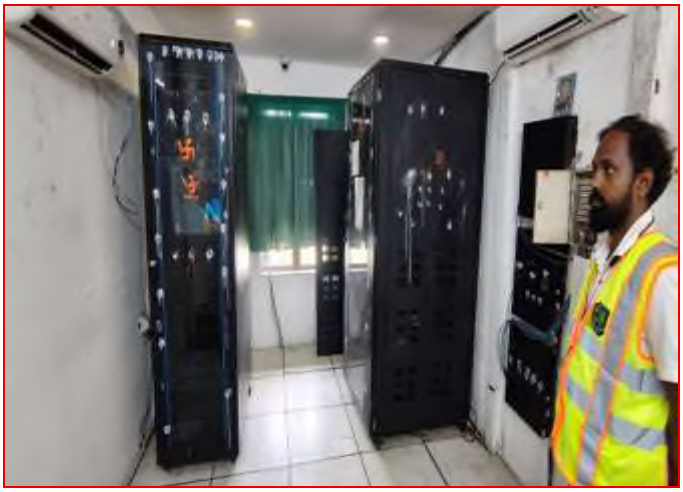
Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.11 Toll Plaza Equipment

3.11.1 TMS Server

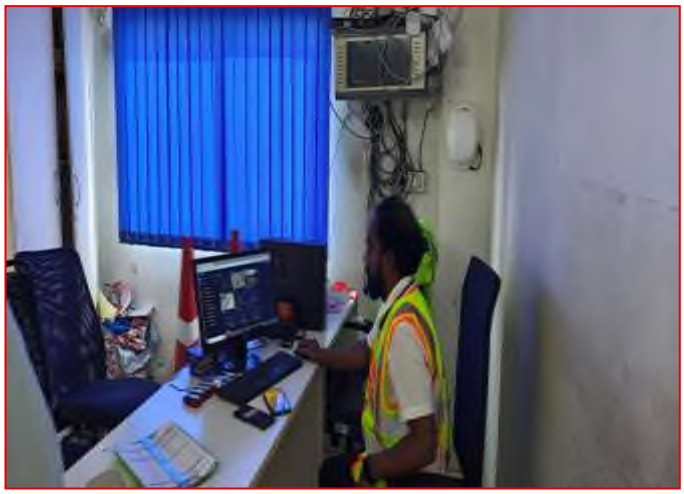
Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch.



TMS Server at TP1 km. 297+867

3.11.2 LED screen for CCTV monitoring

LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

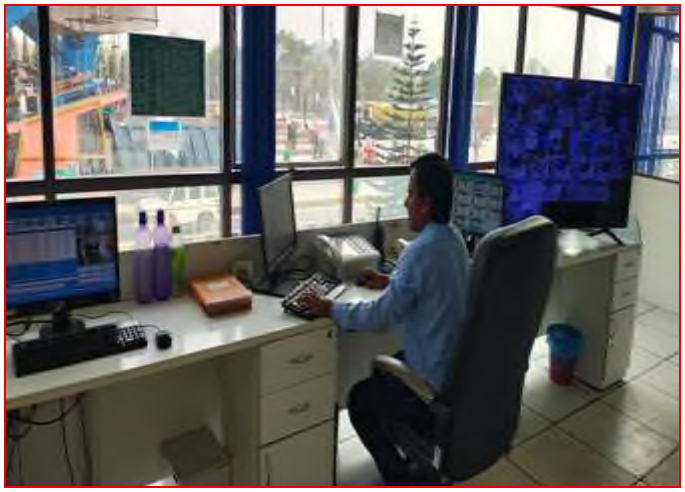


HTMS CCTV and TMS Monitoring at TP1 at km. 297+867

The Toll Plaza Manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.11.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and POS room.



Control Room at TP-1 km. 297+867

3.12 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) installed for the Project Road is controlled by the ATMS center at toll plaza location (km. 351+440). The ATMS is provided and being maintained as per the requirement of the Concession Agreement. The ATMS provided are listed below.

- Automatic Traffic Counter cum Classifier (ATCC)
- Emergency Call Box
- Meteorological Data system
- Variable Message Signboards (VMS)
- CCTV system

Status of these systems at site are described below:

3.12.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is installed at Toll Plaza (km 351+440).

3.12.2 Emergency Call Boxes (ECB)

ECB is installed on the Project highway at the locations as per the requirement.

ECB installed on the Project Highway at km. 319+000 (LHS)

3.12.3 MET System

Meteorological sensors comprise of sensors to measure the atmospheric temperature, humidity, pavement surface temperature, visibility and equipment for measuring wind speed and direction and installed at Toll Plaza km 351+440.

MET System at Toll Plaza km. 351+440

3.12.4 Variable Message Signboards (VMS)

Variable message sign boards are installed as per CA requirement. These display specific messages to the users based on the prevailing conditions on the highway. The message can be changed at any point of time from the HTMS centre. About 250 customised messages can be stored on the system.

Variable Message Signboards (VMS)

3.12.5 CCTV Surveillance Cameras

Surveillance cameras are installed as per CA requirement along the Project Road. The ATMS control room has video wall to monitor these locations through the cameras installed.

CCTV Surveillance Cameras Display at TP2

3.12.6 Video Incident Detection System

CCTV cameras are installed as part of Video incident detection system.

3.12.7 Adequacy of Toll Collection System and ATMS

- Adequacy - All lanes are hybrid ETC system as stipulated by NHAI in Technical Specifications of Hybrid ETC system. NHAI has approved maintenance costs for TMS. TMS shall be upgraded every 7 years at the cost of the Authority.

- The Advanced Traffic Management System (ATMS) installed is as per specifications required by the Authority and in working condition.

3.13 Truck Lay-Bye

The following are the truck lay-bye locations.

Table 3-5 Details of Truck Lay-bye

Sr. No.	Proposed Chainage (km)	Existing Chainage (km)	Village Name / Location
1	298+525	300+590	Both sides on Mainline NH-34 (NEW NH-12)
2	303+365	305+410	Both sides on Mainline NH-34 (NEW NH-12)
3	318+125	319+815	Both sides on Mainline NH-34 (NEW NH-12)
4	356+325	359+740	Both sides on Mainline NH-34 (NEW NH-12)
5	367+200	370+565	Both sides on Mainline NH-34 (NEW NH-12)
6	385+575	388+530	Both sides on Mainline NH-34 (NEW NH-12)

The photographs taken during the Site Visit are presented below.

Figure 3-19 Photographs of Truck Lay Bye

Truck Lay-bye at km. 320+040 (LHS)

Truck Lay-bye at km. 356+325 (LHS)

Truck Lay-bye at km. 367+200 (LHS)

3.14 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Post are constructed and being maintained by the Concessionaire.

3.15 Toilet Block

There are two nos. toilet blocks and maintenance of the same is being maintained by the Concessionaire.

Table 3-6 Details of Toilet Block

Sr. No.	Chainage (km)	Side		Remarks
		LHS	RHS	
1	298+525	-	Yes	
2	303+365	Yes	-	
3	318+125	-	Yes	
4	356+325	Yes	-	
5	367+200	Yes	-	
6	385+575	-	Yes	

The photographs taken during the Site Visit are presented below.

Figure 3-20 Photographs of Toilet Block

Toilet Block at km. 318+125 (RHS)

3.16 Bus Bays and Passenger Shelters

There are 19 Nos. of bus bays / passenger shelters along the Project Road. Some of the photographs of the bus bays are presented below.

The photographs taken during the site visit are presented below.

Figure 3-21 Photographs of Bus Bays and Passenger Shelters

Bus Bay at km. 311+550 (LHS)

Bus Bay at km. 380+380 (RHS)

3.17 Balance Work Status

The project has received Completion Certificate on **03rd May 2021** by completing all the works as mentioned in the Technical Schedules of Concession Agreement. Hence, there are no balance works to be executed as per CA.

3.18 Operation and Maintenance

3.18.1 O&M Contract

As per Clause 17.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall confirm to all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement.

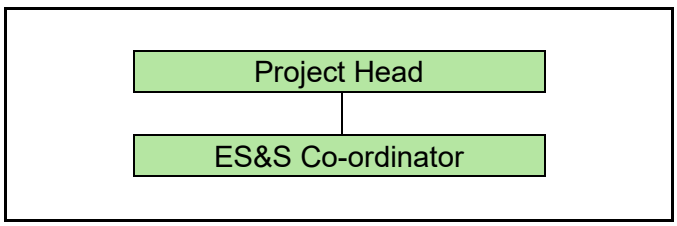
The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

3.18.2 Organization Chart

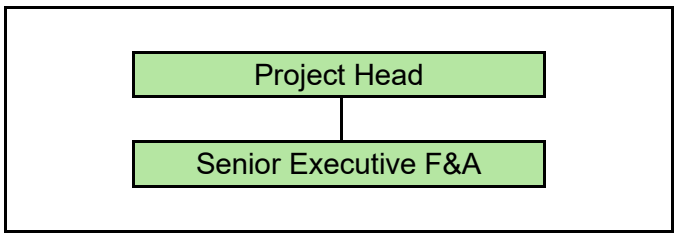
The Concessionaire has given the Organization Chart at site for Operation and maintenance. Accordingly, there is 01 Project Head, 01 Senior Executive- F&A, 01 ES&S Co-Ordinator, 01 Assistance Executive (HR), 01 Manager Maintenance 01 Assistant Manager (TMS / IT), 01 Executive (TMS / IT), 05 Supervisor, 02 Electrician, 01 Executive, 01 Sr. Executive, 02 Plaza Manager, 01 Document Controller, 07 Cashiers and 09 validators to carry out O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent subcontractors.

Organization Chart

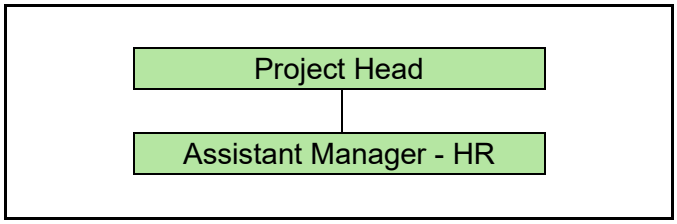
Site Administration



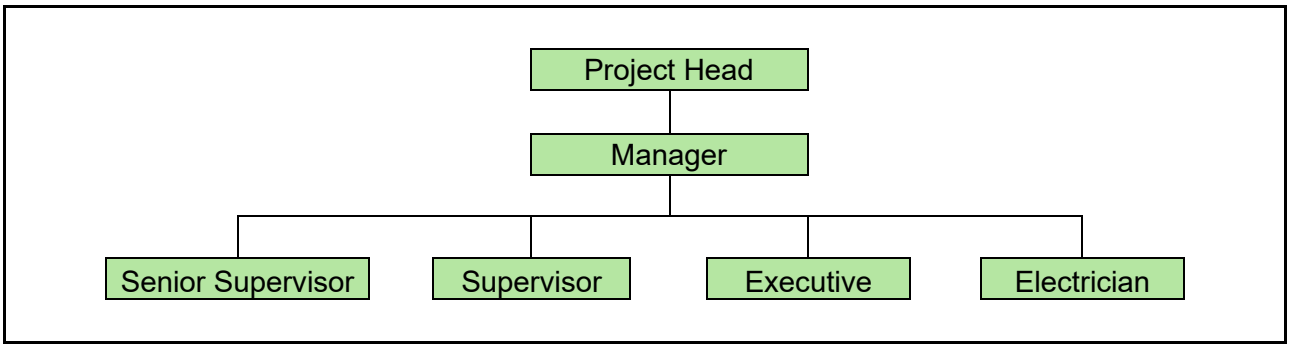
Finance & Account



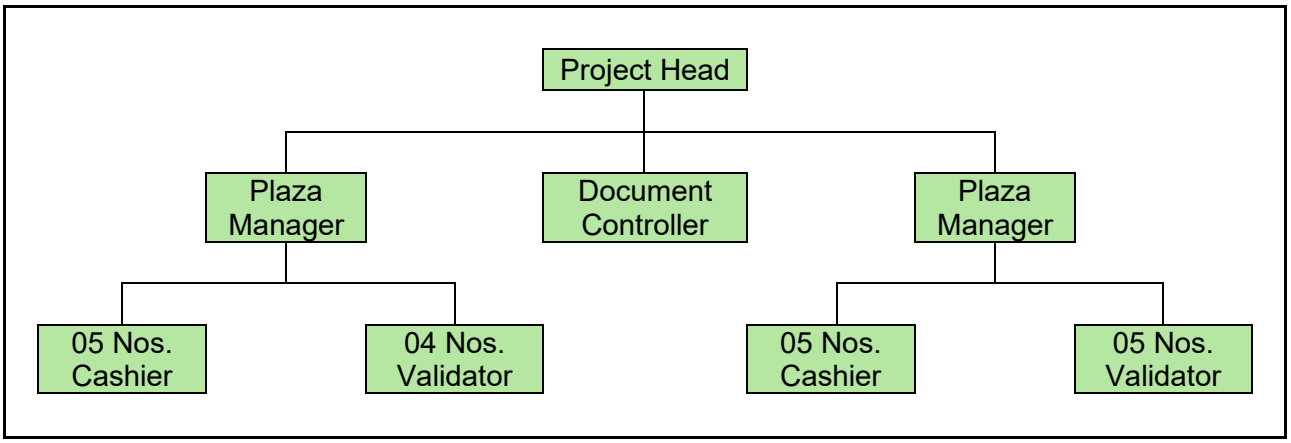
Human Resources



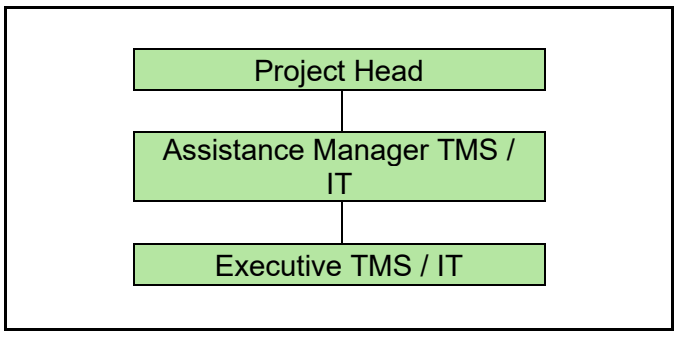
Site Maintenance



Site Operation



Operation System



3.18.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.18.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Concessionaire as per Scope of Work. The Concessionaire initially received Provisional completion certificate for the length of 79.575 km on 19th October 2016 & further received Completion Certificate on 03rd May 2021 for the complete project stretch of 99.995 kms.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 30 years from the Appointed Date 03rd February 2011 including construction period of 2.5 years.

4.2 Surveys and Investigation

4.2.1 Pavement Condition Survey

Pavement condition survey was carried out by the Technical Consultant from **19th February 2026 to 22nd February 2026** through visual inspection for the Project Road and for the entire length.

The summary of pavement condition based on the visual inspection is tabulated below.

Table 4-1 Summary of Pavement Condition

Chainage (km)		Length (km)	LHS Pavement Condition	Chainage (km)		Length (km)	RHS Pavement Condition
From	To			From (km)	To (km)		
294+800	299+000	4.200	Good	294.800	304.000	9.200	Good
299+000	300+000	1.000	Fair	304.000	305.000	1.000	Fair
300+000	306+000	6.000	Good	305.000	308.000	3.000	Good
306+000	307+000	1.000	Fair	308.000	309.000	1.000	Good
307+000	308+000	1.000	Good	309.000	315.000	6.000	Good
308+000	309+000	1.000	Good	315.000	316.000	1.000	Fair
309+000	310+000	1.000	Good	316.000	319.000	3.000	Good
310+000	311+000	1.000	Fair	319.000	323.000	4.000	Fair
311+000	313+000	2.000	Good	323.000	324.000	1.000	Good
313+000	315+000	2.000	Fair	324.000	325.000	1.000	Fair
315+000	329+000	14.000	Good	325.000	328.000	3.000	Good
329+000	330+000	1.000	Fair	328.000	330.000	2.000	Fair
330+000	331+000	1.000	Good	330.000	370.000	40.000	Good
331+000	333+000	2.000	Fair	370.000	373.000	3.000	Fair
333+000	358+000	25.000	Good	373.000	394.975	21.975	Good
358+000	359+000	1.000	Fair				
359+000	364+000	5.000	Good		**Summary (BHS)**		
364+000	367+000	3.000	Fair		**Condition**	**Length**	
367+000	369+000	2.000	Good		**Good**	**86.175**	km
369+000	373+000	4.000	Fair		**Fair**	**14.000**	km
373+000	394+975	21.975	Good		**Poor**	**0.000**	km

4.2.2 Axle Load Survey

In order to estimate vehicle-loading pattern in the Project Area, and to determine vehicle damage factor for the commercial vehicles, axle load survey of the vehicles plying on the project road stretch was carried out at two different locations of project stretch.

Axle load survey was conducted at two locations, first at Toll Plaza-1 (km. 298.250) and second at Toll Plaza-2 (km. 351.400) from 29th June to 2nd July 2019. The survey was carried out for both directions (LHS and RHS) simultaneously and for 24 hours using standard weigh pads. The survey was carried out using random sample method for goods vehicles i.e. LCV, Bus, Trucks and Multi-axle vehicles with special axle configuration count. Vehicle damage factor for various categories of vehicles was computed.

Summary of VDF calculation is shown in below table for both TP-1 and TP-2 locations.

Table 4-2 Summary of VDF

Summary of VDF as per Axle Load Survey (June-2019)						
Type of Vehicle		**Bus**	**LCV**	**2 Axle**	**3 Axle**	**MAV**
TP - 01 (km. 298+967)	UP (F-R)	0.84	0.88	3.26	7.45	20.97
	DN (R-F)	1.04	0.98	1.71	3.92	3.86
TP - 02 (km. 351+440)	UP (F-R)	0.93	0.87	2.05	5.61	16.26
	DN (R-F)	1.20	1.56	1.71	3.96	5.46

*F - Farakka, R - Raiganj

4.2.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data as provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-3 MSA Calculation

Toll Plaza-1 (km. 297+867)					
Year	**LHS (Farraka to Raigunj)**		**RHS (Raigunj to Farraka)**		**Remarks**
	MSA	**Cumulative MSA**	**MSA**	**Cumulative MSA**	
2025-26	15.95	**15.95**	3.47	**3.47**	
2026-27	17.23	**33.18**	3.73	**7.20**	
2027-28	18.95	**52.13**	4.07	**11.27**	
2028-29	19.83	**71.96**	4.24	**15.51**	
2029-30	20.72	**92.68**	4.42	**19.93**	
2030-31	21.48	**114.16**	4.57	**24.50**	
2031-32	22.58	**136.74**	4.79	**29.29**	
2032-33	23.78	**160.52**	5.02	**34.31**	
2033-34	25.03	**185.55**	5.27	**39.58**	
2034-35	26.34	**211.89**	5.53	**45.11**	

Toll Plaza-1 (km. 297+867)					
Year	LHS (Farraka to Raigunj)		RHS (Raigunj to Farraka)		Remarks
	MSA	Cumulative MSA	MSA	Cumulative MSA	
2035-36	27.71	**239.60**	5.80	**50.91**	
2036-37	29.13	**268.73**	6.08	**56.99**	
2037-38	30.61	**299.34**	6.37	**63.36**	
2038-39	32.16	**331.50**	6.68	**70.04**	
2039-40	33.77	**365.27**	7.00	**77.04**	
2040-41	35.45	**400.72**	7.32	**84.36**	End of Concession Period

Toll Plaza-2 (km. 351+440)					
Year	LHS (Farraka to Raigunj)		RHS (Raigunj to Farraka)		Remarks
	MSA	Cumulative MSA	MSA	Cumulative MSA	
2025-26	10.00	**10.00**	3.94	**3.94**	
2026-27	10.67	**20.67**	4.18	**8.12**	
2027-28	11.37	**32.04**	4.44	**12.56**	
2028-29	11.86	**43.90**	4.62	**17.18**	
2029-30	12.36	**56.26**	4.80	**21.98**	
2030-31	12.75	**69.01**	4.94	**26.92**	
2031-32	13.39	**82.40**	5.17	**32.09**	
2032-33	14.10	**96.50**	5.43	**37.52**	
2033-34	14.83	**111.33**	5.69	**43.21**	
2034-35	15.59	**126.92**	5.97	**49.18**	
2035-36	16.39	**143.31**	6.25	**55.43**	
2036-37	17.22	**160.53**	6.55	**61.98**	
2037-38	18.08	**178.61**	6.86	**68.84**	
2038-39	18.99	**197.60**	7.19	**76.03**	
2039-40	19.93	**217.53**	7.52	**83.55**	
2040-41	20.90	**238.43**	7.87	**91.42**	End of Concession Period

4.2.4 Network Survey Vehicles (NSV) Survey

Roughness Survey

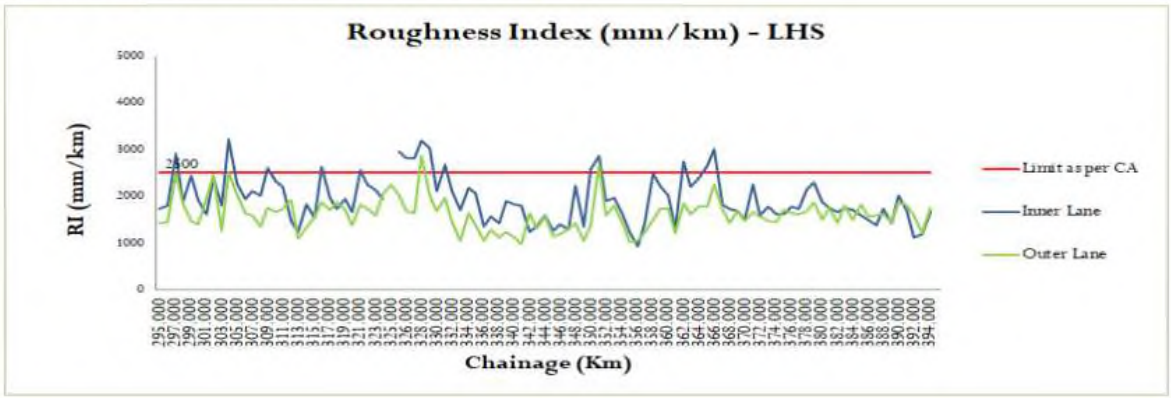
Roughness Survey results were provided by the Concessionaire for analysis and to assess the riding quality on each direction (each lane) of the carriageway of Project Road. The test is carried out on 16th October 2024.

The side-wise results of Roughness Survey are presented as below.

Table 4-4 Result of Roughness Survey

Roughness value (mm/km)	Length obtained based on roughness values (km)			
	LHS IL	LHS OL	RHS IL	RHS OL
0-1000	1.00	1.00	5.00	10.00
1000-2500	82.70	95.70	84.10	84.30
>2500	15.80	3.00	9.00	5.40

Figure 2-3: Roughness Summary for FRHL as per Schedule K of CA



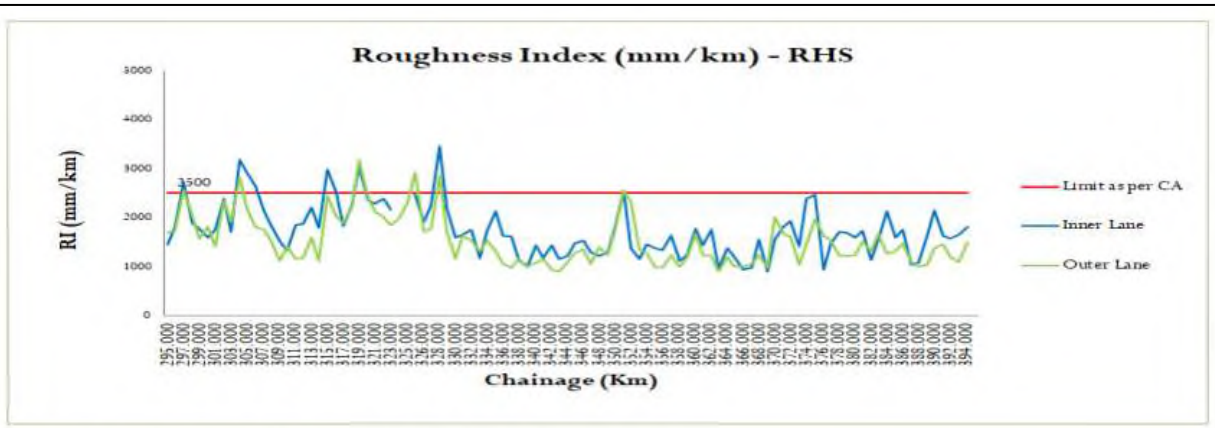


Figure 2-4: Roughness Index for FRHL as per Schedule K of CA

Observation and Conclusion:

As per the NSV test carried out in the month of October 2024 and the related Roughness results provided by the Concessionaire, it was observed that the overall pavement condition for the Project stretch is found to be Good & Fair for 90.95 kms and Poor for 8.30 kms (Survey was not conducted for the length of 0.745 km due to traffic diversion).

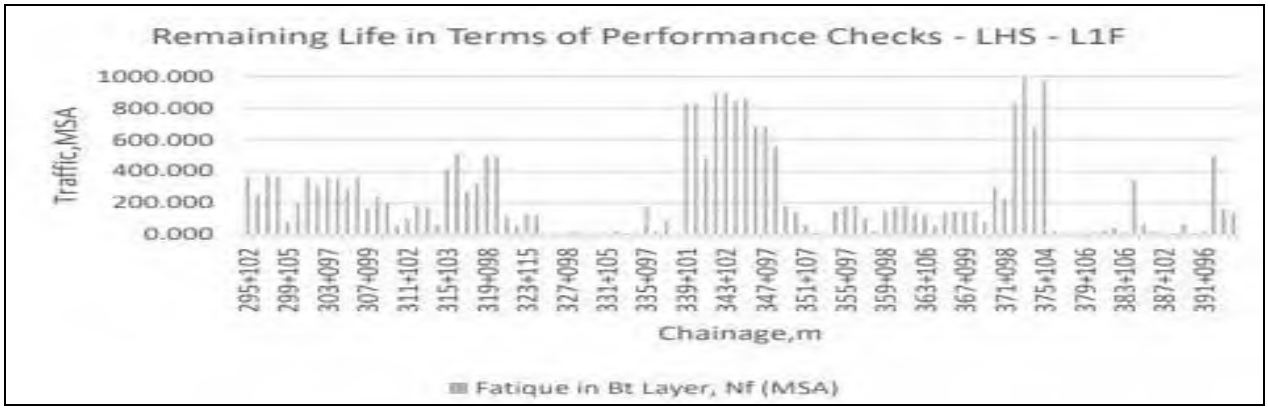
However, as on date, the road condition of the Project Road is better than NSV survey results for October 2024 shared by the Concessionaire. As per IE MPR for the month of January 2025 about 98.81 kms of Road is in satisfactory condition and 1.19 kms of the Road is in unsatisfactory condition.

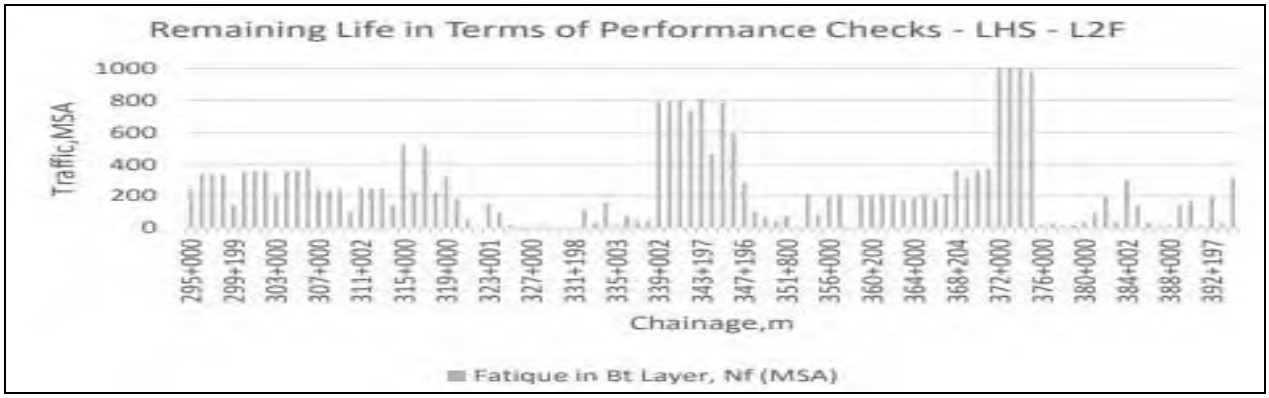
As per observed by the Technical Consultant during site visit the pavement condition for the Project stretch is found to be Good to Fair for 99.99 kms.

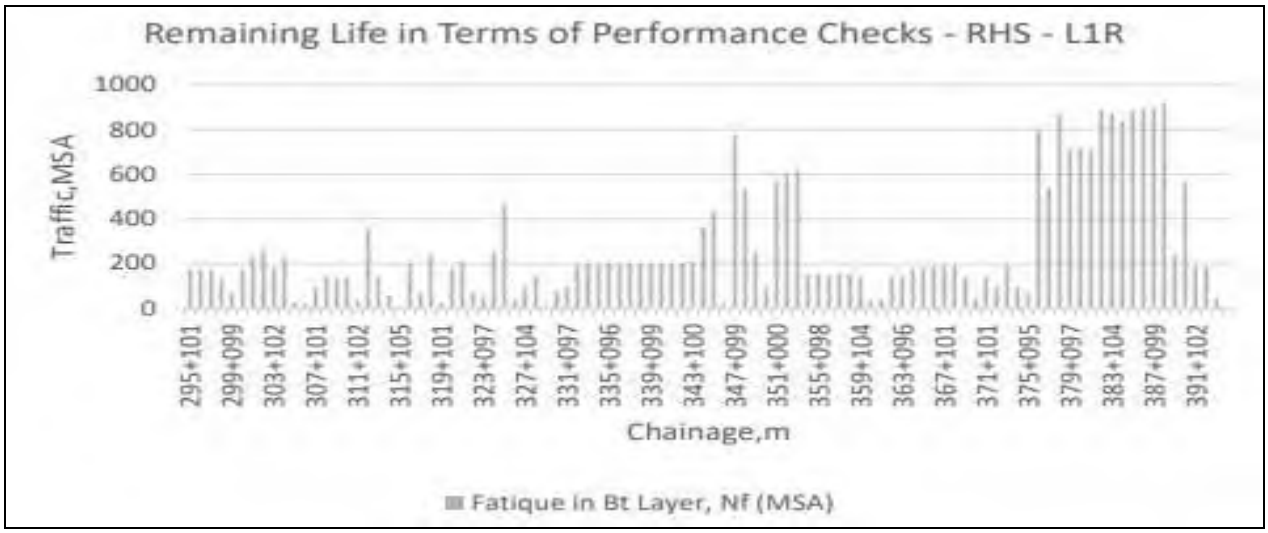
4.2.5 Structural Evaluation

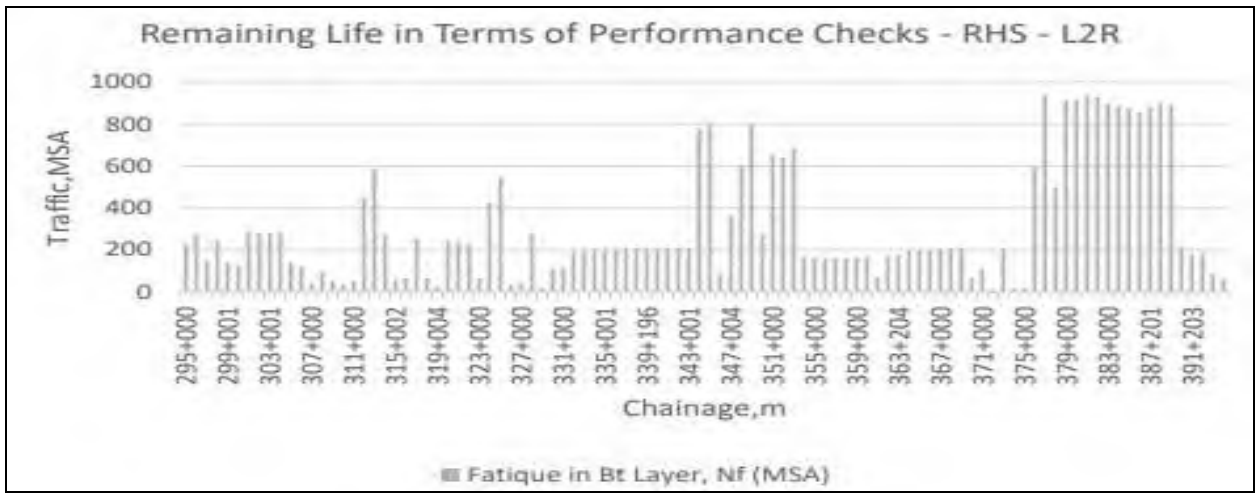
The structural evaluation and analysis of the remaining life of project was carried out in conformity with IRC:115-2014 “Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique”.

The FWD survey was conducted on the Project Road on 18th November 2024 to 25th November 2024. The summary of the same is presented below.


Remaining Life in Terms of Performance Checks - LHS - L1F
Traffic,MSA
1000.000
800.000
600.000
400.000
200.000
0.000
295+102
299+105
303+097
307+099
311+102
315+103
319+098
323+115
327+098
331+105
335+097
339+101
343+102
347+097
351+107
355+097
359+098
363+106
367+099
371+098
375+104
379+106
383+106
387+102
391+096
Chainage,m
Fatique in Bt Layer, Nf (MSA)


Remaining Life in Terms of Performance Checks - LHS - L2F
Traffic,MSA
1000
800
600
400
200
0
295+000
299+199
303+000
307+000
311+002
315+000
319+000
323+001
327+000
331+198
335+003
339+002
343+197
347+196
351+800
356+000
360+200
364+000
368+204
372+000
376+000
380+000
384+002
388+000
392+197
Chainage,m
Fatique in Bt Layer, Nf (MSA)


Remaining Life in Terms of Performance Checks - RHS - L1R
Traffic,MSA
1000
800
600
400
200
0
295+101
299+099
303+102
307+101
311+102
315+105
319+101
323+097
327+104
331+097
335+096
339+099
343+100
347+099
351+000
355+098
359+104
363+096
367+101
371+101
375+095
379+097
383+104
387+099
391+102
Chainage,m
Fatique in Bt Layer, Nf (MSA)


Remaining Life in Terms of Performance Checks - RHS - L2R
Traffic,MSA
1000
800
600
400
200
0
295+000
299+001
303+001
307+000
311+000
315+002
319+004
323+000
327+000
331+000
335+001
339+196
343+001
347+004
351+000
355+000
359+000
363+204
367+000
371+000
375+000
379+000
383+000
387+201
391+203
Chainage,m
Fatique in Bt Layer, Nf (MSA)

The remaining life for most of the project stretch is well above the design life. However, the maintenance can be carried out on as and when required basis and to the compliance of Schedule-K requirement to maintain the road in serviceable condition. However, improvement in Riding Quality is expected if the roughness value exceeds 2500 mm/km.

4.2.6 Test Pit and Subgrade Investigation

The Concessionaire has carried out the subgrade investigation for Project Road. The results of the same as provided by the Concessionaire are tabulated as below.

Table 4-5 Summary of Subgrade Test Results

Sr. No.	Location (Km.)	Side (LHS/RHS)	Type of Pit	per IS: 1498 Soil Classification as	Gradation: Percent by weight passing through the Sieve (IS:2720-IV)						Clay & silt content %	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR (%)	Free Swell Index (%)	Degree of Compaction (%)
					19.0 mm	10.0 mm	4.75 mm	2.0 mm	425 microns	75 microns		Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density gm/cc.	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	299+050	LHS	Subgrade	SC	99	95.2	80.3	65.2	58.1	47.1	47.1	34	20	14	1.9	12.7	1.78	16	9.5	30	93.7
2	301+900	RHS	Subgrade	SM	95.1	88	77.1	63.4	47.6	39.5	39.5	42	27	15	1.89	13	1.74	15	8.2	38.3	92.1
3	310+000	LHS	Subgrade	CI	96.7	91.2	87.4	82	74.5	61	61	40	24	16	1.83	12.8	1.78	16	7	37.1	97.3
4	315+200	RHS	Subgrade	ML	92.5	90.8	89.3	88.1	86.1	68.3	68.3	26	NP	NP	1.89	8.1	1.76	15	8.1	0	93.1
5	321+000	LHS	Subgrade	SM	80.9	73.1	70.6	65.6	61.5	44.9	44.9	21	NP	NP	1.86	8.6	1.79	14	8.7	0	96.2
6	332+000	LHS	Subgrade	SM	94.4	92.3	91.5	90.3	87.1	29.5	29.5	19	NP	NP	1.98	8.3	1.85	14	11.8	0	93.4
7	335+300	RHS	Subgrade	SM	100	100	99.5	98.9	96.1	23.6	23.6	24	NP	NP	1.96	8	1.82	13	12.1	0	92.9
8	340+000	LHS	Subgrade	CI	100	99	97.6	95.4	92.3	89	89	38	24	14	1.79	13.2	1.7	12	6.3	33.3	95
9	345+100	RHS	Subgrade	MI	100	97.9	94.2	88.8	83	77.6	77.6	38	26	12	1.81	12.9	1.79	10	6.1	25.2	98.9
10	350+000	LHS	Subgrade	CI	100	98.7	91.2	77.7	66.9	59.8	59.8	36	24	12	1.89	12.3	1.71	13	7.7	30	90.5
11	353+000 (SR)	LHS	Subgrade	CL	93.4	89.6	87.2	84.2	80.7	71.5	71.5	31	22	9	1.82	10.6	1.7	16	6.3	18.3	93.4
12	355+000	RHS	Subgrade	ML-CL	100	96.2	87.2	73.7	63.7	57.1	57.1	26	21	5	1.92	9.3	1.75	22	8.8	11.1	91.1
13	360+600	LHS	Subgrade	CL	100	97.7	87.4	75.6	65.8	58.3	58.3	24	16	8	1.87	11.4	1.75	14	8.4	18.3	93.6
14	365+000	RHS	Subgrade	ML-CL	98.1	92.3	88.4	78.1	70	61	61	28	21	7	1.87	9.6	1.78		7.8	15.2	95.2
15	370+000	LHS	Subgrade	ML-CL	98.6	90.7	87.2	82.7	74.7	67.4	67.4	23	17	6	1.89	9.1	1.76	8	8.8	11.1	93.1
16	375+000	RHS	Subgrade	CI	100	99	98.6	97.9	96.3	94.3	94.3	43	24	19	1.77	13.7	1.72	21	5.2	40	97.2
17	380+000	LHS	Subgrade	SM	98.3	95.4	92.7	87.3	82.8	28.6	28.6	23	NP	NP	1.94	8.1	1.7	11	10.8	0	87.6
18	380+600 (SR)	RHS	Subgrade	SM	95.8	91.6	87.5	83.7	75.7	17.3	17.3	25	NP	NP	1.91	8.3	1.78	9	11.6	0	93.2
19	384+700	RHS	Subgrade	ML	98.2	93.5	90	86.9	83.8	64.2	64.2	23	NP	NP	1.89	8.4	1.78	8	9	7.1	94.2
20	389+300	LHS	Subgrade	ML	96.1	93.4	90.4	87.9	84.8	72.7	72.7	26	NP	NP	1.84	9.4	1.74	14	8.3	11.1	94.6
21	395+000	RHS	Subgrade	ML	98.5	95.4	92.6	89.2	84.6	63.6	63.6	23	NP	NP	1.83	9	1.74	12	8.5	7.1	95.1

4.2.7 Existing Granular layers Testing

Table 4-6 Summary of Granular Layers Tests Results

Sr. No.	Location (km)	Side (LHS /RHS)	Type of material	Gradation Sieve Size in (mm)											Gradation Conforming to Specifications (as per MORTH 5th revision)	Gradation Conforming to Specifications (as per MORTH 4th revision)	Atterberg Limits			Specify Gravity	Water Absorption (%)	Aggregate Impact Value (%)
				75	53	45	26.5	22.4	11.2	9.5	4.75	2.36	0.6	0.425	0.075			Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)			
1	299+050	LHS	WMM	100	100	100	89.7	69.4	40.8	34.9	26.3	16.6	9.7	4.2	1.6	Conforming to WMM gradation	Conforming to WMM gradation	23	19	4	2.73	0.78	16.81
2	310+000	LHS	GSB	100	100	100	79.6	62.1	55.3	41.6	33.8	28.8	18.2	12.4	3.6	Conforming to GSB grade-I	Conforming to GSB grade-I	19	NP	NP	2.71	0.67	16.5
3	321+000	LHS	GSB	100	100	100	82.5	65.2	51.7	43.3	36.4	22.4	15.5	11.8	5.3	Conforming to GSB grade-I	Conforming to GSB grade-I	21	NP	NP	2.68	0.91	15.53
4	335+300	RHS	WMM	100	100	100	83.5	75.3	41.6	32.6	27.6	17.4	11.3	6.1	3.4	Conforming to WMM gradation	Conforming to WMM gradation	20	NP	NP	2.7	0.68	18.22
5	350+000	LHS	WMM	100	100	100	92.3	78.3	50.8	42.8	30.7	19.7	8.1	5.2	0.8	Conforming to WMM gradation	Conforming to WMM gradation	22	NP	NP	2.68	0.83	17.31
6	360+600	LHS	GSB	100	100	100	88.5	76.6	66.1	59.7	46.5	39.1	19.1	12.2	5.8	Conforming to GSB grade-I	Conforming to GSB grade-I	21	NP	NP	2.64	0.66	15.32
7	380+200	LHS	GSB	100	100	100	86.8	78.9	63.4	57.5	47.3	38.8	20.1	13.4	1.4	Conforming to GSB grade-I&II	Conforming to GSB grade-I&II	23	NP	NP	2.69	0.85	14.67
8	380+600	RHS	WMM	100	100	100	77.1	64.2	42.3	38	31.5	23.8	12.6	9.8	1	Conforming to WMM gradation	Conforming to WMM gradation	24	20	4	2.73	0.75	17.3
9	384+700	RHS	WMM	100	100	100	84.1	74.1	52.6	45.4	37.3	29.6	20.1	16.7	2.4	Conforming to WMM gradation	Conforming to WMM gradation	20	NP	NP	2.69	0.93	16.45
10	389+300	LHS	GSB	100	100	96	72.9	68.4	45.3	39.7	28.4	24.1	12.3	7.2	2.6	Conforming to GSB grade-III&IV	Conforming to GSB grade-IV&V	19	NP	NP	2.68	0.84	15.68

4.2.8 Periodic Maintenance Strategy

The Concessionaire has completed an overlay on both sides of project MCW throughout the entire project length. In Service Road, BC overlay of 30 mm / 40 mm has been provided on both sides at distress locations in FY 2023.

The maintenance can be carried out as and when required basis and to the compliance of Schedule-K requirement to maintain the road in serviceable condition. Only improvement in Riding Quality is expected if the roughness value exceeds 2500 mm/km. The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-7 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2023	MM work is completed	MM work is completed
2	FY 2024 to FY 2028	-	-
3	FY 2029 & FY2030	Major maintenance with 30 mm BC (PMB) (74%) + 50 mm PMB (12%) + Micro-surfacing (14%) + Milling & 50 mm DBM (45%)	Major maintenance with 30 mm BC (100%)
4	FY 2031 to FY 2035	-	-
5	FY 2036 & FY 2037	Major maintenance with 40 mm BC (PMB) (100%) + Milling & 50 mm DBM (5%)	Major maintenance with 30 mm BC (100%)
6	FY 2038 to FY 2039	-	-
7	FY 2040 & FY 2041	Major maintenance with 30 mm BC (100%) + Milling & 50 mm DBM (5%)	Major maintenance with 30 mm BC (100%)

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Work Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

   a. **Manpower and Labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

   b. **Bitumen:** The Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

      Therefore, bitumen prices are considered as per the forecast of Client. Current publish of bitumen is considered for unit rate calculation for FY 2027. Average 10 years price of bitumen is considered for unit rate calculation for FY 2028 and onwards. Following rates of bitumen are considered.

      Polymer and modification costs are provided by the client to work out BC rate with PMB.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY 2027 (Rs. / MT)	Rate for FY 2028 onwards (Rs. / MT)
1	Mathura	All States	VG10	45,102	35,125
2			VG30	46,402	36,137
3			VG40	48,962	38,131
4	Panipat	All States	VG10	45,102	35,125
5			VG30	46,402	36,137
6			VG40	48,962	38,131
7	Koyali	All States	VG10	47,102	37,125
8			VG30	48,402	38,137

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY 2027 (Rs. / MT)	Rate for FY 2028 onwards (Rs. / MT)
9			VG40	51,082	40,251
10	Haldia	All States	VG10	46,602	35,683
11			VG30	47,402	36,295
12			VG40	49,962	38,256
13	Barauni	All States	VG10	47,132	36,213
14			VG30	48,432	37,325
15			VG40	50,992	39,286
16	CPCL	Kerala	VG10	47,402	35,519
17			VG30	48,402	36,395
18			VG40	50,762	38,120
19	CPCL	Tamil Nadu	VG10	47,902	36,019
20			VG30	48,402	36,395
21			VG40	50,962	38,320
22	CPCL	Telangana and Andhra Pradesh	VG10	44,602	32,719
23			VG30	45,402	33,395
24			VG40	47,962	35,320
25	CPCL	Karnataka	VG10	44,602	32,719
26			VG30	45,402	33,395
27			VG40	47,962	35,320

c. **Sand and Aggregate:** Market rates are considered from the quarry located nearest to the Project Road.

d. **Cement:** Market rates are considered from the nearest local market.

e. **Steel :** Rate of steel is taken from SAIL

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable PWD SOR.

g. **Rates of items as per Work Order:** The rates of road marking, road stud, kerb raising, micro-surfacing, milling, aggregate etc. are considered as per the Work Order issued to Contractor at Site shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book / Work Order for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam	Cum	10,806
2	Bituminous Concrete (VG-40)	Cum	12,262
3	Bituminous Concrete (VG-30)	Cum	11,329
4	Bituminous Concrete (PMB)	Cum	13,560
5	Milling	Sqm	93
6	Micro-surfacing	Sqm	163
7	Kerb Raising	Rmt	311

Sr. No.	Item Description	Unit	Rates (Rs.)
8	Road Marking on BC Surface	Sqm	485
9	Road Studs	Nos.	193
10	Road Marking on Micro-surface	Sqm	713

5.3 Balance Work Cost

As discussed in the previous chapter, there are no balance works to be executed as per CA. Hence, the balance work's cost is **NIL**.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads:

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Toll Security Services
4. Incident Management Services
5. Electricity and Diesel Charges
6. TMS / HTMS / System Expenses
7. Office Operating Expenses
8. Vehicle Running Expenses
9. Professional Fees Expense
10. Community Development
11. Communication Expenses
12. Conveyance Expenses
13. Insurance Expense
14. IE Fees
15. Horticulture & ROW Maintenance
16. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or "wear-and-tear". Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation Cost is presented as below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I.**

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027-41)
1	Salary and Welfare Expenses	2,05,92,000
2	Tolling Operations Services	6,41,72,365
3	Toll Security Services	1,72,15,347
4	Incident Management & Emergency Services	4,00,71,419
5	Electricity and Diesel Charges	1,22,06,704
6	TMS/HTMS/System Expenses	74,62,995
7	Office Operating Expenses	32,73,998
8	Vehicle Running Expenses	40,84,800
9	Professional Fees Expense	1,50,94,897
10	Community Development	14,36,848
11	Communication Expenses	3,64,514
12	Conveyance Expenses	3,97,651
13	Insurance Expense	1,55,08,416
14	IE Fees	43,36,587
15	Routine Maintenance Cost (Project Highway)	3,90,92,413
16	Horticulture & ROW Maintenance	3,30,56,520
17	Miscellaneous including Contingency	82,48,742
	Total Cost (Rs.)	**28,66,16,216**
	Total Cost (Cr.)	**28.66**
	Per km Cost (Lakhs)	28.66

5.5 Major Maintenance Cost

As per the information provided by the Concessionaire, overlay has been completed at the project site with strengthening of project road in FY 2023. 40 mm BC overlay (81%) on LHS and 30 mm BC and micro-surfacing (81%) on RHS has been provided and at distress portion DBM of 50 / 95 mm has been laid.

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

The summary of Major Maintenance Cost is provided as below.

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2024 to FY 2028	-	
2	FY 2029 & FY 2030	155.98	
3	FY 2031 to FY 2035	-	
4	FY 2036 & FY 2037	151.20	
5	FY 2037 to FY 2039	-	
6	FY 2040 & FY 2041	103.48	
Total Cost (Cr.)		**410.66**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2026	-	
2	FY 2033	2.46	

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
3	FY 2040	2.46	
Total Cost (Cr.)		**4.92**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-4 Escalation

Year	Escalation	Year	Escalation
2028	4.86%	**2041**	3.99%
2029	4.44%	**2042**	3.99%
2030	4.24%	**2043**	3.99%
2031	4.13%	**2044**	3.99%
2032	4.08%	**2045**	3.99%
2033	4.01%	**2046**	3.99%
2034	4.00%	**2047**	3.99%
2035	4.03%	**2048**	3.99%
2036	4.01%	**2049**	3.99%
2037	3.98%	**2050**	3.99%
2038	3.98%	**2051**	3.99%
2039	4.00%	**2052**	3.99%
2040	3.99%	**2053**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summarised yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr.)

	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41
1	Routine O&M Cost															
1.01	Salary and Welfare Expense	2.06	2.16	2.26	2.35	2.45	2.55	2.65	2.76	2.87	2.98	3.10	3.22	3.35	3.49	3.63
1.02	Tolling Operations Services	6.42	6.73	7.03	7.33	7.63	7.94	8.26	8.59	8.93	9.29	9.66	10.05	10.45	10.87	11.30
1.03	Toll Security Services	1.72	1.81	1.89	1.97	2.05	2.13	2.22	2.30	2.40	2.49	2.59	2.70	2.80	2.91	3.03
1.04	Incident Management Services	4.01	4.20	4.39	4.57	4.76	4.96	5.16	5.36	5.58	5.80	6.03	6.27	6.52	6.79	7.06
1.05	Electricity and Diesel Charges	1.22	1.28	1.34	1.39	1.45	1.51	1.57	1.63	1.70	1.77	1.84	1.91	1.99	2.07	2.15
1.06	TMS/HTMS/System Expenses	0.38	0.40	0.42	0.49	0.61	0.70	0.39	0.51	0.53	0.55	0.65	0.80	0.92	0.51	0.67
1.07	Office Operating Expenses	0.33	0.34	0.36	0.37	0.39	0.41	0.42	0.44	0.46	0.47	0.49	0.51	0.53	0.55	0.58
1.08	Vehicle Running Expenses	0.41	0.43	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.59	0.62	0.64	0.67	0.69	0.72
1.09	Professional Fees Expense	1.51	1.58	1.65	1.72	1.79	1.87	1.94	2.02	2.10	2.19	2.27	2.36	2.46	2.56	2.66
1.10	Community Development	0.14	0.15	0.16	0.16	0.17	0.18	0.18	0.19	0.20	0.21	0.22	0.22	0.23	0.24	0.25
1.11	Communication Expenses	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06
1.12	Conveyance Expenses	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.07
1.13	Insurance Expense	1.55	1.63	1.70	1.77	1.84	1.92	2.00	2.08	2.16	2.25	2.34	2.43	2.53	2.63	2.73
1.14	IE Fees	0.43	0.45	0.47	0.50	0.52	0.54	0.56	0.58	0.60	0.63	0.65	0.68	0.71	0.73	0.76
1.15	Routine Maintenance Cost	3.91	4.10	4.28	4.46	4.65	4.84	5.03	5.23	5.44	5.66	5.89	6.12	6.37	6.62	6.88
1.16	Horticulture & ROW Maintenance	3.31	3.47	3.62	3.77	3.93	4.09	4.25	4.42	4.60	4.79	4.98	5.18	5.38	5.60	5.82
1.17	Miscellaneous and Contingency	0.82	0.86	0.90	0.94	0.98	1.02	1.06	1.10	1.15	1.19	1.24	1.29	1.34	1.40	1.45
	Subtotal of O&M Cost	28.30	29.67	30.99	32.36	33.79	35.23	36.31	37.87	39.40	40.97	42.68	44.50	46.37	47.78	49.82
2	Major Maintenance Cost	-	-	82.65	82.65	-	-	-	-	-	96.28	96.28	-	-	75.73	75.73
3	Periodic Cost of TMS/HTMS Replacement	-	-	-	-	-	-	3.16	-	-	-	-	-	-	4.16	-
4	Balance Works Cost	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**28.30**	**29.67**	**113.63**	**115.01**	**33.79**	**35.23**	**39.47**	**37.87**	**39.40**	**137.26**	**138.96**	**44.50**	**46.37**	**127.67**	**125.55**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Ordinary Repair Cost for Flexible (with GST)	**3,90,92,413**
(Inclusive of GST)	**= 3.91 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD **2,25,267**	**Urban** More than 4500 CVD **2,58,327**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
						Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	344658.00	395241.00	-	-	-	-
		Paved shoulder	1.70	382954.00	439156.00	95.69	-	3,66,42,954	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	450534.00	516654.00	-	-	-	-
		Paved shoulder	2.20	495587.00	568320.00	-	4.31	-	24,49,459
TOTAL						**99.995**		**3,90,92,413**	

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	0.50%
	Volume (cum)			2.50
	Rs/m^3			12980
	Cost in Rupees			32,450
	ii) Patch repair	100 % Patch less	As & when required	0.50%
	Area (sqm)			50
	Rs/m^2			519
	Cost in Rupees			25,960
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			94
	Cost in Rupees			23,624
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.00%
	Area (sqm)			150
	Rs/m^2			63
	Cost in Rupees			9,487
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			519
	Cost in Rupees			38,940

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	v) Road marking	14%	Once in 7th year & @ Repaired location	30963
	SUB TOTAL			**1,61,424**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**7,414**
3	**Maintenance of Cross Drainage works:**			
	i) Repair of floors	100%	Once in a Year	5055
	ii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			**7,161**
4	**Maintenance of Minor & Major Bridges:**			
	i) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints	100%	As & when required	36,950
	ii) Repair of minor washouts, erosion scour and animal holes			
	iii) Sealing Cracks with Cement/ Epoxy Mortar			
	iv) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometer stone etc.		Once in a Year	3695
	ii) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7390
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232
	iv) Traffic Census		Once in a Year	0

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
	v) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**12,317**
	GRAND TOTAL (Normal)			**2,25,267**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	3254
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**33,060**
	GRAND TOTAL (Urban)			**2,58,327**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY 2029 & FY 2030)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
Main Carriageway - Flexible Pavement										
1	Tack coat	Sqm						21,73,071	18	3,98,75,856
	For BC PMB 30 mm	Sqm	2	72,348	8.75		12,66,083	12,66,083		
	For BC PMB 50 mm	Sqm	2	11,732	8.75		2,05,311	2,05,311		
	For DBM	Sqm	2	43,995	7.00		6,15,932	6,15,932		
	For Misc. Location	Sqm	2	4,900	8.75		85,746	85,746		
2	Micro Surfacing	Sqm	2	13,687	8.75		2,39,529	2,39,529	163	3,91,15,110
3	For BC PMB 30 mm	Cum	2	77,247	8.75	0.03	40,555	40,555	13,561	54,99,49,327
4	For BC PMB 50 mm	Cum	2	11,732	8.75	0.05	10,266	10,266	13,561	13,92,07,122
5	DBM with 50 mm	Cum	2	43,995	7.00	0.05	30,797	30,797	10,806	33,27,90,885
6	Milling	Sqm	2	43,995	7.00		6,15,932	6,15,932	93	5,73,74,075
	Main Carriageway - Rigid Pavement									
7	Joint Sealant Replacement @ 10% length	Rmt	10%	4,336	3.50	4.50	3,469	3,469	64	2,22,009
8	Dismantling of CC Panels @ 5% area	Cum	5%		68,294	0.30	1024	1024	1,030	10,54,936
9	Replacement of Panels - PQC @ 5% area	Cum	5%		68,294	0.30	1024	1024	8,552	87,60,293
	Service Road									
10	Tack coat	Sqm	1	8,620	5.36		46,210	46,210	18	8,47,953
11	BC with 30 mm	Cum	1	8,620	5.36	0.03	1,386	1,386	11,329	1,57,05,517
12	Micro Surfacing	Sqm								
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
12	Tack coat	Sqm	1	1,751	23.0		40,340	40,340	18	7,40,237
13	Wearing Coat PMB with 30 mm	Cum	1	1,751	23.0	0.03	1,210	1,210	13,561	1,64,11,034
14	Milling of Ex. Wearing Coat	Sqm	1	1,751	23.0		40,340	40,340	93	37,57,662
15	Painting of Crash Barrier	Sqm	4	1,751		1.20	8,406	8,406	95	7,98,593
	Other Works									
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	12,223			24,446	24,446	193	47,22,967
17	Painting of Kerb	Sqm	2	97,767		0.315	61,593	61,593	95	58,51,355

Major Maintenance Cost (FY 2029 & FY 2030)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
18	Road Marking	Sqm					65,742	65,742	485	3,19,04,593
19	Road Marking Micro Surfacing	Sqm					9,790	9,790	713	69,80,064
	MCW									
	a) Median & Edge line	Sqm	4	1,04,995	0.15		62,997			
	b) Lane line	Sqm	2	34,648	0.10		6,930			
	Service Road									
	a) Edge line	Sqm	2	8,620	0.10		1,724			
	b) Lane line	Sqm	1	2,845	0.10		284			
	Junction crossing	Sqm					3,597			
19	Filling of Earthen shoulder	Cum					6,125	6,125	468	28,63,872
	MCW		2	97,767	1.00	0.03	5,866			
	Service Road		1	8,620	1.00	0.03	259			
20	Miscellaneous	5%								6,29,46,673
Total Major Maintenance Cost (Rs)										**1,32,18,80,135**
Total Major Maintenance Cost with 18% GST (Rs)										**1,55,98,18,560**
Total Major Maintenance Cost with GST (Cr)										**155.98**
Per km Cost (lakh)										**155.99**
Escalation Factor for Major Maintenance Cost (FY 2029 & FY 2030)										**1.10**
Total Escalated Cost for Major Maintenance Cost (FY 2029 & FY 2030) (Cr)										**165.29**

Major Maintenance Cost (FY 2036 & FY 2037)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
Main Carriageway - Flexible Pavement										
1	Tack coat	Sqm						18,65,105	18	3,42,24,679
	For BC PMB	Sqm	2	97,767	8.75		17,10,923	17,10,923		
	For DBM	Sqm	2	4,888	7.00		68,437	68,437		
	For Misc. Location	Sqm	2	4,900	8.75		85,746	85,746		
2	BC PMB with 40 mm	Cum	2	1,02,667	8.75	0.04	71,867	71,867	13,561	97,45,58,114
3	DBM with 50 mm	Cum	2	4,888	7.00	0.05	3,422	3,422	10,806	3,69,76,765
4	Milling	Sqm	2	4,888	7.00		68,437	68,437	93	63,74,897
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 10% length	Rmt	10%	4,336	3.50	4.50	3,469	3,469	64	2,22,009
6	Dismantling of CC Panels @ 5% area	Cum	5%		68,294	0.30	1024	1024	1,030	10,54,936
7	Replacement of Panels - PQC @ 5% area	Cum	5%		68,294	0.30	1024	1024	8,552	87,60,293
	Service Road									
8	Tack coat	Sqm	1	8,620	5.36		46,210	46,210	18	8,47,953
9	BC with 30 mm	Cum	1	8,620	5.36	0.03	1,386	1,386	11,329	1,57,05,517
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
10	Tack coat	Sqm	1	1,751	23.0		40,340	40,340	18	7,40,237
11	Wearing Coat BC PMB with 40 mm	Cum	1	1,751	23.0	0.04	1,614	1,614	13,561	2,18,81,378
12	Milling of Ex. Wearing Coat	Sqm	1	1,751	23.0		40,340	40,340	93	37,57,662
13	Painting of Crash Barrier	Sqm	4	1,751		1.20	8,406	8,406	95	7,98,593
	Other Works									
14	Raising of Road Kerb	Rmt	2	1,02,077			2,04,154	2,04,154	311	6,33,89,817
15	Replacement of Road Stud									
	Normal Road Stud	Nos	2	12,223			24,446	24,446	193	47,22,967
16	Painting of Kerb	Sqm	2	97,767		0.315	61,593	61,593	95	58,51,355
17	Road Marking	Sqm					75,532	75,532	485	3,66,55,540
	MCW									
	a) Median & Edge line	Sqm	4	1,04,995	0.15		62,997			
	b) Lane line	Sqm	2	34,648	0.10		6,930			
	Service Road									

Major Maintenance Cost (FY 2036 & FY 2037)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	a) Edge line	Sqm	2	8,620	0.10		1,724			
	b) Lane line	Sqm	1	2,845	0.10		284			
	Junction crossing	Sqm					3,597			
18	Filling of Earthen shoulder	Cum					8,080	8,080	468	37,78,189
	MCW		2	97,767	1.00	0.04	7,821			
	Service Road		1	8,620	1.00	0.03	259			
19	Miscellaneous	5%								6,10,15,045
Total Major Maintenance Cost (Rs)										**1,28,13,15,949**
Total Major Maintenance Cost with 18% GST (Rs)										**1,51,19,52,820**
Total Major Maintenance Cost with GST (Cr)										**151.20**
Per km Cost (lakh)										**151.20**
Escalation Factor for Major Maintenance Cost (FY 2036 & FY 2037)										**1.45**
Total Escalated Cost for Major Maintenance Cost (FY 2036 & FY 2037) (Cr)										**192.56**

Major Maintenance Cost (FY 2040 & FY 2041)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
Main Carriageway - Flexible Pavement										
1	Tack coat	Sqm						18,65,105	18	3,42,24,679
	For BC	Sqm	2	97,767	8.75		17,10,923	17,10,923		
	For DBM	Sqm	2	4,888	7.00		68,437	68,437		
	For Misc. Location	Sqm	2	4,900	8.75		85,746	85,746		
2	BC with 30 mm	Cum	2	1,02,667	8.75	0.03	53,900	53,900	12,262	66,09,27,220
3	DBM with 50 mm	Cum	2	4,888	7.00	0.05	3,422	3,422	10,806	3,69,76,765
4	Milling	Sqm	2	4,888	7.00		68,437	68,437	93	63,74,897
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 10% length	Rmt	10%	4,336	3.50	4.50	3,469	3,469	64	2,22,009
6	Dismantling of CC Panels @ 5% area	Cum	5%		68,294	0.30	1024	1024	1,030	10,54,936
7	Replacement of Panels - PQC @ 5% area	Cum	5%		68,294	0.30	1024	1024	8,552	87,60,293
	Service Road									
8	Tack coat	Sqm	1	8,620	5.36		46,210	46,210	18	8,47,953
9	BC with 30 mm	Cum	1	8,620	5.36	0.03	1,386	1,386	11,329	1,57,05,517
	Micro Surfacing	Sqm	1							
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
10	Tack coat	Sqm	1	1,751	23.0		40,340	40,340	18	7,40,237
11	Wearing Coat BC with 30 mm	Cum	1	1,751	23.0	0.03	1,210	1,210	12,262	1,48,39,545
12	Milling of Ex. Wearing Coat	Sqm	1	1,751	23.0		40,340	40,340	93	37,57,662
13	Painting of Crash Barrier	Sqm	4	1,751		1.20	8,406	8,406	95	7,98,593
	Other Works									
14	Replacement of Road Stud									
	Normal Road Stud	Nos	2	12,223			24,446	24,446	193	47,22,967
15	Painting of Kerb	Sqm	2	97,767		0.315	61,593	61,593	95	58,51,355
16	Road Marking	Sqm					75,532	75,532	485	3,66,55,540
	MCW									
	a) Median & Edge line	Sqm	4	1,04,995	0.15		62,997			
	b) Lane line	Sqm	2	34,648	0.10		6,930			
	Service Road									

Major Maintenance Cost (FY 2040 & FY 2041)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	a) Edge line	Sqm	2	8,620	0.10		1,724			
	b) Lane line	Sqm	1	2,845	0.10		284			
	Junction crossing	Sqm					3,597			
17	Filling of Earthen shoulder									
	MCW		2	97,767	1.00	0.03	5,866	5,866	468	27,42,951
18	Miscellaneous	5%								4,17,60,156
Total Major Maintenance Cost (Rs)										**87,69,63,276**
Total Major Maintenance Cost with 18% GST (Rs)										**1,03,48,16,665**
Total Major Maintenance Cost with GST (Cr)										**103.48**
Per km Cost (lakh)										**103.49**
Escalation Factor for Major Maintenance Cost (FY 2040 & FY 2041)										**1.69**
Total Escalated Cost for Major Maintenance Cost (FY 2040 & FY 2041) (Cr)										**151.45**

FP Project Management

Technical Due Diligence Study of Ghaziabad - Aligarh Section (NH-91) from km. 23+600 to km. 149+900 in the State of Uttar Pradesh on Build Operate and Transfer (BOT) Basis

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025
Tel: +91-22-6660 3901
e-mail: pfmumbai@fpindia.com www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	13-May-2026	DKR / STP	CSB	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Mumbai

Table of Contents

1. Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2. Project Description 4
2.1 Location 4
2.2 Climate 5
2.3 Terrain 5
2.4 Abutting Land Use 5
2.5 Right of Way 5
2.6 Existing Utilities 5
2.7 Development as per Schedule-B 5
3. Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 10
3.3 Major / Minor Junctions 11
3.4 Condition Survey of Bridge 12
3.5 Condition Survey of Culverts 25
3.6 Drainage 27
3.7 Slope Protection 27
3.8 Road Furniture 28
3.9 Median and Avenue Plantation 31
3.10 Toll Plaza 32
3.11 Lane Equipment 34
3.11.1 RFID ETC Transceiver 34
3.11.2 Lane Controller with Industrial PC 35
3.11.3 Automatic Vehicle Classification (AVC) Sensors 35
3.11.4 Automatic Lane Barrier 35
3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 36
3.11.6 Incident Capture Camera (AVC Camera) 36
3.11.7 License Plate Image Capture Camera (LPIC) 37

3.11.8 Over Head Lane Signal (OHLS) 37
3.11.9 Toll Booth Equipment 38
3.11.10 Medium Speed Weigh in Motion (MSWIM) 38
3.12 Plaza Equipment 39
3.12.1 TMS Server 39
3.12.2 55" LED screen for CCTV monitoring 39
3.12.3 Workstations in Control Room, POS room 39
3.13 Advanced Traffic Management System (ATMS) 40
3.14 Bus Bays and Passenger Shelter 40
3.15 Traffic Aid Post and Medical Aid Post 40
3.16 Toilet Block 41
3.17 Balance Work Status (Capex Augmentation to 6-laning) 41
3.18 Operation and Maintenance 42
3.18.1 O&M Contract 42
3.18.2 Organization Chart 42
3.18.3 Operation 45
3.18.4 Routine Maintenance 45
4 Pavement Investigation and Assessment 46
4.1 General 46
4.2 Axle Load and VDF 46
4.3 Design Traffic 46
4.4 Network Survey Vehicles (NSV) Survey 47
4.5 Structural Investigations 49
4.6 Test pit and Subgrade Investigation 49
4.7 Periodic Maintenance Strategy 59
5 Cost Estimates 60
5.1 General 60
5.2 Rate Assumption 60
5.3 Balance Work Cost 62
5.4 Routine O&M Cost 62
5.5 Major Maintenance Cost 63
5.6 Periodic Replacement of TMS / ATMS System 63
5.7 Escalation Assumption 63
5.8 Summary of Cost 64
Annexures 66
Annexure I - Routine Maintenance Cost 67
Annexure II - Major Maintenance Cost 71

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Pavement Condition 7
Table 3-2 Details of Summary for Structures 12
Table 3-3 Condition Survey of Minor Bridges 13
Table 3-4 Condition Survey of VUP 16
Table 3-5 Condition Survey of Flyover 20
Table 3-6 Condition Survey of ROB 22
Table 3-7 Details of Summary for Toll Plaza-1 at km. 47+500 32
Table 3-8 Details of Summary for Toll Plaza-2 at km. 113+300 33
Table 3-9 Details of Toilet Blocks 41
Table 4-1 Vehicle Damage Factor (VDF) 46
Table 4-2 Summary of Roughness Index 47
Table 4-3 Summary of Rutting 48
Table 4-4 Summary of FWD Survey 49
Table 4-5 Test result Summary of Subgrade 50
Table 4-6 Test Result of Core Cutting of Existing BT 54
Table 4-7 Major Maintenance Cycle 59
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 60
Table 5-2 Summary of Unit Rates 61
Table 5-3 Summary of Operation Cost 62
Table 5-4 Summary of Major Maintenance Cost 63
Table 5-5 Escalation 63

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start of the Project Road 4
Figure 2-3 End of the Project Road 5
Figure 3-1 Photographs of Pavement Condition (Main Carriageway) 7
Figure 3-2 Photographs of Service Road 10
Figure 3-3 Photographs of Major / Minor Junctions 11
Figure 3-4 Photographs of Minor Bridges 14
Figure 3-5 Photographs of Vehicular Underpass 18
Figure 3-6 Photographs of Flyovers 21
Figure 3-7 Photographs of ROB 23
Figure 3-8 Photographs of Culverts 26
Figure 3-9 Photograph of Drainage 27
Figure 3-10 Photographs of Slope Protection and Chute Drain 28
Figure 3-11 Photographs of Pavement Marking & Road Studs 29

Figure 3-12 Photographs of Road Signages / Kerb Painting 30
Figure 3-13 Photographs of Highway Lighting / Crash Barrier 31
Figure 3-14 Photographs of Median and Avenue Plantation 32
Figure 3-15 Photographs of Toll Plaza-1 33
Figure 3-16 Photographs of Toll Plaza-2 34
Figure 3-17 Photographs of Passenger Shelter 40
Figure 3-18 Photographs of Toilet Block 41

1. INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Four Lane Highway of Ghaziabad - Aligarh Section of NH-91 from km. 23+600 at Lalkuan near Ghaziabad Town to km. 149+900 at Aligarh in the State of Uttar Pradesh. The project is developed on Design, Build, Finance, Operate and Transfer (BOT) basis under NHDP Phase-III.

M/s. Ghaziabad Aligarh Expressway Private Limited (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance, and transfer of Improvement, Operation and Maintenance, widening to 4-lane of Ghaziabad - Aligarh Section of NH-91 from km. 23+600 at Lalkuan near Ghaziabad Town to km. 149+900 at Aligarh in the State of Uttar Pradesh on BOT Basis or Project Road. The project was awarded to Concessionaire on 25th February 2011 with a concession period of 24 years (including construction period) by National Highway Authority of India (NHAI). The length of Project Road is 126.300 kms with two toll plazas at km. 47+500 and at km. 113+300.

Accordingly, Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and flied investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.
- Formulation of future major maintenance strategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period
- Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our proposed team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader will coordinate the activities between all the key staff who will work closely together. The key staff will be assisted by various support staff, who will report to the respective key staff in their field of expertise. The Team Leader will act as the point of contact for Client Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyze the same as per the best engineering / industry practices.

The site visit and inspection were carried out between the periods from **28th February 2026 to 04th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features, and overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates:** The chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period.

2. PROJECT DESCRIPTION

2.1 Location

The Project Road is a section of NH-91 in the State of Uttar Pradesh which starts from km. 23+600 (at Lal Kuan near Ghaziabad town) with the junction of NH-24 and ends at the km. 149+900 near Aligarh. The length of the Project Road is 126.300 kms.

The existing Project Road is 4-lane carriageway excluding structures along with approaches which are of 6-lane configuration. From km. 23+600 to km. 27+000, km. 27+000 to km. 48+000, km. 48+000 to km. 108+000 and from km. 108+000 to km. 149+900 of the Project Road fall under the jurisdiction of the Districts of Ghaziabad, Gautam Buddha Nagar, Bulandshahr and Aligarh respectively. Most of the corridor traverses through rural areas. The major urban areas falling in the vicinity of the corridor are Ghaziabad, Dadri, Sikandrabad, Bulandshahr, Khurja, Gabbana and Aligarh.

Figure 2-1 Location Map

The photographs taken during the site visit are presented below.

Figure 2-2 Start of the Project Road

km. 23+600 (Ghaziabad side)

km. 23+600 (Aligarh side)

Figure 2-3 End of the Project Road

km. 149+900 (Kanpur side)

km. 149+900 (Ghaziabad side)

2.2 Climate

January is the coldest month with an average mean monthly temperature of 14°C and May is the hottest month with mean monthly temperature of 38°C in this area. The relative humidity is lowest during summers when it reaches as low as 24% and during monsoon it goes to as high as 80%.

2.3 Terrain

The Project Road runs mostly in plain terrain and passes through rich agricultural areas.

2.4 Abutting Land Use

Agriculture is the predominant land use along Project Road. However, there are some dense built-up areas and large-scale ribbon developments observed intermittently along the Project Road. At many places, large numbers of trees have been observed along Project Road.

2.5 Right of Way

The width of the existing Right of Way (ROW) for the Project Road is 60 m throughout its length.

2.6 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, etc.

2.7 Development as per Schedule-B

The Project Road from Ghaziabad (km. 23.600) to Aligarh (km. 149.900) has proposed to be developed as four lane and subsequent to six lane divided carriageway with median width varies from 1.20 m to 4.50 m, service roads and other arrangements.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.
b) Tolling, operation, management, maintenance, and transfer of the Project Road subject to and in accordance with the provisions of this Agreement.
c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Concessionaire under this Agreement.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km.	126.3	
2	Construction of Service Road	km.	54.6	LHS / RHS / BHS
3	Construction of slip road	Km.	9	LHS / RHS / BHS
4	Major Bridges	Nos.	Nil	
5	Minor Bridges	Nos.	10 (5+5)	
6	ROB	Nos.	4	
7	Grade Separator	Nos.	6	
8	Vehicular Underpass	Nos.	24	
9	Slab / Box Culverts	Nos.	70	
10	Pipe Culverts	Nos.	81	
11	Road marking by Thermoplastic Paint	km.	126.3	

As per Clause 12.5 of the Concession Agreement, the Concessionaire shall undertake construction of six-laning as specified in Schedule-B and Schedule-C, so that the Project Road shall have six lanes on or before the 12th anniversary of the Appointed Date.

3. CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

Project Road is four lane divided carriageway with an earthen shoulder of 1.5 m on either side. The Project Road has a median width of 2.0 m throughout its length. Currently, the Project Road is being widened to six lane carriageways.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

The pavement condition survey was carried out from **28th February 2026 to 04th March 2026** through visual inspection for the entire project length. The details of the visual condition survey are provided as below:

Table 3-1 Pavement Condition

Chainage (km)		Length (km)	Lane Carriageway	Pavement Condition		Remark
From	To			Left Carriageway	Right Carriageway	
23+600	34+000	10.400	4/6 Lane	Fair	Fair	4-Lane overlay is completed. 6-Lane widening and strengthening is completed except 3.495 kms.
34+000	129+900	95.900	6 Lane	Good / Fair	Good / Fair	
129+900	149+900	20.000	4 Lane	Good / Fair	Good / Fair	
Total Length (km)		**126.300**				

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (Main Carriageway)

Bleeding and settlement of road at km. 23+900 (LHS)

Bleeding and settlement of road at km. 24+800 (LHS)

4-Lane at km. 25+700 (LHS)

Pothole at km. 25+800 (LHS)

Road damage due to waterlogg from km. 26+850 to 27+600 (LHS)

Width of approach road A1 side (LHS) at ROB km. 36+800

Cracks at km. 42+900 (LHS)

Pothole at km. 51+100 (LHS)

Paved shoulder damage at km. 63+400 (LHS)

Reveling at km. 90+000 (LHS)

Road damage due to waterlogg from km. 29+100 to 29+400 (RHS)

Cracks & reveling at Km 34+100 (RHS) Dadari bypass

PGR & road damage at km. 51+100 (RHS)

Bleeding and cracks at km. 56+100 (RHS)

Cracks & reveling at km. 62+300 (RHS)

Cracks & reveling at km. 102+900 (RHS)

Pothole at km. 103+400 (RHS)

Settlement at km. 144+500 (RHS)

3.2 Service Road / Slip Road

The service road with a width of 8 m for total 54.60 km is constructed in built-up areas and adjoining underpass locations. As compared to the main carriageway, the pavement condition of service road is poor at many locations.

The photographs taken during the site visit are presented below.

Figure 3-2 Photographs of Service Road

Service Road at km. 65+870 (LHS)

Service Road at km. 103+300 (RHS)

Service Road at km. 87+800 (LHS)

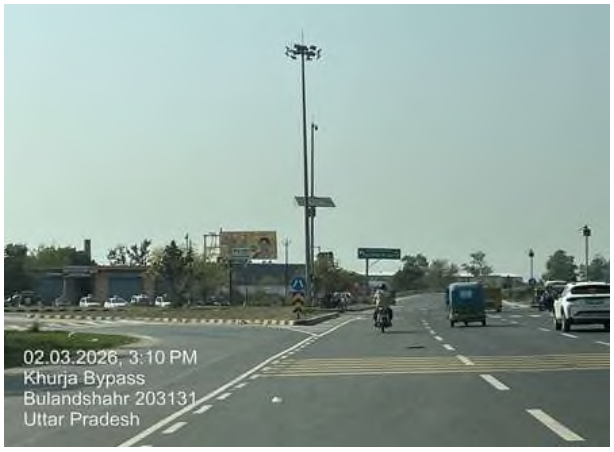
Service Road at km. 108+900 (RHS)

3.3 Major / Minor Junctions

There are 14 nos. of major and 111 nos. of minor at-grade junctions along the Project Road.

The photographs taken during site visit is presented as below:

Figure 3-3 Photographs of Major / Minor Junctions



Khurja Bypass Major Junction at km. 92+000 (RHS)

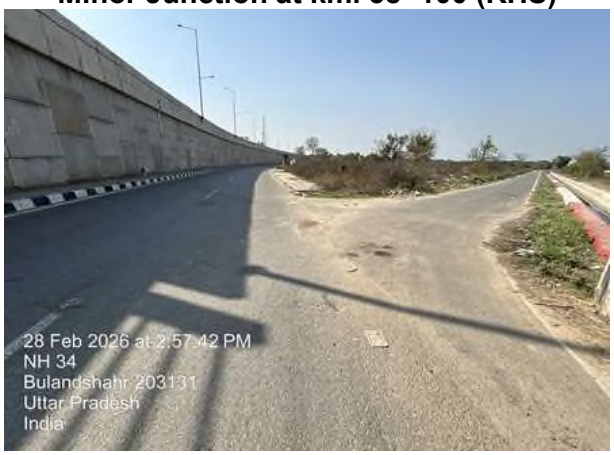
Buland Shahar Major Junction at km. 75+500 (LHS)

Gabhana Major Junction at km. 122+200 (RHS)

Aligarh Major Junction at km. 149+200 (LHS)

Minor Junction at km. 38+100 (RHS)

Minor Junction at km. 62+250 (LHS)



Minor Junction at km. 99+200 (LHS)

Minor Junction at km. 112+600 (LHS)

3.4 Condition Survey of Bridge

The inventory of structures including major bridges, minor bridges, ROB's, underpasses and culverts is presented in table as below:

Table 3-2 Details of Summary for Structures

Sr. No.	Description	As per Concession Agreement	As per Site Condition
1	Major Bridges	Nil	Nil
2	Minor Bridges	10 Nos. (5+5)	13 Nos. (7+6)
3	ROB	4 Nos.	4 Nos.
4	Grade Separator	6 Nos.	6 Nos.
5	Vehicular Underpass	24 Nos.	19 Nos. (Six Lane) + 1 Nos. (Three Lane)
6	Slab / Box Culverts	70 Nos.	70 Nos.
7	Pipe Culverts	81 Nos.	81 Nos.

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in tables below:

Table 3-3 Condition Survey of Minor Bridges

Sr. No.	Location as per CA	Location as per Site	Type of Structure	Proposed Span Arrangement	Proposed Width (m)	Remark
1	25+956	25+947	Minor Bridge	2 x 5	1 x 45	The structure was observed to be in good condition. However, the vent was found to be filled with garbage and requires proper cleaning and removal of debris.
2	35+720	36+200	Minor Bridge	2 x 5	1 x 33.5	The structure was observed to be in good condition. However, the vent was found to be filled with garbage and requires proper cleaning and removal of debris.
3	36+840	37+300	Minor Bridge	2 x 5	1 x 33.5	The structure was found to be in good condition. However, one vent on the A2 side (LHS) was observed to be completely choked with soil and garbage, which requires immediate cleaning and removal of accumulated debris to ensure proper drainage.
4	40+501	41+100	Minor Bridge	1 x 21.6	2 x 14.25	The structure was found to be in good condition.
5	44+908	45+300	Minor Bridge	3 x 5	1 x 45	The structure was observed to be in good condition. However, the vent was found to be filled with garbage and requires proper cleaning and removal of debris.
6	46+805	47+500	Minor Bridge	103 m length	1 x 14.25	During the site inspection, the new bridge (RHS) was found to be in good condition, whereas the existing bridge (LHS) requires periodic maintenance to ensure its continued serviceability.
7		59+500	Minor Bridge	2 x 5	1 x 33.5	The structure was observed to be in good condition. However, the vent was found to be filled with garbage and requires proper cleaning and removal of debris.
9	61+900	62+100	Minor Bridge	3 x 5	1 x 33.5	The structure was observed to be in good condition. However, the vent was found to be filled with garbage and requires proper cleaning and removal of debris.
10	-	75+800	Minor Bridge	1-span	2 x 14.25	The structure was observed to be in good condition.
11		105+090	Minor Bridge	1-span	2 x 14.25	The structure was observed to be in good condition.
12	111+490	115+200	Minor Bridge		4 x 15	The new bridge structure was observed to be in good condition. The existing bridge was also found to be in good condition; however, the expansion joint was observed to be filled with bituminous concrete (BC) and requires proper cleaning.
13	140+000	144+500	Minor Bridge	3 x 5	1 x 33.5	The structure was observed to be in good condition.

Figure 3-4 Photographs of Minor Bridges

Minor Bridge at km. 25+956

Minor Bridge at km. 35+720

Minor Bridge at km. 36+860

Minor Bridge at km. 40+501

Minor Bridge at km. 44+908

Minor Bridge at km. 46+805

Minor Bridge at km. 59+500

Minor Bridge at km. 62+100

Minor Bridge at km. 75+800

Minor Bridge at km. 105+100

Minor Bridge at km. 115+200

Minor Bridge at km. 140+700

Minor Bridge at km. 144+500

Table 3-4 Condition Survey of VUP

Sr. No.	Location as per CA	Location as per Site	Type of Structure	Proposed Span Arrangement	Proposed Width (m)	Remark
1	-	38+100	VUP	1 x 10.0 x 5.5	1 x 25.25	The structure was observed to be in good condition. However, vegetation growth has been observed in portions of the RE wall, which require necessary removal.
2	38+705	39+200	VUP	1 x 10.0 x 5.5	1 x 28.50	The structure was found to be in good condition.
3	50+600	51+300	VUP	1 x 10.0 x 5.5	1 x 25.20	The structure was observed to be in good condition. However, some cracks were observed in the RE panels, which require necessary rectification
4	55+905	57+100	VUP	1 x 10.0 x 5.5	1 x 28.50	The structure was observed to be in good condition. However, bulging and vegetation growth have been observed in portions of the RE wall, which require necessary rectification and removal
5	62+250	63+800	VUP	1 x 10.0 x 5.5	1 x 25.20	The structure was observed to be in good condition. However, vegetation growth has been observed in portions of the RE wall, which require necessary removal.
6	65+870	67+600	VUP	1 x 10.0 x 5.5	1 x 25.20	The structure was observed to be in good condition. However, vegetation growth has been observed in

Sr. No.	Location as per CA	Location as per Site	Type of Structure	Proposed Span Arrangement	Proposed Width (m)	Remark
						portions of the RE wall, which require necessary removal.
7		71+600	VUP	1 x 10.0 x 5.5	1 x 25.20	The structure was observed to be in good condition. However, vegetation growth has been observed in portions of the RE wall, which require necessary removal.
8		73+400	VUP	1 x 10.0 x 5.5	1 x 28.50	The structure was observed to be in good condition. However, vegetation growth has been observed in portions of the RE wall, which require necessary removal.
9	-	80+000	VUP	1 x 10.0 x 5.5	1 x 25.20	The structure was observed to be in good condition. However, vegetation growth has been observed in portions of the RE wall, which require necessary removal.
10	87+360	88+000	VUP	1 x 10.0 x 5.5	1 x 28.50	The structure was observed to be in good condition.
11	91+330	91+800	VUP	1 x 10.0 x 5.5	1 x 28.50	The structure was observed to be in good condition.
12	105+000	105+000	VUP	3 Cell Box		The structure was observed to be in good condition.
13	106+450	107+350	VUP	1 x 10.0 x 5.5	1 x 25.25	The structure was observed to be in good condition. However, the concrete crash barrier is found to be damaged and requires repair.
14		108+900	VUP	1 x 10.0 x 5.5	1 x 25.25	The structure was observed to be in good condition.
15	131+010	131+150	VUP	1 x 10.0 x 5.5	1 x 28.50	The structure was observed to be in good condition.
16		134+880	VUP	1 x 10.0 x 5.5	1 x 28.50	The structure was observed to be in good condition.
17	132+020	136+400	VUP	1 x 10.0 x 5.5	1 x 28.50	The structure was found to be in sound condition. However, erosion of soil was observed on the side slope, which requires refilling and proper compaction in accordance with IRC guidelines
18	134+180	138+500	VUP	1 x 10.0 x 5.5	1 x 28.50	The structure was observed to be in good condition.
19	-	139+980	VUP	1 x 10.0 x 5.5	1 x 28.50	The structure was observed to be in good condition.
20		147+300	VUP	1 x 10.0 x 5.5	1 x 28.50	The structure was observed to be in good condition. However, rain cuts were observed, which require necessary rectification.

Figure 3-5 Photographs of Vehicular Underpass

VUP at km. 38+100

VUP at km. 39+200

VUP at km. 51+300

VUP at km. 57+100

VUP at km. 63+800

VUP at km. 67+600

VUP at km. 71+600

VUP at km. 73+400

VUP at km. 80+000

VUP at km. 88+000

VUP at km. 91+800

VUP at km. 105+000

VUP at km. 107+350

VUP at km. 108+900

VUP at km. 131+150

Table 3-5 Condition Survey of Flyover

Sr. No.	Location as per CA	Location as per Site	Type of Structure	Proposed Span Arrangement	Proposed Width (m)	Remark
1	33+650	34+300	Flyover	1 x 30 x 5.5	1 x 12.5	The structure was observed to be in sound condition during the site inspection. However, the construction of the approach road towards the Ghaziabad side remains pending due to unresolved Land Acquisition (LA) issues. As informed, the said portion has been proposed/accepted to be de-scoped from the original project scope.
2	41+800	42+200	Flyover	1 x 30 x 5.5	1 x 12.5	The structure was observed to be in good condition. However, bulging and vegetation growth have been observed in portions of the RE wall, which require necessary rectification and removal
3	129+700	134+200	Flyover	1 x 30 x 5.5	1 x 12.5	The structure was found to be in sound condition. However, cracks were observed at the joints of the approach slab on both sides, which require necessary inspection and rectification

Sr. No.	Location as per CA	Location as per Site	Type of Structure	Proposed Span Arrangement	Proposed Width (m)	Remark
4	140+620	144+500	Flyover	2 x 30 x 5.5	2 x 12.5	The structure was observed to be in good condition.
5	141+260	145+400	Flyover	1 x 30 x 5.5	2 x 12.5	The structure was observed to be in good condition. However, vegetation growth has been observed in portions of the RE wall, which require necessary removal.
6	143+980	146+950	Flyover	1 x 30 x 5.5	2 x 12.5	The structure was observed to be in good condition.

Figure 3-6 Photographs of Flyovers

Flyover at km. 34+300

Flyover at km. 42+200

Flyover at km. 134+200

Flyover at km. 144+500

Flyover at km. 145+400

Flyover at km. 146+950

Table 3-6 Condition Survey of ROB

Sr. No.	Location as per CA	Location as per Site	Type of Structure	Proposed Span Arrangement	Proposed Width (m)	Remark
1	36+340	36+800	ROB	1 x 31 + 1 x 40 + 1 x 15	2 x 14.25	The structure was observed to be in good condition. However, bulging and vegetation growth have been observed in portions of the RE wall, which require necessary rectification and removal
2	83+935	84+300	ROB	2 x 36 + 1 x 23 (Skew 70 degree)	2 x 14.25	The structure was observed to be in good condition. However, bulging and vegetation growth have been observed in portions of the RE wall, which require necessary rectification and removal
3	120+169	124+100	ROB	1 x 40 + 2 x 15 (Skew 30 deg)	1 x 14.25	The structure was observed to be in good condition. However, bulging and vegetation growth have been observed in portions of the RE wall, which require necessary rectification and removal
4	145+825	149+200	ROB	1 x 40 + 2 x 15 (Skew 17degree)	2 x 14.25	The structure was found to be in good condition. However, the expansion joint was observed to be damaged and requires necessary repair.

Figure 3-7 Photographs of ROB

Bottom view of ROB at km. 36+800

RE Wall of ROB at km. 36+800

Top view of ROB at km. 36+800

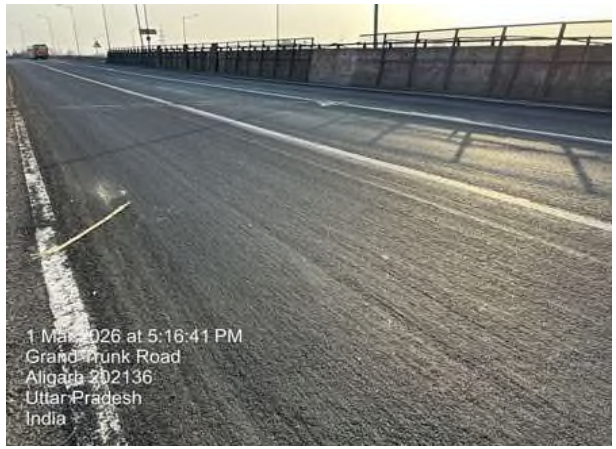
Bottom view of ROB at km. 84+300

RE Wall of ROB at km. 84+300

Expansion Joint of ROB at km. 84+300

Bottom view of ROB at km. 124+100

RE Wall of ROB at km. 124+100



Top view of ROB at km. 124+100

Bottom view of ROB at km. 149+200

Concrete Crush Barrier of ROB at km. 149+200

Expansion Joint of ROB at km. 149+200

3.5 Condition Survey of Culverts

The cross-drainage structure includes hume pipe culverts and box culverts at various locations. There are 81 Nos. of pipe culverts, 70 Nos. of box / slab culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts is satisfactory. The RCC parapet, crash barrier or RCC railing has been provided at culvert locations, which is maintained properly, except some locations. Reconstruction / widening of many culverts has been done and some are being widened to 6-lane configuration.

In most of culverts, the waterway is clear. However, near to urban area and some location is found blocked due to debris, drainage water or bushes, tree growth, which will be removed by the Concessionaire. The cement concrete pitching or stone pitching has been provided for slope protection.

The culverts are maintained by the Concessionaire during O&M period. However, in case of some culverts, cement concrete pitching has been observed damaged which required to be repaired under routine repair work by the Concessionaire.

There is total 62 Nos. of culverts which are to be reconstructed and 89 Nos. of culverts which are to be additionally constructed during six laning of the Project Road. The same is being executed at site.

Figure 3-8 Photographs of Culverts

Pipe Culvert at km. 52+500

Box Culvert at km. 54+600

Box Culvert at km. 55+905

Box Culvert at km. 56+300

Pipe Culvert at km. 63+800

Box Culvert at km. 73+900

Box Culvert at km. 79+000

Pipe Culvert at km. 87+800

Box Culvert at km. 88+900

Box Culvert at km. 119+000

Box Culvert at km. 120+800

Pipe Culvert at km. 126+400

3.6 Drainage

There are of existing drain on both side of the Project Road as per Concession Agreement. However, RCC drain is constructed in built-up areas and locations where service roads are provided. At some of the places covers of RCC drains has broken / exposed and choked. The photograph taken during site visit is presented as below:

Figure 3-9 Photograph of Drainage

Median Drain

Median Drain

Side Drain

Side Drain

3.7 Slope Protection

Slope protection and chut drains are found on Project Road at required locations. The photographs taken during the site visit are presented below.

Figure 3-10 Photographs of Slope Protection and Chute Drain

Side slope at km. 87+800

Side Slope at km. 135+200

Chute Drain at km. 132+020 (LHS)

Chut Drain at km. 135+240 (RHS)

3.8 Road Furniture

The Concessionaire has provided road furniture along Project Road as per the standards and specifications mentioned in Schedule-C. The details of the items are provided below.

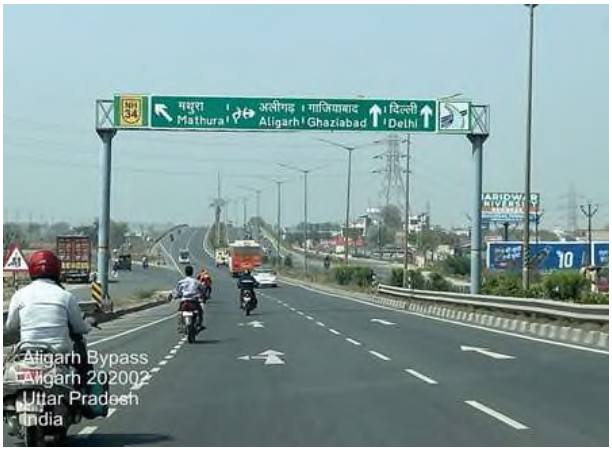
Pavement Marking and Road Studs

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. The pavement marking is faded at some locations which will be rectified by the Concessionaire.

Road studs / cat's eye for the project Road is done as per the design standards indicated in section 12 of Schedule-D. Road studs / cat's eye has been fixed at junction and zebra crossings. However, at few locations some cat eyes have damaged which will be rectified by the Concessionaire.

Some of the photographs of road marking & road studs are presented below.

Figure 3-11 Photographs of Pavement Marking & Road Studs



Road Marking at MCW

Road Marking at Service Road

Road Stud

Road Stud

Traffic Signage / Median Kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards and median kerb paint are faded at few locations which will be rectified by the Concessionaire.

Some of the photographs of sign boards are presented below:

Figure 3-12 Photographs of Road Signages / Kerb Painting

Kilometer Stone

5 Kilometer Stone

Road Marking

Overhead Sign board

Advanced Direction Sign Board

Kerb Painting at Median Opening

Highway Lighting / Crash Barriers

Highway lighting is provided at underpasses, flyovers, toll plaza, ROBs and built-up locations. High mast lighting is provided at toll plaza location. Highway lighting is also provided at approaches of underpass and flyovers.

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site.

Some of the photographs of highway lighting and metal beam crash barriers are presented below.

Figure 3-13 Photographs of Highway Lighting / Crash Barrier

Highway lighting & MBCB at Flyover at km. 30+100

Concrete Crash Barrier at km. 62+100

Damage Metal Beam Crash Barrier at km. 25+600

Pedestrian Guard Rail at km. 44+900

Road Land Boundary

Road land boundary pillar is not found / available on Project Road.

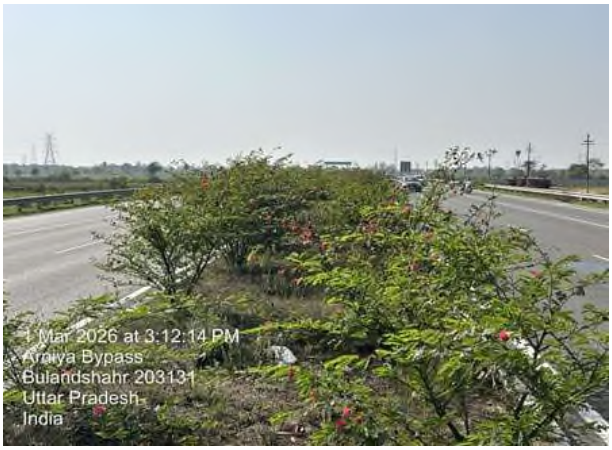
3.9 Median and Avenue Plantation

Avenue plantations are done only where ROW is available, and median plantation has been provided in the project length as per IRC specification.

The photographs taken during the site visit are presented below.

Figure 3-14 Photographs of Median and Avenue Plantation

Median Plantation at km. 54+600



Median Plantation at km. 78+050

Avenue Plantation at km. 99+900 (LHS)

Avenue Plantation at km. 70+200 (RHS)

3.10 Toll Plaza

As per the Concession Agreement, there are two existing toll plazas at km. 47+500 and at km. 113+300 with the following infrastructure.

Table 3-7 Details of Summary for Toll Plaza-1 at km. 47+500

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	47+500
2	Number of Tolling Lanes	10 (lanes for toll operation for vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	One in each direction
5	Number of Toll Booths	10
6	Canopy	Present
7	Administrative Building	Present (Temporary)
8	Parking cum Toilet Block	Present
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	No
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	No

Sr. No.	Particulars	Details
12	Storage facility for Overloaded Material	No
13	High mast Light	Yes 2 Nos
14	Streetlight	Yes
15	Low mast Light	No
16	User Fee Boards	Yes
17	Cantilever/Gantry Boards	Yes
18	Automatic boom barrier	Yes

This toll plaza is near Luharli village. The work of toll plaza is completed, and toll plaza is operational. 10 lanes have been constructed including lane for overhead dimension and all are under operation. Administrative building is yet to be constructed at site. The Concessionaire is managing toll operation from porta cabin due to unavailability of land. The following works could not be completed because of non-availability of land.

- Administration, Operation and maintenance base camp
- Weigh bridge

Figure 3-15 Photographs of Toll Plaza-1

Toll Plaza-1 (LHS)

Toll Plaza-1 (RHS)

Table 3-8 Details of Summary for Toll Plaza-2 at km. 113+300

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	113+300
2	Number of Tolling Lanes	10(lanes for toll operation for vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	One in each direction
5	Number of Toll Booths	10
6	Canopy	Present
7	Administrative Building	Present (Temporary)
8	Parking cum Toilet Block	Present
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	No
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	No

Sr. No.	Particulars	Details
12	Storage facility for Overloaded Material	No
13	High mast Light	Yes 2 Nos
14	Streetlight	Yes
15	Low mast Light	No
16	User Fee Boards	Yes
17	Cantilever/Gantry Boards	Yes
18	Automatic boom barrier	Yes

Figure 3-16 Photographs of Toll Plaza-2

Toll Plaza

Toll Lanes with Weight in Motion Senser

3.11 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.11.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 8 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

RFID

3.11.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data.

3.11.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVCC at TP

3.11.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at TP

3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at TP

3.11.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

AVC Camera at TP

3.11.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

LPIC

3.11.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane “Open” and “Close” sign consists of a pair of “GREEN” (arrow) and “RED” (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at TP

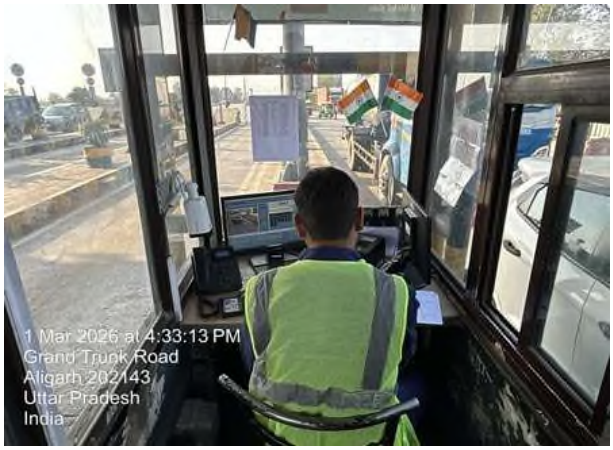
3.11.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and type of ticket.



Toll Booth

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.11.10 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is not installed on entry lanes of Toll Plaza.

3.12 Plaza Equipment

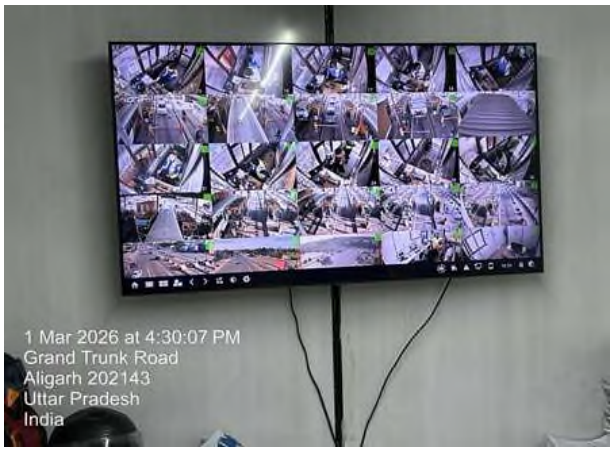
3.12.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio WiFi module. Firewall with Sophos antivirus is provided.

TMS Server Room

3.12.2 55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

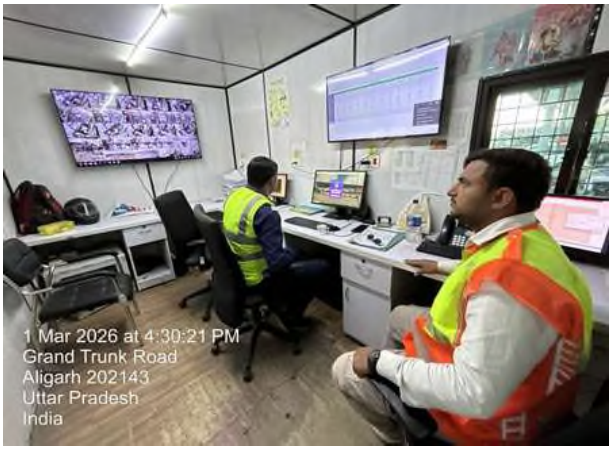


CCTV Monitor

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.12.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.



Control Room

3.13 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) has been installed and maintained as per the requirement of the Concession Agreement. As informed by the Concessionaire, the ATMS Design Report is under progress and installation will be completed by FY 2027.

3.14 Bus Bays and Passenger Shelter

There are 38 Nos. of bus bays / shelter along Project Road. Some of the photographs taken during the site visit are presented below.

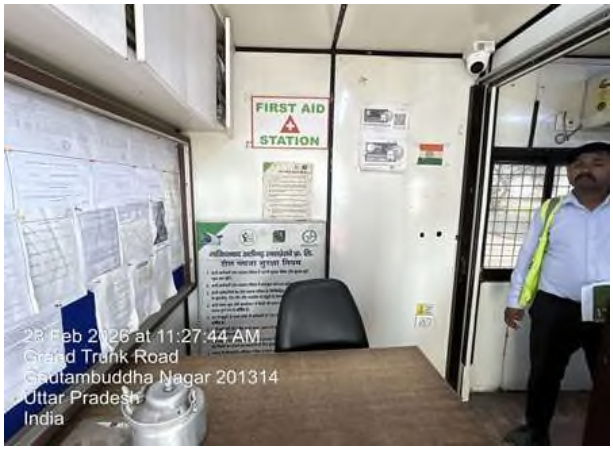
Figure 3-17 Photographs of Passenger Shelter

Passenger Shelter at km. 38+100 (LHS)

Passenger Shelter at km. 84+100 (RHS)

3.15 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Post are maintained by the Concessionaire.



Medical Aid at Toll Plaza-1

3.16 Toilet Block

There are two nos. toilet blocks and the same are maintained by the Concessionaire.

Table 3-9 Details of Toilet Blocks

Sr. No.	Chainage (km)
1	Toll Plaza-1 at km. 47+500
2	Toll Plaza-2 at km. 113+300

Figure 3-18 Photographs of Toilet Block

Truck Layby at km. 96+200 (LHS)

Truck Layby at km. 82+200 (RHS)

Toll Plaza at km. 113+300 (LHS)

3.17 Balance Work Status (Capex Augmentation to 6-laning)

The Project Road is augmented to 6-lane configuration along with rehabilitation of existing 4-lane road. As per our observations during site visit and IE Letter no. Theme/IE/Gzb-Alg/NH-91/2023/9054 dated 16.01.2024, the Concessionaire has already completed the 6-laning work. Currently, the maintenance work is in progress. Hence, there are no balance works to be executed as per CA.

3.18 Operation and Maintenance

3.18.1 O&M Contract

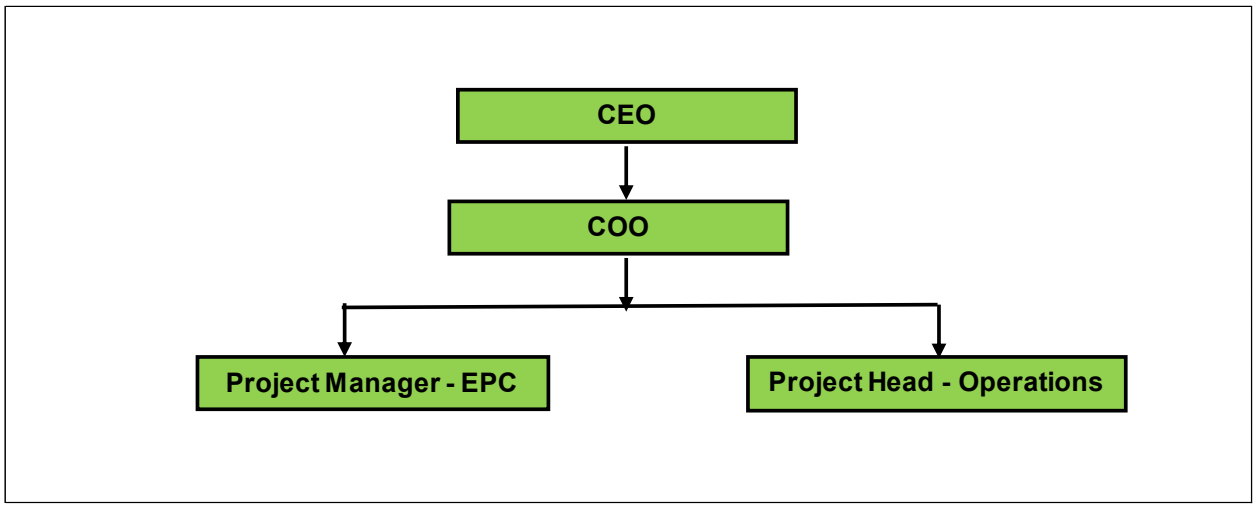
As per Clause 17.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road either by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities will confirm to all the requirements laid down in MoRT&H, IRC Specifications, and the Concession Agreement.

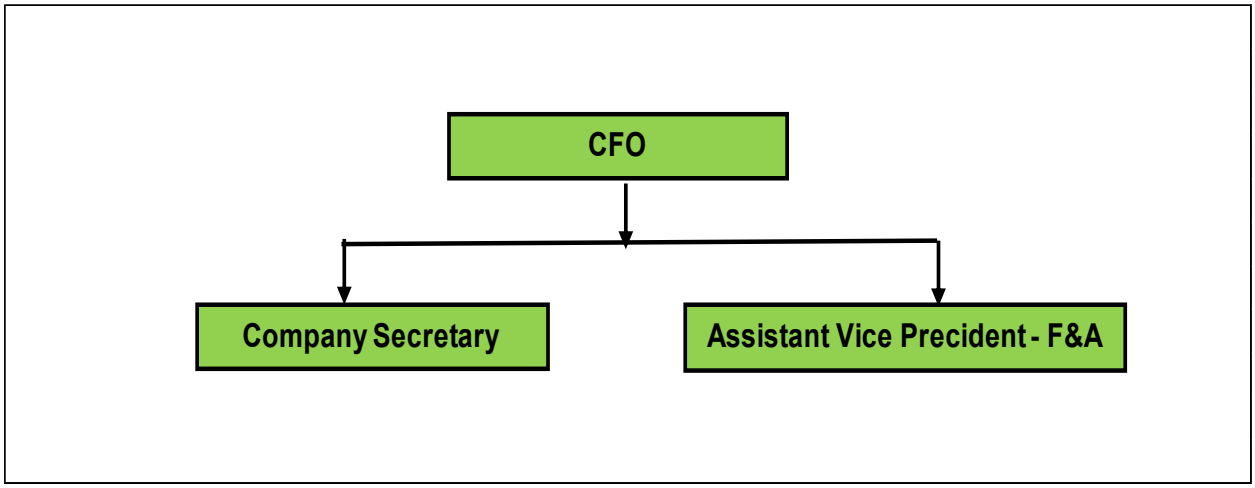
The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

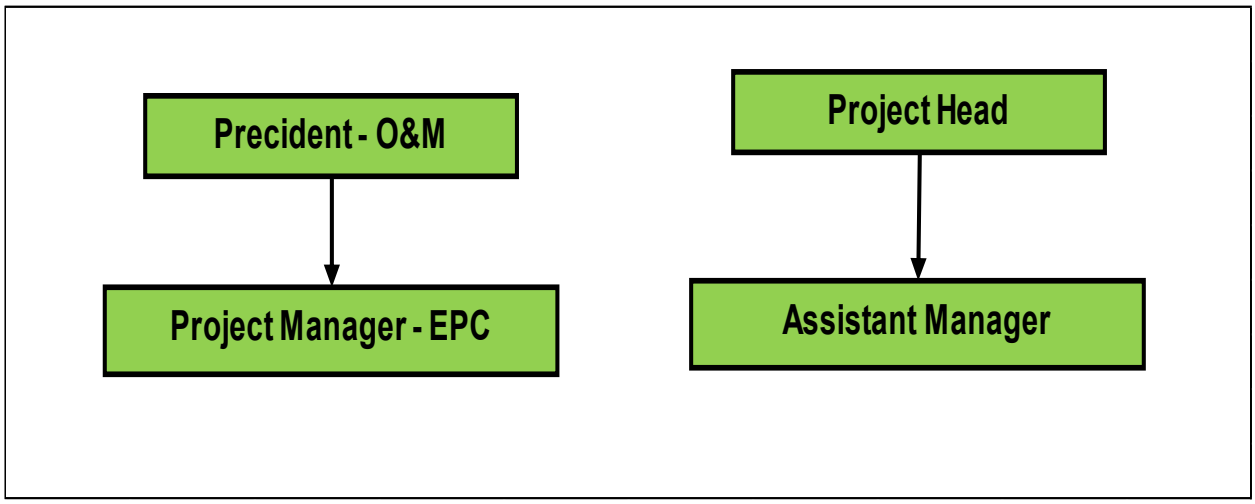
3.18.2 Organization Chart

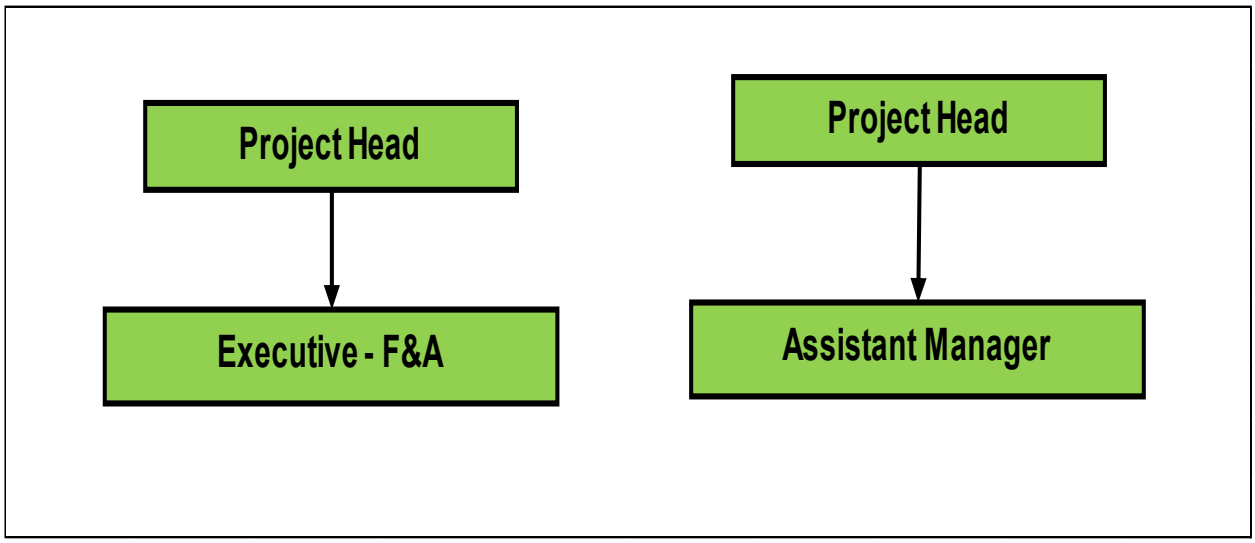
The Concessionaire has given the Organization Chart at site for Operation and maintenance. Accordingly, there is 01 Project Head (Operations), 01 Project Manager (EPC), 01 CFO-CHFA, 01 Company Secretary, 01 Assistant Vice President (F&A), 02 Manager, 02 Assistant Manager, 03 Executive (F&A), 01 Executive (F&A), 01 Documentation Controller, 01 Senior Executive, 06 Executive, 02 Electrician, 02 Supervisor, 01 Sr. Supervisor, 02 Plaza Manager, 01 Assistant Plaza Manager, 01 MIS Executive, and 13 Cashier cum Validators to carry out O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent subcontractors.

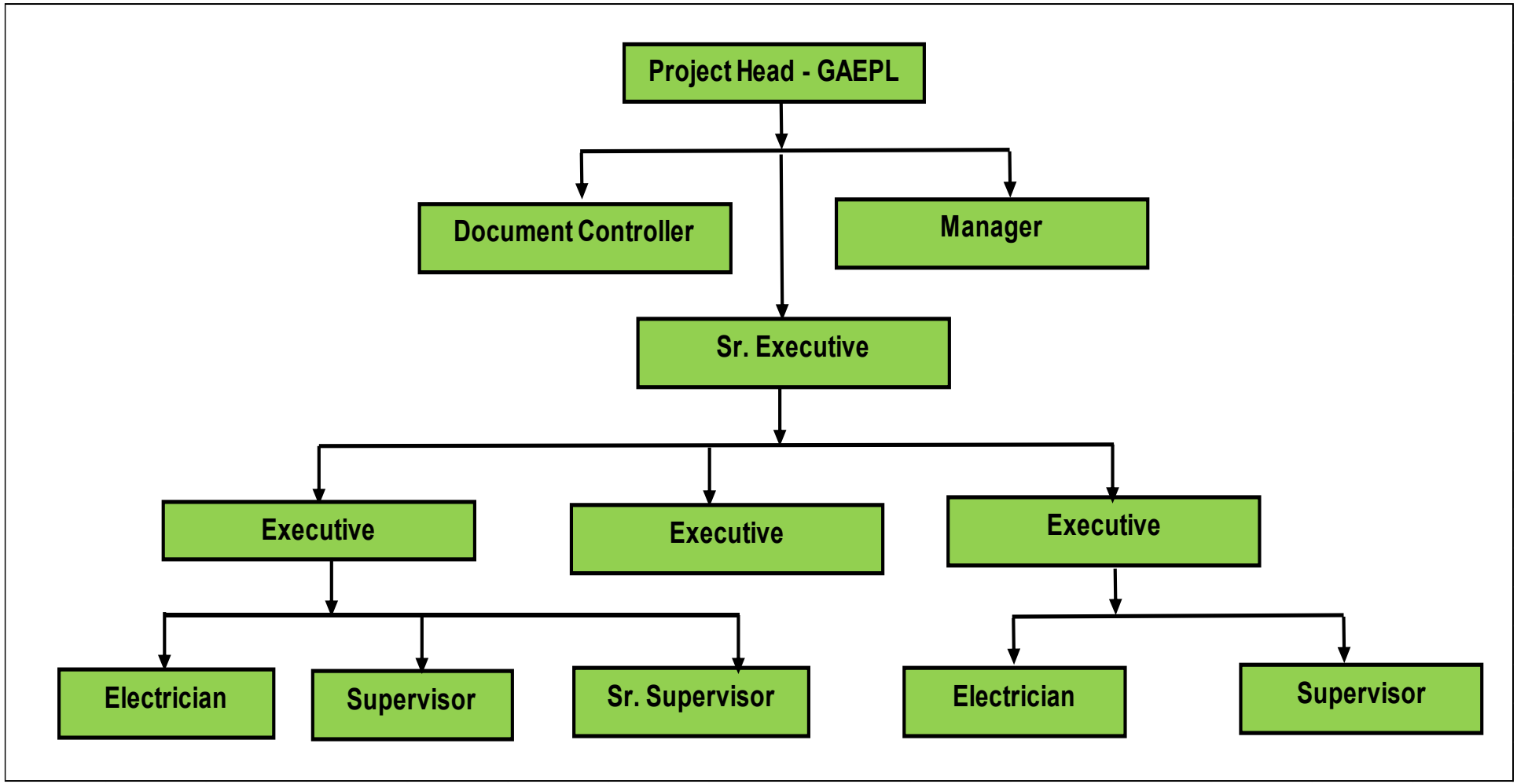
Organization Chart

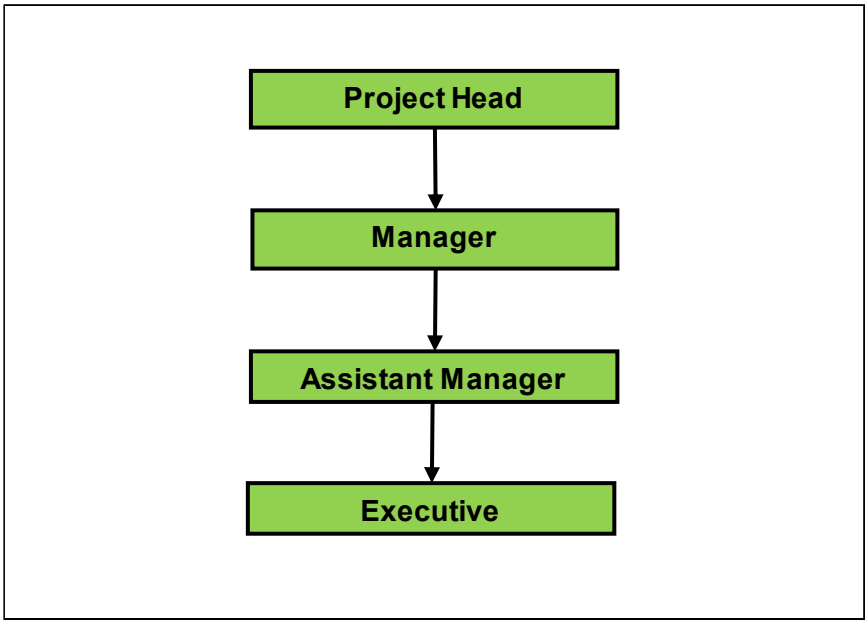



CFO
Company Secretary
Assistant Vice Precident - F&A


Precident - O&M
Project Manager - EPC
Project Head
Assistant Manager


Project Head
Executive - F&A
Project Head
Assistant Manager


Project Head - GAEPL
Document Controller
Manager
Sr. Executive
Executive
Executive
Executive
Electrician
Supervisor
Sr. Supervisor
Electrician
Supervisor



3.18.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have been made from the expense of similar types of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.18.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

The Concessionaire has received Completion Certificate for 125.175 kms on 23rd April 2022. Rest of the stretch of 1.125 kms is de-scoped by the Authority as a part of the Settlement Agreement executed on 8th April 2022 due to non-availability of land.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 24 years from the Appointed Date including construction period. Original Appointed Date of the project was 25th February 2011. As per the Contract Agreement, the Concessionaire shall operate and maintain the Project Road till the end of the concession period.

4.2 Axle Load and VDF

The Concessionaire conducted the Axle Load Survey on Project Road at km. 42+850, km. 47+000 (near Luharli Toll Plaza), km. 80+870 and at km. 113+650 (near Gabhana Toll Plaza) in the month of July 2021. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor (VDF)

Sr. No.	Vehicle Type	Vehicle Damage Factor (VDF)							
		km. 42+850		km. 47+000		km. 80+870		km. 113+650	
		LHS	RHS	LHS	RHS	LHS	RHS	LHS	RHS
1	BUS	0.915	0.972	0.939	0.994	0.98	1.161	1.007	1.152
2	LCV	1.069	0.854	0.796	1.15	0.728	0.851	1.022	1.054
3	2-Axle	3.762	3.975	3.213	3.429	3.593	4.07	3.553	4.089
4	3-Axle	7.35	5.964	7.705	5.348	7.621	7.537	8.066	7.683
5	MAV	14.418	12.013	11.039	14.65	12.671	9.867	13.33	10.55

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data as provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

MSA Calculations at Luharli Toll Plaza					
Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
2024-25	4.39	**4.39**	5.28	**5.28**	
2025-26	4.79	**9.18**	5.75	**11.03**	
2026-27	4.62	**13.80**	5.54	**16.57**	
2027-28	4.56	**18.36**	5.47	**22.04**	
2028-29	4.74	**23.10**	5.70	**27.74**	
2029-30	4.94	**28.04**	5.95	**33.69**	
2030-31	5.14	**33.18**	6.20	**39.89**	

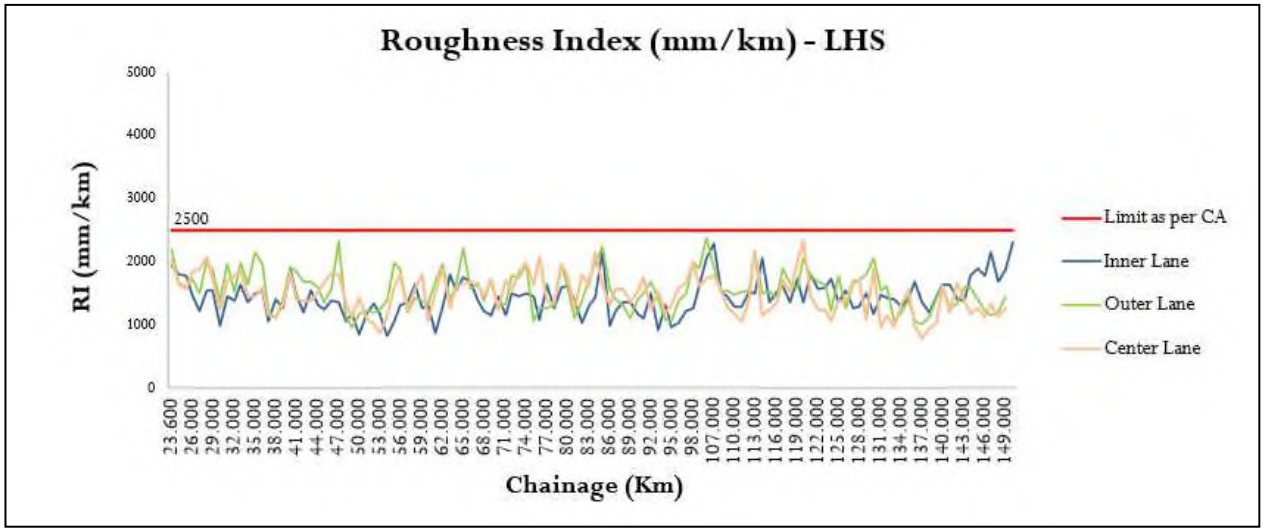
MSA Calculations at Luharli Toll Plaza					
Year	**MSA (LHS)**	**Cumulative MSA (LHS)**	**MSA (RHS)**	**Cumulative MSA (RHS)**	**Remarks**
2031-32	5.36	**38.54**	6.47	**46.36**	
2032-33	5.59	**44.13**	6.76	**53.12**	
2033-34	5.83	**49.96**	7.06	**60.18**	
2034-35	6.08	**56.04**	7.38	**67.56**	
2035-36	6.34	**62.38**	7.70	**75.26**	
2036-37	6.60	**68.98**	8.04	**83.30**	
2037-38	6.88	**75.86**	8.39	**91.69**	
2038-39	7.17	**83.03**	8.75	**100.44**	
2039-40	7.46	**90.49**	9.12	**109.56**	

4.4 Network Survey Vehicles (NSV) Survey

The Concessionaire carried out Roughness Survey using NSV in September 2024. The Concessionaire has provided NSV survey data. The NSV data is used to assess the riding quality and pavement condition of Project Road. The summary Roughness Index and Rutting are given in the table below.

Table 4-2 Summary of Roughness Index

Sr. No.	Rating	Roughness Value (mm/km)	Length (km)					
			LHS			RHS		
			Inner Lane	Centre Lane	Outer Lane	Inner Lane	Centre Lane	Outer Lane
1	Good	<2000	113.70	113.70	109.10	112.50	109.50	104.80
2	Fair	2000-2500	5.10	6.40	10.40	5.40	9.00	13.00
3	Poor	>2500	0.00	0.00	0.00	1.60	1.00	1.00



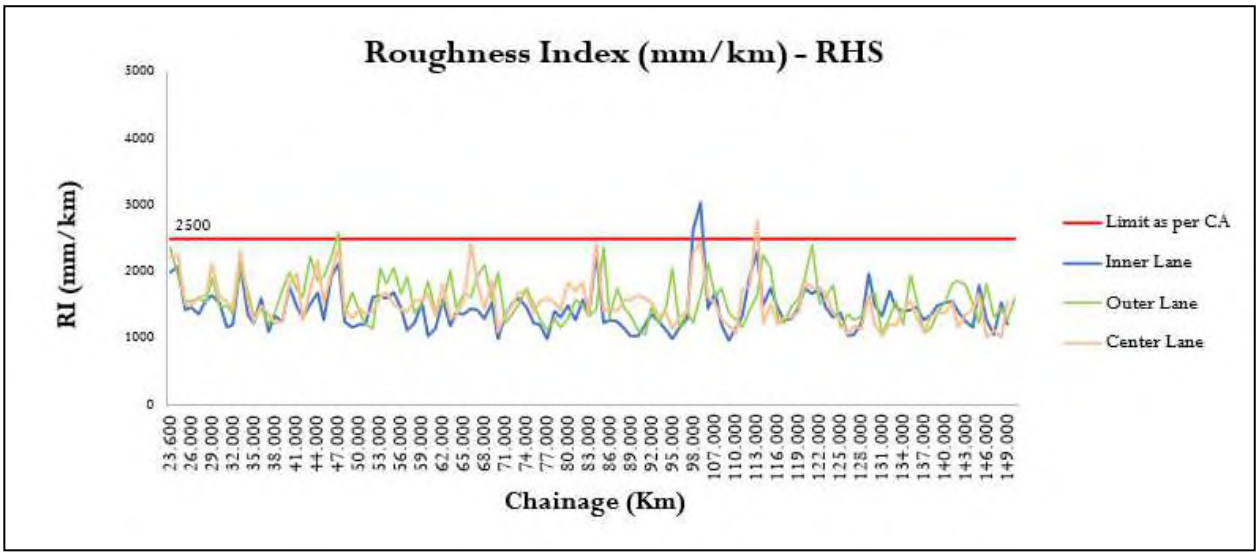
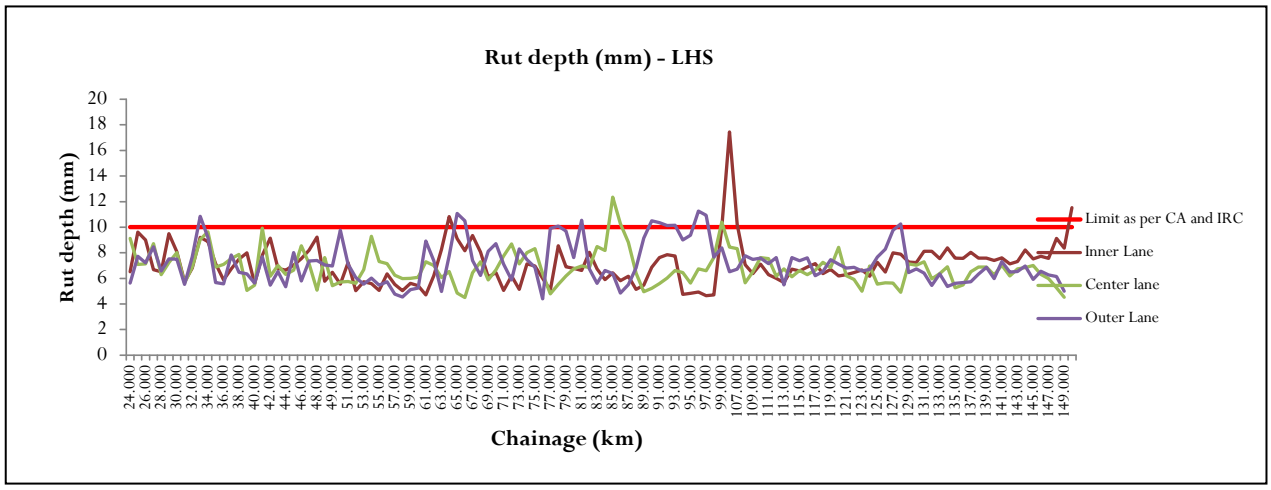
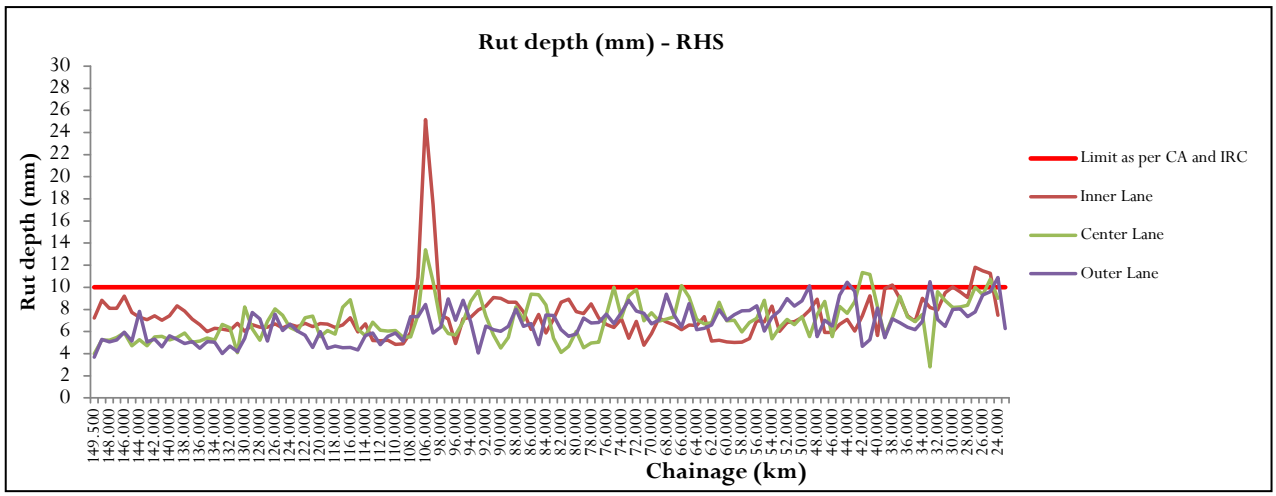


Table 4-3 Summary of Rutting

Rating	Rutting mm/km	Length (km)					
		LHS			RHS		
		Inner Lane	Centre Lane	Outer Lane	Inner Lane	Centre Lane	Outer Lane
Good	<5	115.70	116.90	107.50	111.90	111.90	115.60
Poor	>10	3.10	2.60	12.00	7.60	7.60	3.20





4.5 Structural Investigations

Falling Weight Deflectometer survey was conducted for flexible pavement by the Concessionaire in April 2024. The summary of the FWD survey report is presented in the table below.

Table 4-4 Summary of FWD Survey

Remaining Life (MSA)	Length (km)					
	LHS Inner	**LHS Middle**	**LHS Outer**	**RHS Inner**	**RHS Middle**	**RHS Outer**
<50	16.00	18.00	4.00	8.00	20.00	2.00
50-100	22.00	19.00	6.00	10.00	19.00	8.00
100-300	69.00	65.00	79.00	93.00	67.00	86.00
300-500	11.00	13.00	15.00	7.00	10.00	8.00
>500	6.00	5.00	5.00	2.00	3.00	4.00

4.6 Test pit and Subgrade Investigation

The Concessionaire has carried out the subgrade investigation for Project Road. The results of the same as provided by the Concessionaire are tabulated as below.

Table 4-5 Test result Summary of Subgrade

S. No.	Design Chainage (km)	Side (LHS / RHS)	Soil Classification as per IS: 1498	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR at 97% MDD (%)	Free Swell Index (%)	Degree of Compaction (%)
				Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density gm/cc.	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
1	24.600	LHS	SC	27	19	8	1.92	8.4	1.78	6.0	9.5	15.2	92.7
2	25.070	RHS	ML	24	NP	NP	1.91	8.7	1.85	6.0	8.3	0.0	96.9
3	26.100	LHS	ML	21	NP	NP	1.95	8.8	1.87	5.0	8.7	0.0	95.9
4	27.050	RHS	SM	21	NP	NP	1.98	8.1	1.84	6.0	9.7	0.0	92.9
5	28.750	RHS	SM	23	NP	NP	2.02	7.9	1.78	6.0	11.0	7.1	88.1
6	29.000	LHS	SM-SC	25	19	6	2.03	8.5	1.97	7.0	11.5	11.1	97.0
7	31.100	RHS	SM	29	NP	NP	1.76	9.9	1.45	5.0	6.7	11.1	82.4
8	32.000	LHS	SM	33	NP	NP	1.72	10.4	1.50	5.0	4.1	14.3	87.2
9	33.000	RHS	CL	27	18	9	1.90	10.3	1.74	12.0	7.5	14.3	91.6
10	34.450	LHS	CL-ML	23	17	6	1.90	9.2	1.87	7.0	6.6	11.1	98.4
11	35.000	RHS	CL	25	17	8	1.89	9.6	1.77	12.0	6.3	15.2	93.7
12	37.000	LHS	SM	21	NP	NP	1.98	8.2	1.87	8.0	9.7	7.1	94.4
13	37.100	RHS	SM-SC	23	16	7	1.95	8.7	1.82	8.0	8.8	11.1	93.3
14	38.050	LHS	CL-ML	25	19	6	1.90	9.6	1.81	6.0	7.4	14.3	95.3
15	39.180	RHS	ML	22	NP	NP	1.89	8.5	1.79	7.0	8.1	0.0	94.7
16	40.010	LHS	CL-ML	25	18	7	1.95	9.3	1.92	5.0	7.0	15.2	98.5
17	41.050	RHS	CL	29	19	10	1.93	10.6	1.86	5.0	6.5	22.2	96.4
18	42.000	LHS	SC	26	18	8	1.96	9.7	1.89	5.0	7.4	12.5	96.4
19	43.400	RHS	CL-ML	29	18	11	1.89	11.7	1.86	6.0	4.1	22.2	98.4
20	44.100	LHS	CL	26	17	9	1.91	10.9	1.88	5.0	4.8	20.0	98.4
21	45.650	RHS	CL-ML	26	19	7	1.93	9.4	1.86	5.0	6.6	14.3	96.4
22	46.000	LHS	SM	23	NP	NP	1.98	8.3	1.81	6.0	9.8	0.0	91.4
23	46.700	RHS	SM-SC	25	19	6	1.99	8.7	1.98	5.0	8.3	14.3	99.5
24	48.100	LHS	SM	21	NP	NP	2.00	7.9	1.85	5.0	10.1	0.0	92.5

S. No.	Design Chainage (km)	Side (LHS / RHS)	Soil Classification as per IS: 1498	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR at 97% MDD (%)	Free Swell Index (%)	Degree of Compaction (%)
				Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density gm/cc.	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
25	48.200	RHS	ML	23	NP	NP	1.91	8.9	1.87	5.0	6.4	10.0	97.9
26	50.100	LHS	ML	23	NP	NP	1.95	8.3	1.88	5.0	9.7	0.0	96.4
27	51.900	LHS	CL-ML	26	19	7	1.90	9.6	1.81	6.0	8.0	14.3	95.3
28	53.150	RHS	ML	23	NP	NP	1.99	8.3	1.86	5.0	9.4	14.3	93.5
29	54.020	LHS	SM	24	NP	NP	2.00	8.4	1.88	5.0	10.8	7.1	94.0
30	54.800	RHS	SC	24	16	8	1.93	10.2	1.88	5.0	6.1	20.0	97.4
31	56.150	LHS	ML	22	NP	NP	1.95	8.3	1.88	7.0	8.2	6.3	96.4
32	57.020	RHS	CL	32	19	13	1.90	12.6	1.86	5.0	3.6	22.2	97.9
33	58.000	LHS	SC	26	18	8	1.94	9.8	1.87	5.0	7.3	15.2	96.4
34	59.200	RHS	CL	26	18	8	1.91	10.3	1.85	5.0	6.6	14.3	96.9
35	60.050	LHS	ML	23	NP	NP	1.88	9.2	1.81	6.0	5.1	0.0	96.3
36	61.120	RHS	CL	25	16	9	1.93	11.2	1.88	6.0	4.3	20.0	97.4
37	62.000	LHS	CL	27	17	10	1.94	11.4	1.88	5.0	4.1	22.2	96.9
38	63.000	RHS	ML	23	NP	NP	1.92	8.6	1.85	5.0	8.7	12.5	96.4
39	64.000	LHS	CL	25	17	8	1.98	9.3	1.94	6.0	7.0	15.2	98.0
40	65.020	RHS	CL	25	16	9	1.90	10.5	1.88	5.0	4.6	25.0	98.9
41	66.680	LHS	CL	25	16	9	1.93	11.5	1.89	9.0	4.1	29.4	97.9
42	67.050	RHS	CL-ML	23	17	6	1.89	9.4	1.84	6.0	6.2	12.5	97.4
43	68.000	LHS	ML	22	NP	NP	1.85	9.1	1.78	8.0	6.7	0.0	96.2
44	69.000	RHS	CL	27	18	9	1.87	11.1	1.80	5.0	4.9	12.5	96.3
45	70.000	LHS	SM	21	NP	NP	2.01	8.1	1.91	5.0	10.8	0.0	95.0
46	71.000	RHS	CI	36	20	16	1.89	12.6	1.87	6.0	3.3	33.3	98.9
47	72.400	LHS	ML	23	NP	NP	1.90	8.8	1.83	6.0	8.7	0.0	96.3
48	72.900	RHS	ML	23	NP	NP	1.94	8.3	1.81	7.0	9.3	0.0	93.3
49	74.000	LHS	ML	21	NP	NP	1.93	8.0	1.86	6.0	9.6	0.0	96.4
50	74.500	RHS	ML	22	NP	NP	1.96	8.3	1.85	5.0	8.3	0.0	94.4

S. No.	Design Chainage (km)	Side (LHS / RHS)	Soil Classification as per IS: 1498	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR at 97% MDD (%)	Free Swell Index (%)	Degree of Compaction (%)
				Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density gm/cc.	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
51	75.050	RHS	ML	24	NP	NP	1.93	8.6	1.86	5.0	9.2	0.0	96.4
52	76.000	LHS	SM	25	NP	NP	2.00	8.1	1.86	6.0	10.7	5.3	93.0
53	77.100	RHS	ML	22	NP	NP	1.92	9.2	1.87	6.0	6.4	0.0	97.4
54	78.000	LHS	SM	23	NP	NP	1.96	8.4	1.87	6.0	9.8	0.0	95.4
55	79.050	RHS	CL	28	18	10	1.88	10.5	1.86	5.0	5.3	20.0	98.9
56	80.480	LHS	SM	23	NP	NP	1.98	8.3	1.90	6.0	9.5	0.0	96.0
57	81.000	RHS	ML	25	NP	NP	1.92	8.8	1.88	5.0	7.4	0.0	97.9
58	82.100	LHS	SM	25	NP	NP	2.02	8.0	1.86	5.0	10.9	0.0	92.1
59	83.000	RHS	ML	24	NP	NP	1.91	8.7	1.81	6.0	7.1	11.1	94.8
60	84.850	LHS	ML	25	NP	NP	1.93	9.2	1.88	5.0	6.9	12.5	97.4
61	84.900	RHS	ML	21	NP	NP	2.00	7.8	1.99	5.0	11.8	0.0	99.5
62	86.000	LHS	CL	27	19	8	1.93	9.1	1.88	6.0	7.3	12.5	97.4
63	87.000	RHS	CL-ML	24	19	5	1.91	9.3	1.83	5.0	8.5	11.1	95.8
64	88.140	LHS	CL	28	18	10	1.94	9.8	1.90	6.0	6.0	20.0	97.9
65	89.000	RHS	SM	25	NP	NP	1.88	8.5	1.76	6.0	9.3	0.0	93.6
66	90.020	LHS	SM	23	NP	NP	1.96	8.1	1.87	6.0	9.1	5.6	95.4
67	91.100	RHS	SM	23	NP	NP	1.99	8.3	1.87	5.0	10.4	6.3	94.0
68	92.600	LHS	ML	21	NP	NP	1.95	8.7	1.88	5.0	8.1	0.0	96.4
69	92.950	RHS	ML	21	NP	NP	1.97	8.0	1.85	6.0	9.0	0.0	93.9
70	94.100	LHS	SM	19	NP	NP	2.03	7.8	1.90	6.0	12.2	0.0	93.6
71	95.020	RHS	ML	22	NP	NP	1.91	8.6	1.86	5.0	7.8	0.0	97.4
72	96.050	LHS	SM	20	NP	NP	2.00	8.2	1.92	5.0	11.9	0.0	96.0
73	97.100	RHS	ML	24	NP	NP	1.93	8.7	1.84	5.0	8.7	11.1	95.3
74	106.420	LHS	SM	23	NP	NP	1.98	8.0	1.87	6.0	9.1	0.0	94.4
75	107.250	RHS	CL	27	18	9	1.90	10.1	1.86	5.0	5.8	20.0	97.9
76	108.000	LHS	ML	24	NP	NP	1.89	9.3	1.85	6.0	7.8	0.0	97.9

S. No.	Design Chainage (km)	Side (LHS / RHS)	Soil Classification as per IS: 1498	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR at 97% MDD (%)	Free Swell Index (%)	Degree of Compaction (%)
				Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density gm/cc.	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
77	108.900	RHS	SM-SC	26	19	7	1.96	8.7	1.86	5.0	9.3	11.1	94.9
78	110.000	LHS	SM	25	NP	NP	2.00	8.3	1.92	5.0	10.2	0.0	96.0
79	111.000	RHS	SC	28	19	9	1.93	9.7	1.87	5.0	6.8	14.3	96.9
80	112.080	LHS	ML	23	NP	NP	1.96	8.5	1.86	6.0	8.5	0.0	94.9
81	112.900	RHS	SM	26	NP	NP	1.97	8.0	1.87	6.0	10.6	7.1	94.9
82	114.010	LHS	CL-ML	25	19	6	1.92	8.6	1.85	7.0	8.1	14.3	96.4
83	115.010	RHS	SM-SC	25	19	6	1.90	8.3	1.83	5.0	7.7	10.0	96.3
84	116.000	LHS	SM	20	NP	NP	1.97	8.1	1.84	6.0	9.8	0.0	93.4
85	116.740	RHS	SM	25	NP	NP	1.99	8.5	1.85	5.0	10.3	0.0	93.0
86	118.000	LHS	CL	29	19	10	1.93	10.5	1.88	5.0	5.6	20.0	97.4
87	118.600	RHS	ML	24	NP	NP	1.97	8.6	1.88	6.0	7.5	0.0	95.4
88	120.000	LHS	SC	27	19	8	1.94	9.8	1.81	6.0	7.7	15.2	93.3
89	121.020	RHS	ML	26	NP	NP	1.97	9.3	1.85	5.0	8.3	0.0	93.9
90	122.000	LHS	ML	23	NP	NP	1.90	9.1	1.84	6.0	7.1	0.0	96.8
91	123.160	RHS	SM	24	NP	NP	2.00	8.3	1.89	3.0	11.3	0.0	94.5
92	124.000	LHS	SM	25	NP	NP	1.98	8.7	1.90	7.0	8.7	0.0	96.0
93	125.000	RHS	CL-ML	24	18	6	1.88	9.8	1.80	8.0	5.6	12.5	95.7
94	126.000	LHS	CL-ML	25	18	7	1.95	10.2	1.88	7.0	7.3	14.3	96.4
95	127.020	RHS	SM	26	NP	NP	1.92	8.7	1.85	7.0	8.4	0.0	96.4
96	128.100	LHS	ML	24	NP	NP	1.90	8.1	1.82	8.0	7.2	0.0	95.8
97	129.050	RHS	SM	24	NP	NP	1.97	7.9	1.89	8.0	10.1	0.0	95.9
98	131.000	LHS	SM	24	NP	NP	1.93	8.6	1.80	7.0	9.3	7.1	93.3
99	132.000	RHS	SM	24	NP	NP	1.97	8.0	1.85	7.0	8.7	7.1	93.9
100	133.000	LHS	CL	27	17	10	1.94	10.7	1.89	7.0	5.6	14.3	97.4
101	134.000	RHS	CL-ML	24	17	7	1.94	9.3	1.89	8.0	7.7	12.5	97.4
102	136.000	LHS	SM	25	NP	NP	1.98	8.1	1.87	6.0	9.0	0.0	94.4

S. No.	Design Chainage (km)	Side (LHS / RHS)	Soil Classification as per IS: 1498	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR at 97% MDD (%)	Free Swell Index (%)	Degree of Compaction (%)
				Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density gm/cc.	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
103	137.000	RHS	SM	22	NP	NP	1.93	8.5	1.87	8.0	8.5	0.0	96.9
104	138.350	LHS	SM	23	NP	NP	1.99	8.7	1.91	7.0	10.1	0.0	96.0
105	140.350	RHS	ML	25	NP	NP	1.97	8.4	1.90	7.0	9.3	10.0	96.4
106	140.900	LHS	SM	21	NP	NP	2.02	8.0	1.84	7.0	11.6	0.0	91.1
107	142.200	RHS	ML	24	NP	NP	1.97	9.1	1.90	8.0	7.5	5.9	96.4
108	144.150	LHS	ML	23	NP	NP	1.90	8.5	1.83	6.0	10.7	0.0	96.3
109	146.050	RHS	ML	27	NP	NP	1.84	8.8	1.79	7.0	9.3	0.0	97.3
110	146.950	LHS	CL	31	18	13	1.89	11.3	1.84	8.0	5.0	22.2	97.4
111	148.000	RHS	ML	24	NP	NP	1.88	8.6	1.80	8.0	6.9	0.0	95.7
112	149.100	LHS	ML	27	NP	NP	1.93	9.1	1.84	7.0	7.2	0.0	95.3
113	149.800	RHS	SM	23	NP	NP	1.97	8.3	1.84	7.0	8.0	0.0	93.4

Table 4-6 Test Result of Core Cutting of Existing BT

Sr. No.	Chainage (km)	Side (LHS / RHS)	Type of Material Tested	Source of Sample	Cumulative Percentage of Passing through IS Sieve (mm)												Bitumen Content (%)	Gradation Conforming to MoRTH 5th Revision of Table 500-10 & Table 500-17
					45	37.5	26.5	19.0	13.2	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.08	
1	28+600	RHS	Lower DBM	Core	100	100	100	95.1	58.6	29.2	16.3	9.7	7.9	7.0	5.7	3.5	1.7	2.98	Not Conforming to Any Gradation

Sr. No.	Chainage (km)	Side (LHS / RHS)	Type of Material Tested	Source of Sample	Cumulative Percentage of Passing through IS Sieve (mm)												Bitumen Content (%)	Gradation Conforming to MoRTH 5th Revision of Table 500-10 & Table 500-17
					45	37.5	26.5	19.0	13.2	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.08	
2	29+000	LHS	BC	Core	100	100	100	97.9	77.7	49.2	30.0	23.0	17.4	14.2	9.8	5.3	2.1	5.02	Not Conforming to Any Gradation
3	33+600	LHS	DBM	Core	100	100	100	100.0	92.7	75.3	49.9	35.1	27.2	23.1	18.5	12.4	5.9	4.32	19mm, 13.2mm Sieve Material slightly Finer side in DBM Grade-II
4	34+100 SR	LHS	BC	Core	100	100	100	100.0	93.8	62.6	38.4	27.4	21.5	18.7	15.7	11.1	5.4	4.84	13.2mm Sieve Material slightly Finer side, 2.36mm Sieve Material slightly Coarser side in BC Grade-I
5	38+100	RHS	BC	Core	100	100	100	100.0	100.0	82.6	51.4	29.4	21.3	17.9	14.4	10.4	5.0	4.68	13.2mm, 9.5mm Sieve Material slightly Finer side in BC Grade-I
6	41+500	LHS	DBM	Core	100	100	100	97.8	89.3	64.2	40.7	24.9	19.6	16.9	13.8	8.7	3.4	4.58	19.0mm,13.2mm Sieve Material slightly Finer side, 2.36mm Sieve Material slightly Coarser side in DBM Grade-II

Sr. No.	Chainage (km)	Side (LHS / RHS)	Type of Material Tested	Source of Sample	Cumulative Percentage of Passing through IS Sieve (mm)												Bitumen Content (%)	Gradation Conforming to MoRTH 5th Revision of Table 500-10 & Table 500-17
					45	37.5	26.5	19.0	13.2	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.08	
7	42+150	RHS	DBM	Core	100	100	100	94.1	83.8	59.1	35.4	22.6	17.5	15.1	12.9	9.7	5.4	5.21	13.2mm Sieve Material slightly Finer side, 4.75mm & 2.36mm Sieve Material slightly Coarser side in DBM Grade-II
8	43+500	LHS	BC	Core	100	100	100	96.7	74.5	55.4	41.8	30.0	21.2	16.6	12.4	8.8	5.0	5.75	Conforming to BC Grade-I
9	47+950	RHS	BC	Core	100	100	100	100.0	98.2	76.4	42.4	29.5	23.5	20.3	16.9	11.2	5.0	5.75	13.2mm, 9.5mm Sieve Material slightly Finer side in BC Grade-I
10	57+850	RHS	BC	Core	100	100	100	100.0	97.1	75.8	47.5	30.4	22.0	18.7	14.9	10.4	5.2	4.88	13.2mm, 9.5mm Sieve Material slightly Finer side in BC Grade-I
11	66+100 SR	LHS	BC	Core	100	100	100	93.7	78.8	71.7	45.1	30.2	25.0	21.7	17.0	9.3	3.4	4.55	Conforming to BC Grade-I
12	67+750	RHS	DBM	Core	100	100	100	100.0	92.6	62.4	39.4	27.6	21.3	18.7	15.4	8.8	2.7	4.73	19mm, 13.2mm Sieve Material slightly Finer side, 2.36mm

Sr. No.	Chainage (km)	Side (LHS / RHS)	Type of Material Tested	Source of Sample	Cumulative Percentage of Passing through IS Sieve (mm)													Bitumen Content (%)	Gradation Conforming to MoRTH 5th Revision of Table 500-10 & Table 500-17
					45	37.5	26.5	19.0	13.2	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.08		
																			Sieve Material slightly Coarser side in DBM Grade-II
13	73+300	LHS	DBM	Core	100	100	100	100.0	82.0	56.1	44.8	39.4	37.2	34.8	30.7	26.1	20.5	4.64	19mm, 13.2mm, 300µ, 75µ Sieve Material slightly Finer side in DBM Grade-II
14	78+150	RHS	BC	Core	100	100	100	100.0	94.7	71.2	48.1	33.7	26.4	22.6	17.8	11.0	2.9	5.42	13.2mm Sieve Material slightly Finer side in BC Grade-I
15	86+000	LHS	BC	Core	100	100	100	100.0	84.2	56.6	39.1	29.2	23.5	20.4	16.3	10.7	3.9	4.95	13.2mm Sieve Material slightly Finer side in BC Grade-I
16	91+600 SR	LHS	DBM	Core	100	100	100	98.2	75.8	58.2	35.3	24.3	19.2	16.6	13.9	9.9	4.4	4.18	19mm Sieve Material slightly Finer side, 4.75mm & 2.36mm Sieve Material slightly Coarser side in DBM Grade-II
17	93+400	LHS	DBM	Core	100	100	100	96.8	78.3	48.4	33.1	23.3	19.1	16.9	14.1	9.0	2.8	4.29	19mm Sieve Material slightly Finer side,

Sr. No.	Chainage (km)	Side (LHS / RHS)	Type of Material Tested	Source of Sample	Cumulative Percentage of Passing through IS Sieve (mm)													Bitumen Content (%)	Gradation Conforming to MoRTH 5th Revision of Table 500-10 & Table 500-17
					45	37.5	26.5	19.0	13.2	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.08		
																			4.75mm & 2.36mm Sieve Material slightly Coarser side in DBM Grade-II
18	97+350	RHS	DBM	Core	100	100	100	94.4	76.7	50.9	32.8	22.3	17.7	15.4	12.8	9.1	3.7	4.61	4.75mm, 2.36mm Sieve Material slightly Coarser side in DBM Grade-II
19	113+900	LHS	BC	Core	100	100	100	100.0	84.6	68.9	46.8	34.0	25.1	21.5	18.4	12.5	4.6	4.83	13.2mm Sieve Material slightly Finer side in BC Grade-I
20	127+700	RHS	BC	Core	100	100	100	93.3	75.1	64.6	46.1	29.9	21.2	17.4	13.9	9.2	2.9	4.62	Conforming to BC Grade-I

4.7 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full-length periodic maintenance. Schedule-F of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. Only improvement to Riding Quality is expected if the roughness value exceeds 2500 mm/km.

The Project Road has undergone Capacity Augmentation. Currently, the 6-laning work is completed. Hence, the major maintenance cycle is adjusted accordingly.

The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-7 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2025 to FY 2029	-	-
2	FY 2030 & FY 2031	Major maintenance with 30 mm BC (PMB) (100%) + Milling & 50 mm DBM (8%)	Major maintenance with 30 mm BC (VG-30) (50%) + Micro-surfacing (50%)
3	FY 2032 to FY 2036	-	-
4	FY 2037 & FY 2038	Major maintenance with 30 mm BC (VG-40) (100%) + Milling & 50 mm DBM (8%)	Major maintenance with 30 mm BC (VG-30) (50%) + Micro-surfacing (50%)
5	FY 2039 to FY 2040	-	-

**Actual end of concession period as per Concession Agreement is February 2035. As informed by Cube Highways, the revised concession period is up to FY 2040.*

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per SoR of Uttar Pradesh PWD, Aligarh Division for the year 2020-21. The input rates for MoRTH standard data book were adopted as below:

   a. **Manpower and labour:** As per applicable minimum wages published by Schedule of Rates, Government of Uttar Pradesh.

   b. **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

   Therefore, bitumen prices are considered as per the forecast of Client. Current publish of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards, since bitumen prices have been range bound over the last five-six years. Following rates of bitumen are considered.

   Polymer and modification costs are provided by the Client to work out BC rate with PMB.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY 2027 (Rs. / MT)	Rate for FY 2028 onwards (Rs. / MT)
1	Mathura	All States	VG-10	45,102	35,125
2			VG-30	46,402	36,137
3			VG-40	48,962	38,131
4	Panipat	All States	VG-10	45,102	35,125
5			VG-30	46,402	36,137
6			VG-40	48,962	38,131
7	Koyali	All States	VG-10	47,102	37,125
8			VG-30	48,402	38,137

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY 2027 (Rs. / MT)	Rate for FY 2028 onwards (Rs. / MT)
9			VG-40	51,082	40,251
10	Haldia	All States	VG-10	46,602	35,683
11			VG-30	47,402	36,295
12			VG-40	49,962	38,256
13	Barauni	All States	VG-10	47,132	36,213
14			VG-30	48,432	37,325
15			VG-40	50,992	39,286
16	CPCL	Kerala	VG-10	47,402	35,519
17			VG-30	48,402	36,395
18			VG-40	50,762	38,120
19	CPCL	Tamil Nadu	VG-10	47,902	36,019
20			VG-30	48,402	36,395
21			VG-40	50,962	38,320
22	CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
23			VG-30	45,402	33,395
24			VG-40	47,962	35,320
25	CPCL	Karnataka	VG-10	44,602	32,719
26			VG-30	45,402	33,395
27			VG-40	47,962	35,320

c. **Sand and Aggregate:** Market rates are considered from the quarry located nearest to Project Road.

d. **Cement:** Market rates are considered from the nearest local market.

e. **Steel :** Rate of steel is taken from SAIL.

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with MoRTH standard data book.

g. **Actual Rates of items as per work order:** The rates of road marking, road stud, kerb raising, micro surfacing, milling rates etc. are considered as per the work order shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam (VG-40)	Cum	10,076
2	Bituminous Concrete (VG-30)	Cum	11,105
3	Bituminous Concrete (VG-40)	Cum	11,407
4	Bituminous Concrete (PMB)	Cum	13,073
5	Milling	Sqm	95
6	Micro-surfacing	Sqm	180
7	Kerb Relaying	Rmt	460
8	Road Marking	Sqm	592
9	Road Studs	Nos.	244

5.3 Balance Work Cost

As discussed in the previous chapter, the Concessionaire has completed the 6-laning work. Hence, the cost of balance work is **NIL**.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance, and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Incident Management Services
4. Electricity and Diesel Charges
5. TMS / HTMS / System Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Insurance Expense
10. IE Fees
11. Horticulture & ROW Maintenance
12. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation and Maintenance cost (Routine O&M) is presented below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (Rs.) (FY 2027 to FY 2040)
1	Salary and Welfare Expenses	1,13,85,000
2	Tolling Operations Services	4,76,39,916
3	Toll Security Services	2,57,65,098
4	Incident Management & Emergency Services	4,23,67,462
5	Electricity and Diesel Charges	2,50,07,749
6	TMS / HTMS / System Expenses	1,30,94,769

Sr. No.	Particulars	Amount (Rs.) (FY 2027 to FY 2040)
7	Office Operating Expenses	50,07,000
8	Vehicle Running Expenses	71,50,800
9	Professional Fees Expense	1,18,91,625
10	Community Development	65,71,688
11	Communication Expenses	7,51,050
12	Conveyance Expenses	5,00,700
13	Insurance Expense	1,62,72,750
14	IE Fees	2,06,53,875
15	Routine Maintenance Cost (Project Road)	7,26,56,178
16	Horticulture & ROW Maintenance	4,47,10,200
17	Contingency	93,62,379
	Total Cost (Rs.)	**36,07,88,239**
	Total Cost (Cr.)	**36.08**
	Per km Cost (Lakhs)	28.82

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Table 5-4 Summary of Major Maintenance Cost

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2025 to FY 2029	-	
2	FY 2030 to FY 2031	205.60	
3	FY 2032 to FY 2036	-	
4	FY 2037 to FY 2038	186.41	
5	FY 2039 to FY 2040	-	
Total Cost (Cr.)		**392.00**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2030	14.80	
2	FY 2037	14.80	
Total Cost (Cr.)		**29.60**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-5 Escalation

Year	Escalation	Year	Escalation
2027	-	**2043**	3.99%
2028	5.25%	**2044**	3.99%
2029	4.86%	**2045**	3.99%

Year	Escalation	Year	Escalation
2030	4.44%	**2046**	3.99%
2031	4.24%	**2047**	3.99%
2032	4.13%	**2048**	3.99%
2033	4.08%	**2049**	3.99%
2034	4.01%	**2050**	3.99%
2035	4.00%	**2051**	3.99%
2036	4.03%	**2052**	3.99%
2037	4.01%	**2053**	3.99%
2038	3.98%	**2054**	3.99%
2039	3.98%	**2055**	3.99%
2040	4.00%	**2056**	3.99%
2041	3.99%	**2057**	3.99%
2042	3.99%	**-**	-

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summarised yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr.)

Sr. No.	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40
1	Routine O&M Cost														
1.01	Salary and Welfare Expense	1.14	1.20	1.26	1.33	1.38	1.44	1.50	1.56	1.63	1.69	1.76	1.83	1.90	1.98
1.02	Tolling Operations Services	4.76	5.03	5.29	5.55	5.79	6.04	6.29	6.55	6.81	7.08	7.37	7.66	7.97	8.28
1.03	Toll Security Services	2.58	2.72	2.86	3.00	3.13	3.27	3.40	3.54	3.68	3.83	3.98	4.14	4.31	4.48
1.04	Incident Management Services	4.24	4.47	4.71	4.93	5.15	5.37	5.59	5.82	6.05	6.30	6.55	6.81	7.08	7.37
1.05	Electricity and Diesel Charges	2.50	2.64	2.78	2.91	3.04	3.17	3.30	3.44	3.57	3.72	3.87	4.02	4.18	4.35
1.06	TMS/HTMS/System Expenses	1.55	2.25	2.81	0.67	1.41	1.47	1.53	2.13	3.05	3.76	0.89	1.87	1.94	2.70
1.07	Office Operating Expenses	0.50	0.53	0.56	0.58	0.61	0.63	0.66	0.69	0.72	0.74	0.77	0.81	0.84	0.87
1.08	Vehicle Running Expenses	0.72	0.75	0.79	0.83	0.87	0.91	0.94	0.98	1.02	1.06	1.11	1.15	1.20	1.24
1.09	Professional Fees Expense	1.19	1.25	1.32	1.38	1.45	1.51	1.57	1.63	1.70	1.77	1.84	1.91	1.99	2.07
1.10	Community Development	0.66	0.69	0.73	0.77	0.80	0.83	0.87	0.90	0.94	0.98	1.02	1.06	1.10	1.14
1.11	Communication Expenses	0.08	0.08	0.08	0.09	0.09	0.10	0.10	0.10	0.11	0.11	0.12	0.12	0.13	0.13
1.12	Conveyance Expenses	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09
1.13	Insurance Expense	1.63	1.72	1.81	1.90	1.98	2.06	2.15	2.24	2.33	2.42	2.52	2.62	2.72	2.83
1.14	IE Fees	2.07	2.18	2.29	2.41	2.51	2.62	2.73	2.84	2.95	3.07	3.19	3.32	3.45	3.59
1.15	Routine Maintenance Cost	7.27	7.67	8.07	8.46	8.84	9.21	9.59	9.98	10.38	10.80	11.23	11.68	12.15	12.63
1.16	Horticulture & ROW Maintenance	4.47	4.72	4.97	5.21	5.44	5.67	5.90	6.14	6.39	6.65	6.91	7.19	7.48	7.77
1.17	Miscellaneous and Contingency	0.94	0.99	1.04	1.09	1.14	1.19	1.24	1.29	1.34	1.39	1.45	1.51	1.57	1.63
	Subtotal of O&M Cost	36.32	38.94	41.42	41.16	43.70	45.56	47.43	49.91	52.74	55.44	54.65	57.78	60.08	63.15
2	Major Maintenance Cost	-	-	-	115.47	115.47	-	-	-	-	-	128.88	128.88	-	-
3	Periodic Cost of TMS/HTMS Replacement	-	-	-	17.24	-	-	-	-	-	-	22.89	-	-	-
4	Balance Works Cost	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**36.32**	**38.94**	**41.42**	**173.87**	**159.17**	**45.56**	**47.43**	**49.91**	**52.74**	**55.44**	**206.42**	**186.66**	**60.08**	**63.15**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost (FY 2026)	
Ordinary Repair Cost for Flexible (with GST)	**7,26,56,178**
(Inclusive of GST)	**= 5.8 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD **2,34,085**	**Urban** More than 4500 CVD **2,75,039**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
						Normal	**Urban**	**Normal**	**Urban**
1	Six lane with divided carriageway	without Paved shoulder	2.09	489237.00	574832.00	-	-	-	-
		with Paved shoulder	2.26	529031.00	621588.00	75.73	10.00	4,00,60,872	62,15,880
2	Six lane with divided carriageway and service lane on either side	without Paved shoulder	2.56	599256.00	704100.00	-	-	-	-
		with Paved shoulder	2.76	646073.00	759108.00	31.56	7.89	2,03,90,064	59,89,362
					TOTAL		**125.175**		**7,26,56,178**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	0.50%
	Volume (cum)			2.50
	Rs/m^3			11594
	Cost in Rupees			28,984
	ii) Patch repair	100 % Patch less	As & when required	1.00%
	Area (sqm)			100
	Rs/m^2			464
	Cost in Rupees			46,374
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			90
	Cost in Rupees			22,450
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.00%
	Area (sqm)			150
	Rs/m^2			60
	Cost in Rupees			9,000
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			464
	Cost in Rupees			34,781
	v) Road marking	14%	Once in 7th year & @	28653

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
			Repaired location	
	SUB TOTAL			**1,70,242**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**7,414**
3	**Maintenance of Cross Drainage works:**			
	i) Repair of floors	100%	Once in a Year	5055
	ii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			**7,161**
4	**Maintenance of Minor & Major Bridges:**			
	i) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints	100%	As & when required	36,950
	ii) Repair of minor washouts, erosion scour and animal holes			
	iii) Sealing Cracks with Cement/ Epoxy Mortar			
	iv) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometer stone etc.		Once in a Year	3695
	ii) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7390
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232
	iv) Traffic Census		Once in a Year	0

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	v) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**12,317**
	GRAND TOTAL (Normal)			**2,34,085**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	11149
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**40,955**
	GRAND TOTAL (Urban)			**2,75,039**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY-2030-31)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						33,09,541	18	5,88,76,743
	4 lane section									
	For BC	Sqm	2	18,710	9.00		3,36,780	3,36,780		
	For DBM	Sqm	2	1,497	7.50		22,452	22,452		
	For Misc. Location	Sqm	2	936	9.00		16,839	16,839		
	6 lane section									
	For BC	Sqm	2	1,04,729	12.50		26,18,235	26,18,235		
	For DBM	Sqm	2	8,378	11.00		1,84,324	1,84,324		
	For Misc. Location	Sqm	2	5,236	12.50		1,30,912	1,30,912		
2	BC with 30 mm	Cum					93,083	93,083	13,073	1,21,68,98,832
	4 lane section	Cum	2	19,646	9.00	0.03	10,609			
	6 lane section	Cum	2	1,09,966	12.50	0.03	82,474			
3	DBM with 50 mm	Cum					10,339	10,339	10,076	10,41,77,549
	4 lane section	Cum	2	1,497	7.50	0.05	1,123			
	6 lane section	Cum	2	8,378	11.00	0.05	9,216			
4	Milling	Sqm					1,29,235	1,29,235	95	1,22,77,310
	4 lane section	Cum	2	936	7.50		14,033			
	6 lane section	Cum	2	5,236	11.00		1,15,202			
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 10% length	Rmt	10%	3,367	3.50	4.50	2,693	2,693	120	3,23,185
6	Dismantling of CC Panels @ 3% area	Cum	3%		53,023	0.30	477	477	1,035	4,94,001
7	Replacement of Panels - PQC @ 3% area	Cum	3%		53,023	0.30	477	477	10,674	50,93,847
	Service Road									
8	Tack coat	Sqm	1	38,367	7.91		3,03,629	3,03,629	18	54,01,551
9	BC with 30 mm	Cum	1	38,367	7.91	0.03	9,109	9,109	11,105	10,11,57,660
10	Micro Surfacing	Sqm	1	38,367	7.91		3,03,629	3,03,629	180	5,46,53,130
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									

Major Maintenance Cost (FY-2030-31)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
11	Tack coat	Sqm	1	1,026	23		23,765	23,765	18	4,22,788
12	Wearing Coat BC with 30 mm	Cum	1	1,026	23	0.03	713	713	11,105	79,17,767
13	Milling of Ex. Wearing Coat	Sqm	1	1,026	23		23,765	23,765	95	22,57,720
14	Painting of Crash Barrier	Sqm	4	1,026		1.20	4,923	4,923	84	4,13,522
	Other Works									
15	Replacement of Road Stud						30,606	30,606	244	74,67,864
	Normal Road Stud - 4 Lane Section	Nos	2	2,288			4,576			
	Normal Road Stud - 6 Lane Section	Nos	2	13,015			26,030			
16	Painting of Kerb	Sqm	2	1,61,806		0.315	1,01,938	1,01,938	107	1,09,07,369
17	Road Marking	Sqm					1,18,445	1,18,445	592	7,01,19,200
	4 Lane MCW Section									
	a) Median & Edge line	Sqm	4	19,646	0.15		11,787			
	b) Lane line	Sqm	2	6,483	0.10		1,297			
	6 Lane MCW Section									
	a) Median & Edge line		4	1,11,805	0.15		67,083			
	b) Lane line		4	36,896	0.10		14,758			
	Service Road									
	a) Edge line	Sqm	2	76,734	0.10		15,347			
	b) Lane line	Sqm	1	25,322	0.10		2,532			
	Junction crossing	Sqm					5,640			
18	Filling of Earthen shoulder	Cum					1,036	1,036	493	5,10,185
	MCW		2	62,838	1.50	-	-			
	Service Road		1	23,020	1.50	0.03	1,036			
19	Miscellaneous	5%								8,29,68,511
Total Major Maintenance Cost (Rs)										**1,74,23,38,733.98**
Total Major Maintenance Cost with GST (18%) (Rs)										**2,05,59,59,706.10**
Total Major Maintenance Cost with GST (Cr)										**205.60**
Per km Cost (lakh)										**164.25**
Escalation Factor for Major Maintenance Cost (FY-2030-31)										**1.20**
Total Escalated Cost for Major Maintenance Cost (FY-2030-31) (Cr.)										**230.94**

Major Maintenance Cost (FY-2037-38)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						33,09,541	18	5,88,76,743
	4 lane section									
	For BC	Sqm	2	18,710	9.00		3,36,780	3,36,780		
	For DBM	Sqm	2	1,497	7.50		22,452	22,452		
	For Misc. Location	Sqm	2	936	9.00		16,839	16,839		
	6 lane section									
	For BC	Sqm	2	1,04,729	12.50		26,18,235	26,18,235		
	For DBM	Sqm	2	8,378	11.00		1,84,324	1,84,324		
	For Misc. Location	Sqm	2	5,236	12.50		1,30,912	1,30,912		
2	BC with 30 mm	Cum					93,083	93,083	11,407	1,06,17,95,606
	4 lane section	Cum	2	19,646	9.00	0.03	10,609			
	6 lane section	Cum	2	1,09,966	12.50	0.03	82,474			
3	DBM with 50 mm	Cum					10,339	10,339	10,076	10,41,77,549
	4 lane section	Cum	2	1,497	7.50	0.05	1,123			
	6 lane section	Cum	2	8,378	11.00	0.05	9,216			
4	Milling	Sqm					1,29,235	1,29,235	95	1,22,77,310
	4 lane section	Cum	2	936	7.50		14,033			
	6 lane section	Cum	2	5,236	11.00		1,15,202			
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 10% length	Rmt	10%	3,367	3.50	4.50	2,693	2,693	120	3,23,185
6	Dismantling of CC Panels @ 3% area	Cum	3%		53,023	0.30	477	477	1,035	4,94,001
7	Replacement of Panels - PQC @ 3% area	Cum	3%		53,023	0.30	477	477	10,674	50,93,847
	Service Road									
8	Tack coat	Sqm	1	38,367	7.91		3,03,629	3,03,629	18	54,01,551
9	BC with 30 mm	Cum	1	38,367	7.91	0.03	9,109	9,109	11,105	10,11,57,660
10	Micro Surfacing	Sqm	1	38,367	7.91		3,03,629	3,03,629	180	5,46,53,130
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	1,026	23		23,765	23,765	18	4,22,788
12	Wearing Coat BC with 30 mm	Cum	1	1,026	23	0.03	713	713	11,407	81,32,769

Major Maintenance Cost (FY-2037-38)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
13	Milling of Ex. Wearing Coat	Sqm	1	1,026	23		23,765	23,765	95	22,57,720
14	Painting of Crash Barrier	Sqm	4	1,026		1.20	4,923	4,923	84	4,13,522
	Other Works									
15	Replacement of Road Stud						30,606	30,606	244	74,67,864
	Normal Road Stud - 4 Lane Section	Nos	2	2,288			4,576			
	Normal Road Stud - 6 Lane Section	Nos	2	13,015			26,030			
16	Painting of Kerb	Sqm	2	1,61,806		0.315	1,01,938	1,01,938	107	1,09,07,369
17	Road Marking	Sqm					1,18,445	1,18,445	592	7,01,19,200
	4 Lane MCW Section									
	a) Median & Edge line	Sqm	4	19,646	0.15		11,787			
	b) Lane line	Sqm	2	6,483	0.10		1,297			
	6 Lane MCW Section									
	a) Median & Edge line		4	1,11,805	0.15		67,083			
	b) Lane line		4	36,896	0.10		14,758			
	Service Road									
	a) Edge line	Sqm	2	76,734	0.10		15,347			
	b) Lane line	Sqm	1	25,322	0.10		2,532			
	Junction crossing	Sqm					5,640			
18	Filling of Earthen shoulder	Cum					1,036	1,036	493	5,10,185
	MCW		2	62,838	1.50	-	-			
	Service Road		1	23,020	1.50	0.03	1,036			
19	Miscellaneous	5%								7,52,24,100
Total Major Maintenance Cost (Rs)										**1,57,97,06,098.00**
Total Major Maintenance Cost with GST(18%) (Rs)										**1,86,40,53,195.64**
Total Major Maintenance Cost with GST (Cr)										**186.41**
Per km Cost (lakh)										**148.92**
Escalation Factor for Major Maintenance Cost (FY-2037-38)										**1.58**
Total Escalated Cost for Major Maintenance Cost (FY-2037-38) (Cr)										**257.76**

FP Project Management

Technical Due Diligence of Hazaribagh - Ranchi Section (from km.41+500 to km.115+290) of NH-20 in the state of Jharkhand on TOT Mode

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	SG / VK	RMW	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 8
3.1 Pavement 8
3.1.1 Pavement Condition Survey 8
3.2 Service Road 13
3.3 Major / Minor Junction 16
3.4 Condition Survey of Structure 17
3.5 Condition Survey of Culvert 39
3.6 Drainage 41
3.7 Slope Protection 42
3.8 Road Furniture 44
3.9 Pavement Marking 45
3.10 Avenue Plantation and Median Plantation 54
3.11 Toll Plaza 56
3.12 Lane Equipment 58
3.12.1 RFID ETC Transceiver 58
3.12.2 Lane Controller with Industrial PC 58
3.12.3 Automatic Vehicle Classification (AVC) Sensors 59
3.12.4 Automatic Lane Barrier 59

3.12.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 60
3.12.6 Incident Capture Camera (AVC Camera) 60
3.12.7 License Plate Image Capture Camera (LPIC) 61
3.12.8 Over Head Lane Signal (OHLS) 61
3.12.9 Toll Booth Equipment 61
3.12.10 Medium Speed Weigh in Motion (MSWIM) 62
3.13 Plaza Equipment 63
3.13.1 TMS Server 63
3.13.2 55" LED screen for CCTV monitoring 63
3.13.3 Workstations in Control Room, POS room 63
3.14 Truck Lay-byes 64
3.15 Traffic Aid Post and Medical Aid Post 65
3.16 Toilet Block 66
3.17 Bus Bays and Passenger Shelters 66
3.18 Balance Work Status 67
3.19 Operation and Maintenance 68
3.19.1 O&M Contract 68
3.19.2 Organization Chart 69
3.19.3 Operation 69
3.19.4 Routine Maintenance 70
4 Pavement Investigation and Assessment 71
4.1 General 71
4.2 Axle Load and VDF 71
4.3 Design Traffic 71
4.4 Network Survey Vehicles (NSV) Survey 72
4.5 Structural Investigations 72
4.6 Test pit and Subgrade Investigation 72
4.7 Periodic Maintenance Strategy 72
5 Cost Estimates 74
5.1 General 74
5.2 Rate Assumption 74
5.3 Balance Work Cost 76
5.4 Routine O&M Cost 76
5.5 Major Maintenance Cost 77
5.6 Periodic Replacement of TMS / ATMS System 77
5.7 Escalation Assumption 78
5.8 Summary of Cost 78

Annexures 80
Annexure I - Routine Maintenance Cost 81
Annexure II - Major Maintenance Cost 86

List of Tables

Table 3-1 Summary of Structures 17
Table 3-2 Condition Survey of Major Structure 18
Table 3-3 Details of New Installation of Safety Barriers 44
Table 3-4 Summary for Road Furniture Items 44
Table 3-5 Details of Summary for Toll Plaza Items 56
Table 4-1 Vehicle Damage Factor 71
Table 4-2 MSA Calculation 71
Table 4-3 Major Maintenance Cycle 73
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 74
Table 5-2 Summary of Unit Rates 75
Table 5-3 Summary of Operation Cost 76
Table 5-4 Summary of Major Maintenance Cost 77
Table 5-5 Escalation 78

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start and End of Project Road (LHS) 5
Figure 2-3 Start and End of Project Road (RHS) 5
Figure 3-1 Photographs of Pavement Condition (RHS) 9
Figure 3-2 Photographs of Pavement Condition (LHS) 11
Figure 3-3 Photographs of Service Road (RHS) 14
Figure 3-4 Photographs of Service Road (LHS) 15
Figure 3-5 Photographs of Major Junction 16
Figure 3-6 Photographs of Minor Junction 17
Figure 3-7 Photographs of Major Structures 31
Figure 3-8 Photographs of Box Culvert / Pipe Culvert 40
Figure 3-9 Photographs of Existing Drains (RHS) 41
Figure 3-10 Photographs of Existing Drains (LHS) 41
Figure 3-11 Photographs of Slope Protection and Chute Drain 42
Figure 3-12 Photographs of Pavement Marking 45
Figure 3-13 Photographs of Road Studs 46
Figure 3-14 Photographs of Road Signages 47
Figure 3-15 Photographs of Street Light 49
Figure 3-16 Photographs of MBCB / Crash Barrier 50
Figure 3-17 Photographs of Delineator 52
Figure 3-18 Photographs of Pedestrian Guard Rail 53
Figure 3-19 Photographs of Road Land Boundary 54
Figure 3-20 Photographs of Median Plantation 54
Figure 3-21 Photographs of Avenue Plantation 55
Figure 3-22 Photographs of Toll Plaza 56
Figure 3-23 Details of Truck Lay-bye 64
Figure 3-24 Photograph of Truck Lay-bye 64
Figure 3-25 Photographs of Toilet Blocks 66
Figure 3-26 Photographs of Bus Bay / Passenger Shelter 66

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Hazaribagh - Ranchi section of NH-20 (Old NH-33) from km. 41+500 to km. 115+290 in the State of Jharkhand (hereinafter referred as "Project Road").

Hazaribagh Tollway Private Limited (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance, and transfer of Hazaribagh to Ranchi Section (from km.41+500 to km.115+290) of NH-20 or Project Road under TOT Bundle-3. The project was awarded to Concessionaire on 27th December 2019 with a concession period of 30 years. The length of Project Road is 73.79 kms with one toll plaza at Pundag at km. 100+600.

Accordingly, the Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets.
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.
- Formulation of future major maintenance strategy.
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence.
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period.
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period.
- Review of balance work cost for Project Road including estimation of quantities and item rates.

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our proposed team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader will coordinate the activities between all the key staff who will work closely together. The key is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader will act as the point of contact for Client Technical Study.

The technical study include review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the Consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyze the same as per the best engineering / industry practices.

The site visit and inspection were carried out between the periods from **25th March 2026** to **27th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features, and an overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates**: The chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **Hazaribagh Tollway Private Limited**, is a company promoted by Cube Highways or company a Special Purpose Vehicle (SPV) formed for implementing this project on 27th December 2019. The Appointed Date for the Project Road is 20th October 2020.

Presently, there are two Concessionaires for Project Road. One is Cube Highways who maintains Toll Operation activities (TOT Concessionaire) and the other Concessionaire ELSAMAX a group of ILFS, (Annuity Concessionaire) who maintain the project length as per their original scope of work.

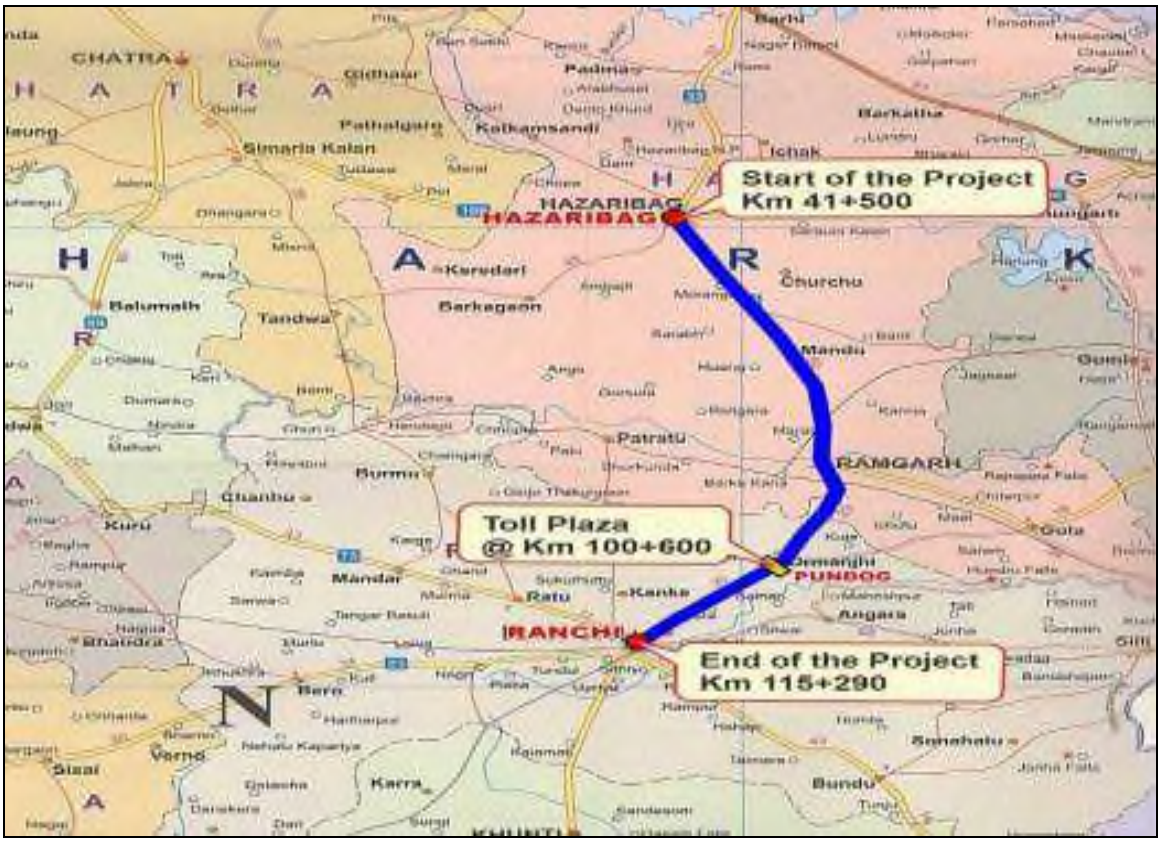
The project is being developed through Annuity BOT mode under TOT (Toll Operate Transfer) Bundle-III with a concession period of 30 years from the Appointed Date while O&M will start from March 2028 as per CA Clause 5.1.4 of Article 5.

2.2 Location

The Project Road is part of National Highway No. 20, NH-20 (Old NH-33) of Hazaribagh - Ranchi section in the state of Jharkhand. The total project length is 73.79 kms.

The Location Map of the Project Road is presented below.

Figure 2-1 Location Map



The photographs taken during the site visit are presented below.

Figure 2-2 Start and End of Project Road (LHS)

Figure 2-3 Start and End of Project Road (RHS)

2.3 Climate

Mainly there are three types of seasons observed. These are mainly Summer, Winter and monsoon. The summer in Hazaribagh begins from March to May. The normal temperature in these month ranges from 24 ºC to 32 ºC. Monsoon in Hazaribagh begins in June and ends in September and the average rainfall in this zone is 1234.5 mm. The average relative humidity of Hazaribagh is around 68% although it varies from 44% during summer to 89% during monsoon. The most humid month of the year is August with humidities varying from 65% to 98%.

2.4 Terrain

The Project Road passes through rolling to hilly terrain.

2.5 Abutting Land Use

The following are the various developments that are anticipated in the Four Laning of Hazaribagh Ranchi Section.

- This Project Road reduces the travel time for getting access to Dhanbad, Bokaro, Patna Kodarama and Bihar Sharif which results in better industrial growth and economy.

- A lot of development is anticipated in Hazaribagh Ranchi Section, which transits through NH-20 / NH-33 and hence the development / maintenance of this Project Road would accelerate the development as majority of traffic would use the highway for getting access to Varanasi and Patna.

- The tourism industry get a great booster as majority of people using this Project Road for going to places like Gaya, Kolkata and Jhariya etc.,

- A lot of commercial establishment along the Project Road in the form of hotels, Snack parlors may be developed in future as most of the road passing through dense forest and a local tourism may developed in the project length.

2.6 Right of Way

The width of the existing Right of Way (ROW) for the Project Road varies from 45.0 m to 60.0 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, etc.

2.8 Development as per Schedule-B

The Project Road from Hazaribagh (km. 41+500) to Ranchi (km. 115+290) has been developed as a four-lane divided carriageway with median width varies from 1.5 m to 4.5 m, service road and other arrangements. The Project Road passes through rural as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.
b) Tolling, operation, management, maintenance, and transfer of the Project Highway subject to and in accordance with the provisions of this Agreement.
c) Performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Concessionaire under this Agreement.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km	73.79	From March 2028
2	Construction of Service Road	km	7.105	14.21 kms (B/S)
3	Vehicular Underpasses	Nos.	01	
4	Widening of Existing Pipe Culvert	Nos.	05	
5	New Construction of Box Culvert	Nos.	0	
6	Reinforce Cement concrete cover Drain with footpath	km	7.105	14.21 kms (B/S)
7	Road marking by Thermoplastic Paint	km	14.20	
8	Rigid Concrete Barrier	km	1.460	
9	Pedestrian Guard Rail	km	11.400	
10	Additional cantilever Sign Boards	Nos.	06	
11	Bus Shelter	Nos.	02	

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 8.5 m with earthen shoulder of 1.0 to 2.5 m on either side. The Project Road has median width varies from 1.5 m to 4.5 m.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

Pavement condition survey was carried out from **25th March 2026** to **27th March 2026** through visual inspection for the entire project length. From the visual inspection, it is found that the average pavement condition of the Project Road is found to be Fair to Poor except few locations.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (RHS)

km. 114+900

km. 110+500

km. 107+400

km. 92+250

km. 89+200

km. 74+00

km. 54+00

km. 47+750

Shoulder – RHS

km. 114+900

km. 110+900

km. 90+700

km. 84+900

km. 79+850

km. 72+445

km. 67+00

km. 49+900

Figure 3-2 Photographs of Pavement Condition (LHS)

km. 43+300

km. 45+00

km. 51+00

km. 54+200

km. 62+500

km. 70+000

km. 86+000

km. 90+975

Shoulder - LHS

km. 43+300

km. 51+000

km. 54+200

km. 58+300

km. 70+000

km. 86+000

km. 90+975

km. 102+000

3.2 Service Road

a) Construction of New Service Road

The width of service road is proposed 7.5 m and is proposed to be constructed in built-up area and adjoining underpass locations.

b) Existing Service Roads

The width of service road is found 4.0 m to 7.0 m partially and it is constructed in built-up area and adjoining Road Over Bridge (ROB) locations.

The photographs taken during the site visit are presented below.

Figure 3-3 Photographs of Service Road (RHS)

km. 92+500

km. 89+644

km. 82+080

km. 78+750

km. 78+614

km. 74+240

km. 68+240

km. 64+877

Figure 3-4 Photographs of Service Road (LHS)

km. 92+500

km. 89+644

km. 82+080

km. 78+614

km. 74+240

km. 68+240

km. 64+877

km. 55+350

3.3 Major / Minor Junction

The Project Road has 5 Nos. of existing major junctions and 73 Nos. of minor junctions. The photographs taken during site visit is presented as below:

Figure 3-5 Photographs of Major Junction

km. 92+400 Ramgarh Chowk km. 89+800 (Connecting NH-23/SH)

km. 77+600 Sarana Chowk

Figure 3-6 Photographs of Minor Junction

km. 56+570

km. 56+950

km. 59+200

km. 72+770

km. 73+750

km. 80+600

3.4 Condition Survey of Structure

The inventory of structures including major bridges, minor bridges, ROB's, underpasses and culverts is presented in table below:

Table 3-1 Summary of Structures

Sr. No.	Type of Structure	Numbers of Structures
1	Major Bridges	01
2	Minor Bridges	09
3	Slab Culverts	-
4	Pipe Culverts	88
5	Box Culverts	40
6	Flyovers	-
7	Road over Bridges	03
8	Road Under Bridge	01
9	Vehicular Underpasses	06
10	Pedestrian / Cattle Underpasses	02
Total		**150**

Table 3-2 Condition Survey of Major Structure

Major Bridge

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
1	85+440	Major Bridge LHS 12 x 20.5m and RHS 12 x 20.5m	Age	Old - 2 Lane	Old – 2 Lane	The structure is in good condition. Vent cleaning is required. Clearing of bushes & repair of stone pitching is required to be carried out. Approaches at BHS settled. Need to be repaired / rectified.
			Foundation	Open Foundation	Open Foundation	
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	PSC Girders + Slab RCC	PSC Girders + Slab RCC	
				Footpath - Available	Footpath - Available	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	Stone Pitching	Stone Pitching	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Satisfactory	Satisfactory	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating not clear	Water grating not clear	

Minor Bridge

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			
			Component	LHS	RHS	General Comments
1	57+780	Minor Bridge LHS 3 x 13.15m and RHS 3 x 13.15m	Age	Old - 2 Lane	New – 2 Lane	The structure is in good condition. Vent cleaning is required. All expansion joints need to be cleaned. Clearing of bushes & repair of stone pitching is required to be carried out.
			Foundation	–	–	
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition- Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition- Satisfactory	Condition- Satisfactory	
			Slope Protection	Stone Pitching	Stone Pitching	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Damaged	Damaged	
			Wearing Coat / Surface	BC - Damaged	BC - Damaged	
			Approach Slope	Joint between approach and wearing coat is not uniform	Joint between approach and wearing coat is not uniform	
			Drainage	Water grating not clear	Water grating not clear	
2	61+720	Minor Bridge LHS 2 x 16.8m and RHS 2 x 17.15m	Age	Old - 2 Lane	New – 2 Lane	Structure is in good condition. Vent cleaning is required. Clearing of bushes & repair of stone pitching is required to be carried out.
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
			Slope Protection	Stone Pitching	Stone Pitching	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier – Satisfactory	
			Expansion Joint	Satisfactory	Satisfactory	
			Wearing Coat / Surface	BC - Satisfactory	BC – Satisfactory	
			Approach Slope	Joint between approach and wearing coat is not uniform	Joint between approach and wearing coat is not uniform	
			Drainage	Water grating not clear	Water grating not clear	
3	71+020	Minor Bridge LHS 4 x 10m and RHS 2 x 18.9m	Age	Old - 2 Lane	New – 2 Lane	The structure is in good condition. Vent cleaning is required. Clearing of bushes & repair of stone pitching is required to be carried out.
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	Stone Pitching	Stone Pitching	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Satisfactory	Satisfactory	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating not clear	Water grating not clear	
4	84+450	Minor Bridge LHS 3 x 6m and RHS 3 x 6m	Age	New - 2 Lane	New – 2 Lane	The structure is in good condition. Vent cleaning is required. Clearing of bushes & repair of stone pitching is
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			
			Component	LHS	RHS	General Comments
				Condition - Satisfactory	Condition - Satisfactory	required to be carried out.
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	Stone Pitching	Stone Pitching	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Satisfactory	Satisfactory	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating not clear	Water grating not clear	
5	103+420	Minor Bridge LHS 2 x 12.5m and RHS 2 x 13.15m	Age	Old - 2 Lane	New – 2 Lane	The structure is in good condition. Vent cleaning is required. Clearing of bushes & repair of stone pitching is required to be carried out. A2 - BHS expansion joints need to clean.
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	Stone Pitching	Stone Pitching	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Satisfactory	Satisfactory	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating not clear	Water grating not clear	
6	107+580	Minor Bridge LHS 3 x 6.5m	Age	Old - 2 Lane	New – 2 Lane	The structure is in good condition. Vent cleaning is
			Sub-structure	Abutment - RCC	Abutment - RCC	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
		and RHS 1 x 18.9m		Wall type	Wall type	required. Clearing of bushes & repair of stone pitching is required to be carried out.
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	Stone Pitching	Stone Pitching	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Satisfactory	Satisfactory	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating not clear	Water grating not clear	
7	109+200	Minor Bridge LHS 2 x 12m and RHS 2 x 13.15m	Age	Old - 2 Lane	New – 2 Lane	The structure is in good condition. Vent cleaning is required. Clearing of bushes & repair of stone pitching is required to be carried out.
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	Stone Pitching	Stone Pitching	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Satisfactory	Satisfactory	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating not clear	Water grating not clear	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
8	112+480	Minor Bridge LHS 1 x 26m and RHS 2 x 18.9m	Age	Old - 2 Lane	New – 2 Lane	The structure is in good condition. Vent cleaning is required. Clearing of bushes & repair of stone pitching is required to be carried out.
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	Stone Pitching	Stone Pitching	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Satisfactory	Satisfactory	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating not clear	Water grating not clear	
9	115+000	Minor Bridge LHS 3 x 8.7m and RHS 3 x 8.7m	Age	Old - 2 Lane	New – 2 Lane	The structure is in good condition. Vent cleaning is required. Clearing of bushes & repair of stone pitching is required to be carried out.
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	Stone Pitching	Stone Pitching	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier – Satisfactory	
			Expansion Joint	Satisfactory	Satisfactory	
			Wearing Coat / Surface	BC - Satisfactory	BC – Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			
			Component	LHS	RHS	General Comments
			Drainage	Water grating not clear	Water grating not clear	

Road Over Bridge (ROB)						
Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			
			Component	LHS	RHS	General Comments
1	67+570	Road Over Bridges LHS 1 x 3.99m and RHS 1 x 3.99m	Age	New - 2 Lane	New – 2 Lane	The structure is in good condition. Vent cleaning is required. Clearing of bushes & repair of stone pitching is required to be carried out.
			Foundation	Box	Box	
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	Stone Pitching	Stone Pitching	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Satisfactory	Satisfactory	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating not clear	Water grating not clear	
2	80+492	Road Over Bridges LHS 1 x 19.54m and RHS 1 x 19.54m	Age	New - 2 Lane	New – 2 Lane	The structure is in good condition. Vent cleaning is required. Clearing of bushes & repair of stone pitching is required to be carried out.
			Foundation	Wall	Wall	
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers – RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	

Road Over Bridge (ROB)						
Sr. No.	**Design Chainage (km)**	**Type of Bridge / Spans**	**Features and Observation**			
			Component	**LHS**	**RHS**	**General Comments**
				Condition - Satisfactory	Condition – Satisfactory	
			Slope Protection	Stone Pitching	Stone Pitching	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier – Satisfactory	
			Expansion Joint	Satisfactory	Satisfactory	
			Wearing Coat / Surface	BC - Satisfactory	BC – Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating not clear	Water grating not clear	
3	90+030	Road Over Bridges LHS 1 x 20.8 + 2 x 10.61 and RHS 1 x 20.8 + 2 x 10.61	Age	New - 2 Lane	New – 2 Lane	The structure is in good condition. Vent cleaning is required. Clearing of bushes & repair of stone pitching is required to be carried out.
			Foundation	Wall	Wall	
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
			Super Structure	Condition - Satisfactory	Condition - Satisfactory	
				RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	Stone Pitching	Stone Pitching	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Satisfactory	Satisfactory	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating not clear	Water grating not clear	

Road Under Bridge (RUB)						
Sr. No.	**Design Chainage (km)**	**Type of Bridge / Spans**	**Features and Observation**			
			Component	**LHS**	**RHS**	**General Comments**
1	58+870	Road Under Bridge B/S 1 x 45.7m	Age	New - 2 Lane	New – 2 Lane	The structure is in good condition.
			Foundation	RCC	RCC	
			Sub-structure	Steel Truss		

Vehicular Underpass (VUP)						
Sr. No.	**Design Chainage (km)**	**Type of Bridge / Spans**	**Features and Observation**			
			Component	**LHS**	**RHS**	**General Comments**
1	55+350	Vehicular Under Pass LHS 1 x 6m and RHS 1 x 6m	Age	New - 2 Lane	New – 2 Lane	The structure is in good condition. Clearing of bushes at RE Wall & repair of PCC at slope is required to be carried out. Electrification is done but not in working condition.
			Foundation	Open	Open	
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	PCC	PCC	
			Parapet / Railing	Crash Barrier -	Crash Barrier -	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
2	74+240	Vehicular Under Pass LHS 1 x 6m and RHS 1 x 6m	Age	New - 2 Lane	New – 2 Lane	The structure is in good condition. Clearing of bushes & repair of PCC at slope is required to be carried out. Electrification is done but not in working condition.
			Foundation	Open	Open	
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	

Vehicular Underpass (VUP)						
Sr. No.	**Design Chainage (km)**	**Type of Bridge / Spans**	**Features and Observation**			
			Component	**LHS**	**RHS**	**General Comments**
			Slope Protection	PCC	PCC	
			Parapet / Railing	Crash Barrier -	Crash Barrier -	
			Wearing Coat / Surface	BC - Satisfactory	BC – Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage			
3	76+137	Vehicular Under Pass LHS 1 x 6m and RHS 1 x 6m	Age	New - 2 Lane	New – 2 Lane	The structure is in good condition. Clearing of bushes & repair of PCC at slope is required to be carried out. Electrification is done but not in working condition.
			Foundation	Open	Open	
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	PCC	PCC	
			Parapet / Railing	Crash Barrier -	Crash Barrier -	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage			
4	78+614	Vehicular Under Pass LHS 1 x 6m and RHS 1 x 6m	Age	New - 2 Lane	New – 2 Lane	The structure is in good condition. Clearing of bushes & repair of PCC at slope is required to be carried out. Electrification work but not in working condition.
			Foundation	Open	Open	
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	PCC	PCC	

Vehicular Underpass (VUP)						
Sr. No.	**Design Chainage (km)**	**Type of Bridge / Spans**	**Features and Observation**			
			Component	**LHS**	**RHS**	**General Comments**
			Parapet / Railing	Crash Barrier -	Crash Barrier -	
			Wearing Coat / Surface	BC - Satisfactory	BC – Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage			
5	82+080	Vehicular Under Pass LHS 1 x 6m and RHS 1 x 6m	Age	New - 2 Lane	New – 2 Lane	The structure is in good condition. Clearing of bushes & repair of PCC at slope is required to be carried out. Electrification is done but not in working condition.
			Foundation	Open	Open	
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	PCC	PCC	
			Parapet / Railing	Crash Barrier -	Crash Barrier -	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage			
6	89+644	Vehicular Under Pass LHS 2 x 11m and RHS 2 x 11m	Age	New - 2 Lane	New – 2 Lane	The structure is in good condition. Clearing bushes from RE Wall & repair of PCC at slope is required to be carried out. Electrification is done but not in working condition.
			Foundation	Open	Open	
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	PCC	PCC	
			Parapet / Railing	Crash Barrier -	Crash Barrier -	

Vehicular Underpass (VUP)						
Sr. No.	**Design Chainage (km)**	**Type of Bridge / Spans**	**Features and Observation**			
			Component	**LHS**	**RHS**	**General Comments**
			Wearing Coat / Surface	BC - Satisfactory	BC – Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage			
7	New 92+600	Vehicular Under Pass	Age	New - 2 Lane	New – 2 Lane	Structure is in good condition.
			Foundation	Open	Open	
			Sub-structure	Abutment - RCC Pear Type	Abutment - RCC Pear Type	
			Abutment / Pier	Piers -	Piers -	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	RE Wall	RE Wall	
			Nalla Bed	–	–	
			Parapet / Railing	Crash Barrier -	Crash Barrier -	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	

Pedestrian / Cattle Underpass (PUP / CUP)						
Sr. No.	**Design Chainage (km)**	**Type of Bridge / Spans**	**Features and Observation**			
			Component	**LHS**	**RHS**	**General Comments**
1	64+877	Pedestrian Under Pass B/S 1 x 3.5 x2.5m	Age	New - 2 Lane	New – 2 Lane	The structure is in good condition. Clearing of bushes & repair of PCC at slope is required to be carried out. Electrification is done but not in working condition.
			Foundation	Open	Open	
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition -	Condition –	

Pedestrian / Cattle Underpass (PUP / CUP)						
Sr. No.	**Design Chainage (km)**	**Type of Bridge / Spans**	**Features and Observation**			
			Component	**LHS**	**RHS**	**General Comments**
				Satisfactory	Satisfactory	
			Slope Protection	PCC	PCC	
			Parapet / Railing	Crash Barrier -	Crash Barrier -	
			Wearing Coat / Surface	BC - Satisfactory	BC – Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
2	74+240	Pedestrian Under Pass B/S 1 x 3.5 x2.5m	Age	New - 2 Lane	New – 2 Lane	The structure is in good condition. Clearing of bushes & repair of PCC at slope is required to be carried out. Electrification is done but not in working condition.
			Foundation	Open	Open	
			Sub-structure	Abutment - RCC Wall type	Abutment - RCC Wall type	
			Abutment / Pier	Piers - RCC	Piers - RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	RCC	RCC	
				Condition - Satisfactory	Condition - Satisfactory	
			Slope Protection	PCC	PCC	
			Parapet / Railing	Crash Barrier -	Crash Barrier -	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	

Figure 3-7 Photographs of Major Structures

Major Bridge

Structural, Mid Portion and EJ, WC view of MJB at km. 85+440

Minor Bridge

Structural View of MNB at km. 115+000

Wearing Coat View at km. 115+000

Structural View of MNB at km. 112+480

Wearing Coat View at km. 112+480

Expansion Joint & Mid portion of MNB at km. 112+480

Structural View & Expansion Joint of MNB at km. 107+580

Structural, WC, EJ & Mid portion view of MNB at km. 103+420

Structural and Wearing coat view of MNB at km. 84+450 **Structural and Wearing coat view of MNB at km. 71+020**

Structural, wearing Coat & EJ, Mid portion view of MNB at km. 61+720

Structural, WC,EJ and Mid portion view of MNB at km. 57+780
Road Over Bridge (ROB)

Bottom, Side Wearing Coat & EJ view of ROB at km. 90+030

Side, Bottom, Wearing Coat & EJ view of ROB at km. 80+492

Side, Bottom & Wearing Coat View of ROB at km. 67+570

Road Under Bridge (RUB)

Side and Bottom View of RUB at km. 58+870

Vehicular Underpass (VUP)

View of Structurecture, REW, Bottom and wearing Coat at km. 92+500-VUP

Structural view of VUP at km.89+644

Structural view of VUP at km.82+080

Structural & Retaining Wall view of VUP at km. 78+614

Structural View of VUP at km. 74+240

Structural and Retaining Wall View of VUP at km. 55+350

Pedestrian / Cattle Underpass (PUP / CUP)

Structural View of PUP at km. 68+240

Structural View of PUP at km. 64+877

3.5 Condition Survey of Culvert

The cross-drainage structure includes hume pipe culverts, box culverts and slab culverts at various locations. There are 88 Nos. of pipe culverts, 40 Nos. of box culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts is satisfactory. The RCC railing has not been provided at culvert locations.

In most of culverts, the waterway is clear. However, near to urban area and some location, it is found blocked due to debris, drainage water or bushes, tree growth which must be removed and cleaned before and after monsoon to clear waterway. The wing wall has been provided for slope protection.

The culverts are maintained by the Annuity Concessionaire during O&M period. However, in case of some culverts, damaged wing walls have been observed at culverts, which need to be addressed under routine maintenance by Annuity Concessionaire.

Figure 3-8 Photographs of Box Culvert / Pipe Culvert

km. 44+800

km. 53+300

km. 68+950

km. 70+00

km. 70+100

km. 76+137

km. 77+800

km. 79+150

km. 83+300

km. 85+100

km. 91+300

km. 98+350

3.6 Drainage

There are 14,210 linear meter reinforced concrete covered drain with footpath constructed newly in the built-up area as well as in the locations where service roads are provided.

The photographs taken during site visit is presented below:

Figure 3-9 Photographs of Existing Drains (RHS)

km. 83+500

km. 82+080

km. 78+750

km. 74+240

km. 64+877

km. 57+000

Figure 3-10 Photographs of Existing Drains (LHS)

km. 78+614

km. 55+350

3.7 Slope Protection

There have been found at many locations slope protection and chute drains in damaged condition. The same will be rectified by the Annuity Concessionaire.

The photographs taken during site visit is presented as below:

Figure 3-11 Photographs of Slope Protection and Chute Drain

km. 115+00-RHS

km. 115+00-LHS

km. 112+480-LHS

km. 109+200-RHS

km. 90+030-RHS

km. 85+440-RHS

km. 84+450-RHS

km. 84+450-LHS

km. 82+080-RHS

km. 80+492-LHS

3.8 Road Furniture

The Concessionaire has provided the following additional road furniture along the Project Road as per standards and specifications mentioned in Schedule-C. The details of the items are provided below.

a) Transverse / Thermoplastic Bar Marking Locations

Transverse / thermoplastic bar markings are provided on either side of carriageway on proposed service road / VUP / VUP approaches.

b) New Installation of Safety Barriers

The Concessionaire has installed new safety barriers at the following locations.

Table 3-3 Details of New Installation of Safety Barriers

Sr. No.	Chainage (km)		Length (m)	Location	Type of Barrier
	From	To			
1	109+650	110+380	730	BHS	Rigid Crash Barrier

c) Pedestrian Guard Rails

The Concessionaire has provided 5,700 linear meter of pedestrian guard rail along the Project Road.

d) Additional Gantry / Cantilever Sign Board

The Concessionaire has provided 2 nos. of cantilever overhead sign board at VUP locations along Project Road.

e) Summary of Quantity for Road Furniture Items

The following details show the summary of quantity for road furniture items provided by Annuity Concessionaire.

Table 3-4 Summary for Road Furniture Items

Sr. No.	Description	Unit	Quantity
1	Solar Blinkers	Nos.	Nil
2	Streetlights	m	Nil
3	High Mast Lights	Nos.	Nil
4	Transverse Bar Makings / Thermoplastic Bar Markings	km.	14.20
5	New installation of Safety Barriers		
	W-Beam Safety Barriers	m	Nil
	Concrete Median Barrier	m	Nil
	Rigid Concrete Barrier	m	1460.00
6	Guard Posts	m	Nil
7	Pedestrian Guard Rails	m	11400.00
8	Road Studs / Raised Pavement Markers	As per Section 9 of IRC:SP:84-2014	
9	Road Markings		
10	Traffic Delineators		
11	Kilometer / Hectometer / Boundary Stones		
12	Additional Sign Boards		

Sr. No.	Description	Unit	Quantity
	Gantry Sign Boards	Nos.	Nil
	Cantilever Sign Boards	Nos.	6
	Shoulder Mounted Dual Post Sign Boards	As per Section 9 of IRC:SP:84-2014	
	Shoulder Median Mounted Single Post Sign Boards		

3.9 Pavement Marking

The pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Pavement marking is faded at some locations which will be rectified by the Annuity Concessionaire. Some of the photographs of road marking are presented below:

Figure 3-12 Photographs of Pavement Marking

km. 114+900

km. 100+900

km. 98+000

LHS

km. 49+800

km. 60+100

km. 86+000

Road Studs

Road studs for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Road studs have been fixed at junction, edge of paved shoulder and at zebra crossing. However, at few locations some road studs have damaged which will be rectified by the Annuity Concessionaire. Some of the photographs of road studs are presented below.

Figure 3-13 Photographs of Road Studs

km. 103+600-RHS

km. 99+900-RHS

km. 51+00-LHS

km. 62+500-LHS

Traffic Signage / Median Kerb Painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The traffic signs along the Project Road is provided as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and at urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards and median kerb paint are faded at few locations. The Annuity Concessionaire will rectify the same.

Some of the photographs of sign boards are presented below.

Figure 3-14 Photographs of Road Signages

RHS

km. 114+900

km. 114+000

km. 112+480

km. 110+900

km. 97+400

km. 93+200

km. 93+250

km. 92+900

km. 89+200

km. 87+150

km. 83+800

km. 47+500

LHS

km. 51+000

km. 51+000

km. 52+250

km. 52+950

km. 52+950

km. 72+700

km. 73+750

km. 81+450

km. 108+000

Highway Lighting / Solar Blinker

Highway lighting is provided at underpasses, flyovers, toll plaza, ROBs and built-up locations. High mast lighting is provided at toll plaza location as well as on major locations.

Solar amber blinker signals are provided at each median opening location. These lights need to be maintained by the Annuity Concessionaire. Regular maintenance work should be carried out to ensure their efficient operation.

Some of the photographs of highway lightings are presented below.

Figure 3-15 Photographs of Street Light

km. 114+00

km. 107+400

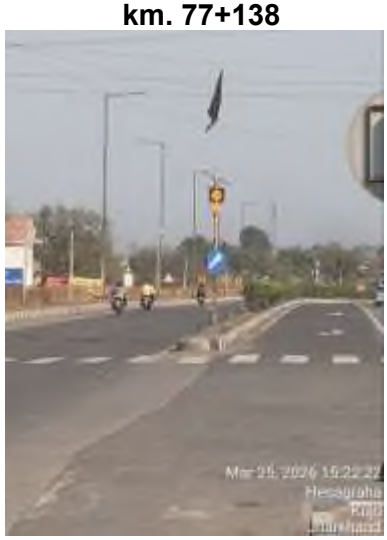
km. 104+100

km. 90+030

km. 77+138

km. 74+00

km. 72+770


km. 73+750

km. 80+600

Crash Barriers

Concrete & Metal beam crash barriers are provided at bridge approaches, locations of high embankment and at sharp curves. All the crash barriers provided and maintained by the Annuity Concessionaire. Some of the photographs of metal beam crash barriers are presented below.

Figure 3-16 Photographs of MBCB / Crash Barrier

km. 115+00-RHS

km. 115+00-LHS

km. 109+200-RHS

km. 109+200-LHS

km. 92+500-RHS

km. 90+030-RHS

km. 85+440-RHS

km. 84+450-LHS

km. 71+020-LHS

km. 67+570-RHS

km. 61+720-LHS

km. 57+780-LHS

Delineators

The traffic delineators are provided and maintained by Annuity concessionaire for the Project Road. However, regular maintenance work should be carried out to ensure their efficient operation. Some of the photographs of delineators are presented below.

Figure 3-17 Photographs of Delineator

km. 50+050

km. 53+300

km. 68+950

km. 99+900

Pedestrian Guard Rail

The pedestrian guard rails are provided at median between service road and main carriageway. It is maintained by Annuity Concessionaire. However, regular maintenance work should be carried out to ensure their efficient purpose. Some of the photographs of pedestrian guard rails are presented below.

Figure 3-18 Photographs of Pedestrian Guard Rail

km. 114+00-RHS

km. 89+200-RHS

km. 74+00-RHS

km. 46+00-LHS

km. 63+150-LHS

km. 73+750-LHS

Road Land Boundary

Road land boundary pillars are available in project length. It is maintained by Annuity Concessionaire. However, the paint of RLB has faded at all locations which needs to be re-painted. Some of the photographs of road boundary pillars are presented below.

Figure 3-19 Photographs of Road Land Boundary

km. 67+570-RHS

km. 68+00-LHS

3.10 Avenue Plantation and Median Plantation

This project length passes through the dense forest zone. However, Annuity Concessionaire has provided avenue plantation on both side of the main carriageway as well as median plantation.

Some of the photographs taken during the site visit are presented below.

Figure 3-20 Photographs of Median Plantation

km. 112+480

km. 100+800

km. 91+600

km. 84+900

km. 80+200

km. 70+050

Figure 3-21 Photographs of Avenue Plantation

km. 84+900-RHS

km. 67+00-RHS

km. 52+00-RHS

km. 45+00-LHS

km. 49+800-LHS

km. 60+100-LHS

3.11 Toll Plaza

There is one existing toll plaza at km.100+600 near Pundag village in the Project Road with the following infrastructure.

Table 3-5 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 100+600
2	Number of Tolling Lanes	14 lanes including 2 for over dimensional lanes
3	Weigh in Motion Facility (Number of Lanes)	Yes, in every lane
4	No. of ETC Lanes	12
5	Number of Toll Booths	14 Nos.
6	Canopy	Yes
7	Administrative Building	Yes
8	Parking cum Toilet Block	Yes (02 Nos.)
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	Yes
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	Not Available
12	Storage facility for Overloaded Material	Not Available
13	High mast Light	Yes
14	Streetlight	Yes
15	Low mast Light	Not Available
16	User Fee Boards	Yes
17	Cantilever / Gantry Boards	Available

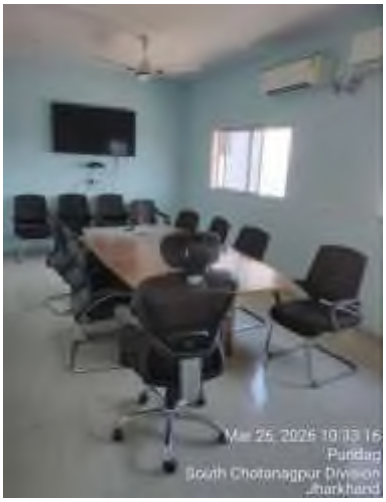
Note:

- *Rehabilitation work of Toll Plaza is generally completed.*
- *TOT Concessionaires maintains only Toll Plaza activities as per scope of work.*
- *ATMS / HTMS is in the scope of Annuity concessionaire.*

Figure 3-22 Photographs of Toll Plaza

Signages Boards & Highmast at Toll Plaza

Toll Plaza and admin Building View



Tunnel & office inside view of office building

View of Weigh Bridge, Fog Light & DG room at Toll Plaza

3.12 Lane Equipment

Following are the Lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.12.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 3 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

RFID ETC Transceiver

3.12.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside the Tunnel. Each toll booth which are connected to the common server and are capable of independent storage of data.

Lane Controller in Toll Tunnel

3.12.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVCC at Toll Lane

3.12.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6-0.9 sec. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at Toll Lane

3.12.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

Lane Traffic Light and User Fare Display

3.12.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on the island of the booth to capture the image of the vehicle from the back side. The AVC triggers the image capture system.

AVC Camera

3.12.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

LPIC

3.12.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane “Open” and “Close” sign consists of a pair of “GREEN” (arrow) and “RED” (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

Overhead Lane Signal (OHLS)

3.12.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for registration of toll operations and is customized for different vehicle types and type of ticket.

Thermal Printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.
Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.12.10 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

MSWIM on entry lane

3.13 Plaza Equipment

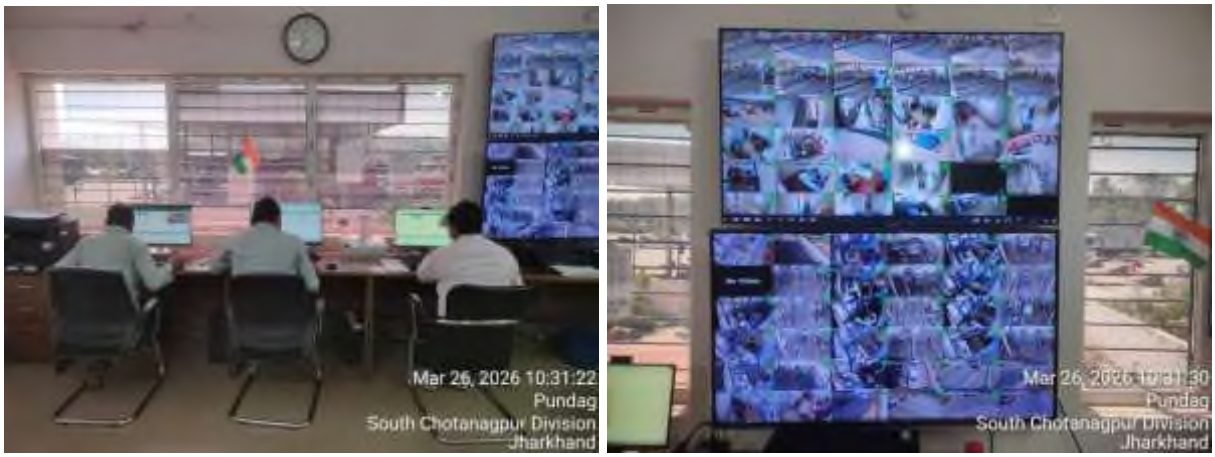
3.13.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio Wi Fi module. Firewall with Sophos antivirus is provided.

Server

3.13.2 55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).



LED Screen

The Toll Plaza Manager is able to observe the activities at the toll lanes and toll booth. When the Toll Collector calls up on the intercom, the Manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.13.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.

POS Cabin

3.14 Truck Lay-byes

The following are the Truck Lay-bye cum Rest Room locations.

Figure 3-23 Details of Truck Lay-bye

Sr. No.	Chainage (km)	Side
1	104+100	RHS
2	60+300	RHS
3	60+150	(LHS)
4	75+100	(LHS)

Some of the photographs taken during the site visit are presented below.

Figure 3-24 Photograph of Truck Lay-bye

km. 60+150-LHS

km. 75+100-LHS

km.104+00-LHS

km. 104+100-RHS

km. 75+00-RHS

km. 60+300-RHS

3.15 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Post are in the scope of Annuity Concessionaire.

3.16 Toilet Block

There are 02 Nos. of Toilet Block on Project Road. The same is maintained by Annuity Concessionaire.

Some of the photographs taken during the site visit are presented below.

Figure 3-25 Photographs of Toilet Blocks

RHS

LHS

3.17 Bus Bays and Passenger Shelters

There are 22 nos. of bus bays / passenger shelters along Project Road. All are maintained by the annuity concessionaire.

Some of the photographs are presented below:

Figure 3-26 Photographs of Bus Bay / Passenger Shelter

km. 100+200-RHS

km. 95+200-RHS

km. 70+800-RHS

km. 47+600-LHS

km. 63+150-LHS

km. 87+600-LHS

3.18 Balance Work Status

During the site visit, it has been observed that TOT Concessionaire has expedited the work at site. However, due to some hindrance at two locations work is yet to start. The reasons for delay in work completion are due to unavailability of ROW and non-shifting the utility and encroachments and forest tree cutting permission. The status of work as on date is summarized in the table below.

Sr. No.	Chainage (km)		Length (m)	Scope / Status of Work	Remark
	From	To			
1	41+500	42+900	2800	Construction of Service Road & Drain works is in progress	Due to late permissions and approval from electrical and forest Dept. Work start late however presently utility works and Tree cutting works has completed and the work is in progress.
2	43+600	44+250	1300	Construction of Service Road & Drain works is in progress	Due to late permissions and approval from electrical and forest Dept. Work start late however presently utility works and Tree cutting works has completed and the work is in progress in the said chainage.
3	46+685	47+400	1430	Construction of Service Road & Drain works is in progress	Due to late permissions and approval from electrical and forest Dept. Work start late however presently utility works and Tree cutting works has completed and the work is in progress in the said chainage.
4	48+400	49+300	1800	Work is in progress	Due to late permissions and approval from electrical and forest Dept as well as encroachment, work start late & presently work is in progress.
5	56+850	57+100	500	Work is in progress	Due to late permissions and approval from electrical and forest Dept as well as encroachment, work start late & presently work is

Sr. No.	Chainage (km)		Length (m)	Scope / Status of Work	Remark
	From	To			
					in progress.
6	63+150	64+350	2400	• Drain – 2500 m Constructed • Service Road - 2000 m BC Completed.	Due to late permissions and approval from electrical and forest Dept. Work start late however presently utility works and Tree cutting works has completed and the work is in progress in the said chainage.
7	78+400	79+000	1200	• Retaining Wall - 800 m completed • Drain – 950 m completed • Service Road - Earthwork in Progress	Due to late permissions and approval from electrical and forest Dept. Work start late, however, presently utility works and Tree cutting works has completed and the work is in progress in the said chainage.
8	81+840	82+350	1020	• Retaining Wall - 620 m completed • Drain – 1000 m completed • Service Road - 620m BC completed. • GSB & WMM Work is in Progress.	Due to late permissions and approval from electrical and forest Dept. Work start late however presently utility works and Tree cutting works has completed and the work is in progress as well as there is no hindrance in the chainage.
9	109+650	110+380	1460	• Drain – 700 m Completed • Service Road - 800m BC Completed remaining 660 m is Hindered.	VUP construction is not started due to late decision from IE/NHAI. IE has recommended the COS to NHAI vide their letter no. UIC-SAICPL/O&M/HZB-RNC/NH-33/2025/5188 dated 13.01.2025. Further Part Utility Shifting (Electrical), is pending due to standing encroachments which is also pending at NHAI end.
10	110+450	110+600	300	• Drain – 300 m completed • Service Road - 150 m BC completed	
11				Rehabilitation work at Toll Plaza	Work Completed

3.19 Operation and Maintenance

3.19.1 O&M Contract

As per Clause 15.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect

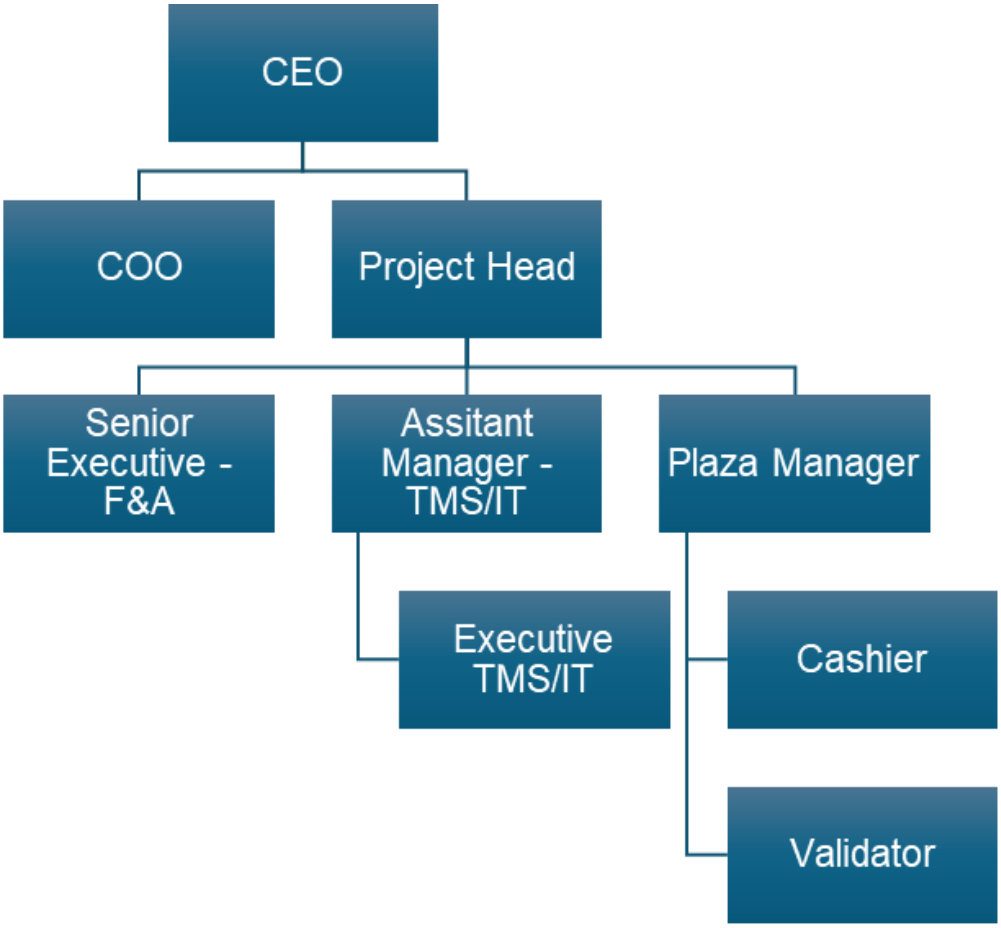
to toll systems. The Operation and Maintenance activities shall conform to all the requirements laid down in MoRT&H, IRC Specifications, and the Concession Agreement.

The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

3.19.2 Organization Chart

The Concessionaire has given the Organization Chart at site for operation and maintenance. Accordingly, there is 01 Project Head, 01 Senior Executive (F&A), 01 Assistant Manager (TMS / IT), 01 Executive (TMS / IT), 01 Plaza Manager, 03 Cashiers and 04 validators to carry out O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent sub-contractors.

Organization Chart



3.19.3 Operation

The Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have been made from the expenses of similar types of projects to arrive at the operation

cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.19.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

Currently, the Project Road is maintained by Annuity Concessionaire. The project will be handed over to TOT Concessionaire in March 2028. Hence, routine maintenance is considered from the year 2028 till end of concession period.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Annuity Concessionaire as per the Scope of Work. The Annuity Concessionaire has received Completion Certificate on 13th April 2013.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 30 years from the Appointed Date (as TOT Package i.e., 20th October 2020) including construction period. The project will be handed over to TOT Concessionaire in March 2028.

4.2 Axle Load and VDF

The Concessionaire has conducted the Axle Load Survey on Project Road at km. 100+600 (near Toll Plaza) on 28th May 2019. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor

Sr. No.	Vehicle Type	Direction	
		Hazaribagh - Ranchi	Ranchi - Hazaribagh
1	BUS	1.33	0.94
2	LCV	2.33	0.93
3	2-Axle	2.98	1.76
4	3-Axle	6.31	5.17
5	MAV	16.32	17.00

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data as provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
2026-27	7.39	**7.39**	7.28	**7.28**	
2027-28	7.01	**14.40**	6.91	**14.19**	
2028-29	6.99	**21.39**	6.90	**21.09**	
2029-30	7.36	**28.75**	7.28	**28.37**	
2030-31	7.72	**36.47**	7.64	**36.01**	
2031-32	8.11	**44.58**	8.03	**44.04**	
2032-33	8.52	**53.10**	8.45	**52.49**	
2033-34	8.96	**62.06**	8.89	**61.38**	
2034-35	9.41	**71.47**	9.34	**70.72**	PCU crossed 40000
2035-36	9.88	**81.35**	9.82	**80.54**	PCU crossed 40000
2036-37	10.37	**91.72**	10.32	**90.86**	PCU crossed 40000

Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
2037-38	10.89	**102.61**	10.84	**101.70**	DPR Preparation
2038-39	11.42	**114.03**	11.38	**113.08**	DPR Preparation
2039-40	11.98	**126.01**	11.95	**125.03**	6Lane Construction
2040-41	12.56	**138.57**	12.53	**137.56**	6Lane Construction
2041-42	13.16	**151.73**	13.14	**150.70**	6Lane Construction
2042-43	11.19	**162.92**	11.19	**161.89**	
2043-44	11.72	**174.64**	11.72	**173.61**	
2044-45	12.26	**186.90**	12.27	**185.88**	
2045-46	12.83	**199.73**	12.85	**198.73**	
2046-47	13.42	**213.15**	13.44	**212.17**	
2047-48	14.02	**227.17**	14.06	**226.23**	
2048-49	14.65	**241.82**	14.70	**240.93**	
2049-50	15.30	**257.12**	15.36	**256.29**	
2050-51	15.95	**273.07**	16.02	**272.31**	End of concession period as per Appointed date & CA

4.4 Network Survey Vehicles (NSV) Survey

The O&M is not under the scope of Concessionaire / Client.

4.5 Structural Investigations

The O&M is not under the scope of Concessionaire / Client.

4.6 Test pit and Subgrade Investigation

The O&M is not under the scope of Concessionaire / Client.

4.7 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full-length periodic maintenance. Schedule-F of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. Only improvement to Riding Quality is expected if the roughness value exceeds 3000 mm/km.

As per Article 14 of CA, the Authority shall carry out capacity augmentation under EPC contract if traffic exceeds 40,000 PCU for three consecutive accounting years. As per the traffic study report submitted by the Company it is observed that the project traffic crosses 40,000 PCU in FY 2035, FY 2036, FY 2037. Assumption has made that execution of 6-laning of project highway will start in the year 2040 or 2041. It is also assumed that during 6-laning of Project Road, overlay of existing four lane road will be the part of the capacity augmentation. Hence, the major maintenance cycle is adjusted accordingly.

The table below shows the major/ periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-3 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2027 to FY 2027	-	-
2	FY 2028	Handing over of Project Site from Annuity Concessionaire	
3	FY 2029 to FY 2030	-	-
4	FY 2031	Major Maintenance with 30 mm BC (PMB) (100%) + Milling & 50 mm DBM (VG-40) (100%)	Major Maintenance with 30 mm BC (VG-40) (50%) + Micro-surfacing (50%)
5	FY 2032 to FY 2037	-	-
6	FY 2038	Major Maintenance with 30 mm BC (PMB) (100%) + Milling & 50 mm DBM (VG-40) (5%)	Major Maintenance with 30 mm BC (VG-40) (50%) + Micro-surfacing (50%)
7	FY 2039 to FY 2041	-	-
6	FY 2042	Assumption of Capacity Augmentation to Six Lane Configuration	
7	FY 2043 to FY 2046	-	-
8	FY 2047	Major Maintenance with 30 mm BC (VG 40) (100%) + Milling & 50 mm DBM (VG-40) (5%)	Major maintenance with 30 mm BC (VG-40) (50%) + Micro-surfacing (50%)
9	FY 2048 to FY 2050	-	-
11	FY 2051	End of concession period	

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1 Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per Jharkhand SoR 2021-22. The input rates for MoRTH standard data book were adopted as below:

a. Manpower and labour: As per applicable minimum wages published by Schedule of Rates, Government of Bihar.

b. Bitumen: Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards, since bitumen prices have been range bound over the last five-six years. Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg last 10 years)
Mathura	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Panipat	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Koyali	All States	VG-10	47,102	37,125
		VG-30	48,402	38,137
		VG-40	51,082	40,251
Haldia	All States	VG-10	46,602	35,683

Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg last 10 years)
		VG-30	47,402	36,295
		VG-40	49,962	38,256
Barauni	All States	VG-10	47,132	36,213
		VG-30	48,432	37,325
		VG-40	50,992	39,286
CPCL	Kerala	VG-10	47,402	35,519
		VG-30	48,402	36,395
		VG-40	50,762	38,120
CPCL	Tamil Nadu	VG-10	47,902	36,019
		VG-30	48,402	36,395
		VG-40	50,962	38,320
CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320
CPCL	Karnataka	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320

c. Sand and Aggregate: Market rates are considered from the quarry located nearest to Project Road.

d. Cement: Market rates are considered from the nearest local market.

e. Steel : Rate of steel is taken from market rate.

f. Machinery Hire charges: Hire charges for the machinery are considered in accordance with MoRTH standard data book.

g. Actual Rates of items as per work order: The rates of road marking, road stud, kerb raising, micro surfacing, milling rates etc. are considered as per the work order shared by the client.

1. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam (VG-40)	Cum	8,833
2	Bituminous Concrete (VG-40)	Cum	10,249
3	Bituminous Concrete (VG-30)	Cum	9,952
4	Bituminous Concrete (PMB 70-10E)	Cum	12,491
5	Milling	Sqm	92
6	Micro-surfacing	Sqm	162
7	Kerb Re-laying	Rmt	311
8	Road Marking	Sqm	503
9	Road Studs	Nos.	179

5.3 Balance Work Cost

The Concessionaire has provided the details of balance work. The total cost of Balance Work is Rs. 89.56 Crores.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance, and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Incident Management Services
4. Electricity and Diesel Charges
5. TMS / HTMS / System Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Insurance Expense
10. IE Fees
11. Horticulture & ROW Maintenance
12. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

Currently, the Project Road is maintained by existing Annuity Concessionaire. The project will be handed over to TOT Concessionaire in March 2028. Hence, the routine maintenance and horticulture maintenance is considered from year 2028 till end of concession period. The Routine Operation and Maintenance cost (Routine O&M) is presented below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027-28)	After Annuity Amount (FY 2029-42)	After Capacity Augmentation (FY 2043-51)
1	Salary and Welfare Expenses	1,11,27,600	1,11,27,600	1,11,27,600
2	Tolling Operations Services	4,09,35,032	4,09,35,032	4,09,35,032

Sr. No.	Particulars	Amount (FY 2027-28)	After Annuity Amount (FY 2029-42)	After Capacity Augmentation (FY 2043-51)
3	Toll Security Services	69,11,071	69,11,071	69,11,071
4	Incident Management & Emergency Services	-	2,51,42,257	2,51,42,257
5	Electricity and Diesel Charges	25,95,133	92,33,930	92,33,930
6	TMS / HTMS / System Expenses	20,69,760	92,50,498	77,38,617
7	Office Operating Expenses	32,53,663	32,53,663	32,53,663
8	Vehicle Running Expenses	36,00,000	36,00,000	36,00,000
9	Professional Fees Expense	1,01,97,570	1,25,17,585	1,36,77,593
10	Community Development	7,78,508	7,78,508	7,78,508
11	Communication Expenses	3,62,250	3,62,250	3,62,250
12	Conveyance Expenses	3,95,182	3,95,182	3,95,182
13	Insurance Expense	32,93,182	32,93,182	32,93,182
14	IE Fees	32,93,182	32,93,182	32,93,182
15	Routine Maintenance Cost (Project Road)	-	2,73,31,831	4,09,57,739
16	Horticulture & ROW Maintenance	-	2,07,87,617	2,07,87,617
17	Miscellaneous including Contingency	35,52,485	52,03,758	51,89,683
	Total Cost (Rs.)	**9,23,64,618**	**18,34,17,145**	**19,66,77,105**
	Total Cost (Cr.)	**9.24**	**18.34**	**19.67**
	Per km Cost (Lakhs)	12.52	24.86	26.65

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Table 5-4 Summary of Major Maintenance Cost

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2028	-	Handing over of Project Site
2	FY 2029 to FY 2030	-	
3	FY 2031	170.69	
4	FY 2032 to FY 2037	-	
5	FY 2038	90.28	
6	FY 2039 to FY 2046	-	
7	FY 2047	100.48	
8	FY 2048 to FY 2050	-	
9	FY 2051	-	End of Concession period
Total Cost (Cr.)		**361.45**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2028	2.11	
2	FY 2035	7.71	
3	FY 2042	7.71	

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
4	FY 2049	7.71	
Total Cost (Cr.)		**25.24**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-5 Escalation

Year	Escalation	Year	Escalation
2025	-	**2041**	3.99%
2026	-	**2042**	3.99%
2027	5.25%	**2043**	3.99%
2028	4.86%	**2044**	3.99%
2029	4.44%	**2045**	3.99%
2030	4.24%	**2046**	3.99%
2031	4.13%	**2047**	3.99%
2032	4.08%	**2048**	3.99%
2033	4.01%	**2049**	3.99%
2034	4.00%	**2050**	3.99%
2035	4.03%	**2051**	3.99%
2036	4.01%	**2052**	3.99%
2037	3.98%	**2053**	3.99%
2038	3.98%	**2054**	3.99%
2039	4.00%	**2055**	3.99%
2040	3.99%	**2056**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summarised yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr.)

Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41	FY42	FY43	FY44	FY45	FY46	FY47	FY48	FY49	FY50	FY51
Routine O&M Cost																									
Salary and Welfare Expense	1.11	1.17	1.22	1.27	1.32	1.38	1.43	1.49	1.55	1.61	1.68	1.74	1.81	1.88	1.96	2.04	2.12	2.20	2.29	2.38	2.48	2.58	2.68	2.79	2.90
Tolling Operations Services	4.09	4.29	4.48	4.67	4.87	5.06	5.27	5.48	5.70	5.93	6.16	6.41	6.67	6.93	7.21	7.50	7.79	8.11	8.43	8.77	9.12	9.48	9.86	10.25	10.66
Toll Security Services	0.69	0.72	0.76	0.79	0.82	0.86	0.89	0.92	0.96	1.00	1.04	1.08	1.13	1.17	1.22	1.27	1.32	1.37	1.42	1.48	1.54	1.60	1.66	1.73	1.80
Incident Management Services	-	-	2.75	2.87	2.99	3.11	3.24	3.36	3.50	3.64	3.79	3.94	4.09	4.26	4.43	4.60	4.79	4.98	5.18	5.38	5.60	5.82	6.05	6.30	6.55
Electricity and Diesel Charges	0.26	0.27	1.01	1.05	1.10	1.14	1.19	1.24	1.29	1.34	1.39	1.45	1.50	1.56	1.63	1.69	1.76	1.83	1.90	1.98	2.06	2.14	2.22	2.31	2.40
TMS/HTMS/System Expenses	0.31	0.33	0.60	0.81	1.13	1.37	1.63	1.70	0.43	0.80	1.07	1.49	1.81	2.15	2.23	0.57	1.05	1.41	1.96	2.38	2.83	2.94	0.75	1.38	1.85
Office Operating Expenses	0.33	0.34	0.36	0.37	0.39	0.40	0.42	0.44	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.60	0.62	0.64	0.67	0.70	0.72	0.75	0.78	0.81	0.85
Vehicle Running Expenses	0.36	0.38	0.39	0.41	0.43	0.45	0.46	0.48	0.50	0.52	0.54	0.56	0.59	0.61	0.63	0.66	0.69	0.71	0.74	0.77	0.80	0.83	0.87	0.90	0.94
Professional Fees Expense	1.02	1.07	1.37	1.43	1.49	1.55	1.61	1.68	1.74	1.81	1.88	1.96	2.04	2.12	2.20	2.29	2.60	2.71	2.82	2.93	3.05	3.17	3.29	3.42	3.56
Community Development	0.08	0.08	0.09	0.09	0.09	0.10	0.10	0.10	0.11	0.11	0.12	0.12	0.13	0.13	0.14	0.14	0.15	0.15	0.16	0.17	0.17	0.18	0.19	0.19	0.20
Communication Expenses	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09	0.09
Conveyance Expenses	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.09	0.09	0.10	0.10	0.10
Insurance Expense	0.33	0.35	0.36	0.38	0.39	0.41	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.63	0.65	0.68	0.71	0.73	0.76	0.79	0.82	0.86
IE Fees	0.33	0.35	0.36	0.38	0.39	0.41	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.63	0.65	0.68	0.71	0.73	0.76	0.79	0.82	0.86
Routine Maintenance Cost	-	-	2.99	3.12	3.25	3.38	3.52	3.66	3.81	3.96	4.12	4.28	4.45	4.63	4.81	5.00	7.80	8.11	8.43	8.77	9.12	9.48	9.86	10.26	10.67
Horticulture & ROW Maintenance	-	-	2.28	2.37	2.47	2.57	2.68	2.78	2.89	3.01	3.13	3.25	3.38	3.52	3.66	3.81	3.96	4.12	4.28	4.45	4.63	4.81	5.01	5.21	5.41
Miscellaneous and Contingency	0.36	0.37	0.57	0.59	0.62	0.64	0.67	0.70	0.72	0.75	0.78	0.81	0.85	0.88	0.92	0.95	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.30	1.35
Subtotal of O&M Cost	9.34	9.79	19.68	20.69	21.83	22.92	24.05	25.01	24.68	26.02	27.29	28.76	30.17	31.64	32.90	32.46	37.02	38.82	40.86	42.83	44.90	46.69	46.24	48.69	51.05
Major Maintenance Cost	-	-	-	-	190.71	-	-	-	-	-	-	120.56	-	-	-	-	-	-	-	-	175.33	-	-	-	-
Periodic Cost of TMS/ HTMS Replacement	-	2.22	-	-	-	-	-	-	10.73	-	-	-	-	-	-	14.11	-	-	-	-	-	-	18.56	-	-
Balance Works Cost	89.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Cost	**98.90**	**12.01**	**19.68**	**20.69**	**212.55**	**22.92**	**24.05**	**25.01**	**35.41**	**26.02**	**27.29**	**149.32**	**30.17**	**31.64**	**32.90**	**46.57**	**37.02**	**38.82**	**40.86**	**42.83**	**220.23**	**46.69**	**64.80**	**48.69**	**51.05**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost (Up to FY 2042)	
Ordinary Repair Cost for Flexible (with GST)	**2,73,31,831**
(Inclusive of GST)	**= 3.7 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal**	**Urban**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				More than 4500 CVD	More than 4500 CVD				
				1,97,637	**2,39,405**	**Normal**	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	302385.00	366289.00	-	-	-	-
		Paved shoulder	1.70	335983.00	406988.00	60.47	-	2,03,17,900	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	395274.00	478809.00	-	-	-	-
		Paved shoulder	2.20	434802.00	526690.00	-	13.32	-	70,13,931
					TOTAL		**73.790**		**2,73,31,831**

Routine Maintenance Cost (From FY 2043 onwards)	
Ordinary Repair Cost for Flexible (with GST)	**4,09,57,739**
(Inclusive of GST)	**= 5.55 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal**	**Urban**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				More than 4500 CVD	**More than 4500 CVD**				
				1,97,637	**2,39,405**	**Normal**	**Urban**	**Normal**	**Urban**
1	Six lane with divided carriageway	without Paved shoulder	2.43	480258.00	581753.00	-	-	-	-
		with Paved shoulder	2.60	513857.00	622452.00	60.47	-	3,10,74,474	-
2	Six lane with divided carriageway and service lane on either side	without Paved shoulder	2.90	573148.00	694273.00	-	-	-	-
		with Paved shoulder	3.10	612675.00	742154.00	-	13.32	-	98,83,265
					TOTAL	**73.790**			**4,09,57,739**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Potholes repair (50 mm deep)	100 % Pothole free	As & when required	0.50%
	Volume (cum)			2.50
	Rs/m^3			10532
	Cost in Rupees			26,329
	ii) Patch repair	100 % Patch less	As & when required	0.50%
	Area (sqm)			50
	Rs/m^2			421
	Cost in Rupees			21,063
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			85
	Cost in Rupees			21,152
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.50%
	Area (sqm)			187.5
	Rs/m^2			55
	Cost in Rupees			10,377
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			421
	Cost in Rupees			31,595
	v) Road marking	14%	Once in 7th year & @ Repaired location	23279
	SUB TOTAL			**1,33,795**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**7,414**
3	**Maintenance of Cross Drainage works:**			
	i) Repair of floors	100%	Once in a Year	5055
	ii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			**7,161**
4	**Maintenance of Minor & Major Bridges:**			
	i) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints	100%	As & when required	36,950
	ii) Repair of minor washouts, erosion scour and animal holes			
	iii) Sealing Cracks with Cement/ Epoxy Mortar			
	iv) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometre stone etc.		Once in a Year	3695
	ii) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7390
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232
	iv) Traffic Census		Once in a Year	0

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	v) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**12,317**
	GRAND TOTAL (Normal)			**1,97,637**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Centre Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	11961
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**41,767**
	GRAND TOTAL (Urban)			**2,39,405**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY - 2031)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						23,97,627	13	2,99,94,310
	For BC	Sqm	2	72,633	8.75		12,71,076	12,71,076		
	For DBM	Sqm	2	73,089	7.00		10,23,245	10,23,245		
	For Misc. Location	Sqm	2	5,903	8.75		1,03,306	1,03,306		
2	BC with 30 mm	Cum	2	78,536	8.75	0.03	41,231	41,231	12,491	51,50,11,831
3	DBM with 50 mm	Cum	2	73,089	7.00	0.05	51,162	51,162	8,833	45,19,30,876
4	Geogrid below DBM	Sqm	2	73,089	7.00		10,23,245	10,23,245	115	11,76,73,145
5	Milling	Sqm	2	73,089	7.00		10,23,245	10,23,245	92	9,45,47,814
	Main Carriageway - Rigid Pavement									
6	Joint Sealant Replacement @ 10% length	Rmt	10%	1,311	3.50	4.50	2,065	2,065	51	1,05,295
7	Dismantling of CC Panels @ 5% area	Cum	5%		20,646	0.30	310	310	1,035	3,20,593
8	Replacement of Panels - PQC @ 5% area	Cum	5%		20,646	0.30	310	310	8,479	26,25,726
	Service Road									
9	Tack coat	Sqm	1	14,649	6.33		92,784	92,784	13	11,60,730
10	BC with 30 mm	Cum	1	14,649	6.33	0.03	2,784	2,784	10,249	2,85,28,740
11	Micro Surfacing	Sqm	1	14,649	6.33		92,784	92,784	162	1,50,31,036
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
12	Tack coat	Sqm	1	701	20.2		14,130	14,130	13	1,76,769
13	Wearing Coat BC with 30 mm	Cum	1	701	20.2	0.03	424	424	12,491	52,94,924
14	Milling of Ex. Wearing Coat	Sqm	1	701	20.2		14,130	14,130	92	13,05,636
15	Painting of Crash Barrier	Sqm	4	701		1.20	3,365	3,365	99	3,33,158
	Other Works									
16	Raising of Road Kerb	Rmt	2	99,267			1,98,534	1,98,534	311	6,16,44,751

Major Maintenance Cost (FY - 2031)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
17	Replacement of Road Stud									
	Normal Road Stud	Nos	2	9,020			18,040	18,040	179	32,29,160
	Solar Road Stud	Nos	1	-			-	-	1,976	-
18	Painting of Kerb	Sqm	2	99,267		0.375	74,450	74,450	99	73,70,568
19	Road Marking	Sqm								
	on BC						57,595	57,595	503	2,89,70,064
	on Micro surfacing						3,103	3,103	713	22,13,232
	MCW									
	a) Median & Edge line	Sqm	4	77,480	0.15		46,488			
	b) Lane line	Sqm	2	25,568	0.10		5,114			
	Service Road									
	a) Edge line	Sqm	2	26,634	0.10		5,327			
	b) Lane line	Sqm	1	8,789	0.10		879			
	Junction crossing	Sqm					2,890			
20	Filling of Earthen shoulder	Cum					13,074	13,074	776	1,01,48,633
	MCW		2	72,633	1.50	0.06	13,074			
21	Median Filling	Cum	1	71,080	4.17	-	-	-	334	-
22	Miscellaneous	5%								6,88,80,850
Total Major Maintenance Cost (Rs)										**1,44,64,97,843**
Total Major Maintenance Cost with GST (Rs)										**1,70,68,67,455**
Total Major Maintenance Cost with GST (Cr)										**170.69**
Per km Cost (lakh)										**231.31**
Escalation Factor for Major Maintenance Cost (FY - 2031)										**1.19**
Total Escalated Cost for Major Maintenance Cost (FY - 2031) (Cr)										**190.71**

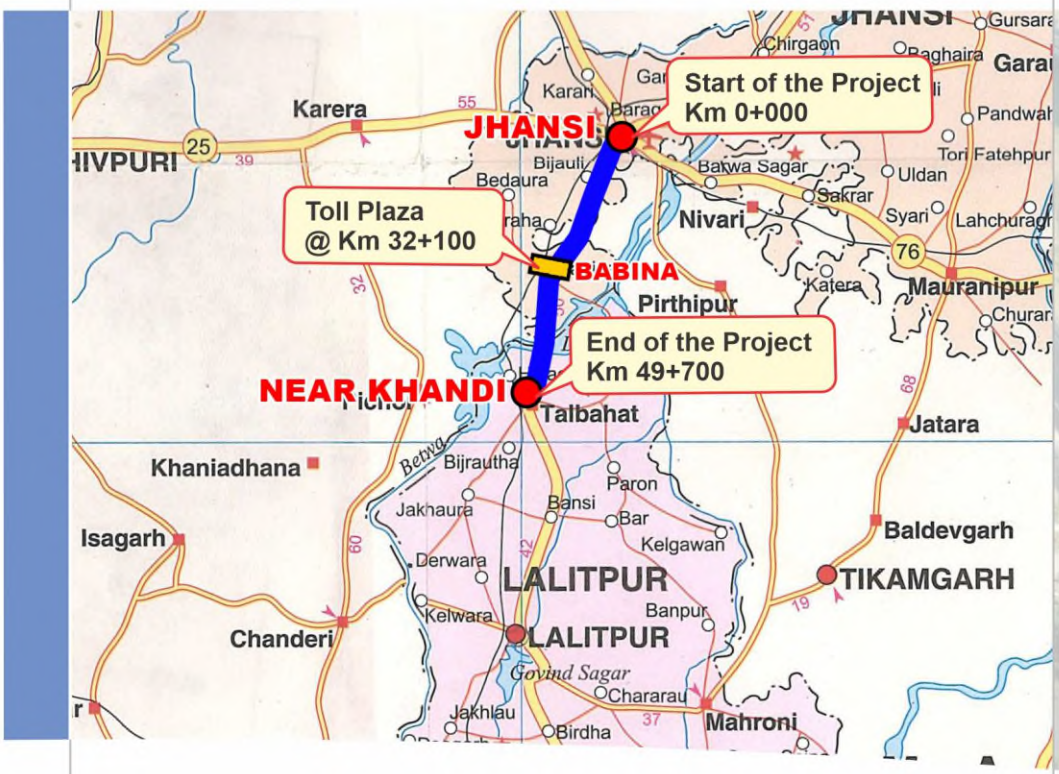
Major Maintenance Cost (FY - 2038)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						14,25,544	13	1,78,33,557
	For BC	Sqm	2	72,633	8.75		12,71,076	12,71,076		
	For DBM	Sqm	2	3,654	7.00		51,162	51,162		
	For Misc. Location	Sqm	2	5,903	8.75		1,03,306	1,03,306		
2	BC with 30 mm	Cum	2	78,536	8.75	0.03	41,231	41,231	12,491	51,50,11,831
3	DBM with 50 mm	Cum	2	3,654	7.00	0.05	2,558	2,558	8,833	2,25,96,544
4	Geogrid below DBM	Sqm	-	3,654	7.00		-	-	115	-
5	Milling	Sqm	2	3,654	7.00		51,162	51,162	92	47,27,391
	Main Carriageway - Rigid Pavement									
6	Joint Sealant Replacement @ 10% length	Rmt	10%	1,311	3.50	4.50	2,065	2,065	51	1,05,295
7	Dismantling of CC Panels @ 5% area	Cum	5%		20,646	0.30	310	310	1,035	3,20,593
8	Replacement of Panels - PQC @ 5% area	Cum	5%		20,646	0.30	310	310	8,479	26,25,726
	Service Road									
9	Tack coat	Sqm	1	14,649	6.33		92,784	92,784	13	11,60,730
10	BC with 30 mm	Cum	1	14,649	6.33	0.03	2,784	2,784	10,249	2,85,28,740
11	Micro Surfacing	Sqm	1	14,649	6.33		92,784	92,784	162	1,50,31,036
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
12	Tack coat	Sqm	1	701	20.2		14,130	14,130	13	1,76,769
13	Wearing Coat BC with 30 mm	Cum	1	701	20.2	0.03	424	424	12,491	52,94,924
14	Milling of Ex. Wearing Coat	Sqm	1	701	20.2		14,130	14,130	92	13,05,636
15	Painting of Crash Barrier	Sqm	4	701		1.20	3,365	3,365	99	3,33,158
	Other Works									
16	Raising of Road Kerb	Rmt	2	99,267			1,98,534	1,98,534	311	6,16,44,751
17	Replacement of Road Stud									

Major Maintenance Cost (FY - 2038)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Normal Road Stud	Nos	2	9,020			18,040	18,040	179	32,29,160
	Solar Road Stud	Nos	1	-			-	-	1,976	-
18	Painting of Kerb	Sqm	2	99,267		0.375	74,450	74,450	99	73,70,568
19	Road Marking	Sqm								
	on BC						57,595	57,595	503	2,89,70,064
	on Micro surfacing						3,103	3,103	713	22,13,232
	MCW									
	a) Median & Edge line	Sqm	4	77,480	0.15		46,488			
	b) Lane line	Sqm	2	25,568	0.10		5,114			
	Service Road									
	a) Edge line	Sqm	2	26,634	0.10		5,327			
	b) Lane line	Sqm	1	8,789	0.10		879			
	Junction crossing	Sqm					2,890			
20	Filling of Earthen shoulder	Cum					13,074	13,074	776	1,01,48,633
	MCW		2	72,633	1.50	0.06	13,074			
21	Median Filling	Cum	1	71,080	4.17	-	-	-	334	-
22	Miscellaneous	5%								3,64,31,417
Total Major Maintenance Cost (Rs)										**76,50,59,757**
Total Major Maintenance Cost with GST (Rs)										**90,27,70,513**
Total Major Maintenance Cost with GST (Cr)										**90.28**
Per km Cost (lakh)										**122.34**
Escalation Factor for Major Maintenance Cost (FY - 2038)										**1.57**
Total Escalated Cost for Major Maintenance Cost (FY - 2038) (Cr)										**120.56**

Major Maintenance Cost (FY - 2047)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						21,37,448	13	2,67,39,480
	For BC	Sqm	2	72,633	13.50		19,61,089	19,61,089		
	For DBM	Sqm	2	3,654	10.50		76,743	76,743		
	For Misc. Location	Sqm	2	3,690	13.50		99,617	99,617		
2	BC with 30 mm	Cum	2	76,322	13.50	0.03	61,821	61,821	10,249	63,36,13,643
3	DBM with 50 mm	Cum	2	3,654	10.50	0.05	3,837	3,837	8,833	3,38,94,816
4	Milling	Sqm	2	3,654	10.50		76,743	76,743	92	70,91,086
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 10% length	Rmt	10%	1,311	3.50	4.50	2,065	2,065	51	1,05,295
6	Dismantling of CC Panels @ 5% area	Cum	5%		20,646	0.30	310	310	1,035	3,20,593
7	Replacement of Panels - PQC @ 5% area	Cum	5%		20,646	0.30	310	310	8,479	26,25,726
	Service Road									
8	Tack coat	Sqm	1	14,649	6.33		92,784	92,784	13	11,60,730
9	BC with 30 mm	Cum	1	14,649	6.33	0.03	2,784	2,784	10,249	2,85,28,740
10	Micro Surfacing	Sqm	1	14,649	6.33		92,784	92,784	162	1,50,31,036
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	701	28.0		19,631	19,631	13	2,45,578
12	Wearing Coat BC with 30 mm	Cum	1	701	28.0	0.03	589	589	10,249	60,35,878
13	Milling of Ex. Wearing Coat	Sqm	1	701	28.0		19,631	19,631	92	18,13,860
14	Painting of Crash Barrier	Sqm	4	701		1.20	3,365	3,365	99	3,33,158
	Other Works									
15	Raising of Road Kerb	Rmt	-	99,267			-	-	311	-
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	9,020			18,040	18,040	179	32,29,160

Major Maintenance Cost (FY - 2047)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Solar Road Stud	Nos	1	-			-	-	1,976	-
17	Painting of Kerb	Sqm	2	99,267		0.315	62,538	62,538	99	61,91,277
18	Road Marking	Sqm								
	on BC						62,964	62,964	503	3,16,70,837
	on Micro surfacing						3,103	3,103	713	22,13,232
	MCW									
	a) Median & Edge line	Sqm	4	77,480	0.15		46,488			
	b) Lane line	Sqm	4	25,568	0.10		10,227			
	Service Road									
	a) Edge line	Sqm	2	26,634	0.10		5,327			
	b) Lane line	Sqm	1	8,789	0.10		879			
	Junction crossing	Sqm					3,146			
19	Filling of Earthen shoulder	Cum					13,074	13,074	776	1,01,48,633
	MCW		2	72,633	1.50	0.06	13,074			
20	Median Filling	Cum	-	71,080	4.17	-	-	-	334	-
21	Miscellaneous	5%								4,05,49,638
Total Major Maintenance Cost (Rs)										**85,15,42,397**
Total Major Maintenance Cost with GST (Rs)										**1,00,48,20,029**
Total Major Maintenance Cost with GST (Cr)										**100.48**
Per km Cost (lakh)										**136.17**
Escalation Factor for Major Maintenance Cost (FY - 2047)										**2.23**
Total Escalated Cost for Major Maintenance Cost (FY - 2047) (Cr)										**175.33**

FP Project Management



Technical Due Diligence of Jhansi - Lalitpur Section [Package-I] of NH - 44 (from km. 0+000 to km. 49+700) in the State of Uttar Pradesh on TOT Mode

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited

315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	13-May-2026	DKR / STP	RMW	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 2
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 8
3.3 Major / Minor Junction 9
3.4 Condition Survey of Bridge 9
3.5 Condition Survey of Culverts 18
3.6 Drainage 20
3.7 Slope Protection 20
3.8 Road Furniture 21
3.9 Avenue Plantation and Median Plantation 25
3.10 Toll Plaza 26
3.11 Lane Equipment 28
3.11.1 RFID ETC Transceiver 28
3.11.2 Lane Controller with Industrial PC 28
3.11.3 Automatic Vehicle Classification (AVC) Sensors 28
3.11.4 Automatic Lane Barrier 29
3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 29

3.11.6 Incident Capture Camera (AVC Camera) 30
3.11.7 License Plate Image Capture Camera (LPIC) 30
3.11.8 Over Head Lane Signal (OHLS) 31
3.11.9 Toll Booth Equipment 31
3.11.10 Medium Speed Weigh in Motion (MSWIM) 32
3.12 Plaza Equipment 33
3.12.1 TMS Server 33
3.12.2 55" LED screen for CCTV monitoring 33
3.12.3 Workstations in Control Room, POS room 33
3.13 Advanced Traffic Management System (ATMS) 34
3.13.1 Automatic Traffic Counter cum classifier (ATCC) 34
3.13.2 Mobile Radio communication System (MRCS) 35
3.13.3 Emergency Call Boxes (ECB) 35
3.13.4 Portable Weigh-in-Motion (PWIM) 35
3.13.5 MET System 35
3.13.6 Variable Message Signboards (VMS) 35
3.13.7 CCTV Surveillance Cameras 36
3.13.8 Video Incident Detection System 36
3.13.9 Vehicle Actuated Speed Display (VASD) 36
3.13.10 Adequacy of Toll Collection System and ATMS 37
3.14 Truck Lay-bye 37
3.15 Traffic Aid Post and Medical Aid Post 38
3.16 Toilet Block 38
3.17 Bus Bays and Passenger Shelters 39
3.18 Balance Work Status 39
3.19 Operation and Maintenance 39
3.19.1 O&M Contract 39
3.19.2 Organization Chart 39
3.19.3 Operation 41
3.19.4 Routine Maintenance 41
4 Pavement Investigation and Assessment 42
4.1 General 42
4.2 Axle Load and VDF 42
4.3 Design Traffic 42
4.4 Network Survey Vehicles (NSV) Survey 43
4.5 Structural Investigations 43
4.6 Periodic Maintenance Strategy 43

5 Cost Estimates 45
5.1 General 45
5.2 Rate Assumption 45
5.3 Balance Work Cost 47
5.4 Routine O&M Cost 47
5.5 Major Maintenance Cost 48
5.6 Periodic Replacement of TMS / ATMS System 48
5.7 Escalation Assumption 49
5.8 Summary of Cost 49
Annexures 51
Annexure I - Routine Maintenance Cost 52
Annexure II - Major Maintenance Cost 56

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Details of Summary for Structures 9
Table 3-2 Condition Survey of Major Structure 11
Table 3-3 Details of Summary for Road Furniture Items 21
Table 3-4 Details of Summary for Toll Plaza Items 26
Table 3-5 Details of Truck Lay-bye 37
Table 3-6 Details of Toilet Block 38
Table 4-1 Vehicle Damage Factor 42
Table 4-2 MSA Calculation 42
Table 4-3 Major Maintenance Cycle 43
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 45
Table 5-2 Summary of Unit Rates 46
Table 5-3 Summary of Operation Cost 47
Table 5-4 Escalation 49

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start of Project Road 5
Figure 2-3 End of Project Road 5
Figure 3-1 Photographs of Pavement Condition (Main Carriageway) 7
Figure 3-2 Photographs of Service Road 8
Figure 3-3 Photographs of Major / Minor Junctions 9
Figure 3-4 Photographs of Major Structures 14
Figure 3-5 Photographs of Drainage 20
Figure 3-6 Photographs of Slope Protection and Cute Drain 21
Figure 3-7 Photographs of Pavement Marking and Road Studs 22
Figure 3-8 Photographs of Road Signages 23
Figure 3-9 Photographs of Highway Lighting / Crash Barrier / Delineator 24
Figure 3-10 Photographs of Avenue and Median Plantation 26
Figure 3-11 Photographs of Toll Plaza 27
Figure 3-12 Photographs of Truck Lay-bye 37
Figure 3-13 Photographs of Toilet Block 38
Figure 3-14 Photographs of Bus Bay / Passenger Shelter 39

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Jhansi - Lalitpur section [Package-I] of NH-44 (old "NH-26") from km. 0+000 to km. 49+700 in the State of Uttar Pradesh (hereinafter referred as "Project Road").

M/s. Jhansi Lalitpur Tollway Private Limited (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance, and transfer of Jhansi to Lalitpur Section (from km. 0+000 to km. 49+700) of NH-44 or Project Road under TOT. The project was awarded to Concessionaire on 20th October 2020 with a concession period of 30 years by National Highway Authority of India (NHAI). The length of Project Road is 49.700 kms with one toll plaza at km. 32+100 near Babina.

Accordingly, Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and filed investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

1. A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
2. Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
3. Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.
4. Formulation of future major maintenance strategy
5. Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
6. Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
7. Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period
8. Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyze the same as per the best engineering / industry practices.

The site visit and inspection were carried out between the periods from **25th March 2026** to **27th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features and overviews of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates**: The chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **Jhansi Lalitpur Tollway Private Limited**, is a company promoted by Cube Highways or Special Purpose Vehicle (SPV) formed for implementing this project. The Appointed Date of the project was 20th October 2020 (as TOT Package). The concession period of the project is 30 years including construction period. The project has received COD on 12th November 2014.

Presently, there are two Concessionaires for Project Road. One is Cube Highways who maintains Toll Operation activities (TOT Concessionaire) and the other Concessionaire is Gayatri Group (Annuity Concessionaire) who maintains the project length as per their original scope of work.

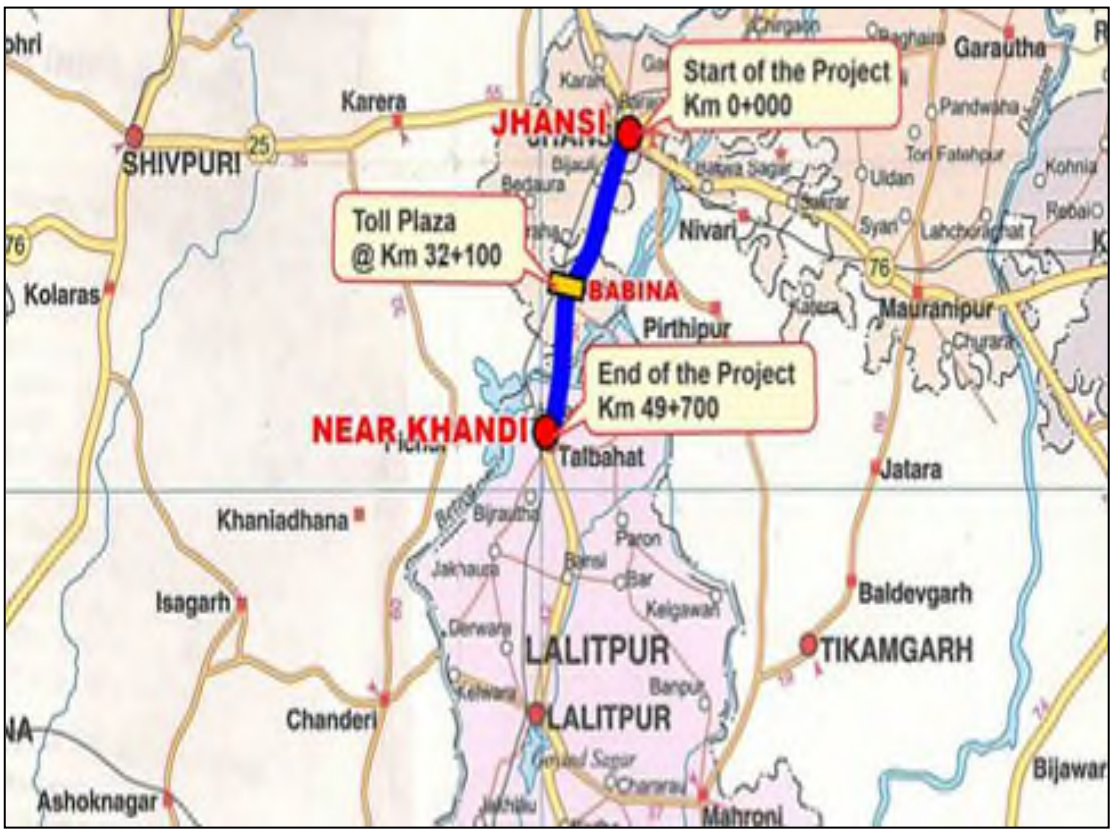
The project is being developed through Annuity BOT mode under TOT (Toll Operate Transfer) Bundle-3 with concession period of 30 years from the Appointed Date while O&M will start from April 2027 as per Clause 10.2.2 of Concession Agreement.

2.2 Location

The Project Road is part of National Highway No. 44 (old "NH-26") of Jhansi - Lalitpur section in the state of Uttar Pradesh. The total project length is 49.700 kms.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map



The photographs taken during the site visit are presented below:

Figure 2-2 Start of Project Road

Figure 2-3 End of Project Road

2.3 Climate

The project area being on a rocky plateau, Jhansi experiences extreme temperatures. Winter begins in October and peaks in mid-December. Temperature is about 4 °C minimum and 21 °C maximum. Summer begins by April and summer temperatures can peak 47 °C in May. The rainy season starts by the third week of June, while the monsoon rains gradually weaken in September and end before the last week of September. In the rainy season, the average daily high temperature hovers around 36 °C with high humidity. The average rainfall for the project is about 850 mm per year, occurring almost entirely within the three-and-a-half months of the Southwest Monsoon. In summer, temperatures as high as 45 to 47 °C while in winter the temperatures can fall as low as 0 to 1 °C as recorded in winter 2011.

2.4 Terrain

The Project Road traverses through plain / rolling terrain.

2.5 Abutting Land Use

The land use along the Project Road is predominantly agriculture or barren with intermittent built-up areas.

2.6 Right of Way

The width of the existing Right of Way (ROW) throughout the Project Road is 60 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, etc.

2.8 Development as per Schedule-B

The Project Road from Jhansi (km. 0+000) to Lalitpur (km. 49+700) has been developed as a four-lane divided carriageway with median width of 2 m, service road and other arrangements. The Project Road passes through rural as well as built-up section.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.

b) Tolling, operation, management, maintenance, and transfer of the Project Road subject to and in accordance with the provisions of this Agreement.

c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Concessionaire under this Agreement.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km.	49.700	From April 2027
2	Construction of Service Road	km.	3.310	
3	Reconstruction of Pipe Culvert	Nos.	01	
4	Reconstruction of Box Culvert	Nos.	05	
5	New Construction of Box Culvert	Nos.	-	
6	Vehicular Underpasses	Nos.	-	
7	Reinforce Cement concrete cover Drain with footpath	km.	3.310	
8	Road marking by Thermoplastic Paint	km.	3.310	
9	Rigid Concrete Barrier	km.	-	
10	Additional cantilever Sign Boards	Nos.	-	

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 9.0 m with an earthen shoulder of 1.5 m on either side. The Project Road has a median width of 2.0 m throughout its length.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

The pavement condition survey was carried out from **25th March 2026** to **27th March 2026** through visual inspection for the entire project length. From the visual inspection, it is found that the pavement condition of the Project Road at LHS side is around 30% length in poor condition, 60% length in fair condition and only 10% length is in good to fair condition. The Project Road on RHS side is around 20% length is in poor condition, 30% length is in fair condition, and 50% length is in good condition. The Concessionaire has done BC overlaying activities from Km 00+000 to 23+000; Overlay work for balance stretches are in progress.

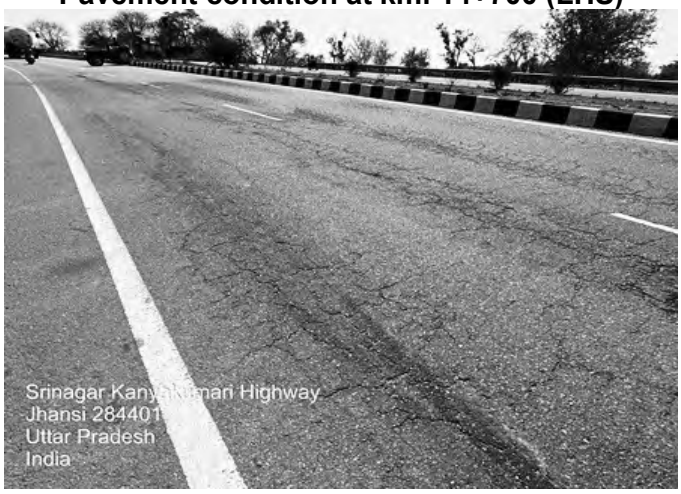
Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (Main Carriageway)

Pavement condition at km. 00+240 (LHS)

Pavement condition at km. 14+700 (LHS)

Pavement condition at km. 20+800 (IHS)

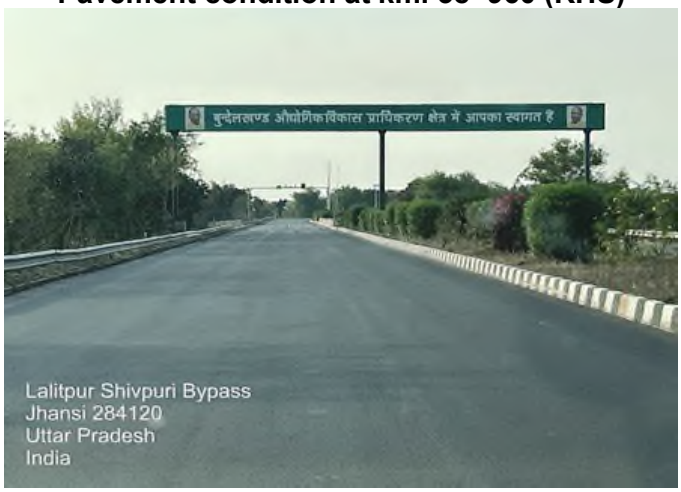


Pavement condition at km. 41+500 (LHS)

Pavement condition at km. 48+560 (RHS)

Pavement condition at km. 38+960 (RHS)

Pavement condition at km. 24+000 (RHS)



Overlay done from 0+000 to 23+000 (RHS)

3.2 Service Road / Slip Road

The service road with width 5.5 is constructed in built-up area and adjoining underpass locations. The total service road length is 3.310 kms. The photographs taken during the site visit are presented below.

Figure 3-2 Photographs of Service Road

km. 04+660 LHS

km. 08+750 RHS

3.3 Major / Minor Junction

There are 01 no. of major junctions and 14 nos. of minor junctions along Project Road.

The photographs taken during site visit is presented as below:

Figure 3-3 Photographs of Major / Minor Junctions

Junction at km. 8+900 LHS

Orchha Junction at km. 21+300 LHS

Junction at km. 35+380 LHS

Babina Junction at km. 31+760 RHS

3.4 Condition Survey of Bridge

The inventory of structures including major bridges, minor bridges, ROB's, underpasses and culverts is presented in table as below:

Table 3-1 Details of Summary for Structures

Type of Structure	Total Number of Structures
Road Over Bridge (ROB)	01
Flyover	01
Major Bridges (MJB)	05
Minor Bridges (MNB)	04
Vehicular Underpass (VUP)	12
Light Vehicular Underpass (LVUP)	-
Pedestrian Underpass (PUP)	04
Cattle Underpass (CUP)	-
Foot over Bridge	-
Culverts (Box / Slab / HPC)	79

Type of Structure	Total Number of Structures
Total	**106**

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-2 Condition Survey of Major Structure

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway Width (m)	Deck Width (m)	Type of Superstructure	Type of Foundation	Remarks
Major Bridge								
1	03+593	LHS	5 x 13	7.5	12	Slab RCC	Open	The structure is in good condition; however, cleaning of drainage spouts, weep holes, and vents is required, and the side slopes need to be properly maintained
		RHS	5 x 13	7.5	12	Slab RCC	Open	
2	06+744	LHS	3 x 33	7.5	10	PSC Girder	Open	The structure is in good condition; however, cleaning of drainage spouts, weep holes, and vents is required, and the side slopes need to be properly maintained
		RHS	3 x 33	7.5	10	PSC Girder	Open	
3	15+139	LHS	6 x 32 + 1 x 60 + 1 x 16	7.5	10	Box + PSC Girder	Open	The structure is in good condition; however, cleaning of drainage spouts, weep holes, and vents is required, and the side slopes need to be properly maintained
		RHS	6 x 32 + 1 x 60 + 1 x 16	7.5	10	Box + PSC Girder	Open	
4	20+730	LHS	4 x 32	7.5	10	Box Girder	Open	The structure is in good condition; however, cleaning of drainage spouts, weep holes, and vents is required, and the side slopes need to be properly maintained
		RHS	4 x 33	7.5	10	Box Girder	Open	
5	42+216	LHS	31 x 20	7.5	10	Arch Type Girder	Open	The structure is in good condition; however, cleaning of drainage spouts, weep holes, and vents are required, and the side slopes need to be properly maintained, Crush barrier damaged, needs to be repair.
		RHS	31 x 20	7.5	12	PSC Girder	Open	
Minor Bridge								
1	17+523	LHS	1 x 15	7.5	10.5	PSC Girder	Open	The structure is in good condition; cleaning of vents is required, and the side slopes need to be properly maintained, Expansion Joint needs to repaired.
		RHS	1 x 15	7.5	10.5	PSC Girder	Open	The structure is in good condition; cleaning of vents is required, and the side slopes need to be properly maintained
2	19+044	LHS	2 x 20	7.5	10.5	PSC Girder	Open	The structure is in good condition; cleaning of vents is required, and the side slopes need to be properly maintained, Exp Joint needs to repair.
		RHS	2 x 20	7.5	10.5	PSC Girder	Open	The structure is in good condition; cleaning of vents is required, and the side slopes need to be properly

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway Width (m)	Deck Width (m)	Type of Superstructure	Type of Foundation	Remarks
								maintained
3	22+697	LHS	1 x 45	7.5	10.5	Box Girder	Open	The structure is in good condition; cleaning of vents is required, and the side slopes need to be properly maintained, crush barrier & cute drain needs to repair.
		RHS	1 x 45	7.5	10.5	Box Girder	Open	The structure is in good condition; cleaning of vents is required, and the side slopes need to be properly maintained, crush barrier & cute drain needs to repair.
4	41+162	LHS	1 x 10	7.5	12	Solid Slab	Open	The structure is in good condition; cleaning of vents is required, and the side slopes need to be properly maintained
		RHS	1 x 10	7.5	12	Solid Slab	Open	The structure is in good condition; cleaning of vents is required, and the side slopes need to be properly maintained
Flyover								
1	13+800	LHS	1 x 12 + 1 x 45 + 1 x 11.5 (SK) x 6	9	12	Steel Girder & RCC Slab	Open	Structure is in good condition.
		RHS		9	12			Structure is in good condition.
Road over Bridges								
1	10+481	LHS	1 x 23 + 1 x 20 + 1 x 32 + 1 x 18 + 1 x 24	7.5	10.5	PSC Girder & Steel Beam Girder	Open	Structure is in good condition.
		RHS						Structure is in good condition.
Vehicular Underpasses								
1	1+273	LHS	1 x 10.5	9.25	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS		9.25	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
2	5+256	LHS	1 x 10	9.25	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS		9.25	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
3	8+276	LHS	1 x 10	9.25	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS		9.25	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
4	9+040	LHS	1 x 17 (SK)	9.25	24	RCC Solid Slab	-	The structure is in good condition; however, the

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway Width (m)	Deck Width (m)	Type of Superstructure	Type of Foundation	Remarks
								side slope repair requires.
		RHS		9.25	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
5	10+306	LHS	1 x 16 (SK)	9.25	40	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS		9.25	40	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
6	12+738	LHS	1 x 14.5 (SK)	9.25	34	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS		9.25	34	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
7	16+100	LHS	1 x 10	9.25	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS		9.25	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
8	23+335	LHS	1 x 11.5 (SK)	9.25	27.5	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS		9.25	27.5	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
9	28+789	LHS	1 x 15 (SK)	7.5	36	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS		7.5	36	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
10	30+420	LHS	1 x 15 (SK)	7.5	36	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS		7.5	36	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
11	36+340	LHS	2 x 10 (SK) + 1 x 13.5	7.5	39	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS		7.5	39	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
12	38+965	LHS	1 x 11.5 (SK)	7.5	28	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS		7.5	28	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway Width (m)	Deck Width (m)	Type of Superstructure	Type of Foundation	Remarks
Pedestrian / Cattle Underpasses								
1	18+837	LHS	1 x 6	7.5	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS	1 x 6	7.5	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
2	21+728	LHS	1 x 6	7.5	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires. Crush barrier damage, needs to repair.
		RHS	1 x 6	7.5	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
3	24+712	LHS	1 x 6	7.5	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS	1 x 6	7.5	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
4	45+810	LHS	1 x 6	7.5	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.
		RHS	1 x 6	7.5	24	RCC Solid Slab	-	The structure is in good condition; however, the side slope repair requires.

Figure 3-4 Photographs of Major Structures

Existing VUP at km. 1+273

Existing VUP at km. 5+256

Existing VUP at km. 8+276

Existing VUP at km. 9+040

Existing VUP at km. 10+306

Existing VUP at km. 12+738

Existing VUP at km. 16+100

Existing PUP / CUP at km. 18+837

Existing PUP / CUP at km.21+728

Existing VUP at km. 23+335

Existing PUP / CUP at km.24+712

Existing VUP at km. 28+789

Existing VUP at km. 30+420

Existing VUP at km. 36+340

Existing VUP at km. 38+965

Existing PUP / CUP at km. 24+712

Existing Major Bridge at km.3+593

Existing Major Bridge at km.6+744

Existing Major Bridge at km.15+139

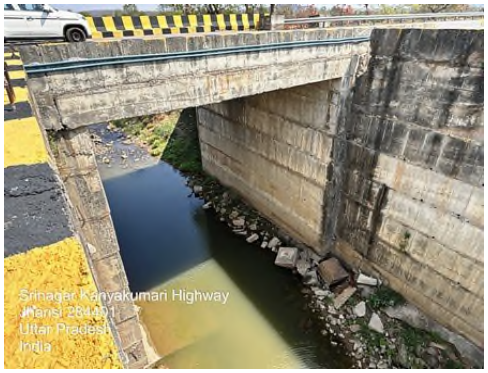
Existing Major Bridge at km.20+730

Existing Major Bridge at km.42+216

Existing Minor Bridge at km.17+523

Existing Minor Bridge at km.19+044

Existing Minor Bridge at km.22+697



Existing Minor Bridge at km.41+162

Existing ROB at km. 10+481

Existing Flyover at km. 13+800

Existing Flyover at km. 13+800

3.5 Condition Survey of Culverts

The cross-drainage structure includes hume pipe culverts and box culverts at various locations. There are 23 Nos. of pipe culverts, 66 Nos. of box culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts is satisfactory. The RCC parapet, crash barrier or RCC railing has been provided at culvert locations, which is maintained properly.

In most of culverts, the waterway is clear. However, near to urban area and some location is found blocked due to debris, drainage water or bushes, tree growth, which will be removed by the Annuity Concessionaire. The cement concrete pitching or stone pitching has been provided for slope protection.

The culverts are maintained by the Annuity Concessionaire during O&M period. However, in case of some culverts, cement concrete pitching has been observed damage which required to be addressed under routine repair work by the Annuity Concessionaire.

Box Culvert at km. 44+140

Box Culvert at km. 45+700

Box Culvert at km. 45+850

Box Culvert at km. 46+050

Box Culvert at km. 46+540

Box Culvert at km. 48+060

Slab Culvert at km. 48+160

Box Culvert at km. 49+220

Note: Pipe culverts were not visible during the visual inspection of Project Road.

3.6 Drainage

There are 4.87 kms of existing covered drain on both side of the Project Road at urban section and between MCW and SR. The photographs taken during site visit are presented below.

Figure 3-5 Photographs of Drainage

km. 8+900 Service Road (LHS)

km. 8+200 Service Road (LHS)

km. 12+740 (Median Drain)

Cover Drain at km. 38+960 (RHS)

3.7 Slope Protection

Slope protection and chute drains are found on Project Road at required locations. At a few locations the slope protection and chute drains are damaged which will be rectified by the Annuity Concessionaire.

Some of the photographs taken during the site visit are presented below.

Figure 3-6 Photographs of Slope Protection and Cute Drain

km. 01+273 (VUP)

km. 08+900 (VUP)

km.19+040 Cute Drain

km. 22+700 Cute Drain

3.8 Road Furniture

The Concessionaire has provided additional road furniture along Project Road as per the standards and specifications mentioned in Schedule-C.

Table 3-3 Details of Summary for Road Furniture Items

Sr. No.	Description	Unit	Quantity
1	Solar Blinkers	Nos.	Nil
2	Streetlights	Nos.	Nil
3	High Mast Lights	Nos.	Nil
4	Transverse Bar Makings / Thermoplastic Bar Markings	km.	4.870
5	New installation of Safety Barriers		
	W-Beam Safety Barriers	m	Nil
	Concrete Median Barrier	m	Nil
	Rigid Concrete Barrier	m	Nil
6	Guard Posts	m	Nil
7	Pedestrian Guard Rails	m	Nil
8	Road Studs / Raised Pavement Markers		
9	Road Markings		
10	Traffic Delineators	As per Section-9 of IRC:SP:84-2014	

Sr. No.	Description	Unit	Quantity
11	Kilometer / Hectometer / Boundary Stones		
12	Additional Sign Boards		
	Gantry Sign Boards	Nos.	Nil
	Cantilever Sign Boards	Nos.	Nil
	Shoulder Mounted Dual Post Sign Boards	As per Section 9 of IRC:SP:84-2014	
	Shoulder / Median Mounted Single Post Sign Boards		

Pavement Marking and Road Studs

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Pavement marking is faded at some locations which will be rectified by the Annuity Concessionaire.

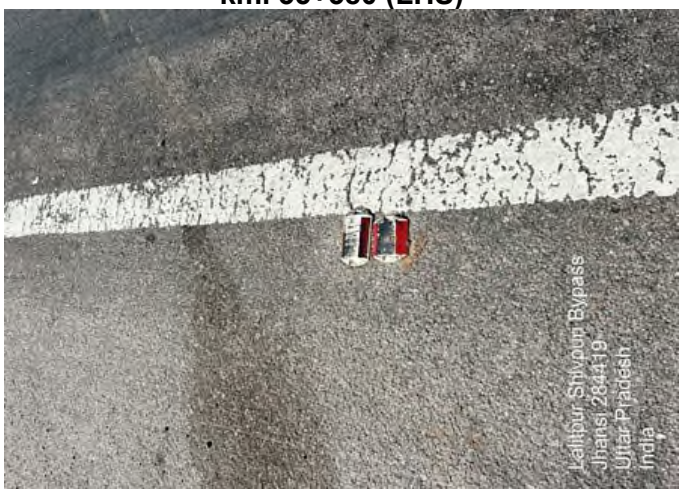
Cat's eye / road studs for the Project Road are done as per the design standards indicated in section 12 of Schedule-D. Cat's eye has been fixed at junction and zebra crossings. However, at few locations some road studs have damaged which will be rectified by the Annuity Concessionaire.

Some of the photographs of road marking and road studs are presented below.

Figure 3-7 Photographs of Pavement Marking and Road Studs

km. 35+380 (LHS)

km. 00+540 (RHS)



km. 02+560 (LHS)

km. 35+800 (RHS)

Traffic Signage / Median Kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards and median kerb paint are faded at few locations which will be rectified by the Annuity Concessionaire.

Some of the photographs of sign boards are presented below.

Figure 3-8 Photographs of Road Signages

5th km Stone at km. 10+000

km. stone at km. 02+000

NHAI Emergency Sign Board

Overhead Sign Board

Direction Sign at km. 0+000

Over Head Gantry at km. 0+200

Highway Lighting / Crash Barriers / Delineators

Highway lighting is provided at underpasses, flyovers, toll plaza, ROBs and built-up locations. High mast lighting is provided at toll plaza location. Highway lighting is also provided at approaches of underpass and flyovers.

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site.

The traffic delineators are provided by Concessionaire for road users in abnormal condition of weather for the Project Road. The same is maintained by the Annuity Concessionaire.

Some of the photographs of highway lighting, crash barrier and delineators are presented below.

Figure 3-9 Photographs of Highway Lighting / Crash Barrier / Delineator

Highway Lighting at km. 14+250

Crash Barrier at km. 12+738

MBCB at km. 01+270

Road Delineator at km. 01+980

Road Land Boundary

Road land boundary pillars are found at km 19+000 along Project Road.

Road land boundary pillars at km. 01+980 (MCW)

3.9 Avenue Plantation and Median Plantation

Avenue plantations are done only where ROW is available, and median plantation has been providing in the project length as per IRC specification.

Some of the photographs of avenue plantation and median plantation are presented below.

Figure 3-10 Photographs of Avenue and Median Plantation

km. 00+240

km. 35+380

3.10 Toll Plaza

As per the Concession Agreement, there is one existing toll plaza at km. 32+100 near Babina with the following infrastructure.

Table 3-4 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 32+100
2	Number of Tolling Lanes	8 (4+4) lanes for toll operation for vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	in each direction
5	Number of Toll Booths	8
6	Canopy	Present
7	Administrative Building	Present
8	Parking cum Toilet Block	Present
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	Tunnel/Yes
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	No
12	Storage facility for Overloaded Material	No
13	High mast Light	Yes
14	Streetlight	Yes
15	Low mast Light	No
16	User Fee Boards	3
17	Cantilever/Gantry Boards	Yes
18	Automatic boom barrier	Yes

Note:

- *Presently, the Concessionaire is using Annuity Concessionaire's building as an administration building for toll plaza.*
- *The electricity supply for the existing streetlights is provided by the TOT Concessionaire. The maintenance of these streetlights is in the scope of Annuity Concessionaire.*

- *Toll plaza is completed as per rehabilitation work and as per scope given in schedule-B.*

Figure 3-11 Photographs of Toll Plaza

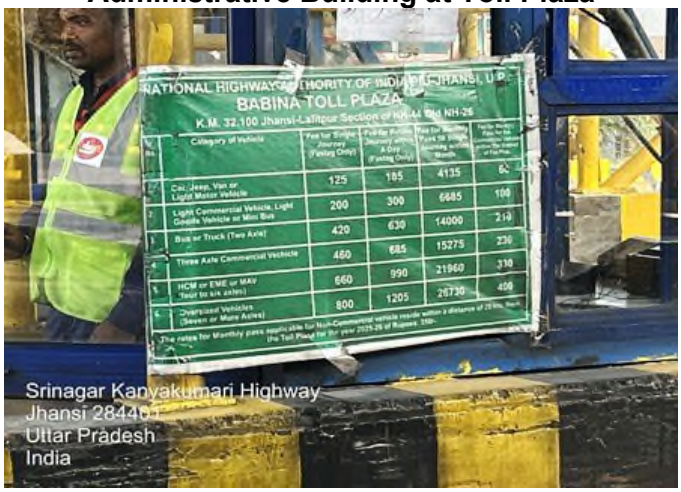
Toll Plaza at km. 32+100

Weight Bridge at Toll Plaza

O&M Centre at Toll Plaza

Administrative Building at Toll Plaza

Medical & Traffic aid Post



Toll Rate Chart

3.11 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.11.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

RFID

3.11.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data.

3.11.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVCC at Toll Plaza

3.11.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at Toll Plaza

3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at Toll Plaza

3.11.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on the island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

AVC Camera

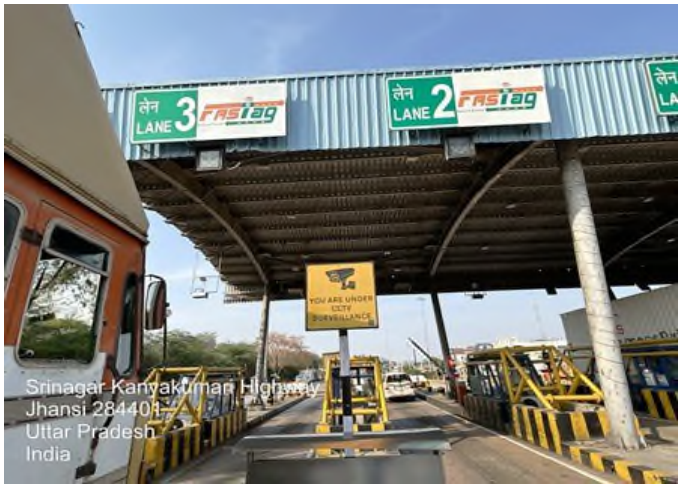
3.11.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

LPIC

3.11.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane "Open" and "Close" sign consists of a pair of "GREEN" (arrow) and "RED" (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.



OHLS at Toll Plaza

3.11.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and type of ticket.

Toll Collector Display (TCD)

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.11.10 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

MSWIM at Toll Plaza

3.12 Plaza Equipment

3.12.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio Wi-Fi module. Firewall with Sophos antivirus is provided.

TMS Server

3.12.2 55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

CCTV Monitor

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.12.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and POS.

Control Room

3.13 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) installed for the Project Road is controlled by the ATMS center at the toll plaza location. As per Concession Agreement, ATMS shall conform to ATMS Policy guidelines (2016) which comprises of the following:

- Automatic Traffic Counter cum Classifier (ATCC)
- Mobile Radio communication system
- Emergency Call Box
- Portable Weigh in Motion
- Meteorological Data system
- Variable Message Signboards (VMS)
- CCTV system
- Video Incident Detection System (VIDS)
- Vehicle actuated Speed Display (VASD)

Status of these systems at site is described below:

3.13.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is installed at Toll Plaza.

ATCC

3.13.2 Mobile Radio communication System (MRCS)

Mobile Radio communication System (MRCS) is not yet installed. Application for MRCS UHF band has been sought from WPC, DoT, Ministry of Communications which is not yet allocated.

3.13.3 Emergency Call Boxes (ECB)

Emergency Call Boxes (ECB) is not installed at site.

3.13.4 Portable Weigh-in-Motion (PWIM)

Portable Weigh-in-Motion (PWIM) is provided at the site.

3.13.5 MET System

Meteorological sensors comprise of sensors to measure the atmospheric temperature, humidity, pavement surface temperature, visibility and equipment for measuring wind speed and direction and installed at Toll Plaza km. 42+650.

MET System

3.13.6 Variable Message Signboards (VMS)

Variable message sign boards are installed at 14 locations. These display specific messages to the users based on the prevailing conditions on the highway. The message can be changed at any point of time from the HTMS centre. About 250 customised messages can be stored on the system.

VMS at km. 14+900 LHS

VMS at km. 49+160 RHS

3.13.7 CCTV Surveillance Cameras

Surveillance cameras are installed at various locations along the Project Road. The ATMS control room has video wall to monitor these locations through the cameras installed.

km. 33+500 (LHS)

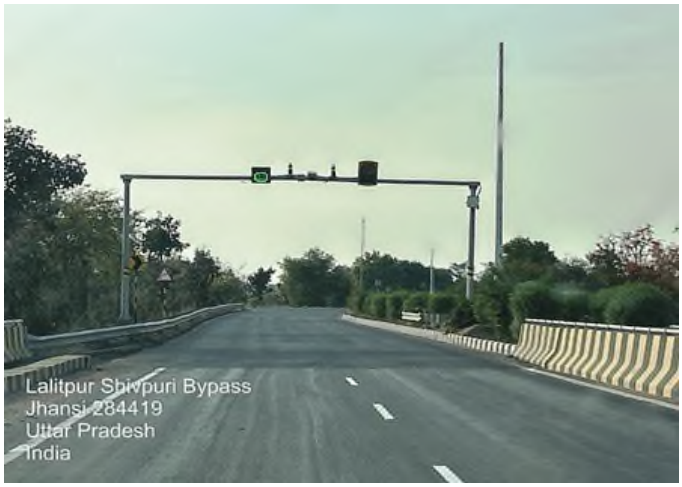
km. 09+750 (RHS)

3.13.8 Video Incident Detection System

62 Nos. of fixed CCTV cameras are installed as part of Video incident detection system.

3.13.9 Vehicle Actuated Speed Display (VASD)

VASD is installed at locations each on LHS and RHS.



km. 06+600 RHS

km. 21+000 LHS

3.13.10 Adequacy of Toll Collection System and ATMS

- Adequacy-All lanes are hybrid ETC system as stipulated by NHAI in Technical Specifications of Hybrid ETC system. NHAI has approved maintenance costs for TMS. TMS shall be upgraded every 5 years at the cost of the Authority.
- The Advanced Traffic Management System (ATMS) installed is as per specifications required by the Authority and in working condition.

3.14 Truck Lay-bye

The Concessionaire has constructed truck lay-bye at the following locations.

Table 3-5 Details of Truck Lay-bye

Sr. No.	Chainage (km)	Remarks
1	0+280	LHS
2	38+040	RHS

The photographs taken during the site visit are presented below.

Figure 3-12 Photographs of Truck Lay-bye

Truck lay-bye at km. 0+280 (LHS)

Truck lay-bye at km. 38+040 (RHS)

3.15 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Post are in the scope of Annuity Concessionaire.

Traffic Aid Post and Medical Aid Post

3.16 Toilet Block

The Annuity Concessionaire has constructed 02 Nos. of Toilet Blocks along the Project Road and maintenance of the same is in Annuity Concessionaire's scope.

Table 3-6 Details of Toilet Block

Sr. No.	Chainage (km)	Side		Remarks
		LHS	RHS	
1	32+250	Yes	-	
2	32+050	-	Yes	

The photographs taken during the site visit are presented below.

Figure 3-13 Photographs of Toilet Block

Toilet Block at Toll Plaza

Highway Nest at Toll Plaza

3.17 Bus Bays and Passenger Shelters

There are 04 Nos. of bus bays / passenger shelters along Project Road. The photographs taken during the site visit are presented below.

Figure 3-14 Photographs of Bus Bay / Passenger Shelter

Km. 00+400

Km. 40+360

3.18 Balance Work Status

The project has received Final Completion Certificate on 12th November 2014 by completing all the works as mentioned in the Technical Schedules of Concession Agreement. There are no balance works to be executed as per Concession Agreement.

3.19 Operation and Maintenance

3.19.1 O&M Contract

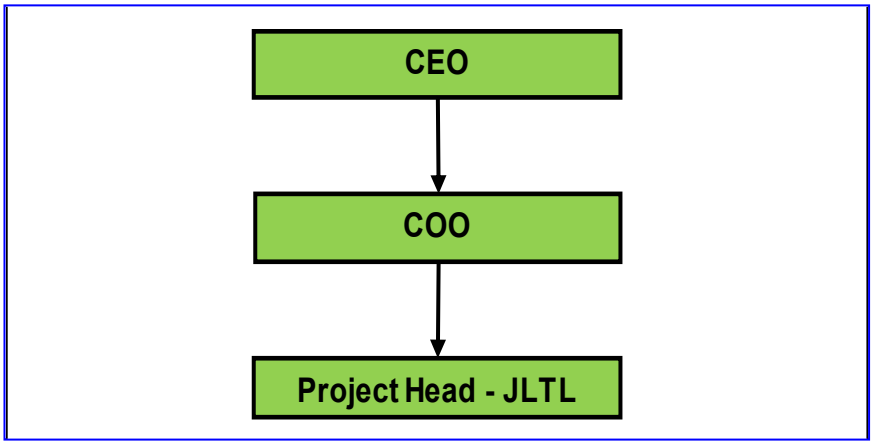
As per Clause 15.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall confirm to all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement.

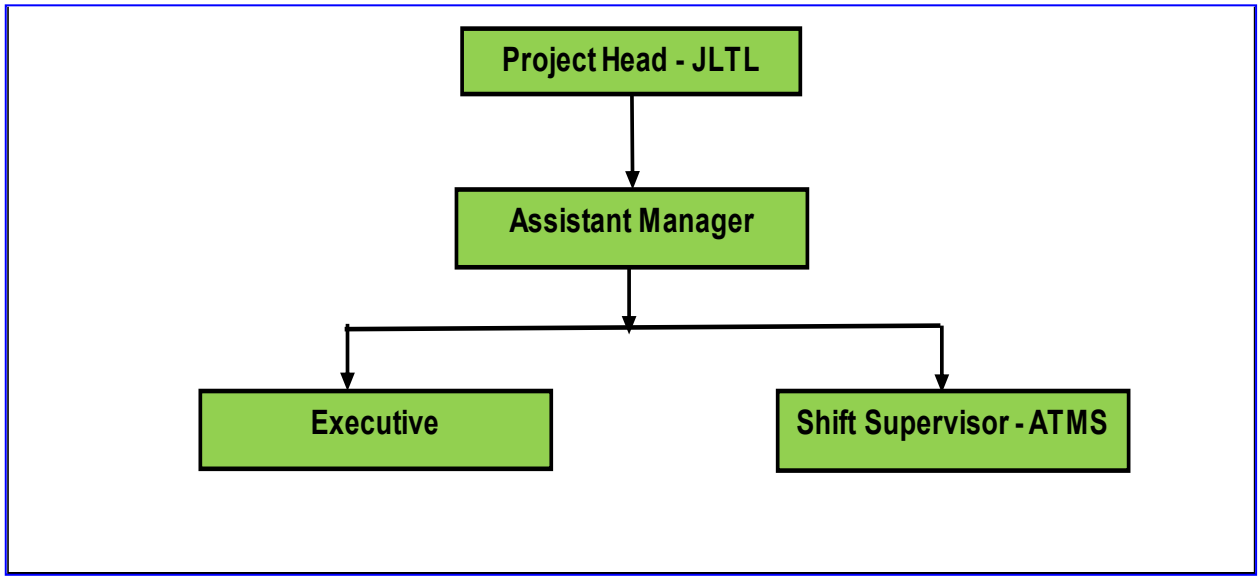
The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

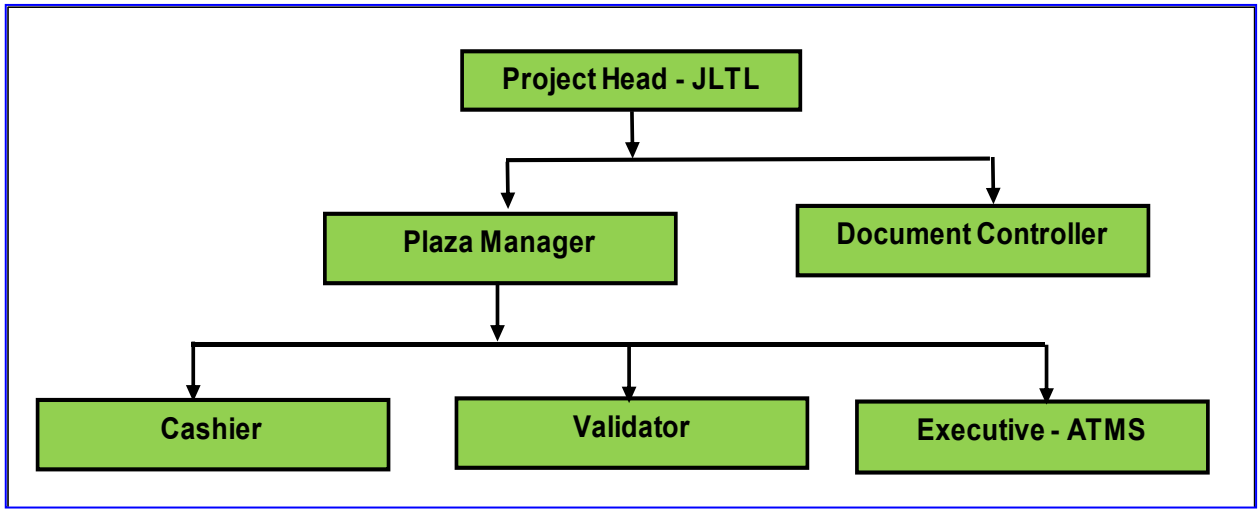
3.19.2 Organization Chart

The Concessionaire has given the Organization Chart at site for Operation and maintenance. Accordingly, there is 01 Project Head, 01 Senior Executive (HR), 01 Assistant Manager (TMS / IT), 01 Executive (TMS / IT), 01 Plaza Manager, 01 Assistant Plaza Manager, 04 Cashiers and 04 validators to carry out O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent sub-contractors.

Organization Chart







3.19.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on the best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.19.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

Currently, the Project Road is maintained by Annuity Concessionaire. The project will be handed over to TOT Concessionaire in April 2027. Hence, the routine maintenance is considered from FY 2028 till end of concession period.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Annuity Concessionaire as per Scope of Work. The Annuity Concessionaire received Completion Certificate on 12th November 2014.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 30 years from the Appointed Date (as TOT Package i.e., 20th October 2020) including construction period. The project will be handed over to TOT Concessionaire in April 2027.

4.2 Axle Load and VDF

The Concessionaire has conducted the Axle Load Survey on Project Road at km. 32+100 (near Toll Plaza) on 19th July 2019 and 20th July 2019. The summary of Vehicle Damage Factor (VDF) as calculated and provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor

Vehicle Category	Vehicle Damage Factor	
	LHS	RHS
Bus	0.86	1.13
LCV	1.08	0.63
2A	2.59	2.44
3A	5.40	5.04
MAV	11.38	10.96

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
FY2021	3.57	**3.57**	3.40	**3.40**	
FY2022	3.83	**7.40**	3.64	**7.04**	
FY2023	4.17	**7.74**	3.97	**7.37**	
FY2024	4.30	**12.04**	4.10	**11.47**	
FY2025	4.65	**16.69**	4.43	**15.90**	
FY2026	4.73	**21.42**	4.50	**20.40**	
FY2027	4.83	**26.25**	4.60	**25.00**	
FY2028	5.01	**31.26**	4.77	**29.77**	Handing over from Annuity Concessionaire in FY2027
FY2029	5.11	**36.37**	4.86	**34.63**	
FY2030	5.36	**41.73**	5.11	**39.74**	MM Cycle 1

Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
FY2031	5.63	**47.36**	5.36	**45.10**	
FY2032	5.91	**53.27**	5.63	**50.73**	
FY2033	6.21	**59.48**	5.92	**56.65**	
FY2034	6.53	**66.01**	6.23	**62.88**	
FY2035	6.87	**72.88**	6.55	**69.43**	
FY2036	7.22	**80.10**	6.88	**76.31**	
FY2037	7.58	**87.68**	7.23	**83.54**	MM Cycle 2
FY2038	7.96	**95.64**	7.60	**91.14**	
FY2039	8.36	**104.00**	7.98	**99.12**	
FY2040	8.78	**112.78**	8.38	**107.50**	
FY2041	7.37	**120.15**	7.04	**114.54**	
FY2042	7.74	**127.89**	7.39	**121.93**	
FY2043	8.11	**136.00**	7.75	**129.68**	
FY2044	8.51	**144.51**	8.13	**137.81**	
FY2045	8.92	**153.43**	8.52	**146.33**	MM Cycle 3
FY2046	9.35	**162.78**	8.93	**155.26**	End of CP as per Client

4.4 Network Survey Vehicles (NSV) Survey

The O&M is not under the scope of Concessionaire / Client.

4.5 Structural Investigations

The O&M is not under the scope of Concessionaire / Client.

4.6 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full-length periodic maintenance. Schedule-F of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. Only improvement to Riding Quality is expected if the roughness value exceeds 3000 mm/km.

Currently, the Project Road is maintained by the existing Annuity Concessionaire. The project will be handed over to TOT Concessionaire in April 2027. It is assumed that the pavement will be overlaid before handing over the project confirming the pavement parameters kept within the limits as per Table-1 (Maintenance Criteria for Pavements) of Schedule-F. Hence, the major maintenance cycles are proposed between FY 2028 and the end of concession period i.e. FY 2046.

The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-3 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2028	Handing over Project Road from Annuity Concessionaire	
2	FY 2029	-	-
3	FY 2030	Major maintenance with 30 mm BC	Major maintenance with 30 mm

Sr. No.	Year	Main Carriageway	Service Road
		(PMB) (100%) + Milling & 50 mm DBM (100%)	BC (VG-30) (50%) + Micro-surfacing (50%)
4	FY 2031 to FY 2036	-	-
5	FY 2037	Major maintenance with 40 mm BC (PMB) (100%) + Milling & 50 mm DBM (5%)	Major maintenance with 30 mm BC (VG-30) (50%) + Micro-surfacing (50%)
6	FY 2038 to FY 2044	-	-
7	FY 2045	Major maintenance with 30 mm BC (PMB) (100%) + Milling & 50 mm DBM (5%)	Major maintenance with 30 mm BC (VG-30) (50%) + Micro-surfacing (50%)
8	FY 2046*	End of Concession Period	

**Actual end of concession period as per Concession Agreement is October 2050. However, as per traffic details submitted by the Concessionaire, the revised concession period is up to FY 2046 as per provision of Article 14 of CA.*

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Work Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

   a. **Manpower and labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

   b. **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Some discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

   Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards. Following rates of bitumen are considered.

   Polymer cost and modification costs are provided by client to work out BC rate with PMB.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY2027 (Rs. / MT)	Rate for FY2028 onwards (Rs. / MT)
1	Mathura,	All States	VG10	45,102	35,125
2			VG30	46,402	36,137
3			VG40	48,962	38,131
4	Panipat	All States	VG10	45,102	35,125
5			VG30	46,402	36,137
6			VG40	48,962	38,131
7	Koyali	All States	VG10	47,102	37,125
8			VG30	48,402	38,137
9			VG40	51,082	40,251
10	Haldia	All States	VG10	46,602	35,683

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY2027 (Rs. / MT)	Rate for FY2028 onwards (Rs. / MT)
11			VG30	47,402	36,95
12			VG40	49,962	38,256
13	Barauni	All States	VG10	47,132	36,213
14			VG30	48,432	37,325
15			VG40	50,992	39,286
16	CPCL	Kerala	VG10	47,402	35,519
17			VG30	48,402	36,395
18			VG40	50,762	38,120
19	CPCL	Tamil Nadu	VG10	47,902	36,019
20			VG30	48,402	36,395
21			VG40	50,962	38,320
22	CPCL	Telangana and Andhra Pradesh	VG10	44,602	32,719
23			VG30	45,402	33,395
24			VG40	47,962	35,320
25	CPCL	Karnataka	VG10	44,602	32,719
26			VG30	45,402	33,395
27			VG40	47,962	35,320

c. **Sand and Aggregate:** Market rates are considered from the quarry located nearest to Project Road.

d. **Cement:** Market rates are considered from the nearest local market.

e. **Steel :** Rate of steel is taken from Tata Tiscon website.

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable PWD SOR.

g. **Actual Rates of items as per work order:** The rates of road marking, road stud, kerb raising, micro surfacing, milling etc. are considered as per the work order shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam (VG-40)	Cum	9,081
2	Bituminous Concrete (PMB)	Cum	11,619
3	Bituminous Concrete (VG-30)	Cum	9,968
4	Milling	Sqm	90
5	Micro-surfacing	Sqm	180
6	Kerb Re-laying	Rmt	440
7	Road Marking	Sqm	596
8	Road Studs	Nos.	244

5.3 Balance Work Cost

As discussed in the previous chapter, there are no balance works to be executed as per Concession Agreement. Hence, balance work cost is **NIL**.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Incident Management Services
4. Electricity and Diesel Charges
5. TMS / HTMS / System Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Insurance Expense
10. IE Fees
11. Horticulture & ROW Maintenance
12. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

Currently, the Project Road is maintained by existing Annuity Concessionaire. The project will be handed over to TOT Concessionaire in April 2027. Hence, the routine maintenance and horticulture maintenance is considered from FY 2028 till end of concession period.

The Routine Operation Cost is presented as below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027)	After Annuity Amount (FY 2028-2046)
1	Salary and Welfare Expenses	92,40,000	92,40,000
2	Tolling Operations Services	2,20,97,559	2,20,97,559
3	Toll Security Services	57,53,265	57,53,265

Sr. No.	Particulars	Amount (FY 2027)	After Annuity Amount (FY 2028-2046)
4	Incident Management & Emergency Services	-	1,59,84,410
5	Electricity and Diesel Charges	30,25,522	67,95,256
6	TMS/HTMS/System Expenses	23,14,000	47,46,278
7	Office Operating Expenses	35,03,845	35,03,845
8	Vehicle Running Expenses	35,40,000	35,40,000
9	Professional Fees Expense	78,63,802	82,21,248
10	Community Development	4,44,360	4,44,360
11	Communication Expenses	3,64,514	3,64,514
12	Conveyance Expenses	3,97,651	3,97,651
13	Insurance Expense	26,51,012	26,51,012
14	IE Fees	33,40,275	33,40,275
15	Routine Maintenance Cost (Project Highway)	-	2,14,90,746
16	Horticulture & ROW Maintenance	-	1,45,67,666
17	Miscellaneous including Contingency	25,81,432	34,83,187
	Total Cost (Rs.)	**6,71,17,236**	**12,66,21,271**
	Total Cost (Cr.)	6.71	12.66
	Per km Cost (Lakh)	**13.50**	**25.48**

5.5 Major Maintenance Cost

As mentioned in earlier chapter, the Project Road is maintained by existing Annuity Concessionaire. The project will be handed over to TOT Concessionaire in April 2027. It is assumed that the pavement will be overlaid before handing over of the project confirming the pavement parameters kept within the limits as per Table-1 (Maintenance Criteria for Pavements) of Schedule-F. Hence, the major maintenance cycles are proposed between FY 2028 and end of concession period.

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2030	98.51	
2	FY 2037	62.39	
3	FY 2045	49.03	
Total Cost (Cr.)		**209.93**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2027	5.15	
2	FY 2034	5.15	
3	FY 2041	5.15	
Total Cost (Cr.)		**15.45**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-4 Escalation

Year	Escalation	Year	Escalation
2027	-	**2041**	3.99%
2028	5.25%	**2042**	3.99%
2029	4.86%	**2043**	3.99%
2030	4.44%	**2044**	3.99%
2031	4.24%	**2045**	3.99%
2032	4.13%	**2046**	3.99%
2033	4.08%	**2047**	3.99%
2034	4.01%	**2048**	3.99%
2035	4.00%	**2049**	3.99%
2036	4.03%	**2050**	3.99%
2037	4.01%	**2051**	3.99%
2038	3.98%	**2052**	3.99%
2039	3.98%	**2053**	3.99%
2040	4.00%	**2054**	3.99%
2040	3.99%	**2055**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr.)

	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41	FY42	FY43	FY44	FY45	FY46
1	Routine O&M Cost																				
1.01	Salary and Welfare Expense	0.92	0.97	1.03	1.08	1.12	1.17	1.22	1.27	1.32	1.37	1.43	1.49	1.55	1.61	1.67	1.74	1.81	1.88	1.95	2.03
1.02	Tolling Operations Services	2.21	2.33	2.45	2.57	2.69	2.80	2.92	3.04	3.16	3.28	3.42	3.55	3.70	3.84	4.00	4.16	4.32	4.49	4.67	4.86
1.03	Toll Security Services	0.58	0.61	0.64	0.67	0.70	0.73	0.76	0.79	0.82	0.86	0.89	0.93	0.96	1.00	1.04	1.08	1.13	1.17	1.22	1.27
1.04	Incident Management Services	-	1.69	1.78	1.86	1.94	2.03	2.11	2.20	2.28	2.38	2.47	2.57	2.67	2.78	2.89	3.01	3.13	3.25	3.38	3.52
1.05	Electricity and Diesel Charges	0.30	0.72	0.75	0.79	0.83	0.86	0.90	0.93	0.97	1.01	1.05	1.09	1.14	1.18	1.23	1.28	1.33	1.38	1.44	1.49
1.06	TMS/HTMS/System Expenses	0.23	0.41	0.44	0.46	0.61	0.84	1.01	0.32	0.56	0.58	0.61	0.80	1.11	1.34	0.42	0.74	0.77	0.80	1.06	1.45
1.07	Office Operating Expenses	0.35	0.37	0.39	0.41	0.43	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.59	0.61	0.63	0.66	0.69	0.71	0.74	0.77
1.08	Vehicle Running Expenses	0.35	0.37	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.59	0.62	0.64	0.67	0.69	0.72	0.75	0.78
1.09	Professional Fees Expense	0.79	0.87	0.91	0.96	1.00	1.04	1.09	1.13	1.17	1.22	1.27	1.32	1.37	1.43	1.49	1.55	1.61	1.67	1.74	1.81
1.10	Community Development	0.04	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09	0.09	0.10
1.11	Communication Expenses	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08
1.12	Conveyance Expenses	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09
1.13	Insurance Expense	0.27	0.28	0.29	0.31	0.32	0.34	0.35	0.36	0.38	0.39	0.41	0.43	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58
1.14	IE Fees	0.33	0.35	0.37	0.39	0.41	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.63	0.65	0.68	0.71	0.73
1.15	Routine Maintenance Cost	-	2.27	2.39	2.50	2.61	2.72	2.84	2.95	3.07	3.19	3.32	3.46	3.59	3.74	3.89	4.04	4.20	4.37	4.54	4.73
1.16	Horticulture & ROW Maintenance	-	1.54	1.62	1.70	1.77	1.85	1.92	2.00	2.08	2.17	2.25	2.34	2.44	2.53	2.63	2.74	2.85	2.96	3.08	3.20
1.17	Miscellaneous and Contingency	0.26	0.37	0.39	0.41	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.61	0.63	0.66	0.68	0.71	0.74	0.77
	Subtotal of O&M Cost	6.71	13.27	13.97	14.65	15.43	16.29	17.10	17.06	17.98	18.70	19.45	20.40	21.49	22.53	22.46	23.66	24.60	25.58	26.83	28.26
2	Major Maintenance Cost	-	-	-	106.82	-	-	-	-	-	-	79.58	-	-	-	-	-	-	-	78.11	-
3	Periodic Cost of TMS/HTMS Replacement	5.15	-	-	-	-	-	-	7.08	-	-	-	-	-	-	9.32	-	-	-	-	-
	Total Cost	**11.87**	**13.27**	**13.97**	**121.47**	**15.43**	**16.29**	**17.10**	**24.15**	**17.98**	**18.70**	**99.04**	**20.40**	**21.49**	**22.53**	**31.78**	**23.66**	**24.60**	**25.58**	**104.94**	**28.26**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Ordinary Repair Cost for Flexible (with GST)	**2,14,90,746.17**
(inclusive of GST)	**= 4.32 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD	**Urban** More than 4500 CVD	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				2,48,637	**2,82,366**				
						Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	380415.00	432020.00	-	-	-	-
		Paved shoulder	1.70	422683.00	480022.00	47.27	-	1,99,78,112.00	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	497274.00	564732.00	-	-	-	-
		Paved shoulder	2.20	547002.00	621205.00	-	2.44	-	15,12,634.18
TOTAL							**49.700**		**2,14,90,746.17**

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	1.00%
	Volume (cum)			5.00
	Rs/m^3			10886
	Cost in Rupees			54,428
	ii) Patch repair	100 % Patch less	As & when required	1.00%
	Area (sqm)			100
	Rs/m^2			435
	Cost in Rupees			43,542
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	1.50%
	Area (sqm)			150
	Rs/m^2			97
	Cost in Rupees			14,615
	b) Width less than 3 mm	75 % Crack Less	As & when required	1.50%
	Area (sqm)			112.5
	Rs/m^2			66
	Cost in Rupees			7,386
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			435
	Cost in Rupees			32,657

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	v) Road marking	14%	Once in 7th year & @ Repaired location	32008
	SUB TOTAL			**1,84,636**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6322
	ii) Jungle Clearance	100%	Twice in a Year	0
	ii) Kuccha Drain Maintenance	100%	Twice in a Year	1111
	SUB TOTAL			**7,433**
3	**Maintenance of Cross Drainage works:**			
	ii) Repair of floors	100%	Once in a Year	5067
	iii) Repair of parapets	100%	As & when required	2111
	SUB TOTAL			**7,178**
4	**Maintenance of Minor & Major Bridges:**			
	i) Cleaning and removal of dirt & vegetation from pier caps, Bearings, Expansion Joints, Superstructure, Substructure and Retaining wall etc.	100%	As & when required	37,043
	ii) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints			
	iii) Repair of minor washouts, erosion scour and animal holes			
	iv) Sealing Cracks with Cement/ Epoxy Mortar			
	v) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**37,043**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometer stone etc.		Once in a Year	3704

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	ii) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7409
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1235
	iv) Traffic Census		Once in a Year	0
	v) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**12,348**
	GRAND TOTAL (Normal)			**2,48,637**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	3848
	ii)Repairs to footpath	100%	As & when required	4939
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4939
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7655
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9878
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2470
	SUB TOTAL			**33,729**
	GRAND TOTAL (Urban)			**2,82,366**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY 2030)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						15,70,724	15	2,40,63,498
	For BC	Sqm	2	47,702	8.95		8,53,878	8,53,878		
	For DBM	Sqm	2	48,026	7.00		6,72,364	6,72,364		
	For Misc. Location	Sqm	2	2,485	8.95		44,482	44,482		
2	BC with 30 mm	Cum	2	50,187	8.95	0.03	26,951	26,951	11,619	31,31,37,452
3	DBM with 50 mm	Cum	2	48,026	7.00	0.05	33,618	33,618	9,081	30,52,97,968
4	Milling	Sqm	2	48,026	7.00		6,72,364	6,72,364	90	6,05,12,760
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,079	3.50	4.50	432	432	120	51,814
6	Dismantling of CC Panels @ 2% area	Cum	2%		17,002	0.30	102	102	996	1,01,612
7	Replacement of Panels - PQC @ 2% area	Cum	2%		17,002	0.30	102	102	8,553	8,72,538
	Service Road									
8	Tack coat	Sqm	1	2,435	5.50		13,393	13,393	15	2,05,173
9	BC with 30 mm	Cum	1	2,435	5.50	0.03	402	402	9,968	40,04,905
10	Micro Surfacing	Sqm	1	2,435	5.50		13,393	13,393	180	24,10,650
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	1,674	15.3		25,664	25,664	15	3,93,174
12	Wearing Coat BC with 30 mm	Cum	1	1,674	15.3	0.03	770	770	11,619	89,45,618
13	Milling of Ex. Wearing Coat	Sqm	1	1,674	15.3		25,664	25,664	90	23,09,768
14	Painting of Crash Barrier	Sqm	4	1,674		1.12	7,466	7,466	107	7,98,866
	Other Works									
15	Raising of Road Kerb	Rmt	2	47,702			95,404	95,404	440	4,19,77,760
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	6,075			12,150	12,150	244	29,64,600
	Solar Road Stud	Nos					-	-	1,647	-
17	Painting of Kerb	Sqm	2	47,702		0.315	30,052	30,052	107	32,15,592
18	Road Marking	Sqm					37,684	37,684	596	2,24,59,912

Major Maintenance Cost (FY 2030)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	MCW									
	a) Median & Edge line	Sqm	4	52,185	0.15		31,311			
	b) Lane line	Sqm	2	17,221	0.10		3,444			
	Service Road									
	a) Edge line	Sqm	2	4,870	0.10		974			
	b) Lane line	Sqm	1	1,607	0.10		161			
	Junction crossing	Sqm					1,794			
19	Filling of Earthen shoulder	Cum					2,935	2,935	449	13,17,011
	MCW		2	47,702	1.00	0.03	2,862			
	Service Road		1	2,435	1.00	0.03	73			
20	Median Filling	Cum		47,270	4.17	0.10	-	-	431	-
21	Miscellaneous	5%								3,97,52,034
Total Major Maintenance Cost (Rs)										**83,47,92,705**
Total Major Maintenance Cost with GST @18% (Rs)										**98,50,55,392**
Total Major Maintenance Cost with GST (Cr)										**98.51**
Per Km Cost (Lakh)										**198.20**
Escalation Factor for Major Maintenance Cost (FY 2030)										**1.14**
Total Escalated Cost for Major Maintenance Cost (FY 2030) (Cr)										**106.82**

Major Maintenance Cost (FY 2037)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						9,31,979	15	1,42,77,913
	For BC	Sqm	2	47,702	8.95		8,53,878	8,53,878		
	For DBM	Sqm	2	2,401	7.00		33,618	33,618		
	For Misc. Location	Sqm	2	2,485	8.95		44,482	44,482		
2	BC with 40 mm	Cum	2	50,187	8.95	0.04	35,934	35,934	11,619	41,75,16,602
3	DBM with 50 mm	Cum	2	2,401	7.00	0.05	1,681	1,681	9,081	1,52,64,898
4	Milling	Sqm	2	2,401	7.00		33,618	33,618	90	30,25,638
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,079	3.50	4.50	432	432	120	51,814
6	Dismantling of CC Panels @ 2% area	Cum	2%		17,002	0.30	102	102	996	1,01,612
7	Replacement of Panels - PQC @ 2% area	Cum	2%		17,002	0.30	102	102	8,553	8,72,538
	Service Road									
8	Tack coat	Sqm	1	2,435	5.50		13,393	13,393	15	2,05,173
9	BC with 30 mm	Cum	1	2,435	5.50	0.03	402	402	9,968	40,04,905
10	Micro Surfacing	Sqm	1	2,435	5.50		13,393	13,393	180	24,10,650
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	1,674	15.3		25,664	25,664	15	3,93,174
12	Wearing Coat BC with 40 mm	Cum	1	1,674	15.3	0.04	1,027	1,027	11,619	1,19,27,490
13	Milling of Ex. Wearing Coat	Sqm	1	1,674	15.3		25,664	25,664	90	23,09,768
14	Painting of Crash Barrier	Sqm	4	1,674		1.12	7,466	7,466	107	7,98,866
	Other Works									
15	Raising of Road Kerb	Rmt	-	47,702			-	-	440	-
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	6,075			12,150	12,150	244	29,64,600
	Solar Road Stud	Nos	-	-			-	-	1,647	-
17	Painting of Kerb	Sqm	2	47,702		0.315	30,052	30,052	107	32,15,592
18	Road Marking	Sqm					37,684	37,684	596	2,24,59,912
	MCW									
	a) Median & Edge line	Sqm	4	52,185	0.15		31,311			

Major Maintenance Cost (FY 2037)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	b) Lane line	Sqm	2	17,221	0.10		3,444			
	Service Road									
	a) Edge line	Sqm	2	4,870	0.10		974			
	b) Lane line	Sqm	1	1,607	0.10		161			
	Junction crossing	Sqm					1,794			
19	Filling of Earthen shoulder	Cum					3,889	3,889	449	17,45,089
	MCW		2	47,702	1.00	0.04	3,816			
	Service Road		1	2,435	1.00	0.03	73			
20	Median Filling	Cum	-	47,270	4.17	0.05	-	-	431	-
21	Miscellaneous	5%								2,51,77,312
Total Major Maintenance Cost (Rs)										**52,87,23,547**
Total Major Maintenance Cost with GST @18% (Rs)										**62,38,93,785**
Total Major Maintenance Cost with GST (Cr)										**62.39**
Per Km Cost (Lakh)										**125.53**
Escalation Factor for Major Maintenance Cost (FY 2037)										**1.51**
Total Escalated Cost for Major Maintenance Cost (FY 2037) (Cr)										**79.58**

Major Maintenance Cost (FY 2045)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						9,31,979	15	1,42,77,913
	For BC	Sqm	2	47,702	8.95		8,53,878	8,53,878		
	For DBM	Sqm	2	2,401	7.00		33,618	33,618		
	For Misc. Location	Sqm	2	2,485	8.95		44,482	44,482		
2	BC with 30 mm	Cum	2	50,187	8.95	0.03	26,951	26,951	11,619	31,31,37,452
3	DBM with 50 mm	Cum	2	2,401	7.00	0.05	1,681	1,681	9,081	1,52,64,898
4	Milling	Sqm	2	2,401	7.00		33,618	33,618	90	30,25,638
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,079	3.50	4.50	432	432	120	51,814
6	Dismantling of CC Panels @ 2% area	Cum	2%		17,002	0.30	102	102	996	1,01,612
7	Replacement of Panels - PQC @ 2% area	Cum	2%		17,002	0.30	102	102	8,553	8,72,538
	Service Road									
8	Tack coat	Sqm	1	2,435	5.50		13,393	13,393	15	2,05,173
9	BC with 30 mm	Cum	1	2,435	5.50	0.03	402	402	9,968	40,04,905
10	Micro Surfacing	Sqm	1	2,435	5.50		13,393	13,393	180	24,10,650
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	1,674	15.3		25,664	25,664	15	3,93,174
12	Wearing Coat BC with 30 mm	Cum	1	1,674	15.3	0.03	770	770	11,619	89,45,618
13	Milling of Ex. Wearing Coat	Sqm	1	1,674	15.3		25,664	25,664	90	23,09,768
14	Painting of Crash Barrier	Sqm	4	1,674		1.12	7,466	7,466	107	7,98,866
	Other Works									
15	Raising of Road Kerb	Rmt	-	47,702			-	-	440	-
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	6,075			12,150	12,150	244	29,64,600
	Solar Road Stud	Nos	-	-			-	-	1,647	-
17	Painting of Kerb	Sqm	2	47,702		0.315	30,052	30,052	107	32,15,592
18	Road Marking	Sqm					37,684	37,684	596	2,24,59,912
	MCW									
	a) Median & Edge line	Sqm	4	52,185	0.15		31,311			

Major Maintenance Cost (FY 2045)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	b) Lane line	Sqm	2	17,221	0.10		3,444			
	Service Road									
	a) Edge line	Sqm	2	4,870	0.10		974			
	b) Lane line	Sqm	1	1,607	0.10		161			
	Junction crossing	Sqm					1,794			
19	Filling of Earthen shoulder	Cum					2,935	2,935	449	13,17,011
	MCW		2	47,702	1.00	0.03	2,862			
	Service Road		1	2,435	1.00	0.03	73			
20	Median Filling	Cum	-	47,270	4.17	0.05	-	-	431	-
21	Miscellaneous	5%								1,97,87,857
Total Major Maintenance Cost (Rs)										**41,55,44,991**
Total Major Maintenance Cost with GST @18% (Rs)										**49,03,43,089**
Total Major Maintenance Cost with GST (Cr)										**49.03**
Per Km Cost (Lakh)										**98.66**
Escalation Factor for Major Maintenance Cost (FY 2045)										**2.06**
Total Escalated Cost for Major Maintenance Cost (FY 2045) (Cr)										**78.11**

FP Project Management

Technical Due Diligence of Mahua - Jaipur Section of NH-11 from km.120+000 to km.229+100 in the State of Rajasthan on BOT Basis

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited

315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025
Tel: +91-22-6660 3901
e-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	RW / NHA	CSB	SMA

This report is to be regarded as confidential to our client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 6
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 11
3.3 Major / Minor Junctions 11
3.4 Condition Survey of Structure 13
3.5 Condition Survey of Culverts 27
3.6 Drainage 32
3.7 Slope Protection 32
3.8 Road Furniture 33
3.9 Avenue Plantation and Median Plantation 38
3.10 Toll Plaza 39
3.10.1 Lane Equipment 40
3.10.2 RFID ETC Transceiver 40
3.10.3 Lane Controller with Industrial PC 41
3.10.4 Automatic Vehicle Classification (AVC) Sensors 41
3.10.5 Automatic Lane Barrier 42
3.10.6 Lane Traffic Light (LTL) and User Fare Display (UFD) 42
3.10.7 Incident Capture Camera (AVC Camera) 43

3.10.8 License Plate Image Capture Camera (LPIC) 43
3.10.9 Over Head Lane Signal (OHLS) 43
3.10.10 Toll Booth Equipment 43
3.11 Plaza Equipment 44
3.11.1 TMS Server 44
3.11.2 55" LED screen for CCTV monitoring 45
3.11.3 Workstations in Control Room, POS room 45
3.12 Truck Lay-bye 46
3.13 Administrative, Operation and Maintenance Base Camp 46
3.14 Toilet Block 47
3.15 Bus Bays and Passenger Shelters 47
3.16 Balance Work Status 48
3.17 Operation and Maintenance 48
3.17.1 O&M Contract 48
3.17.2 Operation 48
3.17.3 Routine Maintenance 49
3.17.4 Organization Chart 49
4 Pavement Investigation and Assessment 55
4.1 General 55
4.2 Axle Load and VDF 55
4.3 Design Traffic 55
4.4 Network Survey Vehicles (NSV) Survey 56
4.5 Structural Investigations 58
4.6 Test pit and Subgrade Investigation 59
4.7 Periodic Maintenance Strategy 62
5 Cost Estimates 63
5.1 General 63
5.2 Rate Assumption 63
5.3 Balance Works Cost 65
5.4 Routine O&M Cost 65
5.5 Major Maintenance Cost 66
5.6 Periodic Replacement of TMS / ATMS System 66
5.7 Escalation Assumption 67
5.8 Summary of Cost 67
Annexures 69
Annexure I - Routine Maintenance Cost 70
Annexure II - Major Maintenance Cost 74

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Details of Summary for Structures 13
Table 3-2 Condition Survey of Major Structure 14
Table 3-3 Details of Summary for Toll Plaza Items 39
Table 3-4 Details of Truck Lay-bye 46
Table 3-5 Details of Toilet Block 47
Table 4-1 Vehicle Damage Factor (VDF) 55
Table 4-2 MSA Calculation 55
Table 4-3 Summary of FWD Survey 58
Table 4-4 Test Results Summary of Natural Ground Soil Samples 59
Table 4-5 Test Results Summary of Bituminous Layer Samples 61
Table 4-6 Major Maintenance Cycle 62
Table 5-1 Bitumen Rates - Ex- MI Supply excluding discount and GST 63
Table 5-2 Summary of Unit Rates 64
Table 5-3 Summary of Operation & Routine Maintenance Cost 66
Table 5-4 Escalation 67

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start of Project Road 5
Figure 2-3 End of Project Road 5
Figure 3-1 Photographs of Pavement Condition (MCW-LHS) 8
Figure 3-2 Photographs of Pavement Condition (MCW-RHS) 9
Figure 3-3 Photographs of Service Road 11
Figure 3-4 Photographs of Major Junctions 12
Figure 3-5 Photographs of Minor Junctions 12
Figure 3-6 Photographs of Road Over Bridge (ROB) 22
Figure 3-7 Photographs of Major Bridge 22
Figure 3-8 Photographs of Minor Bridge 23
Figure 3-9 Photographs of Grade Separator 26
Figure 3-10 Photographs of Underpasses 27
Figure 3-11 Photographs of Slab Culverts 28
Figure 3-12 Photographs of Pipe Culverts 30
Figure 3-13 Photographs of Drainage 32
Figure 3-14 Photographs of Slope Protection and Chute Drain 33
Figure 3-15 Photographs of Pavement Marking 34
Figure 3-16 Photographs of Road Studs 34
Figure 3-17 Photographs of Traffic Signages 35
Figure 3-18 Photographs of Street Light 36
Figure 3-19 Photographs of MBCB / Crash Barrier 36
Figure 3-20 Photographs of Delineators 37
Figure 3-21 Photographs of Pedestrian Guard Rail 37
Figure 3-22 Photographs of Road Land Boundary 38

Figure 3-23 Photographs of Avenue Plantation and Median Plantation 38
Figure 3-24 Photographs of Toll Plaza 40
Figure 3-25 Photographs of Truck Lay-Bye 46
Figure 3-26 Photographs of Toilet Block 47
Figure 3-27 Photographs of Bus Bays 48

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InVIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Mahua - Jaipur section of NH-11 from km. 120+000 to km. 229+100 in the State of Rajasthan (hereinafter referred as "Project Road").

Jaipur Mahua Tollway Private Limited (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance, and transfer of Jaipur to Mahua Section (from km. 120+000 to km. 229+100) of NH-11 BOT Basis. The project was awarded to Concessionaire on 23rd September 2005 with a concession period of 25 years including construction period of 3 years by National Highway Authority of India (NHAI). The length of Project Road is 109.100 kms with two toll plazas at km. 156+600 (Sikandra) and at km. 204+700 (Rajadhok).

Accordingly, Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and filed investigations. Same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.
- Formulation of future major maintenance strategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period
- Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified Engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design, and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyse the same as per the best engineering / industry practices.

The site visit and inspection were carried out between the periods from **04th March 2026 to 06th March 2026**.

The report is organized with the following chapters for easy understandings of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features, overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates:** The chapter summarizes the forecasting of O&M and major maintenance cost over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement **Jaipur Mahua Tollway Private Limited**, is a company promoted by Cube Highways or a Special Purpose Vehicle (SPV) formed for implementing this project on 23rd September 2005. The Appointed Date of the Project Road is on 20th March 2006.

The project is being developed through BOT basis with concession period of 25 years from the Appointed Date including construction period of 3 years. The Concessionaire received Completion Certificate on 9th March 2015. The Project Road is currently under Operation and Maintenance stage.

2.2 Location

The Project Road is part of National Highway No. 11 of Jaipur - Mahua section in the state of Rajasthan. The total project length is 109.100 kms.

The Location Map of the Project Road is presented below:

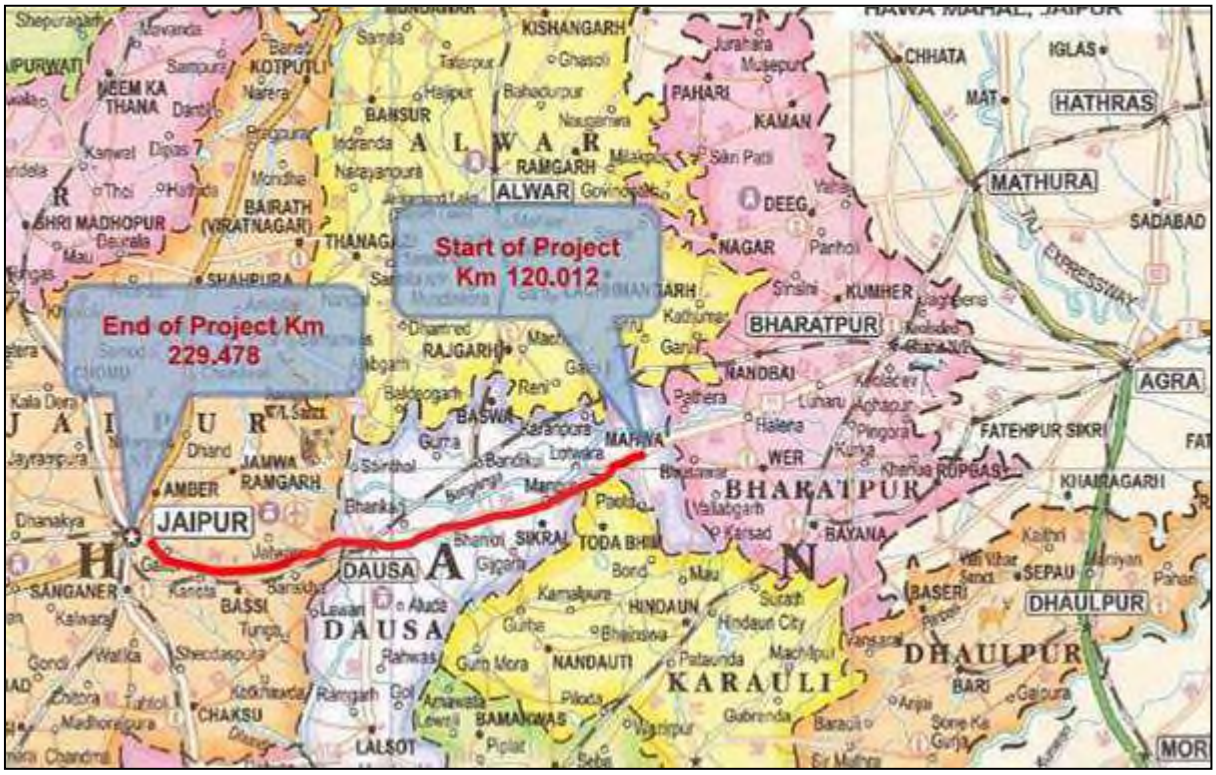


Figure 2-1 Location Map

The photographs taken during the site visit are presented below.

Figure 2-2 Start of Project Road

Start of Project Road

Start of Project Road

Figure 2-3 End of Project Road

End of Project Road

End of Project Road

2.3 Climate

The climate features of the area covered by the Project Road are:

Summer	March - May, with maximum temperature up to 47C.
Monsoon	June - August, with annual rainfall of about 560-660 mm.
Retreating monsoon season	September - November, with dry weather and moderate temperature.
Winter	December - February, temperature falls up to 3C.

2.4 Terrain

This section of National Highway traverses through plain terrain.

2.5 Abutting Land Use

The Project Road is characterized by a mix of habituated area and agriculture lands.

2.6 Right of Way

The width of existing Right of Way (RoW) for the Project Road varies from 13.50 m to 22.50 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services located along the Project Road were shifted to the PROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC cables, etc.

2.8 Development as per Schedule-B

The Project Road from Mahua (km. 120+000) to Jaipur (km. 229+100) has been developed as a four-lane divided carriageway with median width of 4.5 m and 2.0 m, service road and other arrangements. The Project Road passes through rural as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.

b) Tolling, operation, management, maintenance, and transfer of the Project Road subject to and in accordance with the provisions of this Agreement.

c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Concessionaire under this Agreement.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km.	109.100	
2	Construction of Service Road	km.	28.628	each Side
3	Major Bridge	Nos.	01	
4	Minor Bridge	Nos.	17	
5	Reconstruction of Pipe Culvert	Nos.	24	
6	Reconstruction of Slab Culvert	Nos.	65	
7	New Construction of Box Culvert	Nos.	01	
8	Underpasses	Nos.	07	
9	Grade Separated Structure	Nos	01	
10	Rail Over Bridge	Nos	01	

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 9.0 m with earthen shoulder of 1.5 m on either side. The Project Road has median width of 4.5 m and 2.0 m throughout its length.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza is rigid pavement.

3.1.1 Pavement Condition Survey

Pavement condition survey was carried out from **04th March 2026 to 06th March 2026**. through visual inspection for the entire project length. From the visual inspection, it is found that the average pavement condition of the Project Road is found to be Good.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (MCW-LHS)

Pavement Condition at km. 206+000

Pavement Condition at km. 193+800

Pavement Condition at km. 188+000

Pavement Condition at km. 173+900

Rigid Pavement at km. 166+950

Rigid Pavement at km. 163+800

Rigid Pavement at km. 146+800

Pavement Condition at km. 145+000

Pavement Condition at km. 137+700

Pavement Condition at km. 132+580

Pavement Condition at km. 127+200

Pavement Condition at km. 123+450

Figure 3-2 Photographs of Pavement Condition (MCW-RHS)

Pavement Condition at km. 218+200

Pavement Condition at km. 214+400

Pavement Condition at km. 206+650

Pavement Condition at km. 203+670

Rigid Pavement at km. 196+400

Pavement Condition at km. 192+200

Pavement Condition at km. 187+260

Pavement Condition at km. 172+925

Pavement Condition at km. 169+000

Pavement Condition at km. 152+400

Pavement Condition at km. 125+000

Pavement Condition at km. 123+300

3.2 Service Road / Slip Road

The service road of width 5.5 m is constructed in built-up area and adjoining underpass locations. The Project Road has total service road length of 28.628 kms on each side. The photographs taken during the site visit are presented below.

Figure 3-3 Photographs of Service Road

Service Road at km. 183+300 (LHS)

Service Road at km. 153+100 (LHS)

Service Road at km. 132+880 (LHS)

Service Road at km. 143+450 (RHS)

Service Road at km. 160+350 (RHS)

Service Road at km. 225+350 (RHS)

3.3 Major / Minor Junctions

There are 11 nos. of major junctions and 62 nos. of minor junctions along Project Road.

The photographs taken during site visit is presented as below:

Figure 3-4 Photographs of Major Junctions

Major Junction at km. 220+400 (RHS)

Major Junction at km. 182+200 (RHS)

Major Junction at km. 177+210 (LHS)

Major Junction at km. 171+550 (LHS)

Figure 3-5 Photographs of Minor Junctions

Minor Junction at km. 212+900 (RHS)

Minor Junction at km. 195+900 (RHS)

Minor Junction at km. 211+700 (LHS)

Minor Junction at km. 127+800 (LHS)

3.4 Condition Survey of Structure

The inventory of structures including major bridges, minor bridges, ROB's, underpasses and culverts is presented in table as below:

Table 3-1 Details of Summary for Structures

Type of Structure	Total Number of Structures
Major Structures:	
Road Over Bridge (ROB)	01
Grade Separator	01
Major Bridges (MJB)	01
Minor Bridges (MNB)	17
Underpass (UP)	07
Culverts:	
Pipe Culverts	24
Slab Culverts	65
Total	**116**

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-2 Condition Survey of Major Structure

Sr. No.	Chainage (km)	Description	Type of Structure	Span Arrangement (No. x Length (m)	Width (m)	Remarks
1	131+825	Minor Bridge	RCC Slab	2 x 6.72 (skew) 2 x 5.82 (Square)	12.5	**LHS -** Newly constructed, Substructure RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection are in good condition. Drainage spouts are cleaned; Structure is in sound condition. **RHS -** Existing Bridge, Stone masonry are used for Abutment and Pier, RCC deck slab, Tar paper bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail., Crash barrier and slope protection are in good condition. Drainage spouts are cleaned; Structure is in sound condition.
2	135+000	Underpass	RCC Box Type	1 x 10 x 4	12.5	Newly constructed, RCC box type structure and Structure is in sound condition. Drainage spouts are choked
3	144+700	Underpass	RCC Box Type	1 x 10 x 4	12.5	Newly constructed, RCC box type structure and Structure is in sound condition. Drainage spouts are choked
4	148+606	Minor Bridge	T beam bridge	1 x 11.00	12.5	**LHS -** Newly constructed, Substructure RCC abutment and pier, RCC T-Beam Girder 5 no. for each span, Elastomeric Bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Expansion Joint, Crash barrier and slope protection are in good condition. Drainage spouts are choked; Structure is in sound condition. **RHS -** Existing Bridge, Stone masonry are used for Abutment and Pier, RCC T-Beam Girder 5 no. for each span, Elastomeric bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail, Expansion Joint, Crash barrier and slope protection are in good condition. Drainage spouts are Choked; Structure is in sound condition. Partly Masonry and Partly PCC Return wall with handrail.

Sr. No.	Chainage (km)	Description	Type of Structure	Span Arrangement (No. x Length (m)	Width (m)	Remarks
5	149+750	Minor Bridge	RCC Slab	3 x 7.0	12.5	**LHS -** Newly constructed, RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection are in good condition. Drainage spouts are Cleaned; Structure is in sound condition. RCC return wall and RCC Crash Barrier with handrail. At slab joint cracks are seen on Main Carriageway **RHS -** Existing Bridge, Stone masonry is used for Abutment and Pier, RCC deck slab, Tar Paper bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection are in good condition. Drainage spouts are cleaned; Structure is in sound condition. Masonry and PCC Return wall with handrail.
6	153+600	Underpass	RCC Box Type	1 x 10 x 4	12.5	Newly constructed, RCC box type structure and Structure is in sound condition. Drainage spouts are choked.
7	154+952	Minor Bridge	RCC Slab	6 x 6.0	12.5	**LHS -** Newly constructed, Substructure RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Footpath side RCC Railing, shoulder side RCC Crash Barrier with handrail. Crash barrier is in good condition. The structure is in sound condition. Drainage spouts are choked. No Slope protection. At slab joint cracks are seen on Main Carriageway **RHS -** Newly constructed, Substructure RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Return wall RCC crash Barrier with handrail. Footpath side RCC Railing, shoulder side RCC Crash Barrier with handrail. Crash barrier is in good condition. The structure is in sound condition. Drainage spout chocked. No Slope protection. At slab joint cracks are seen on Main Carriageway. Vegetation seen on Pier Top and Slab joint
8	161+016	Minor Bridge	RCC Slab	5 x 6.0	12.5	**LHS -** Newly constructed, RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Footpath side RCC Railing, Median

Sr. No.	Chainage (km)	Description	Type of Structure	Span Arrangement (No. x Length (m)	Width (m)	Remarks
						and shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection are in good condition. Drainage spouts are chocked; Structure is in sound condition. At slab joint cracks are seen on Main Carriageway **RHS -** Existing Bridge, Stone masonry are used for Abutment and Pier, RCC deck slab, Tar Paper bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail., Crash barrier and slope protection are in good condition. Drainage spouts are choked; Structure is in sound condition.
9	164+279	Minor Bridge	RCC Slab	2 x 15.5	12.5	**LHS -** Newly constructed, Substructure RCC abutment and pier, RCC girder 5 nos. for each span, Elastomeric Bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Expansion Joint, Crash barrier and slope protection are in good condition. Drainage Spouts are cleaned Structure is in sound condition. Expansion joints cleaning required. **RHS -** Newly constructed, Substructure RCC abutment and pier, RCC girder 5 no. for each span, Elastomeric Bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Expansion Joint, Crash barrier and slope protection are in good condition. Drainage Spouts are cleaned. The structure is in sound condition. Expansion joints cleaning required
10	166+417	Minor Bridge	RCC Slab	4 x 11.0	12.5	**LHS -** Newly constructed, Substructure RCC abutment and pier, RCC deck slab, Elastomeric Bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection are in good condition. Drainage Spouts are chocked. The structure is in sound condition. At slab joint cracks are seen on Main Carriageway. A2 side Slop Protection is damage.

Sr. No.	Chainage (km)	Description	Type of Structure	Span Arrangement (No. x Length (m)	Width (m)	Remarks
						RHS - Newly constructed, Substructure RCC abutment and pier, RCC deck slab, Elastomeric Bearing are used, Footpath side RCC Railing, Median and Shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection are in good condition. Drainage Spouts are chocked. The structure is in sound condition. At slab joint cracks are seen on Main Carriageway.
11	170+319	Minor Bridge	T beam bridge	4 x 6	12.5	**LHS -** Newly constructed, Substructure RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection are in good condition. Drainage Spouts are chocked. The structure is in sound condition. At slab joint cracks are seen on Main Carriageway. **RHS -** Existing Bridge, Stone masonry are used for Abutment and Pier, RCC deck slab, Tar paper bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection are in good condition. Drainage Spouts are chocked. The structure is in sound condition. At slab joint cracks are seen on Main Carriageway.
12	178+049	ROB	T Beam Girder Bridge	LHS - 1 x 17.1 RHS - 1 x 27.6	LHS-11 RHS-12.5	**LHS -** Existing Bridge, Substructure RCC abutment, RCC T- Beam Girder 3 nos. are used, Elastomeric bearing are used, RCC Railing, Expansion Joint damage. Crash barrier and Slope protection are in good condition. Drainage spouts are choked; Structure is in sound condition. **RHS -** Newly constructed Bridge, Substructure RCC abutment, RCC T- Beam Girder 5 nos. are used, Elastomeric Bearings are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Expansion Joint, crash barrier and slope protection are in good condition. Drainage spouts are cleaned; Structure is in sound condition. Return wall with RCC parapet is constructed. One high mass erected at A2 side. Shoulder

Sr. No.	Chainage (km)	Description	Type of Structure	Span Arrangement (No. x Length (m)	Width (m)	Remarks
						settlement is seen near Abutment A1 and A2.
13	181+575	Underpass	RCC Box Type	1 x 10 x 4	12.5	Newly constructed, RCC box type structure and Structure is in sound condition. Drainage spouts are choked.
14	182+050	Grade Separator	RCC Girder	1 x 36	12.5	Newly constructed, RCC box type Girder, POT PTFE bearing are used, RCC Crash Barrier with handrail, Expansion joints are in good condition. Drainage spouts are chocked. Structure is in sound condition.
15	182+265	Underpass	RCC Box Type	1 x 10 x 4	12.5	Newly constructed, RCC box type structure and Structure is in sound condition. Drainage spouts are choked.
16	188+612	Minor Bridge	RCC Slab	2 x 5.6	12.5	**LHS -** Newly constructed, RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection are in good condition. Drainage spouts are choked. The structure is in sound condition. At slab joint cracks are seen on Main Carriageway **RHS -** Existing Bridge, RCC abutment and pier, RCC deck slab, Tar Paper bearing are used, Return Wall with RCC crash Barrier. Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail., RCC Railing, and slope protection are in good condition. Drainage spouts are choked. The structure is in sound condition. At slab joint cracks are seen on Main Carriageway
17	194+129	Minor Bridge	T beam bridge	17.1 + 17.75 + 17.1	12.5	**LHS -** Newly constructed, Substructure RCC abutment and pier, RCC T-Beam Girder 5 no. for each span, Elastomeric Bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Expansion Joint cleaning required. Crash barrier is in good condition. Slope protection on A2 side is damaged. Drainage spouts are cleaned; The Structure is in sound condition. **RHS -** Existing Bridge, Substructure RCC abutment and pier, RCC T-Beam Girder 3 no. for each span, Elastomeric bearing are used,

Sr. No.	Chainage (km)	Description	Type of Structure	Span Arrangement (No. x Length (m)	Width (m)	Remarks
						Shoulder and Median side RCC Crash Barrier with handrail., Expansion Joint cleaning required. Crash barrier and slope protection are in good condition. Drainage spouts are cleaned. The Structure is in sound condition. Patchwork has been seen on wearing coat.
18	208+000	Underpass	RCC Box Type	1 x 10 x 4	12.5	Newly constructed, RCC box type structure and Structure is in sound condition
19	210+371	Minor Bridge	RCC Slab	9.32 + 9.63 + 9.32 (Skew) 9.0 + 9.3 + 9.0 (Square)	12.5	**LHS -** Newly constructed, RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection are in good condition. Drainage spouts are choked; Structure is in sound condition. RCC Dirt wall. At slab joint cracks are seen on Main Carriageway. **RHS -** Existing Bridge, Stone masonry are used for Abutment and Pier, RCC deck slab, Tar Paper bearing are used, Footpath side RCC Railing, Shoulder and Median side RCC crash barrier with handrail, RCC Railing and slope protection are in good condition. Drainage spouts are choked. The Structure is in sound condition. Stone masonry dirt wall with RCC Crash Barrier.
20	213+607	Minor Bridge	RCC Slab	3 x 6.83 (skew), 3 x 6.6 (square)	LHS-12.5 RHS-10	**LHS -** Newly constructed, RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection are in good condition. Drainage spouts are choked. The Structure is in sound condition. **RHS -** Existing Bridge, Stone masonry are used for Abutment, Pier and Return wall, RCC deck slab, Tar Paper bearing are used, Shoulder and Median side RCC Crash Barrier. Stone masonry dirt wall with Parapet. Slope protection is in good condition. Drainage spouts are choked. The Structure is in sound condition.
21	214+943	Minor Bridge	RCC Slab	2 x 7.17(skew)	LHS-	**LHS -** Newly constructed, RCC abutment, pier and Return wall,

Sr. No.	Chainage (km)	Description	Type of Structure	Span Arrangement (No. x Length (m)	Width (m)	Remarks
				2 x 5.8 (square)	12.5 RHS-11.5	RCC deck slab, Tar Paper Bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection are in good condition. Drainage spouts are choked. The Structure is in sound condition. **RHS -** Existing Bridge, Stone masonry are used for Abutment and Pier, RCC deck slab, Tar Paper bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail., Crash barrier and slope protection are in good condition. Drainage spouts are cleaned. The Structure is in sound condition. Stone masonry return wall and RCC crash Barrier with handrail.
22	218+079	Minor Bridge	RCC Slab	3 x 8.08 (skew) 3 x 7.0 (square)	12.5	**LHS -** Newly constructed, RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection are in good condition. Drainage spouts are choked. The Structure is in sound condition. At slab joint cracks are seen on Main Carriageway. **RHS -** Existing Bridge, Stone masonry are used for Abutment and Pier, RCC deck slab, Tar Paper bearing are used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail, Crash barrier and slope protection are in good condition. Drainage spouts are choked. The Structure is in sound condition. Stone masonry return wall and RCC crash Barrier with handrail.
23	219+800	Underpass	RCC Box Type	1 x 10 x 4	12.5	RCC box type structure and Structure is in sound condition. Drainage spouts are choked.
24	221+363	Major Bridge	RHS-PSC 3-girder and LHS - RCC Box Girder	7 x 39.75	LHS-12.5, RHS-8.00	**LHS -** Newly constructed Bridge, RCC Box Girders are used, POT PTFE bearing is used, Footpath side RCC Railing, Median and shoulder side RCC Crash Barrier with handrail. Expansion Joints cleaning required. Crash barrier and slope protection are in good condition. Drainage spouts are choked; Structure is in sound condition.

Sr. No.	Chainage (km)	Description	Type of Structure	Span Arrangement (No. x Length (m)	Width (m)	Remarks
						RHS - Existing Bridge, Substructure RCC Pier, PSC 3 no. of Girders for each span, POT PTFE bearing is used, Median and shoulder side RCC Railing, Expansion Joint, crash barrier and slope protection are in good condition. Drainage spouts are choked; Structure is in sound condition. Median side RCC railing damaged and repaired with MBCB in bits of pieces.
25	223+434	Minor Bridge	RCC Slab	5 x 7.75 (skew) 5 x 6.71 (square)	20.75	**LHS -** Newly constructed, RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Service Road footpath with RCC Railing and are in good condition. Drainage spouts are chocked. The structure is in sound condition. At slab joint cracks are seen on Main Carriageway and Service Road. **RHS -** Newly constructed, RCC abutment, pier and Return Wall, RCC deck slab, Tar Paper Bearing are used, Service Road footpath with RCC Railing and are in good condition. Drainage spouts are chocked. Structure is in sound condition. At slab joint cracks are seen on Main Carriageway and Service Road.
26	225+679	Minor Bridge	RCC Slab	6.8 + 6.8 + 7.0	18.75	**LHS -** Newly constructed, RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Service Road footpath with RCC Railing and are in good condition. Bridge is fully blocked/ Buried with Garbage. The Structure is in sound condition. At slab joint cracks are seen on Main Carriageway as well as Service Road. The Wall Constructed in front of the Bridge. **RHS -** Newly constructed, RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Service Road footpath with RCC Railing and are in good condition. Bridge is fully blocked/Buried. with Garbage. The Structure is in sound condition. At slab joint cracks are seen on Main Carriageway as well as Service Road.
27	227+207	Minor Bridge	RCC Slab	6.8 + 6.8	18.75	**LHS -** Newly constructed, RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Service Road footpath with RCC

Sr. No.	Chainage (km)	Description	Type of Structure	Span Arrangement (No. x Length (m)	Width (m)	Remarks
						Railing and are in good condition. Bridge is fully blocked. The Structure is in sound condition. **RHS -** Newly constructed, RCC abutment and pier, RCC deck slab, Tar Paper Bearing are used, Service Road footpath with RCC Railing and are in good condition. Bridge is fully blocked. The Structure is in sound condition.

Figure 3-6 Photographs of Road Over Bridge (ROB)

ROB at km. 179+049 (LHS)

ROB at km. 179+049 (LHS)

ROB at km. 179+049 (RHS)

ROB at km. 179+049 (LHS)

Figure 3-7 Photographs of Major Bridge

Major Bridge at km. 221+363 (RHS)

Major Bridge at km. 221+363 (RHS)

Expansion joint at km. 221+363 (LHS)

Major Bridge at km. 221+363 (LHS)

Figure 3-8 Photographs of Minor Bridge

Minor Bridge at km. 227+207 (RHS)

Minor Bridge at km. 225+679 (LHS)

Minor Bridge at km. 223+424 (LHS)

Minor Bridge at km. 218+079 (RHS)

Minor Bridge at km. 218+079 (LHS)

Minor Bridge at km. 214+943 (RHS)

Minor Bridge at km. 214+943 (LHS)

Minor Bridge at km. 213+607 (RHS)

Minor Bridge at km. 213+607

Minor Bridge at km. 211+700

Minor Bridge at km. 194+129 (RHS)

Minor Bridge at km. 194+129 (LHS)

Minor Bridge at km. 188+612 (LHS)

Minor Bridge at km. 170+319 (RHS)

Minor Bridge at km. 170+319

Minor Bridge at km. 166+417 (LHS)

Minor Bridge at km. 166+417

Minor Bridge at km. 164+279 (RHS)

Minor Bridge at km. 161+016 (LHS)

Minor Bridge at km. 154+952 (RHS)

Minor Bridge at km. 154+952

Minor Bridge at km. 149+750 (LHS)

Minor Bridge at km. 148+606 (RHS)

Minor Bridge at km. 131+825 (RHS)

Figure 3-9 Photographs of Grade Separator

Grade Separator at km. 182+050

Grade Separator at km. 182+050

Grade Separator at km. 182+050

Grade Separator at km. 182+050

Figure 3-10 Photographs of Underpasses

Underpass at km. 219+800 (LHS)

Underpass at km. 208+000 (RHS)

Underpass at km. 182+285 (RHS)

Underpass at km. 181+575 (LHS)

Underpass at km. 181+575

Underpass at km. 153+600 (LHS)

Underpass at km. 144+700 (RHS)

Underpass at km. 135+000 (LHS)

3.5 Condition Survey of Culverts

The cross-drainage structure includes Hume pipe culverts and slab culverts at various locations. There is 24 Nos. of pipe culverts, 65 Nos. of slab culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of Slab culverts is satisfactory. The RCC parapet, crash barrier or RCC railing has been provided at culvert locations, which is maintained properly.

In most of culverts, the waterway is clear. However, near to urban area and some location is found blocked due to debris, drainage water or bushes, tree growth, which will be removed by the Annuity Concessionaire. The cement concrete pitching or stone pitching has been provided for slope protection.

The culverts are maintained by the Annuity Concessionaire during O&M period. However, in case of some culverts, cement concrete pitching have been damaged which required to be addressed under routine repair work by the Annuity Concessionaire.

Figure 3-11 Photographs of Slab Culverts

Slab Culvert at km. 214+330 (RHS)

Slab Culvert at km. 211+769 (LHS)

Slab Culvert at km. 206+075 (RHS)

Slab Culvert at km. 201+394 (LHS)

Slab Culvert at km. 198+632 (RHS)

Slab Culvert at km. 189+238 (LHS)

Slab Culvert at km. 173+901 (RHS)

Slab Culvert at km. 172+950 (LHS)

Slab Culvert at km. 167+541 (RHS)

Slab Culvert at km. 167+401 (LHS)

Slab Culvert at km. 163+789 (RHS)

Slab Culvert at km. 162+259 (LHS)

Slab Culvert at km. 158+806 (RHS)

Slab Culvert at km. 145+272 (LHS)

Slab Culvert at km. 139+756 (RHS)

Slab Culvert at km. 137+047 (LHS)

Figure 3-12 Photographs of Pipe Culverts

Pipe Culvert at km. 192+230 (RHS)

Pipe Culvert at km. 186+224 (LHS)

Pipe Culvert at km. 180+317 (LHS)

Pipe Culvert at km. 129+723 (LHS)

Pipe Culvert at km. 128+539 (RHS)

Pipe Culvert at km. 127+217 (RHS)

Pipe Culvert at km. 125+947 (LHS)

Pipe Culvert at km. 124+345 (RHS)

3.6 Drainage

RCC drains are constructed in built-up areas and locations where service roads are provided. The photographs taken during site visit is presented as below.

Figure 3-13 Photographs of Drainage

Median RCC Drain at km. 227+200

RCC Drain at km. 184+700 (RHS)

RCC Drain at km. 176+000 (RHS)

RCC Drain at km. 137+050 (LHS)

3.7 Slope Protection

Slope protection and chute drains are found on Project Road at required locations. Few of the slope protection and chute drains are damaged which will be rectified by the Concessionaire. The photographs taken during site visit is presented as below.

Figure 3-14 Photographs of Slope Protection and Chute Drain

Slope Protection at km. 194+100 (LHS-MNB)

Slope Protection at km. 178+049 (RHS-ROB)

Slope Protection at km. 170+319 (LHS-MNB)

Slope Protection at km. 148+606 (LHS-MNB)

3.8 Road Furniture

The Concessionaire has provided road furniture along the Project Road as per the Standards and Specifications mentioned in Schedule-C.

Pavement Marking

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Some of the photographs of road marking are presented below.

Some of the photographs of road marking are presented below.

Figure 3-15 Photographs of Pavement Marking

Road Marking at km. 211+240 (RHS)

Pedestrian Cross Marking at km. 235+350 (RHS)

Road Marking at km. 209+200

Centre Lane Marking at km. 171+550 (RHS)

Road Studs

Road studs for the Project Road are done as per the design standards indicated in section 12 of Schedule-D. Road studs has been fixed at junction and zebra crossings.

Some of the photographs of road studs are presented below.

Figure 3-16 Photographs of Road Studs

Road Studs at km. 198+675 (LHS)

Road Studs at km. 185+650 (RHS)

Traffic Signage / Median Kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location, and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards are properly placed. Median kerb painting is completed by the Concessionaire.

Some of the photographs of sign boards are presented below.

Figure 3-17 Photographs of Traffic Signages

Traffic Sign Board at km. 195+725 (RHS)

Traffic Sign Board at km. 176+150 (LHS)

Kilometre Stone at km. 185+000 RHS

Traffic Sign Board at km. 183+375

Highway Lighting

Highway lighting is provided at underpasses, flyovers, toll plaza, ROBs and built-up locations. High mast lighting is provided at toll plaza location. Highway lighting is also provided at approaches of underpass and flyovers. Some of the photographs of highway lighting are presented below.

Figure 3-18 Photographs of Street Light

Street Lighting at km. 221+600

Street Lighting at km. 181+400

Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site. Some of the photographs of metal beam crash barriers are presented below.

Figure 3-19 Photographs of MBCB / Crash Barrier

Crash Barrier at km. 199+425 (RHS)

Crash Barrier at km. 188+612 (LHS)

Crash Barrier at km. 187+450 (RHS)

Crash Barrier at km. 153+600 (LHS)

Delineators

The traffic delineators are seen in median on curve portion and at median openings along the Project Road. Some of the photographs of delineators are presented below.

Figure 3-20 Photographs of Delineators

Delineators at km. 212+900

Delineators at km. 198+250 (RHS)

Pedestrian Guard Rail

The pedestrian guard rails are provided in between Main Carriageway and Service Road. It is maintained by the Concessionaire. Some of the photographs of pedestrian guard rails are presented below.

Figure 3-21 Photographs of Pedestrian Guard Rail

Pedestrian Guard Rail at km. 223+300

Pedestrian Guard Rail at km. 175+000

Pedestrian Guard Rail at km. 171+550 (RHS)

Pedestrian Guard Rail at km. 126+000 (LHS)

Road Land Boundary

Some of the Road land boundary pillars are seen along the Project Road.

Figure 3-22 Photographs of Road Land Boundary

Boundary Pillar at km. 180+000 (RHS)

Boundary Pillar at km. 140+550 (LHS)

3.9 Avenue Plantation and Median Plantation

Avenue plantations and median plantations are done along the project length as per IRC specification except at built-up locations. Some of the photographs of avenue plantation and median plantation are presented below.

Figure 3-23 Photographs of Avenue Plantation and Median Plantation

Avenue Plantation at km. 212+000 (RHS)

Median and Avenue Plantation at km. 206+600

Median Plantation at km. 194+075

Avenue Plantation at km. 158+450 (LHS)

Median Plantation at km. 142+400

Avenue Plantation at km. 139+850 (LHS)

3.10 Toll Plaza

As per Concession Agreement, there are two no. of toll plazas at km. 156+500 (Sikandra) and at km. 204+700 (Rajadhok) with the following infrastructure.

Table 3-3 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 156+500 and km. 204+700
2	Number of Tolling Lanes	8 lanes for toll operation plus 2 lanes for Class-I Vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	in each direction
5	Number of Toll Booths	8 singles
6	Canopy	Present
7	Administrative Building	Present
8	Parking cum Toilet Block	Present
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	Tunnel/Yes
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	No
12	Storage facility for Overloaded Material	No
13	High mast Light	Yes
14	Streetlight	Yes (only 20 nos. near Toll Plaza. 10 nos. in both direction)
15	Low mast Light	No
16	User Fee Boards	3
17	Cantilever/Gantry Boards	Yes
18	Automatic boom barrier	Yes

Figure 3-24 Photographs of Toll Plaza

Sikandra Toll Plaza at km. 156+600

Sikandra Toll Plaza at km. 156+600

Rajadhok Toll Plaza at km. 204+700

Rajadhok Toll Plaza at km. 204+700

3.10.1 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.10.2 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

3.10.3 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data at Km 156+500 and at km. 204+700 is located inside the Tunnel.

Lane Controller in Tunnel at TP

3.10.4 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

3.10.5 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at TP

3.10.6 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at TP

3.10.7 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

3.10.8 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

3.10.9 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane "Open" and "Close" sign consists of a pair of "GREEN" (arrow) and "RED" (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

Overhead Lane Signal at Toll Plaza

3.10.10 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard

- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and type of ticket.

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Camera is provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.11 Plaza Equipment

3.11.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio Wi-Fi module. Firewall with Sophos antivirus is provided.

Server Room

3.11.2 55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.11.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.

3.12 Truck Lay-bye

The following are the truck lay-bye locations.

Table 3-4 Details of Truck Lay-bye

Sr. No.	Design Chainage (km)	Name of the Village
1	154+800	Sikandra
2	182+200	Jatwara
3	210+200	Bassi

Photographs taken during the site visit are presented below.

Figure 3-25 Photographs of Truck Lay-Bye

Truck Lay-Bye at km. 162+550 (RHS)

Truck Lay-Bye at km. 211+500 (LHS)

3.13 Administrative, Operation and Maintenance Base Camp

Traffic Aid Post and Medical Aid Post are in the scope of Concessionaire. Photographs taken during the site visit are presented below.

Toll Plaza Administrative Building at km. 204+700

3.14 Toilet Block

There are three nos. toilet blocks at Truck Lay-Bye and maintenance of the same is in Concessionaire's scope.

Table 3-5 Details of Toilet Block

Sr. No.	Design Chainage (km)	Name of the Village
1	154+800	Sikandra
2	182+200	Jatwara
3	210+200	Bassi

Photographs taken during the site visit are presented below.

Figure 3-26 Photographs of Toilet Block

Toilet Block at km. 203+000 RHS

Toilet Block at km. 187+050 LHS

3.15 Bus Bays and Passenger Shelters

There are 43 Nos. of bus bays / passenger shelters along the Project Road. Some of the photographs of the bus bays are presented below.

Figure 3-27 Photographs of Bus Bays

Bus Bay at km. 155+070 (RHS)

Bus Bay at km. 140+420 (LHS)

Bus Bay at km. 200+620 (LHS)

Bus Bay at km. 215+850 (RHS)

3.16 Balance Work Status

The project has received Completion Certificate on 09th March 2015 by completing all the works as mentioned in the Technical Schedules of Concession Agreement. There are no balance works to be executed as per CA.

3.17 Operation and Maintenance

3.17.1 O&M Contract

As per Clause 18.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, or otherwise make improvements to the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement, Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems, More Specifically.

The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services.

3.17.2 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have made from the

expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.17.3 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

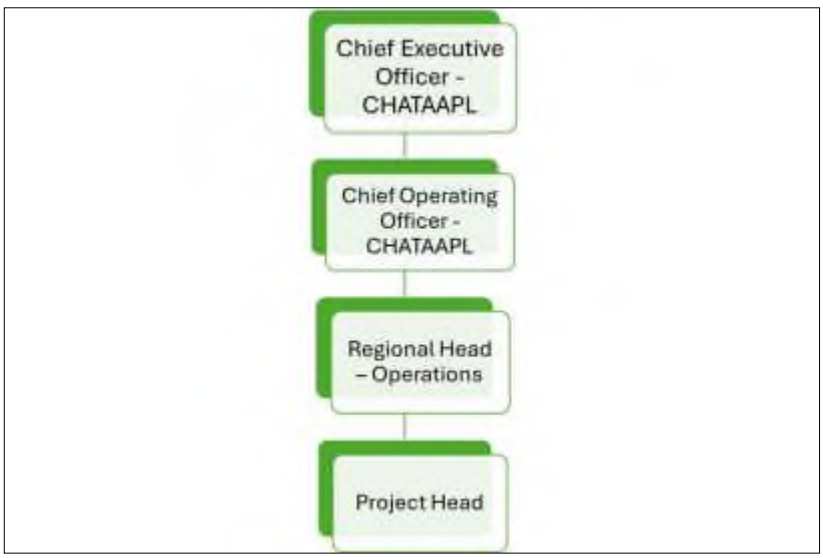
Currently, the Project Road is maintained by Concessionaire.

The Routine Maintenance Cost is presented in the subsequent chapter.

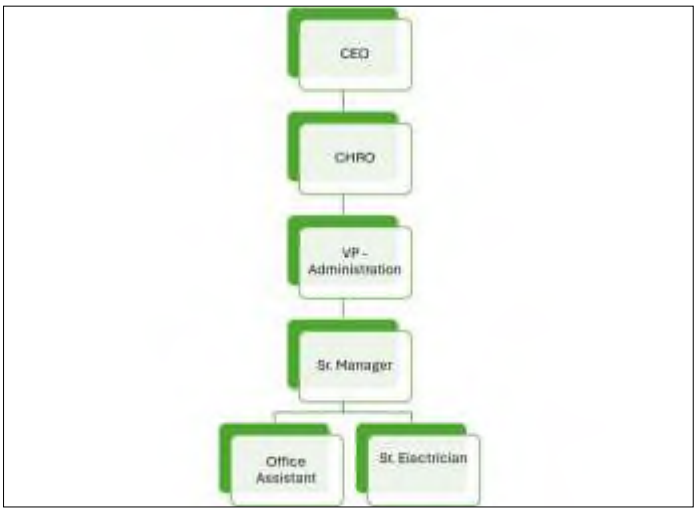
3.17.4 Organization Chart

The Concessionaire has provided the Organization Chart at site for Operation and maintenance. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent sub-contractors.

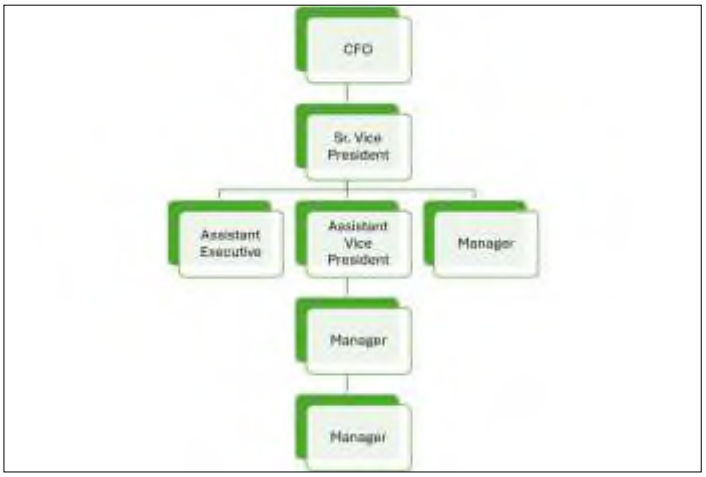
Project Head



Administration - Head Office

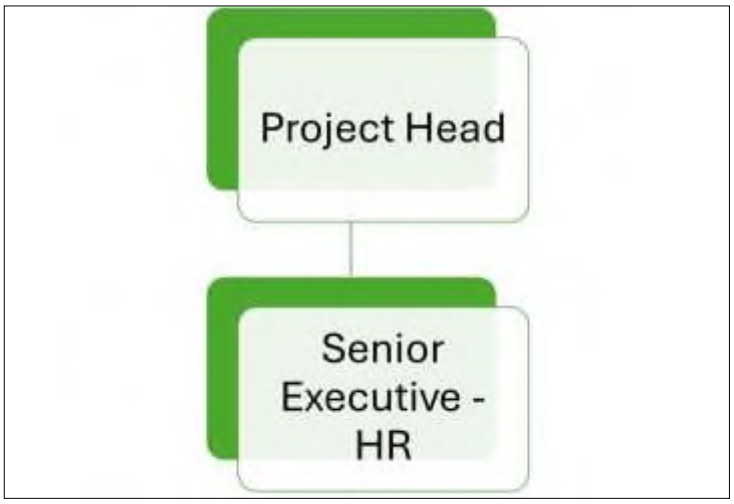


Finance & Accounts - Head Office

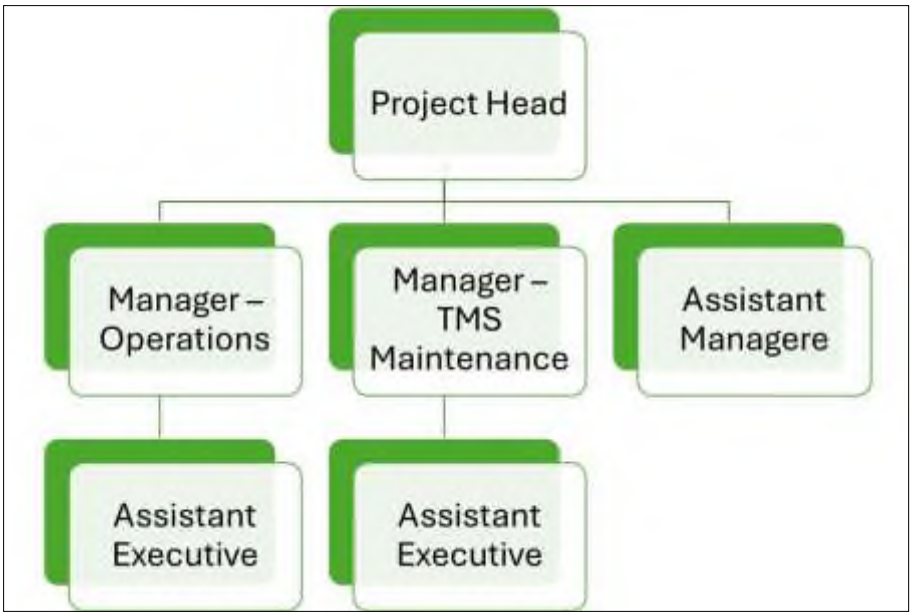


Secretarial-Head Office

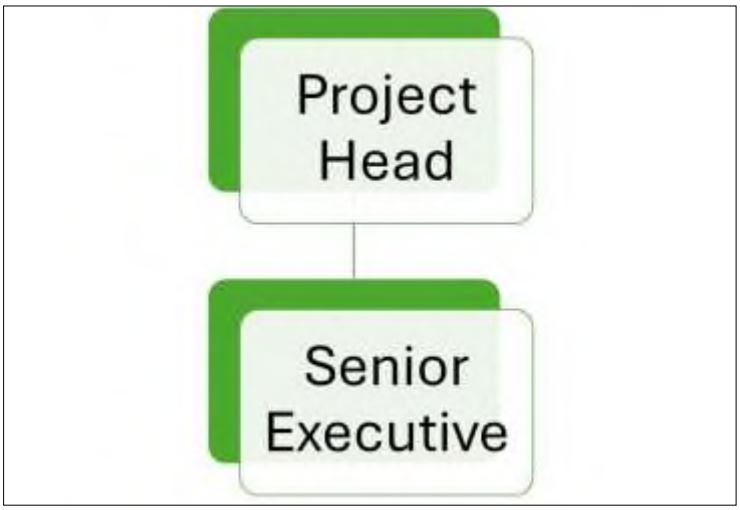
Human Resource - Site Office



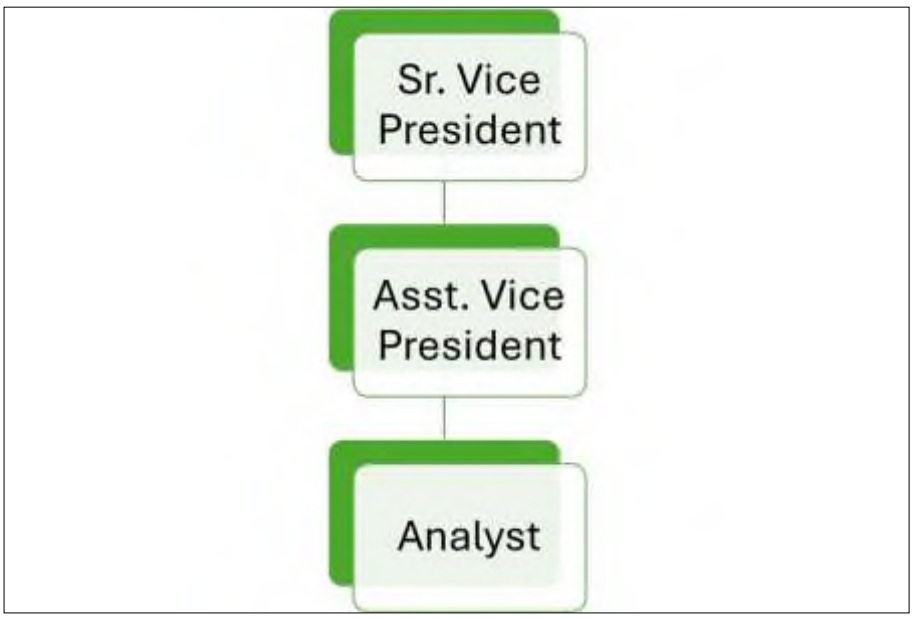
Finance & Accounts - Site Office



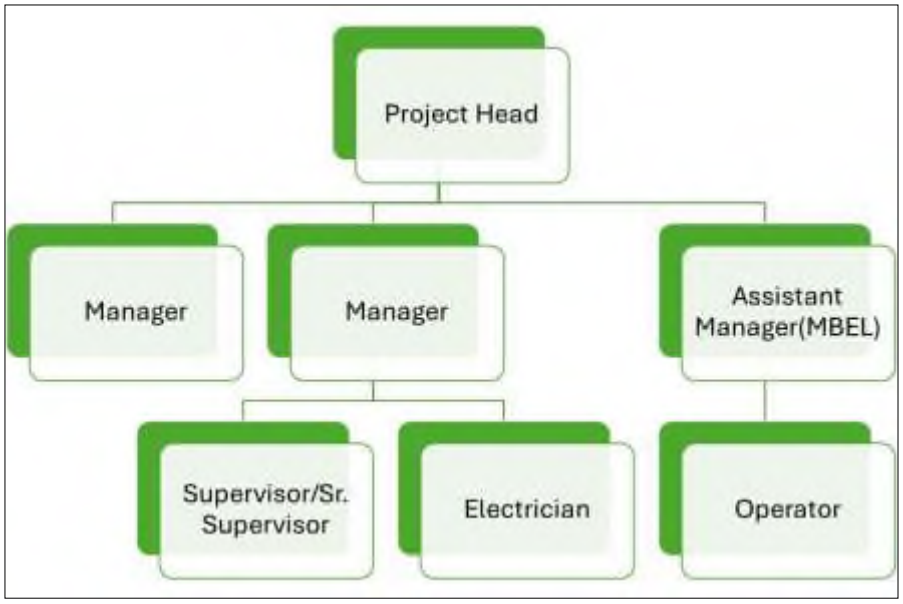
Road Safety– Site Office



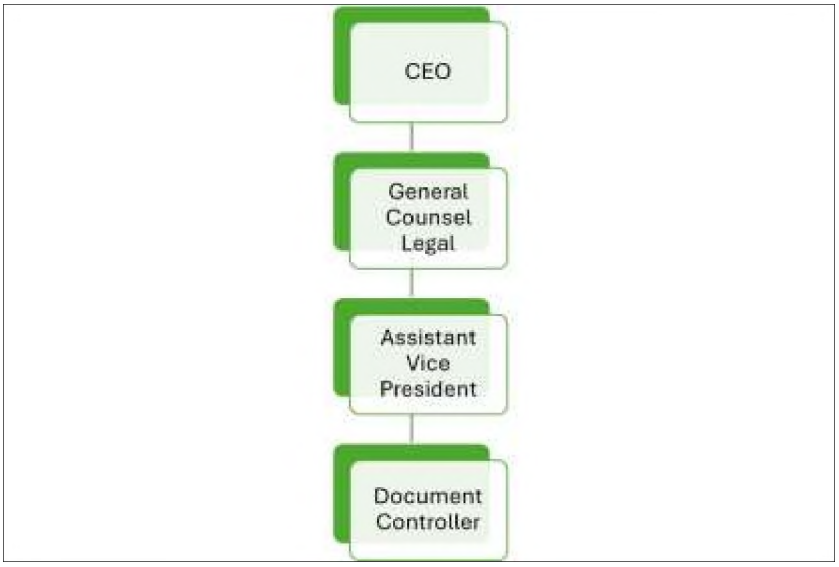
Tax Treasury & Internal Controls - HO



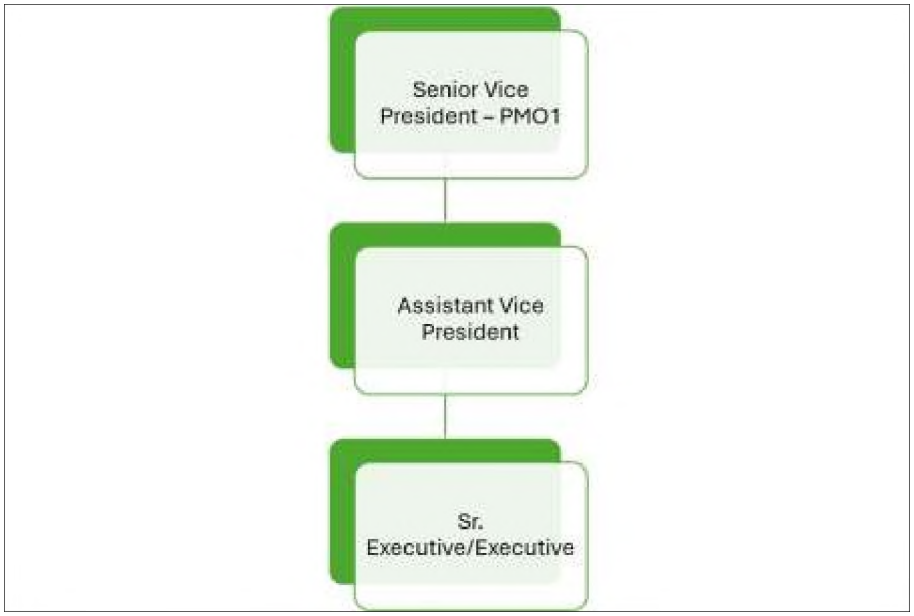
Administration - Site Office

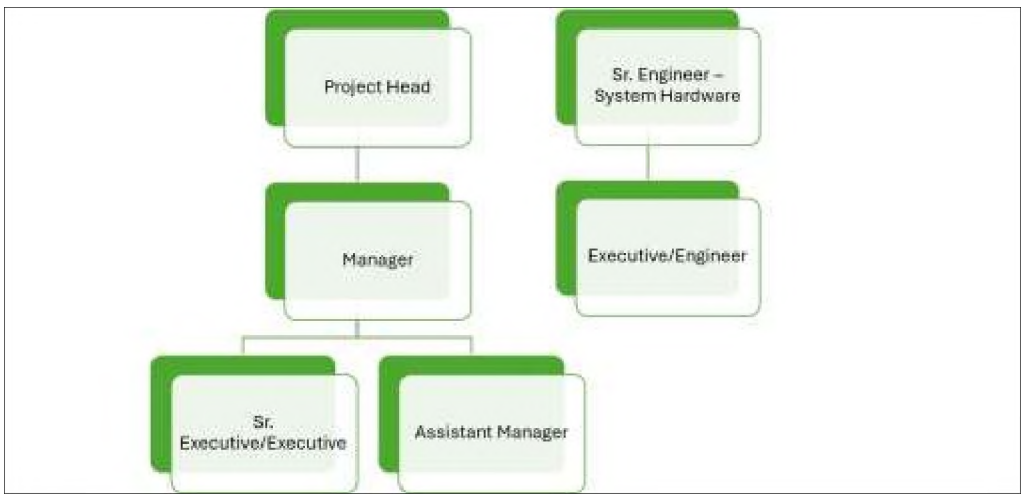


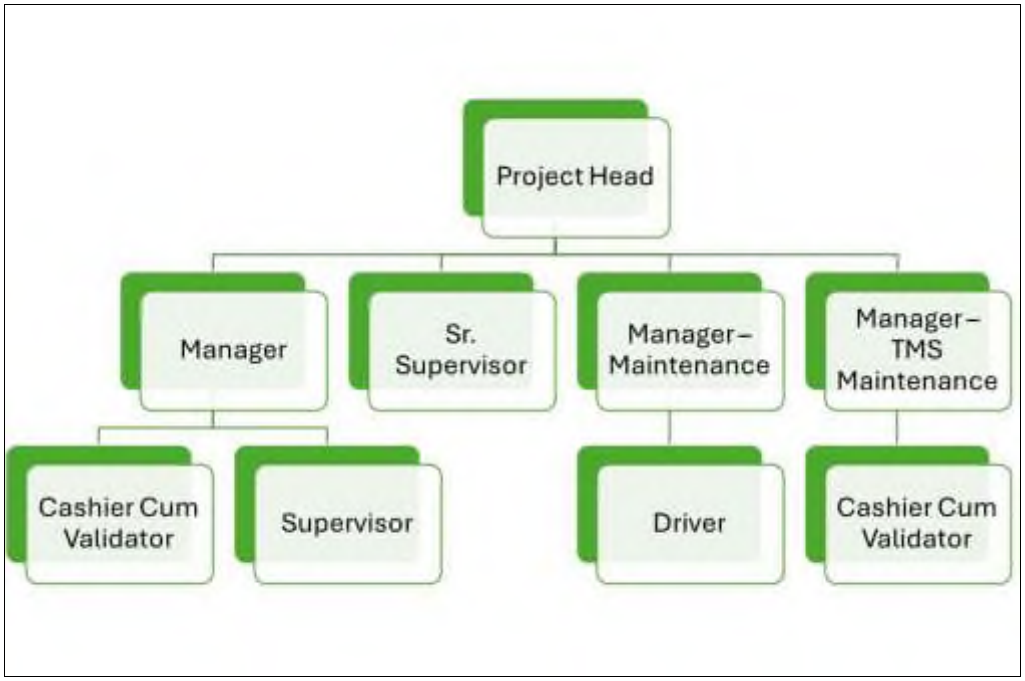
Contracts – Site office



PMO - Site office







JMTPL-Manpower Summary

S.NO.	DEPARTMENT	HEAD OFFICE	SITE	TOTAL STRENGTH
1	Administration	2	1	3
2	Finance & Accounts	0	3	3
3	Human Resource	0	1	1
4	Maintenance	0	7	7
5	TMS Maintenance	0	10	10
6	Operations	0	18	18
7	PMO-1	0	2	2
8	Secretarial	1	0	1
9	Finance Controlling	4	0	4
10	Contracts	0	1	1
11	Road Safety	0	1	1
12	Tax Treasury & Internal Controls	0	0	0
	Total	7	44	51

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Concessionaire as per Scope of Work. The Project Road has received Completion Certificate on 9th March 2015.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 25 years from the Appointed Date including construction period of 36 months. For operation and maintenance purposes, the Project Road is divided into two sections viz **MS-1** (Length of 54.729 kms, from km. 119+567 to km. 174+296) and **MS-2** (Length of 54.359 kms, from km. 174+741 to km. 229+100).

4.2 Axle Load and VDF

The Concessionaire has conducted the Axle Load Survey on Project Road at km. 156+600 (near Sikandra Toll Plaza) in the month of March 2022 and at km. 204+500 (near Rajadhok Toll Plaza) in the month of August 2023. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor (VDF)

Vehicle Category	Vehicle Damage Factor (VDF)			
	MS-1		MS-2	
	LHS	RHS	LHS	RHS
Bus	1.210	1.171	1.139	1.001
LCV	0.628	1.130	0.508	1.196
2-Axle	2.666	4.842	2.487	4.053
3-Axle	6.601	7.662	4.909	7.126
MAV	16.108	24.161	12.309	20.772

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data as provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

MSA Calculation (MS-1 LHS)			
Year	**MSA**	**Cumulative MSA**	**Remarks**
FY 27	9.67	**9.67**	
FY 28	10.20	**19.87**	
FY 29	10.71	**30.58**	
FY 30	11.09	**41.67**	
FY 31	11.63	**53.30**	**End of concession period**

MSA Calculation (MS-1 RHS)			
Year	**MSA**	**Cumulative MSA**	**Remarks**
FY 27	14.32	**14.32**	
FY 28	15.11	**29.42**	
FY 29	15.88	**45.30**	
FY 30	16.44	**61.74**	
FY 31	17.24	**78.98**	**End of concession period**

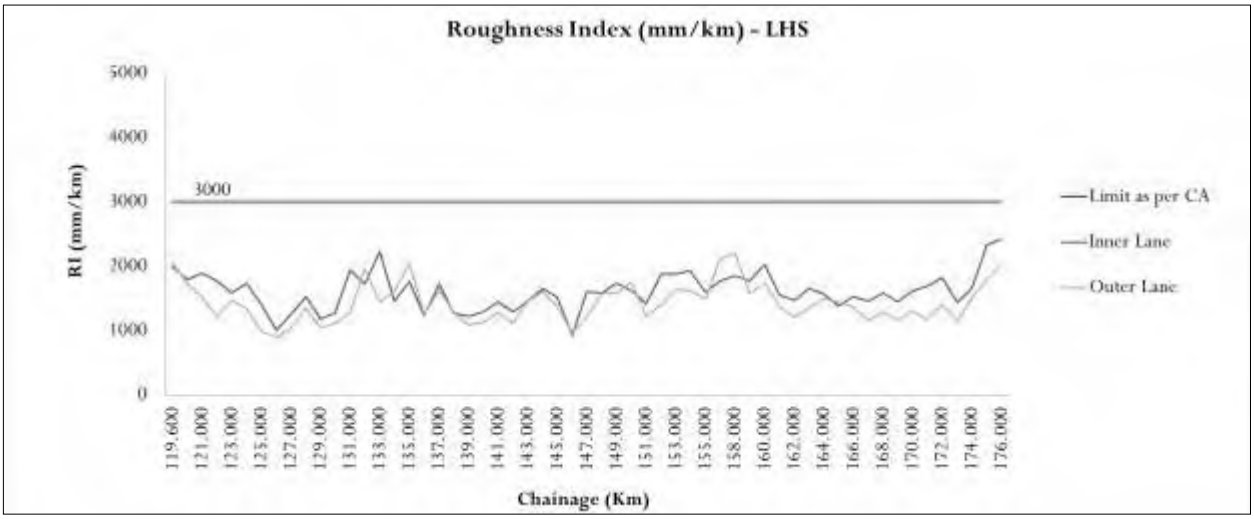
MSA Calculation (MS-2 LHS)			
Year	**MSA**	**Cumulative MSA**	**Remarks**
FY 27	5.54	**5.54**	
FY 28	5.85	**11.40**	
FY 29	6.15	**17.55**	
FY 30	6.37	**23.92**	
FY 31	6.68	**30.60**	**End of concession period**

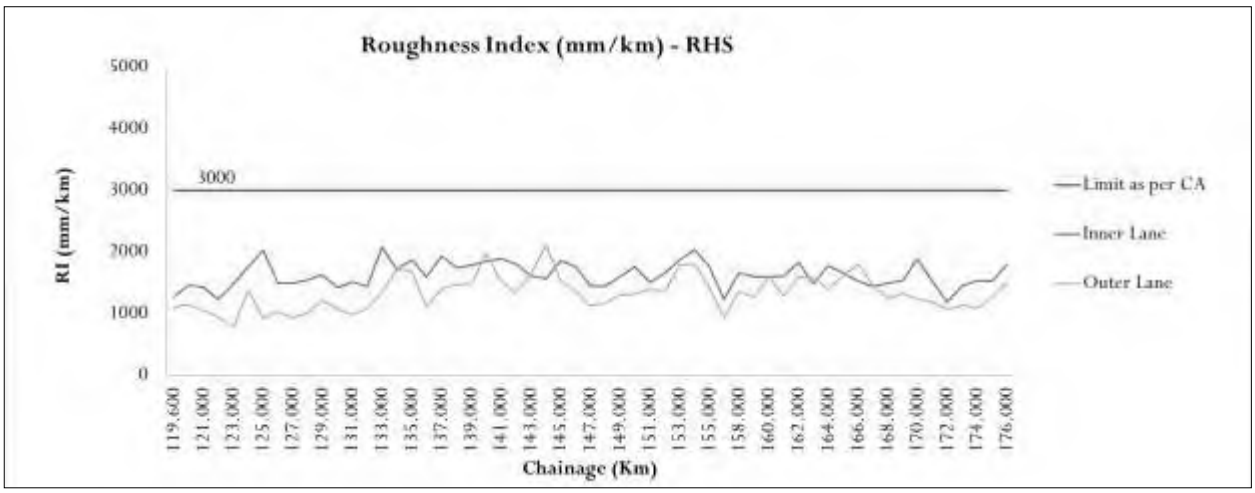
MSA Calculation (MS-2 RHS)			
Year	**MSA**	**Cumulative MSA**	**Remarks**
FY 27	9.07	**9.07**	
FY 28	9.58	**18.64**	
FY 29	10.07	**28.72**	
FY 30	10.42	**39.14**	
FY 31	10.94	**50.08**	**End of concession period**

4.4 Network Survey Vehicles (NSV) Survey

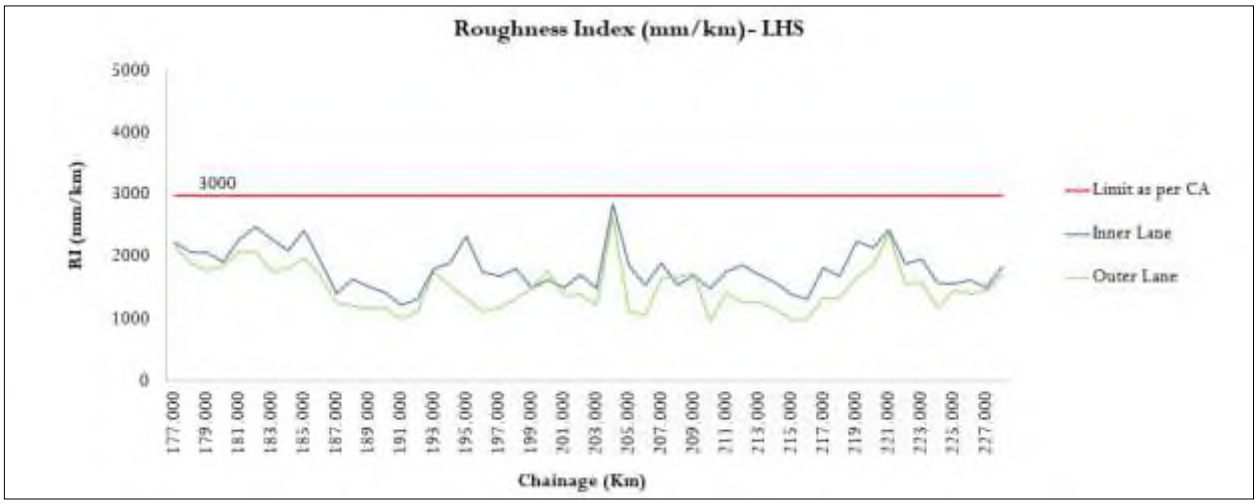
The Concessionaire has provided NSV survey data conducted on MS-1 and MS-2 on 23-April-2024 to 25 April-2024. The NSV data is used to assess the riding quality and pavement condition of Project Road. The summary of classification of pavement as per Schedule - L is given in below table:

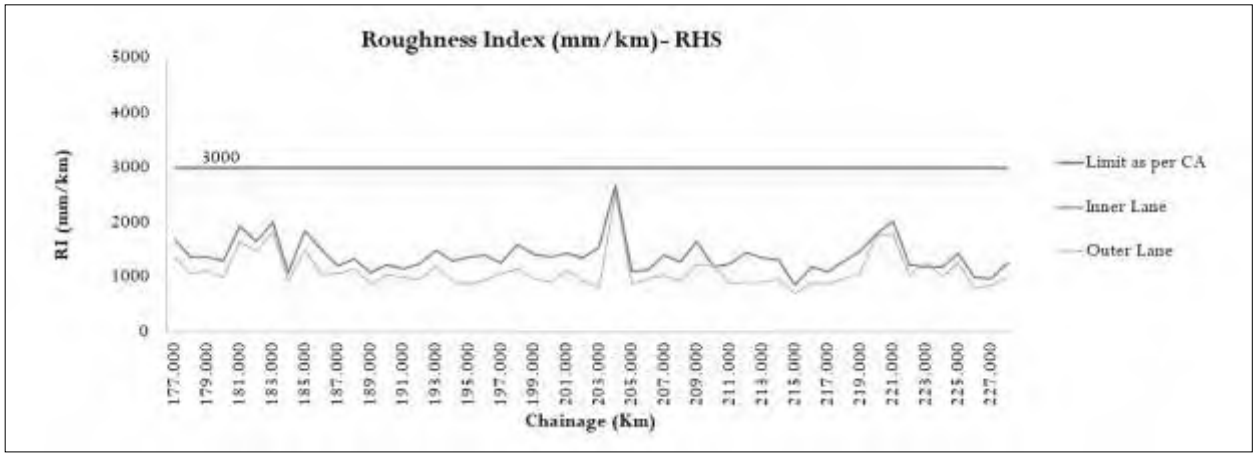
MS-1					
Riding Condition	**Roughness Index (mm/km)**	**Length (km)**			
		LHS		**RHS**	
		Inner	**Outer**	**Inner**	**Outer**
Good	<2000	52.0	52.0	53.4	55.4
Fair	2001-3000	5.4	5.4	3.0	1.0
Poor	>3000	0.0	0.0	0.0	0.0





MS-2					
Riding Condition	Roughness Index (mm/km)	Length (km)			
		LHS		RHS	
		Inner	Outer	Inner	Outer
Good	<2000	39.0	47.0	49.0	51.0
Fair	2001-3000	13.0	5.0	3.0	1.0
Poor	>3000	0.0	0.0	0.0	0.0





Conclusion:

Riding quality is generally fair to good.

4.5 Structural Investigations

Evaluation of existing pavement using Falling Weight Deflectometer (FWD) survey was carried out in the month of September 2024. Summary of FWD Survey report for is presented below:

Table 4-3 Summary of FWD Survey

Description	Length (km)	
	LHS	RHS
Less than 20 MSA	10	8
20-50 MSA	18	15
Greater than 50 MSA	81.1	86.1

The strengthening/ overlay of pavement for project stretch are derived from 15th percentile of corrected E moduli of existing pavement, existing crust thickness etc. The combination of existing pavement and overlay will be analysed as a four-layer system to ensure that fatigue and rutting criteria are satisfied for the calculated design traffic in terms of MSA. IITPAVE program is used to compute strain value at bottom of bituminous layer and top of subgrade in order to calculate design life of the proposed overlay. Poisson's ratio values used in overlay analysis from top to bottom of existing pavement layers are 0.5, 0.4 and 0.4 for existing bituminous, existing granular and existing subgrade layers respectively. Elastic modulus of 3000 MPa (VG-40) is used for the new bituminous layer.

4.6 Test pit and Subgrade Investigation

The Concessionaire has carried out the subgrade investigation for Project Road. The results of the same as provided by the Concessionaire is tabulated as below.

Table 4-4 Test Results Summary of Natural Ground Soil Samples

Sr. No.	Design Chainage (km)	Side (LHS / RHS)	Soil Classification as per IS: 1498	Gradation: Percent by weight passing through the Sieve (IS:2720-IV)						Clay & silt content %	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR at MDD (%)	Free Swell Index (%)	Degree of Compaction (%)
				19.0 mm	10.0 mm	4.75 mm	2.0 mm	425 microns	75 microns		Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density gm/cc.	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	120+000	LHS	ML	100.0	98.0	95.8	95.2	93.4	78.4	78.4	26	NP	NP	1.93	9.2	1.77	7.0	8.2	0.0	89.4
2	122+550	RHS	CL	100.0	96.4	94.8	93.8	91.6	85.2	85.2	32	18	14	2.01	12.1	1.97	6.0	4.9	30.0	98.0
3	125+000	LHS	ML	100.0	97.6	94.5	93.4	89.6	56.3	56.3	23	NP	NP	1.95	8.7	1.90	5.0	13.4	0.0	97.4
4	127+500	RHS	CL-ML	100.0	100.0	96.6	94.3	87.9	70.0	70.0	25	18	7	1.96	9.6	1.92	7.0	8.0	15.2	98.0
5	130+000	LHS	SM	100.0	97.9	95.7	95.4	94.1	40.5	40.5	21	NP	NP	1.96	8.8	1.88	8.0	14.1	0.0	95.9
6	132+500	RHS	ML	100.0	94.0	88.4	86.7	83.4	76.1	76.1	19	NP	NP	1.92	8.9	1.85	4.0	10.7	0.0	96.4
7	135+400	LHS	SM	95.7	90.6	89.1	88.5	85.1	30.7	30.7	22	NP	NP	1.97	7.8	1.89	7.0	18.4	0.0	95.9
8	137+500	RHS	SM	100.0	100.0	99.3	99.1	98.7	40.3	40.3	24	NP	NP	1.97	7.9	1.94	4.0	14.6	0.0	98.5
9	140+000	LHS	ML	100.0	99.2	98.8	98.5	96.9	59.5	59.5	21	NP	NP	2.02	8.8	1.84	5.0	13.4	12.5	91.1
10	142+500	RHS	ML	100.0	95.4	88.9	87.2	84.3	66.6	66.6	25	NP	NP	1.98	9.2	1.91	4.5	8.3	0.0	96.5
11	145+000	LHS	SM	98.8	95.1	92.6	91.5	88.0	34.7	34.7	24	NP	NP	1.95	8.1	1.84	6.0	14.8	0.0	94.4
12	147+500	RHS	SM	100.0	98.6	96.5	95.9	94.2	48.9	48.9	22	NP	NP	1.98	9.3	1.82	5.0	11.3	0.0	91.9
13	150+000	LHS	ML	100.0	99.3	99.0	98.9	98.4	50.5	50.5	21	NP	NP	1.99	8.7	1.93	6.5	12.4	0.0	97.0

Sr. No.	Design Chainage (km)	Side (LHS / RHS)	Soil Classification as per IS: 1498	Gradation: Percent by weight passing through the Sieve (IS:2720-IV)						Clay & silt content %	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR at MDD (%)	Free Swell Index (%)	Degree of Compaction (%)
				19.0 mm	10.0 mm	4.75 mm	2.0 mm	425 microns	75 microns		Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density gm/cc.	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
14	152+450	RHS	ML	100.0	100.0	100.0	99.9	99.8	85.5	85.5	23	NP	NP	1.93	8.8	1.81	4.0	7.9	0.0	93.8
15	155+000	LHS	SM	100.0	99.6	98.3	97.6	95.7	50.0	50.0	23	NP	NP	2.02	8.9	1.90	7.0	14.2	0.0	94.1
16	157+600	RHS	ML	99.1	97.9	96.1	95.5	93.5	56.6	56.6	21	NP	NP	1.98	8.4	1.87	8.5	11.8	0.0	94.4
17	160+000	LHS	ML	100.0	99.5	98.0	97.2	94.3	69.7	69.7	19	NP	NP	1.97	9.5	1.89	5.0	9.9	12.5	95.9
18	162+300	RHS	ML	100.0	98.6	96.1	95.4	93.2	86.5	86.5	26	NP	NP	1.93	9.6	1.90	6.5	8.1	0.0	98.4
19	165+000	LHS	SM	100.0	98.3	96.3	95.8	94.0	39.0	39.0	23	NP	NP	2.02	9.4	1.86	8.0	9.7	0.0	92.1
20	167+400	RHS	ML	100.0	96.1	86.5	82.2	75.5	64.5	64.5	22	NP	NP	2.00	9.0	1.93	7.0	10.9	0.0	96.5
21	170+350	LHS	ML	96.0	90.5	81.6	79.1	74.9	67.2	67.2	22	NP	NP	1.93	9.7	1.86	7.0	5.8	11.1	96.4
22	172+600	RHS	CL	100.0	96.3	93.1	92.0	87.4	70.1	70.1	27	19	8	1.95	10.6	1.92	9.0	7.2	20.0	98.5
23	175+000	LHS	CL	100.0	97.3	92.1	89.5	81.6	69.3	69.3	28	18	10	1.93	11.7	1.85	8.0	5.4	22.2	95.9

Table 4-5 Test Results Summary of Bituminous Layer Samples

Sr. No.	Chainage (km)	Side (LHS/ RHS)	Lane	Type of Material Tested	Source of sample	Cumulative Percentage of Passing through IS Sieve (mm)													Bitumen Content (%)	Bulk Specific gravity
						45.0	37.5	26.5	19	13.2	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.075		
1	125+000	LHS	Outer Lane	BC	CORE	100.0	100.0	100.0	98.1	95.2	72.6	49.6	37.2	23.6	17.5	12.5	5.1	2.2	5.69	-
2	125+500	RHS	Inner Lane	DBM	CORE	100.0	100.0	92.1	86.0	78.3	55.2	39.4	33.2	24.0	20.7	17.7	11.5	9.4	4.61	2.48
3	128+300	RHS	Outer Lane	BC	CORE	100.0	100.0	100.0	100.0	89.9	69.8	52.9	43.7	27.7	21.0	15.3	5.5	2.9	5.84	2.57
4	129+000	RHS	Inner Lane	DBM	CORE	100.0	100.0	100.0	100.0	95.1	69.9	49.2	38.8	22.0	16.5	11.6	3.6	1.8	4.63	2.28
5	130+000	RHS	Outer Lane	BC	CORE	100.0	100.0	100.0	100.0	85.6	65.1	50.7	42.7	28.5	22.6	16.6	4.7	1.8	5.71	2.59
6	134+000	RHS	Inner Lane	DBM	CORE	100.0	100.0	100.0	100.0	86.3	61.1	41.4	31.2	14.4	8.1	4.5	1.1	0.3	4.74	2.42
7	134+400	LHS	Inner Lane	BC	CORE	100.0	100.0	100.0	100.0	92.4	69.4	45.2	33.3	22.6	18.2	14.1	6.0	3.0	5.06	2.58
8	140+200	RHS	Outer Lane	DBM	CORE	100.0	100.0	95.10	95.10	84.9	58.2	39.9	29.2	19.7	16.5	13.7	6.1	2.7	4.37	-
9	141+200	LHS	Outer Lane	BC	CORE	100.0	100.0	100.0	100.0	94.4	73.4	51.2	41.8	26.7	20.3	14.7	5.2	2.8	5.52	2.59
10	144+000	LHS	Inner Lane	DBM	CORE	100.0	100.0	100.0	100.0	85.6	59.5	39.1	30.7	18.3	13.7	9.6	3.4	1.6	4.49	2.47
11	144+000	RHS	Inner Lane	BC	CORE	100.0	100.0	100.0	100.0	89.4	64.6	49.0	41.6	25.7	19.2	13.7	3.4	1.3	5.08	-
12	145+000	LHS	Outer Lane	DBM	CORE	100.0	100.0	100.0	98.7	78.3	55.1	33.1	22.2	14.4	12.3	10.7	6.5	4.3	4.57	-
13	150+800	RHS	Outer Lane	BC	CORE	100.0	100.0	100.0	100.0	96.3	72.1	55.5	45.6	29.4	22.4	16.7	5.6	2.3	5.77	-
14	155+000	LHS	Inner Lane	DBM	CORE	100.0	100.0	100.0	93.8	86.9	64.1	41.1	32.5	20.3	16.3	12.7	5.5	3.1	4.33	-
15	161+300	LHS	Outer Lane	BC	CORE	100.0	100.0	100.0	100.0	100.0	74.9	49.9	37.1	22.9	16.8	12.1	4.8	2.5	6.09	-
16	162+200	RHS	Inner Lane	DBM	CORE	100.0	100.0	100.0	98.5	86.1	56.5	37.2	29.6	19.4	15.9	12.3	5.1	2.6	4.29	2.47
17	165+300	LHS	Inner Lane	DBM	CORE	100.0	100.0	100.0	100.0	78.7	50.1	37.0	29.8	20.1	15.9	12.5	5.9	3.7	4.38	2.42
18	168+600	LHS	Outer Lane	BC	CORE	100.0	100.0	100.0	100.0	95.6	75.6	52.1	37.9	21.1	15.3	11.4	5.6	3.2	4.99	2.45
19	169+150	LHS	Inner Lane	BC	CORE	100.0	100.0	100.0	98.8	92.3	59.4	43.1	32.7	19.5	14.2	10.9	6.7	4.3	4.94	-
20	171+500	LHS	Outer Lane	DBM	CORE	100.0	100.0	100.0	92.5	72.1	51.2	41.7	34.7	22.3	17.9	14.4	7.2	4.0	4.48	-
21	171+500	RHS	Outer Lane	BC	CORE	100.0	100.0	100.0	100.0	95.4	63.4	38.5	31.4	21.6	18.5	14.1	7.2	4.3	5.50	2.53
22	172+800	LHS	Inner Lane	DBM	CORE	100.0	100.0	100.0	97.5	67.2	30.9	19.4	15.5	9.8	7.8	5.7	2.0	1.0	3.72	-
23	174+000	RHS	Inner Lane	DBM	CORE	100.0	100.0	100.0	100.0	91.0	65.2	50.4	40.0	23.9	17.6	12.1	4.1	1.9	4.88	2.52
24	174+200	LHS	Outer Lane	BC	CORE	100.0	100.0	100.0	92.3	77.0	61.9	51.3	42.2	24.8	18.6	14.1	5.1	2.3	5.17	2.54

4.7 Periodic Maintenance Strategy

Major Maintenance is required in order to comply requirement of Concession Agreement and to maintain performance level as defined in Schedule-L. As per schedule-L of Concession Agreement, periodic maintenance shall be carried out at least once every 5th year from COD and in the last year of concession period.

It is noted that Concessionaire has carried out 1st Major Maintenance in year 2018 / 2019 for both MS-1 and MS-2. Presently, the Concessionaire has carried out 2nd Major Maintenance for MS-1 in the month of March 2023 and completed 2nd Major Maintenance for MS-2 in FY 2025.

3rd Major Maintenance for MS-1 is forecasted in FY 2028 and for MS-2 in FY 2029. As per Concession Agreement, periodic maintenance shall be carried out in the last year of concession period prior to handover. Accordingly, major maintenance is proposed in FY 2031 for the entire length. Before carrying out major maintenance, structural evaluation shall be done through surveys and investigation to determine the overlay requirement.

The table below shows the major / periodic maintenance cycle throughout the balance concession period for the Project Road.

Table 4-6 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2028	**MS-1:** LHS: BC 30 mm (PMB) - 100%, DBM 50 mm (VG 40) - 10% RHS: BC 40 mm (PMB) - 100%, DBM 50 mm (VG 40) - 10%	30 mm BC overlay in 50% and Micro-surfacing in 50% length
2	FY 2029	**MS-2:** LHS: BC 30 mm (PMB) - 100%, DBM 50 mm (VG-40) - 10% RHS: BC 30 mm (PMB) - 100%, DBM 50 mm (VG-40) - 10%	30 mm BC overlay in 50% and Micro-surfacing in 50% length
3	FY 2030	-	-
4	FY 2031	30 mm BC (VG-40) - 100%, 50 mm DBM (VG-40) - 10%	30 mm BC overlay in 50% and Micro-surfacing in 50% length

The projected cost for periodic/ major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

- Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

- **Manpower and labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

- **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

  Therefore, bitumen prices are considered as per the forecast of Client. Current published price of bitumen is considered for unit rates calculation for FY 27. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards, since bitumen prices have been range bound over the last five-six years.

  Polymer cost and modification cost are provided by the client to work out BC rate with PMB and HiMA.

  Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex- MI Supply excluding discount and GST

Sr. No.	Supply Location	Applicability of Rates	Product	Current Published Price (FY 2027)	Long term price (Avg. last 10 years)
1	Mathura	All States	VG-10	45,102	35,125
2			VG-30	46,402	36,137
3			VG-40	48,962	38,131
4	Panipat	All States	VG-10	45,102	35,125
5			VG-30	46,402	36,137
6			VG-40	48,962	38,131
7	Koyali	All States	VG-10	47,102	37,125
8			VG-30	48,402	38,137
9			VG-40	51,082	40,251

Sr. No.	Supply Location	Applicability of Rates	Product	Current Published Price (FY 2027)	Long term price (Avg. last 10 years)
10	Haldia	All States	VG-10	46,602	35,683
11			VG-30	47,402	36,295
12			VG-40	49,962	38,256
13	Barauni	All States	VG-10	47,132	36,213
14			VG-30	48,432	37,325
15			VG-40	50,992	39,286
16	CPCL	Kerala	VG-10	47,402	35,519
17			VG-30	48,402	36,395
18			VG-40	50,762	38,120
19	CPCL	Tamil Nadu	VG-10	47,902	36,019
20			VG-30	48,402	36,395
21			VG-40	50,962	38,320
22	CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
23			VG-30	45,402	33,395
24			VG-40	47,962	35,320
25	CPCL	Karnataka	VG-10	44,602	32,719
26			VG-30	45,402	33,395
27			VG-40	47,962	35,320

- **Sand and Aggregate:** Market rates are considered from the quarry located nearest to Project Road.
- **Cement:** Market rates are considered from the nearest local market.
- **Steel :** Rate of steel is taken from SAIL.
- **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable PWD SOR.
- **Actual Rates of items as per work order:** The rates of road marking, road stud, kerb raising, micro surfacing, milling, aggregate rates etc. are considered as per the work order shared by the client.
- Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

  Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below:

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.) (FY 28 onwards)
1	Dense Bituminous Macadam (PMB)	Cum	11,549
2	Dense Bituminous Macadam (VG-40)	Cum	9,467
3	Bituminous Concrete (HiMA)	Cum	14,512
4	Bituminous Concrete (PMB)	Cum	13,332
5	Bituminous Concrete (VG-40)	Cum	10,675
6	Bituminous Concrete (VG-30)	Cum	10,362
7	Milling	Sqm	75
8	Micro-surfacing	Sqm	150

Sr. No.	Item Description	Unit	Rates (Rs.) (FY 28 onwards)
9	Kerb Re-laying	Rmt	270
10	Road Marking - BC Surface	Sqm	423
11	Road Marking - Micro Surface	Sqm	526
12	Road Studs	Nos.	168

5.3 Balance Works Cost

As discussed in the previous chapter, there are no balance works to be executed as per CA. Hence, balance work cost is **NIL**.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance, and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads:

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Toll Security Services
4. Incident Management Services
5. Electricity and Diesel Charges
6. TMS / HTMS / System Expenses
7. Office Operating Expenses
8. Vehicle Running Expenses
9. Professional Fees Expense
10. Community Development
11. Communication Expenses
12. Conveyance Expenses
13. Insurance Expense
14. IE Fees
15. Horticulture & ROW Maintenance
16. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation and Maintenance cost (Routine O&M) is presented below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation & Routine Maintenance Cost

Sr. No.	Particulars	Amount (Rs)
1	Salary and Welfare Expenses	1,26,00,000
2	Tolling Operations Services	5,34,52,743
3	Toll Security Services	2,16,22,320
4	Incident Management & Emergency Services	3,09,94,146
5	Electricity and Diesel Charges	73,02,885
6	TMS / System Expenses	27,52,500
7	Office Operating Expenses	38,31,310
8	Vehicle Running Expenses	39,60,000
9	Professional Fees Expense	54,73,300
10	Community Development	19,70,388
11	Communication Expenses	5,47,330
12	Conveyance Expenses	6,56,796
13	Insurance Expense	49,25,970
14	IE Fees	54,73,300
15	Routine Maintenance Cost (Project Road)	5,70,89,669
16	Horticulture & ROW Maintenance	2,98,65,368
17	Miscellaneous including Contingency	62,22,520
	Total O&M Cost (in Rs)	**24,87,40,545**
	Total O&M Cost (in Cr)	**24.87**
	Per km Cost (Lakh)	**22.72**

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost (Base year cost) is provided as below. The detailed working of the same is presented in **Annexure-II**.

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remark
1	FY 2026	-	-
2	FY 2027	-	-
3	FY 2028	78.28	MS -1
4	FY 2029	75.39	MS -2
5	FY 2030	-	-
6	FY 2031	125.83	MS -1 & MS -2
Total MM Cost (Cr.)		**279.50**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	ATMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2030	0.58	
Total Cost (Cr.)		**0.58**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-4 Escalation

Year	Escalation	Year	Escalation
2027	-	**2042**	3.99%
2028	4.86%	**2043**	3.99%
2029	4.44%	**2044**	3.99%
2030	4.24%	**2045**	3.99%
2031	4.13%	**2046**	3.99%
2032	4.08%	**2047**	3.99%
2033	4.01%	**2048**	3.99%
2034	4.00%	**2049**	3.99%
2035	4.03%	**2050**	3.99%
2036	4.01%	**2051**	3.99%
2037	3.98%	**2052**	3.99%
2038	3.98%	**2053**	3.99%
2039	4.00%	**2054**	3.99%
2040	3.99%	**2055**	3.99%
2041	3.99%	**2056**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summarised yearly for remaining concession period along with escalation as mentioned in the above section.

Escalated O&M Cost (in INR Cr.)

	Year of expense	FY27	FY28	FY29	FY30	FY31
1	Routine O&M Cost					
1.01	Salary and Welfare Expense	1.26	1.32	1.38	1.44	1.50
1.02	Tolling Operations Services	5.35	5.61	5.85	6.10	6.35
1.03	Toll Security Services	2.16	2.27	2.37	2.47	2.57
1.04	Incident Management Services	3.10	3.25	3.39	3.54	3.68
1.05	Electricity and Diesel Charges	0.73	0.77	0.80	0.83	0.87
1.06	TMS / System Expenses	0.28	0.29	0.30	0.31	0.33
1.07	Office Operating Expenses	0.38	0.40	0.42	0.44	0.46
1.08	Vehicle Running Expenses	0.40	0.42	0.43	0.45	0.47
1.09	Professional Fees Expense	0.55	0.57	0.60	0.62	0.65
1.10	Community Development	0.20	0.21	0.22	0.22	0.23
1.11	Communication Expenses	0.05	0.06	0.06	0.06	0.07
1.12	Conveyance Expenses	0.07	0.07	0.07	0.07	0.08
1.13	Insurance Expense	0.49	0.52	0.54	0.56	0.59
1.14	IE Fees	0.55	0.57	0.60	0.62	0.65
1.15	Routine Maintenance Cost	5.71	5.99	6.25	6.52	6.79
1.16	Horticulture & ROW Maintenance	2.99	3.13	3.27	3.41	3.55
1.17	Miscellaneous and Contingency	0.62	0.65	0.68	0.71	0.74
	Subtotal of O&M Cost	24.87	26.08	27.24	28.40	29.57
2	Major Maintenance Cost		80.55	79.77		141.91
3	Periodic Cost of TMS / HTMS Replacement	-	-	-	0.66	
	Total O&M + MM Cost	**24.87**	**106.63**	**107.01**	**29.06**	**171.48**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Ordinary Repair Cost for Flexible (with GST)	**5,70,89,669**
(Inclusive of GST)	**= 5.22 lakhs per km**

Sr. No.	Description for Flexible Pavement		Factor	Normal	Urban	Project Length (km)		Per Year Project Maintenance Cost	
				More than 4500 CVD	More than 4500 CVD				
				2,70,932	3,16,442	Normal	Urban	Normal	Urban
1	Four-lane with divided carriageway	Without paved shoulder	1.53	414526.00	484156.00	-	-	-	-
		Paved shoulder	1.70	460584.00	537951.00	81.15	-	3,73,75,470	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	541863.00	632884.00	-	-	-	-
		Paved shoulder	2.20	596050.00	696172.00	-	28.32	-	1,97,14,199
					Total	**109.466**		**5,70,89,669**	

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Potholes repair (50 mm deep)	100 % Pothole free	As & when required	1%
	Volume (cum)			3.75
	Rs/m^3			12066
	Cost in Rupees			45,246
	ii) Patch repair	100 % Patch less	As & when required	1%
	Area (sqm)			100
	Rs/m^2			483
	Cost in Rupees			48,262
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.5%
	Area (sqm)			250
	Rs/m^2			109
	Cost in Rupees			27,140
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.00%
	Area (sqm)			150
	Rs/m^2			89
	Cost in Rupees			13,275
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.50%
	Area (sqm)			112.5
	Rs/m^2			483
	Cost in Rupees			54,295
	v) Road marking	14%	Once in 7th year & @	19843

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
			Repaired location	
	SUB TOTAL			**2,08,061**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6210
	ii) Kuccha Drain Maintenance	100%	Twice in a Year	1092
	SUB TOTAL			**7,302**
3	**Maintenance of Cross Drainage works:**			
	i) Repair of floors	100%	Once in a Year	4978
	ii) Repair of parapets	100%	As & when required	2074
	SUB TOTAL			**7,052**
4	**Maintenance of Minor & Major Bridges:**			
	i) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints	100%	As & when required	36,387
	ii) Repair of minor washouts, erosion scour and animal holes			
	iii) Sealing Cracks with Cement/ Epoxy Mortar			
	iv) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,387**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometre stone etc.		Once in a Year	3639
	ii) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7277
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1213
	iv) Traffic Census		Once in a Year	0
	v) Provision for roughness measurement		Twice in a Year	0

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
	SUB TOTAL			**12,129**
	GRAND TOTAL (Normal)			**2,70,932**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Centre Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	16157
	ii)Repairs to footpath	100%	As & when required	4852
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4852
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7520
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9703
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2426
	SUB TOTAL			**45,510**
	GRAND TOTAL (Urban)			**3,16,442**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY 28) (MS-1)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	**LHS (MS-1)**									
	Tack coat	Sqm						5,70,464	16	91,27,417
	For BC	Sqm	1	56,203	9.00		5,05,830	5,05,830		
	For DBM	Sqm	1	5,353	7.00		37,469	37,469		
2	BC PMB	Cum	1	56,203	9.00	0.03	15,175	15,175	13,332	20,23,11,676
3	BC PMB	Cum	1	-	9.00	0.04	-	-	13,332	-
4	DBM VG 40	Cum	1	5,353	7.00	0.05	1,873	2,061	9,467	1,95,09,480
5	Milling	Sqm	1	5,353	7.00		37,469	37,469	75	28,10,165
6	Micro Surfacing	Sqm	1	-	9.00		-	-	150	-
	RHS (MS-1)									
7	Tack coat	Sqm						5,70,464	16	91,27,417
	For BC	Sqm	1	56,203	9.00		5,05,830	5,05,830		
	For DBM	Sqm	1	5,353	7.00		37,469	37,469		
8	BC PMB	Cum	1	-	9.00	0.03	-	-	13,332	-
9	BC PMB	Cum	1	56,203	9.00	0.04	20,233	20,233	13,332	26,97,48,901
10	DBM VG 40	Cum	1	5,353	7.00	0.05	1,873	2,061	9,467	1,95,09,480
11	Milling	Sqm	1	5,353	7.00		37,469	37,469	75	28,10,165
12	Micro Surfacing	Sqm	1	-	9.00		-	-	150	-
	Main Carriageway - Rigid Pavement									
13	Joint Sealant Replacement @ 5% length	Rmt	5%	1,448	3.50	4.50	579	579	139	80,488
14	Dismantling of CC Panels @ 1% area	Cum	1%		22,800	0.30	68	68	1,339	91,588
15	Replacement of Panels - PQC @ 1% area	Cum	1%		22,800	0.30	68	68	7,169	4,90,360
16	Replacement of Panels - DLC @ 0% area	Cum			22,800	0.15	0	0	3,196	-
	Service Road									
17	Tack coat	Sqm	1	11,050	5.50		66,853	66,853	16	10,69,640
18	BC with 30 mm	Cum	1	11,050	5.50	0.03	2,006	2,006	10,675	2,14,09,513
19	Micro Surfacing	Sqm	1	11,050	5.50		66,853	66,853	150	1,00,27,875
	Structures									

Major Maintenance Cost (FY 28) (MS-1)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
20	Tack coat	Sqm	1	445	17.8		7,908	7,908	16	1,26,529
21	Wearing Coat BC with 30 mm	Cum	1	445	17.8	0.03	237	237	13,332	31,62,910
22	Milling of Ex. Wearing Coat	Sqm	1	445	17.8		7,908	7,908	75	5,93,105
23	Painting of Crash Barrier	Sqm	4	445		1.20	2,136	2,136	85	1,81,576
	Other Works									
24	Raising of Road Kerb	Rmt	2	37,813			75,627	75,627	270	2,04,19,279
25	Replacement of Road Stud									
	Normal Road Stud	Nos	2	6,691			13,382	13,382	168	22,48,176
26	Painting of Kerb	Sqm	2	75,627		0.375	56,720	56,720	109	61,82,504
27	Road Marking	Sqm					49,578	49,578		-
	on BC						47,003	47,003	423	1,98,66,856
	on Micro-surfacing						2,575	2,575	526	13,53,328
	MCW									
	a) Median & Edge line	Sqm	4	57,470	0.15		34,482			
	b) Lane line	Sqm	4	18,965	0.10		7,586			
	Service Road									
	a) Edge line	Sqm	2	22,100	0.10		4,420			
	b) Lane line	Sqm	1	7,293	0.10		729			
	Junction crossing	Sqm					2,361			
28	Filling of Earthen shoulder	Cum					14,172	14,172	675	95,66,418
	MCW		2	53,527	2.00	0.06	12,846			
	Service Road		1	11,050	2.00	0.06	1,326			
29	Median Filling	Cum	-	52,742	4.17	0.05	-	-	315	-
30	Miscellaneous	5%								3,15,91,242
									Total Major Maintenance Cost (Rs)	**66,34,16,086**
									Total Major Maintenance Cost with 18% GST (Rs)	**78,28,30,982**
									Total Major Maintenance Cost with GST (Cr)	**78.28**
									Per km Cost (lakh)	**143.03**
									Escalation Factor for Major Maintenance Cost (FY - 28) (MS-1)	**1.05**
									Total Escalated Cost for Major Maintenance Cost (FY - 28) (MS-1) (Cr)	**80.55**

Major Maintenance Cost (FY 29) (MS-2)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	**LHS (MS-2):**									
	Tack coat	Sqm						5,95,755	16	95,32,081
	For BC	Sqm	1	58,880	9.00		5,29,917	5,29,917		
	For DBM	Sqm	1	5,353	7.00		37,469	37,469		
2	BC with 30 mm	Cum	1	58,880	9.00	0.03	15,898	15,898	13,332	21,19,45,565
3	BC with 40 mm	Cum	1	-	7.00	0.04	-	-	13,332	-
4	DBM with 50 mm	Cum	1	5,353	7.00	0.05	1,873	2,061	9,467	1,95,09,480
5	Milling	Sqm	1	5,353	7.00		37,469	41,216	75	30,91,182
6	Micro Surfacing	Sqm	1	-	9.00		-	-	150	-
	RHS (MS-2):									
7	Tack coat	Sqm						5,95,755	16	95,32,081
	For BC	Sqm	1	58,880	9.00		5,29,917	5,29,917		
	For DBM	Sqm	1	5,353	7.00		37,469	37,469		
8	BC with 30 mm	Cum	1	58,880	9.00	0.03	15,898	15,898	13,332	21,19,45,565
9	BC with 40 mm	Cum	1		7.00	0.04	-	-	13,332	-
10	DBM with 50 mm	Cum	1	5,353	7.00	0.05	1,873	2,061	9,467	1,95,09,480
11	Milling	Sqm	1	5,353	7.00		37,469	41,216	75	30,91,182
12	Micro Surfacing	Sqm	1	-	9.00		-	-	150	-
	Main Carriageway - Rigid Pavement									
13	Joint Sealant Replacement @ 5% length	Rmt	5%	1,448	3.50	4.50	579	579	139	80,488
14	Dismantling of CC Panels @ 1% area	Cum	1%		22,800	0.30	68	68	1,339	91,588
15	Replacement of Panels - PQC @ 1% area	Cum	1%		22,800	0.30	68	68	7,169	4,90,360
	Service Road									
17	Tack coat	Sqm	1	17,578	5.50		96,679	1,01,513	16	16,24,207
18	BC with 30 mm	Cum	1	17,578	5.50	0.03	2,900	3,045	10,675	3,25,09,522
19	Micro Surfacing	Sqm	1	17,578	5.50		96,679	1,01,513	150	1,52,26,943
	Structures									
20	Tack coat	Sqm	1	445	17.8		7,908	7,908	16	1,26,529
21	Wearing Coat BC with 30 mm	Cum	1	445	17.8	0.03	237	237	13,332	31,62,910

Major Maintenance Cost (FY 29) (MS-2)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
22	Milling of Ex. Wearing Coat	Sqm	1	445	17.8		7,908	7,908	75	5,93,105
23	Painting of Crash Barrier	Sqm	4	445		1.20	2,136	2,136	85	1,81,576
	Other Works									
24	Raising of Road Kerb	Rmt	2	44,341			88,683	88,683	270	2,39,44,399
25	Replacement of Road Stud									
	Normal Road Stud	Nos	2	6,691			13,382	13,382	168	22,48,176
	Solar Road Stud	Nos	1				-	-	1,647	-
26	Painting of Kerb	Sqm	2	88,683		0.375	66,512	66,512	109	72,49,832
27	Road Marking	Sqm					52,772	52,772		
	on BC						48,676	48,676	423	2,05,74,035
	on Micro surfacing						4,096	4,096	526	21,52,832
	MCW									
	a) Median & Edge line	Sqm	4	57,470	0.15		34,482			
	b) Lane line	Sqm	4	18,965	0.10		7,586			
	Service Road									
	a) Edge line	Sqm	2	35,156	0.10		7,031			
	b) Lane line	Sqm	1	11,601	0.10		1,160			
	Junction crossing	Sqm					2,513			
28	Filling of Earthen shoulder	Cum					14,956	14,956	675	1,00,95,186
	MCW		2	53,527	2.00	0.06	12,846	12,846		
	Service Road		1	17,578	2.00	0.06	2,109	2,109		
29	Median Filling	Cum	-	52,742	4.17	0.05	-	-	315	-
30	Miscellaneous	5%								3,04,25,415
Total Major Maintenance Cost (Rs)										**63,89,33,717**
Total Major Maintenance Cost with 18% GST (Rs)										**75,39,41,786**
Total Major Maintenance Cost with GST (Cr)										**75.39**
Per km Cost (lakh)										**137.75**
Escalation Factor for Major Maintenance Cost (FY 29) (MS-2)										**1.10**
Total Escalated Cost for Major Maintenance Cost (FY 29) (MS-2) (Cr)										**79.77**

Major Maintenance Cost (FY 31) (MS-1 & MS-2)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						23,07,239	16	3,69,15,829
	For BC	Sqm	2	1,07,815	9.00		19,40,669	20,37,702		
	For DBM	Sqm	2	5,391	7.00		75,470	75,470		
	For Misc. Location	Sqm	2	10,781	9.00		1,94,067	1,94,067		
2	BC with 30 mm	Cum	2	1,18,596	9.00	0.03	64,042	67,244	10,675	71,78,31,468
3	DBM with 50 mm	Cum	2	5,391	7.00	0.05	3,774	3,774	9,467	3,57,23,935
4	Milling	Sqm	2	5,391	7.00		75,470	75,470	75	56,60,283
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	2,841	3.50	4.50	1,137	1,137	139	1,57,980
6	Dismantling of CC Panels @ 1% area	Cum	1%		44,752	0.30	134	134	1,339	1,79,767
7	Replacement of Panels - PQC @ 1% area	Cum	1%		44,752	0.30	134	134	7,169	9,62,471
	Service Road									
8	Tack coat	Sqm	1	31,491	5.50		1,73,199	1,73,199	16	27,71,190
9	BC with 30 mm	Cum	1	31,491	5.50	0.03	5,196	5,196	10,675	5,54,67,108
10	Micro Surfacing	Sqm	1	31,491	5.50		1,73,199	1,73,199	150	2,59,79,910
	Structures									
11	Tack coat	Sqm	1	890	17.8		15,816	15,816	16	2,53,058
12	Wearing Coat BC with 30 mm	Cum	1	890	17.8	0.03	522	522	10,675	55,71,627
13	Milling of Ex. Wearing Coat	Sqm	1	890	17.8		15,816	15,816	75	11,86,210
14	Painting of Crash Barrier	Sqm	4	890		1.20	4,272	4,272	85	3,63,153
	Other Works									
15	Raising of Road Kerb	Rmt	2	82,535			1,65,071	1,65,071	270	4,45,69,148
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	13,380			26,760	26,760	168	44,95,680
	Solar Road Stud	Nos	1	-			-	-	1,647	-
17	Painting of Kerb	Sqm	2	1,65,071		0.375	1,23,803	1,23,803	109	1,34,94,548
18	Road Marking	Sqm					1,02,350	1,02,350		-
	on BC							95,680	423	4,04,40,891
	on Micro-surfacing							6,670	526	35,06,160
	MCW									

Major Maintenance Cost (FY 31) (MS-1 & MS-2)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	a) Median & Edge line	Sqm	4	1,14,939	0.15		68,964			
	b) Lane line	Sqm	4	37,930	0.10		15,172			
	Service Road									
	a) Edge line	Sqm	2	57,256	0.10		11,451			
	b) Lane line	Sqm	1	18,894	0.10		1,889			
	Junction crossing	Sqm					4,874			
19	Filling of Earthen shoulder	Cum					29,654	29,654	675	2,00,16,772
	MCW		2	1,07,815	2.00	0.06	25,876	25,876		
	Service Road		1	31,491	2.00	0.06	3,779	3,779		
20	Median Filling	Cum	-	1,06,245	4.17	0.05	-	-	315	-
20	Miscellaneous	5%								5,07,77,359
Total Major Maintenance Cost (Rs)										**1,06,63,24,546**
Total Major Maintenance Cost with 18% GST (Rs)										**1,25,82,62,964**
Total Major Maintenance Cost with GST (Cr)										**125.83**
Per km Cost (lakh)										**114.95**
Escalation Factor for Major Maintenance Cost (FY 31)										**1.19**
Total Escalated Cost for Major Maintenance Cost (FY 31) (Cr)										**141.91**

TECHNICAL DUE DILIGENCE REPORT

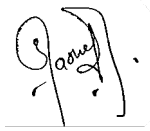
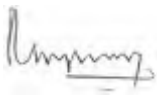
4-LANING OF JAMMU - UDHAMPUR SECTION OF NH-1A ON BOT (ANNUITY) IN THE STATE OF JAMMU & KASHMIR

PREPARED FOR

CUBE HIGHWAYS TRUST

PREPARED BY

Knight Frank

Rev. No.	Effective Date	Revision Description	Checked and Approval Record		
			Activity	**Name**	**Signature**
R0	**31.03.2026**	Draft DD Report of Jammu-Udhampur Section	Prepared By	Aashif Ahmed	
R1	**28.04.2026**		Reviewed by	Maj Gen K T Gajria	
R2	**11.05.2026**	Final DD Report of Jammu-Udhampur Section	Approved By	Rajeev Vijay	

Disclaimer

This report has been prepared, based on the inputs provided by the Client. Every effort is made to submit realistic details as available, statistics and information obtained/furnished at site by Client during our interaction at various levels.

In preparing this report, Knight Frank relied, in whole or in part, on data and information provided by the Client which information has not been independently verified by Knight Frank and which Knight Frank has assumed to be accurate, complete, reliable, and current. Therefore, while Knight Frank has utilized its best efforts in preparing this report, Knight Frank does not warrant or guarantee the conclusions set forth in this report which are dependent or based upon data, information, or statements supplied by third parties or the client.

This report is intended for the client's sole and exclusive use and is not for the benefit of any third party and may not be distributed to, disclosed in any form to, used by, or relied upon by, any third party without prior written consent of Knight Frank, which consent may be withheld in its sole discretion.

Use of this report or any information contained herein, if by any party other than the client, shall be at the sole risk of such party and shall constitute a release and agreement by such party to defend and indemnify Knight Frank and its affiliates, officers, employees and subcontractors from and against any liability for direct, indirect, incidental, consequential or special loss or damage or other liability of any nature arising from its use of the report or reliance upon any of its content. To the maximum extent permitted by law, such release from and indemnification against liability shall apply in contract, tort (including negligence), strict liability, or any other theory of liability.

TABLE OF CONTENTS

CHAPTER 1. INTRODUCTION AND SCOPE OF SERVICES 11

1.1 BACKGROUND 11
1.2 SCOPE OF SERVICES 11
1.3 APPROACH 12
1.4 METHODOLOGY 12
1.5 STUDY 12
1.6 STRUCTURE OF THE REPORT 13

CHAPTER 2. PROJECT DESCRIPTION 15

2.1 PROJECT ROAD 15
2.2 CLIMATE 17
2.3 TERRAIN 18
2.4 ADMINISTRATIVE DETAILS OF THE PROJECT 18
2.5 SALIENT FEATURES OF THE PROJECT 20
2.6 TUNNEL DETAILS 21
2.7 PAVEMENT COMPOSITION 22
2.8 PROJECT COMPLETION CERTIFICATE AND PCOD & FCOD 23
2.9 EXTENSION OF TIME 23
2.10 PENALTY 23
2.11 ANNUITY PAYMENT 24
2.12 CHANGE OF SCOPE 25
2.13 APPROVALS & PERMITS 25

CHAPTER 3. REVIEW OF PROJECT AGREEMENTS 27

3.1 REVIEW OF CONCESSION AGREEMENT 27
3.2 REVIEW OF SUPPLEMENTARY AGREEMENT 32
3.3 REVIEW OF STATE SUPPORT AGREEMENT 33
3.4 REVIEW OF SETTLEMENT AGREEMENT 35
3.5 REVIEW OF FINAL SETTLEMENT AGREEMENT 36

CHAPTER 4. CONDITION ASSESMENT OF PROJECT ROAD 40

4.1 GENERAL 40
4.2 PAVEMENT COMPOSITION 41
4.3 ASSESSMENT OF HIGHWAY 43
4.4 ASSESSMENT OF STRUCTURES 46
4.5 ASSESSMENT OF TUNNELS 48

CHAPTER 5. REVIEW OF PAVEMENT CONDITION & DESIGN 51

5.1 PAVEMENT CONDITION 51

5.2 OBJECTIVES 52
5.3 REVIEW OF PAVEMENT DESIGN 52
5.4 PAVEMENT EVALUATION BY FALLING WEIGHT DEFLECTOMETER (FWD) TECHNIQUE 55
5.5 MAJOR MAINTENANCE OF PAVEMENT 79

CHAPTER 6. COST ESTIMATE 81

6.1 ASSUMPTIONS 81
6.2 ROUTINE OPERATION & MAINTENANCE (O& M) COST 84
6.3 HIGHWAY LIGHTING 87
6.4 CORRIDOR MANAGEMENT 88
6.5 MANPOWER COST 88
6.6 OFFICE EXPENSES 89
6.7 MAJOR MAINTENANCE 90
6.8 MAJOR MAINTENANCE ITEMS 90
6.9 MAJOR MAINTENANCE CYCLES & COST 91
6.10 SUMMARY OF COST 93

CHAPTER 7. PROJECT PHOTOGRAPHS 96

LIST OF EXHIBITS

EXHIBIT 1 SCOPE OF TDD SERVICES 11
EXHIBIT 2 STRUCTURE OF THE REPORT 13
EXHIBIT 3 PROJECT LOCATION MAP 16
EXHIBIT 4 KEY LOCATION MAP 16
EXHIBIT 5: PROJECT CHAINAGE DETAILS 17
EXHIBIT 6: ADMINISTRATIVE DETAILS OF PROJECT 18
EXHIBIT 7:SALIENT FEATURES OF PROJECT 20
EXHIBIT 8:SALIENT FEATURES OF PROJECT 21
EXHIBIT 9: DESIGN TRAFFIC IN MSA FOR NEW CONSTRUCTION & OVERLAY SECTION 22
EXHIBIT 10: PAVEMENT COMPOSITION-MAIN CARRIAGEWAY 22
EXHIBIT 11: PAVEMENT COMPOSITION -SERVICE ROAD 23
EXHIBIT 12: DETAILS OF ANNUITY PAYMENTS 24
EXHIBIT 13: CHANGE OF SCOPE DETAILS 25
EXHIBIT 14: KEY TERMS OF CONCESSION AGREEMENT 27
EXHIBIT 15: KEY OBLIGATIONS OF PARTIES 28
EXHIBIT 16: KEY FINANCIAL COVENANTS DETAIL 29
EXHIBIT 17: KEY TERMS OF DAMAGES/ PENALTY 30
EXHIBIT 18: SUMMARY OF SUPPLEMENTARY AGREEMENTS 32
EXHIBIT 19: KEY TERMS OF THE STATE SUPPORT AGREEMENT 33
EXHIBIT 20: KEY ASPECTS OF SETTLEMENT AGREEMENT 35
EXHIBIT 21: OVERLAPPING STRETCH BETWEEN DAK EXPRESSWAY AND JAMMU–UDHAMPUR NH-44 36
EXHIBIT 21: KEY ASPECTS OF FINAL SETTLEMENT AGREEMENT 36
EXHIBIT 27: DESIGN TRAFFIC IN MSA FOR NEW CONSTRUCTION & OVERLAY SECTION 41
EXHIBIT 28: PAVEMENT COMPOSITION-MAIN CARRIAGEWAY 42
EXHIBIT 29: PAVEMENT COMPOSITION -SERVICE ROAD 42
EXHIBIT 30: DETAILS OF TUNNEL 48
EXHIBIT 32 PAVEMENT DESIGN COMPOSITION OF MAIN CARRIAGEWAY 53
EXHIBIT 33: PAVEMENT COMPOSITION -SERVICE ROAD 53
EXHIBIT 34: PAVEMENT COMPOSITION -OVERLAY WORKS 54
EXHIBIT 35 REMAINING LIFE OF THE EXISTING PAVEMENT, ... 58
EXHIBIT 36 LIST OF BRIDGE INSPECTED 62
EXHIBIT 38 BITUMEN RATES (IN INR/MT) - EX-MI SUPPLY EXCLUDING DISCOUNT AND GST 82
EXHIBIT 39: ADOPTED UNIT RATES FOR KEY ITEMS 83

EXHIBIT 40: MAJOR COMPONENTS DETAIL FOR KEY ITEMS 83
EXHIBIT 41: WORK OUTSOURCING FOR OPERATIONS AND MAINTENANCE WORK.....86
EXHIBIT 42: ROUTINE MAINTENANCE COST 86
EXHIBIT 43: PREVENTIVE MAINTENANCE COST 87
EXHIBIT 45: MAJOR MAINTENANCE CYCLES & COST 91
EXHIBIT 46: SUMMARY O & M COST FOR REMAINING CONCESSION PERIOD.....94

ACRONYMS AND ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
SPV	**M/s Athaang Jammu Udhampur Highway Limited**	**NHAI**	**National Highway Authority of India**
AMC	Annual Maintenance Contract	MM	Major Maintenance
ATMS	Advanced Traffic Management System	MS	Milestone
BC	Bituminous Concrete	NCR	Non-Compliance Report
BOQ	Bill of Quantities	NOC	No Objection Certificate
BHS	Both hand Side	NMS	Network Management System
BI	Bump Indicator	NSV	Network Survey Vehicle
CA	Concession Agreement	OFC	Optical Fibre Cable
CAPEX	Capital Expenditure	OPEX	Operation Expenditure
COD	Commercial Operations Date	O&M	Operation and Maintenance
COS	Change of Scope	PCC	Plain Cement concrete
CUP	Cattle Under Pass	PCI	Pavement condition Index
DBM	Dense Bituminous Macadam	PCR	Pavement condition rating
DG	Diesel Generator	PCU	Passenger Car Unit
DLC	Dry Lean Concrete	PCOD	Provisional Completion Certificate
DLP	Defect liability period	PQC	Pavement Quality Concrete

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
DPR	Detailed Project Report	PUP	Pedestrian Under Pass
ECB	Emergency Call Box	POP	Pedestrian Over pass
ESAL	Equivalent Standard Axle Load	PMB	Polymer Modified Bitumen
EPC	Engineering Procurement & Construction	QA/QC	Quality Assurance/Quality Control
ETC	Electronic Toll Collection	RCC	Reinforced Cement Concrete
FOB	Foot Over Bridge	RAP	Reclaimed Asphalt Concrete
FO	Flyover	RFQ	Request for Qualification
FRL	Formation Road Level	RHS	Right Hand Side
FWD	Falling Weight Deflectometer	RM	Routine Maintenance
GAD	General Arrangement Drawing	RMS	Radio Mobile System
GFC	Good for Construction	ROB	Road Over Bridge
GSB	Granular Subbase	ROW	Right of Way
GST	Goods & Service Tax	SR	Service Road
IPC	Interim Payment Certification	SPV	Special Purpose Vehicle
IRC	Indian Roads Congress	SOR	Schedule of Rates
INR	Indian Rupees	SAN	Storage Area Network
ITM	Integrated Traffic Management	TMS	Toll Management System
KVA	Kilo-Volt-Ampere	TOR	Terms of reference

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
LA	Land acquisition	BOT	Build Operate & Transfer
LHS	Left hand side	TLB	Truck lay bay
LCV	Light Commercial Vehicle	VUP	Vehicular Under Pass
LVUP	Low height Vehicular under pass	VDF	Vehicle Damage Factor
LED	Light Emitting Diode	VIDS	Video Incident Detection System
LIU	Light Interface Units	VMS	Variable Message Sign
MIS	Management Information System	WIP	Work in Progress
MSA	Million Standard Axles	WIM	Weigh in motion
MAV	Multi Axle Vehicle	WMM	Wet mix macadam

C 1.

Chapter 1. INTRODUCTION AND SCOPE OF SERVICES

1.1 BACKGROUND

Cube Highways Trust ("Trust" or "InvIT") is registered with Securities and Exchange Board of India ("SEBI") as an infrastructure investment trust under the SEBI InVIT Regulations. Cube Highways Trust has appointed **M/s Knight Frank India (KFI)** (hereinafter referred as "Technical Consultant" or "KFI") to carry out Technical Due Diligence of Rehabilitation, Strengthening and Four Laning of Jammu - Udhampur Section from Km 15.00 (Jammu Bypass) To Km 67.00 of NH-1A on BOT (Annuity) Basis on DBFOT Pattern in the state of Jammu & Kashmir (hereinafter referred as "Project Road").

1.2 SCOPE OF SERVICES

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below –

Exhibit 1 Scope of TDD Services

S. No	Terms of Reference
1	A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets.
2	Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, as built drawings, O&M manual, COD/PCOD certificate, Punch list, previous major maintenance etc.
3	Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, Axle Load, material investigations etc.
4	Formulation of future major maintenance Strategy.
5	Estimation of any initial expenses to be incurred due to deficiencies observed in diligence.
6	Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
7	Estimation of Annual Operation expenses along with Systems cost (TMS/HTMS) till the end of concession period.

S. No	Terms of Reference
8	Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Approach

Approach followed for this Due Diligence study is to understand the requirement of the client and terms of reference set forth. Our aim is that the study report should assist the clients in achieving their objectives.

1.4 Methodology

Methodology adopted is broadly outlined as under:

- Objectives of the client were identified from discussions and terms of reference spelt out for the study.
- Available data was collated and analysed by desk study.
- Requirements were identified to augment information/ data as available.
- Detailed List of data required was sent to Concessioner team from time to time
- Personal discussions were carried out with Clients by senior executives from KF to explain data requirements.
- Extensive interaction was made by KF with Clients and data was collected.
- Information to be gathered from Client head office & team were listed
- Relevant documents regarding project highway, including CA Agreement and other documents were collected and the provisions studied in detail.
- All data as collected was duly collated and arranged in the order as required for preparation of the report.

1.5 Study

- Data collected from all sources was duly collated and disseminated to concerned experts in KF.
- Project documents such as CA Agreement, O&M Costing details, O&M Manual etc were studied in detail.
- The data made available was analysed, and comments formulated for inclusion in the report.

1.6 Structure of the Report

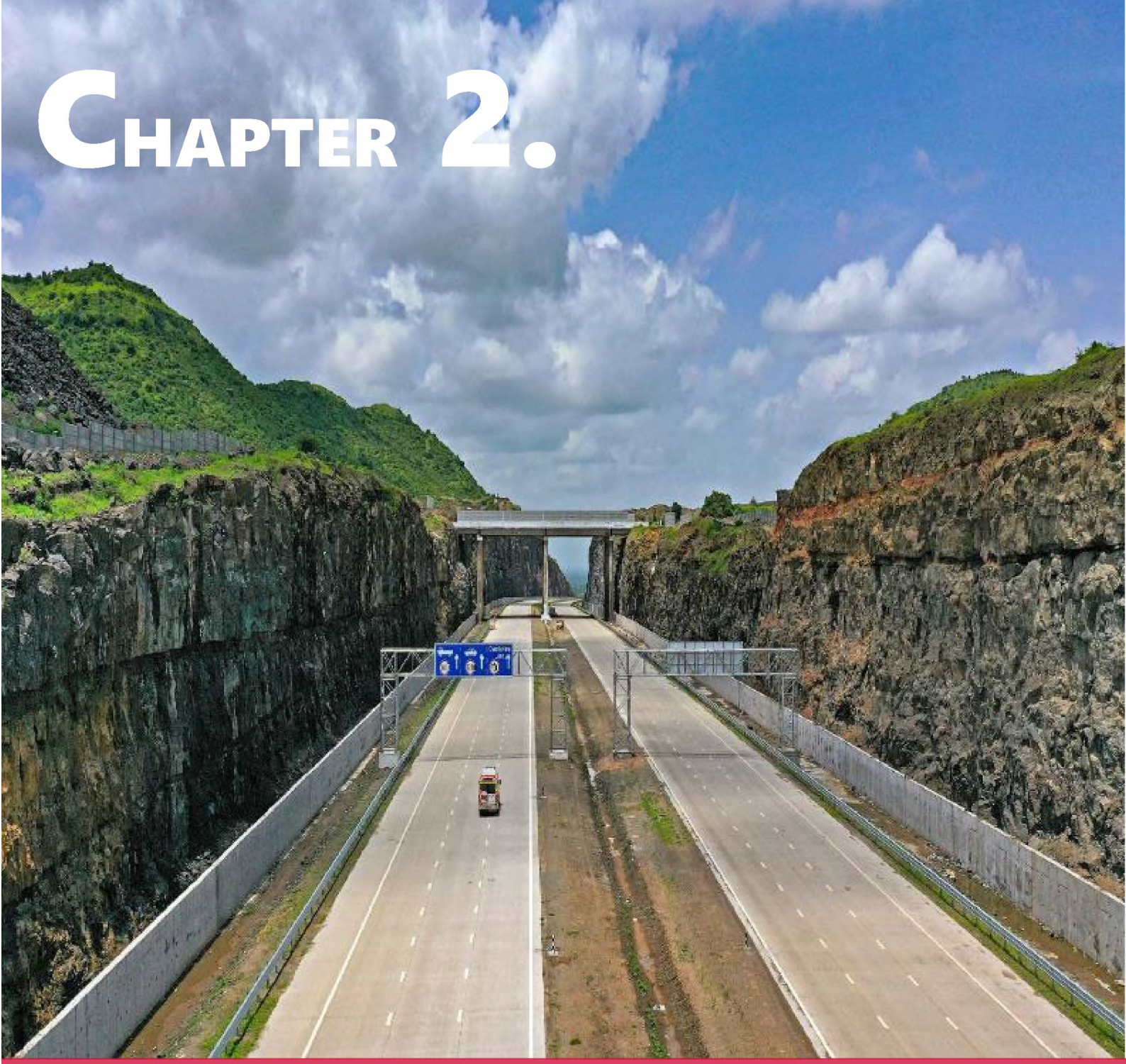
This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyse the same as per the best engineering / industry practices.

The report is organized with the following chapters for easy understanding of various issues –

Exhibit 2 Structure of the Report

S.nos	Chapter	Description
1	**Chapter 1**	**Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies**.**
2	**Chapter 2**	**Project Description:** The chapter describes existing project features, overview of project development.
3	**Chapter 3**	**Review of Agreements:** The chapter describes review of CA, Supplementary, State Support Agreement, Settlement Agreement & Various O & M Agreements.
4	**Chapter 4**	**Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit**.**
5	**Chapter 5**	**Pavement Investigation and Assessment:** This chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance
6	**Chapter 6**	**Cost Estimates**: This chapter summarizes the forecasting of O&M and major maintenance cost over the remaining concession period

Chapter 2.



Chapter 2. PROJECT DESCRIPTION

2.1 Project Road

National Highway-1A (NH-1A) is presently known as National Highway-44 (NH-44). This highway is a four lane road in Jammu and Kashmir that connects city of Udhampur with Jammu City passing through mountain terrain. This road connects important Army and Air bases in the state of J & K and passes along the international border. The highway also serves as the main pilgrimage and tourist route for pilgrims going to Amarnath Shrine and to Katra for Vaishno Devi Shrine and tourists going to Kashmir valley and even further up to Leh Ladakh.

The project corridor passes through following urban stretches namely Sidhra, Nagrota, Suketar, Jhajjarkotli, Tikri, Mand and Udhampur. The terrain of this project corridor is mostly mountainous except at Jammu bypass, which has rolling terrain. The state of Jammu & Kashmir is accessed by only one major highway, this National Highway-1A linking Uri in the north of J&K with the rest of the country via the cities of Jammu and Srinagar.

The highway runs through Nandini Wildlife Sanctuary. The highway enables seamless movement of traffic and goods, with enhanced inter-region connectivity and a significant reduction of travel time between the hilly cities.

To execute the project, NHAI issued a Request for Qualification (RFQ) on February 27, 2009, inviting bids for the project. Shapoorji Pallonji & Co. Ltd. was selected as the successful bidder and received the Letter of Award (LOA) on April 30, 2010. A Special Purpose Vehicle (SPV), M/s SP Jammu Udhampur Highway Limited, was incorporated for project implementation. The Concession Agreement was signed on July 19, 2010.

Accordingly, Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and flied investigations. Same is presented in this report.

The project achieved Provisional Completion (PCOD) on June 1, 2014, and the Final Completion Certificate was issued on May 31, 2018. The project is currently in the Operation & Maintenance (O&M) phase with toll collection ongoing.

Subsequently, ***NIIF acquired SP Jammu Udhampur Highway Limited on July 30, 2022***. The project has since been managed by Athaang Infrastructure, NIIF's proprietary roads platform, and the company was renamed ***M/s Athaang Jammu Udhampur Highway Limited***. The **current proposed acquisition** of the project is by ***M/s Cube Highways Trust.***

The total project length is **64.58 km**, commencing from **Km 15.00 near Jammu** to **Km 67.00 near Udhampur**, comprising **one toll plazas** located at **Ban (Km 22.00)**. The project plays a crucial role in enhancing connectivity between **Jammu and Srinagar**, ensuring improved traffic flow, safety, and overall highway efficiency.

The Project Location Map in wider context and Specific Project Road Context is shown below at **Exhibit 3.** The Project Location Map is shown below in

Exhibit 4

Exhibit 3 Project Location Map

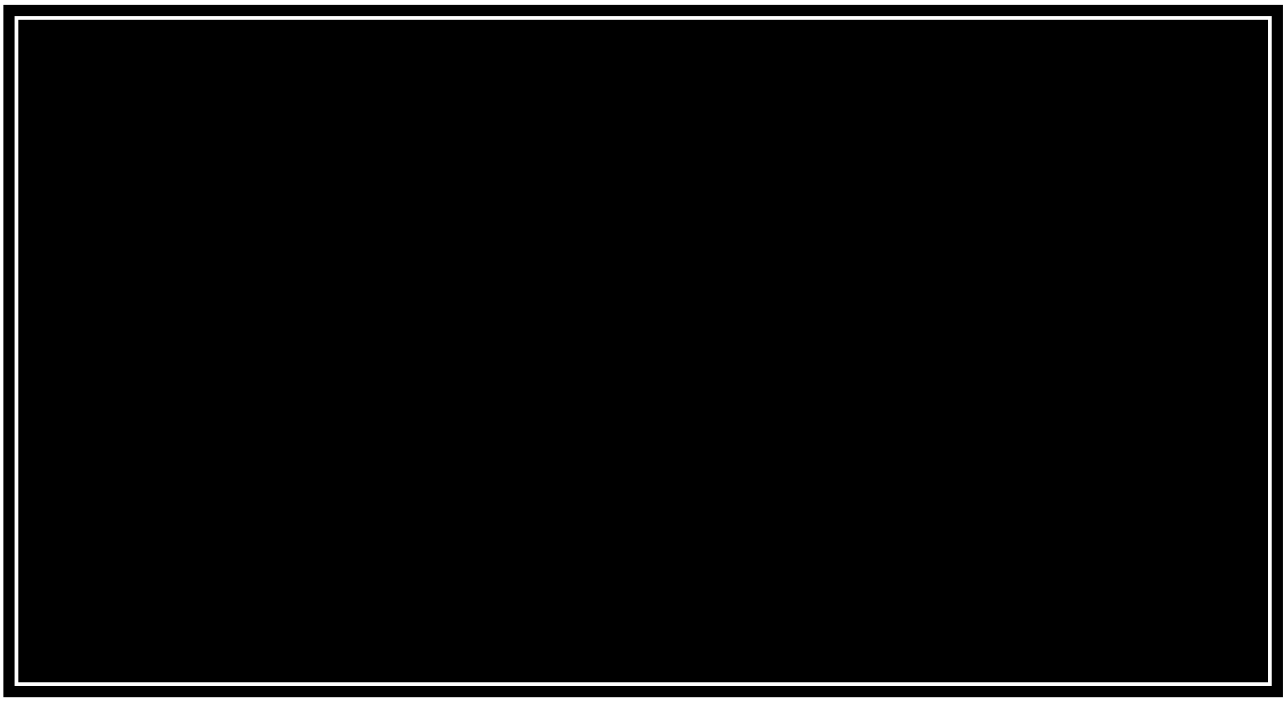


Exhibit 4 Key Location Map

As per the CA, the corridor has different design chainage systems, which are presented in the table below.

Exhibit 5: Project Chainage Details

Referencing System	Section	Chainage		Length	Total Length (km)
		From	To	(km)	
CA Design Chainage	Jammu Bypass (JBP)	15.2	20.3	5.1	5.1
CA Design Chainage	Main Road (MR)	9.35	9.9	0.55	
	Nagrota Bypass (NBP)	9.9	21.78	11.88	43.027
	Main Road (MR)	21.78	50.33	28.55	
	Realignment Udhampur Bypass	50.33	52.377	2.047	
	Udhampur Bypass (UBP)	0	16.452	16.452	16.452
Total length				64.579	
Descope length				16.995	
Actual length (kms)				47.584	

2.2 Climate

The project corridor experiences a **sub-tropical to temperate climate**, influenced by its varying elevation along the Himalayan foothills. The region is characterized by **hot summers, moderate monsoons, and cold winters**.

During the **summer months (April to June)**, the temperature ranges between **25°C to 40°C**, while in **winter (November to February)**, it may drop to **4°C to 10°C**, with occasional frost in elevated zones. The **monsoon season (July to September)** brings considerable rainfall, contributing to high surface runoff, landslides, and localized flooding in low-lying stretches.

Relative humidity generally varies from **40% to 90%**, depending on season and altitude. The **annual average rainfall** in the region is approximately **1,100–1,400 mm**, predominantly concentrated during the monsoon months.

Due to these climatic conditions, special attention is required in the **design and maintenance of pavement, drainage structures, slope protection works, and erosion control measures**, to ensure long-term performance and serviceability of the project road.

2.3 Terrain

The terrain along the project alignment is **predominantly hilly and undulating**, traversing through the lower Himalayan ranges. The topography exhibits **sharp gradients, steep slopes, and deep valleys**, especially in the middle and northern sections of the corridor.
The **southern stretch** of the alignment, near Jammu, consists of **rolling terrain with moderate gradients**, while the **northern portion towards Udhampur** features **rugged terrain with significant elevation differences**, requiring multiple **cutting and filling operations, retaining structures, and slope stabilization measures**.
Geotechnically, the area comprises **sedimentary and metamorphic rock formations**, with occasional exposure of shale and sandstone. The soil is generally **silty clay to sandy loam**, prone to erosion during heavy rainfall.
The complex topography and geotechnical conditions necessitate careful consideration of **geometric design standards, drainage planning, and slope protection works**, along with **regular geotechnical monitoring** to mitigate risks of slope instability and landslides.

2.4 Administrative details of the Project

The Concession stands granted to operate the road from the Appointed date for the concession period with the obligation on concessionaire to maintain the road in the same period. Administrative details of projects are as at Exhibit 2 below.

Exhibit 6: Administrative Details of Project

S. No	Particulars	Details
1	Project Corridor	Rehabilitation, Strengthening and Four Laning of Jammu - Udhampur Section from Km 15.00 (Jammu Bypass) To Km 67.00 of NH-1A on BOT (Annuity) Basis on DBFOT Pattern in the state of Jammu & Kashmir
2	Employer	National Highways Authority of India
3	Concessionaire	**M/s Athaang Jammu Udhampur Highway Limited**
4	Independent Engineer (During O & M)	M/s TPF Getinsa Euroestudios SL in association with Segmental Consulting Infrastructure Advisory Pvt Ltd.
5	EPC Contractor	Afcons Infrastructure Limited

S. No	Particulars	Details
6	Project Road Length	Total Length 64.579 kms Descope: 16.995 kms Actual length: 47.584 Kms
7	Project Cost	₹1814 Cr.
8	Annuity Bi-annually	34 installments of ₹201.90 Crores each, every 6 months
9	Date of LOA	30-Apr-10
10	Date of Concession Agreement	19-Jul-10
11	Appointed Date	16-Jun-11
12	Concession Period	20 years (including construction period of 1095 days from appointed date)
13	Construction Period	1095
14	Schedule Date of COD	16-Jun-14
15	Schedule End to Concession Period	22-Jul-31
16	PCOD	01-Jun-14
17	Final COD	31-May-18
18	No. of Toll Plazas (Number and Location)	Ban Toll Plaza: Ch. 22+700

2.5 Salient Features of the Project

Salient features of the project are covered at **Exhibit 7** below.

Exhibit 7:Salient Features of Project

S. No	Particulars	Description and details
1	Main Carriageway	Total Length: 64.579 Kms Descope Length: 16.995 Kms **Actual Length: 47.584 Kms**
2	Existing Slip / Service Road	20.18 Km
3	Major Bridges	36 Nos
4	Minor Bridges	31 Nos
5	Causeway	01 no
6	Box Culverts	177 Nos
7	Pipe Culvert	45 Nos
8	Underpass	12 Nos
9	FOB	02 Nos
10	VOP	02 Nos
11	No of Toll Plaza & Location of Toll Plaza (chainage) & Toll Lanes	1 No (Ban Ch. 22+700) Toll Plaza with 8 lanes
12	Tunnels	4 nos Twin Tunnels
13	Traffic Control and Management	• Ambulance – 3 nos. • Tow away cranes - 3 nos. • Corridor Management Vehicle – 3 nos
14	Length of RCC Crash Barrier	31.588 km
15	Length of W-Beam Crash Barrier	21.007 km
16	Brifen Wire Rope	12.292 km
17	Length of Median Drain	30.536 km
18	RCC Cover Drain	9.407 Km
19	Toe Drain	56.577 km
20	Median Width	1.5m/4.00m
21	Toll Plaza Sign Boards	8 Nos
22	Sign Boards	3412 Nos
23	Overhead Gantry	2 Nos
24	Solar Blinkers	62 Nos
25	Highway Lighting	26 Nos (single arm poles), 71 Nos (double arm poles)
26	Highway Mast Lighting	32 Nos
27	Toilets and Drinking water facility	12 Nos

S. No	Particulars	Description and details
28	DG Set	15 Nos (11 nos at Tunnels, 1 no at Toll Plaza & 3 nos at office & medical aid post)
29	Major Intersection	13 Nos
30	Minor Intersection	15 Nos
31	Median Opening	44 Nos
32	Bus Bay with Shelter	28 nos
33	Truck Lay Bye	13 nos
34	Rest Area	Nil
35	Breast Wall	23.607 Km
36	Gabion Wall	1.576 km
37	RCC Retaining wall	10.231 KM
38	Stepped Wall	1.060 Km
39	Concrete Railing	19.379 Km
40	Transformers	22 Nos
41	5th Kilometre/ Kilometre/ HM Kilometre stones	320 Nos
42	Delineators	336 nos

2.6 Tunnel Details

The highway features four twin-tube tunnels with a combined length of 2.77 km. An overview of the tunnel details for the project is provided below.

Exhibit 8:Salient Features of Project

Tunnel No.	Section	LHS/RHS	Design Chainage		length(m)
T-1	Main Road	LHS	23.72	23.89	170
		RHS	23.715	23.88	165
T-2	Main Road	LHS	24.48	24.711	231
		RHS	24.533	24.8	267
T-3	Main Road	LHS	24.94	25.37	430
		RHS	24.916	25.39	474
T-4	Main Road	LHS	25.49	26.02	530
		RHS	25.49	26.00	510

2.7 Pavement Composition

The pavement has been designed in accordance with IRC:37-2001. The concessionaire has based the design on CBR values of 8% and 10%. Although the design traffic on the RHS is relatively lower than on the LHS, the concessionaire has opted to provide the same pavement thickness for both directions.

As mentioned in Pavement Design Report, design consultants summarized the calculated design traffic for the next 20 years for BT and Base and subbase layer respectively.

Exhibit 9: Design traffic in MSA for New Construction & Overlay Section

As per Concessionaire			
S. No	**Section Type**	**Design Traffic MSA for 20 years (Jammu to Udhampur)**	**Design Traffic MSA for 20years (Udhampur to Jammu)**
1	New Construction	41	16
2	Overlay	47	19

Pavement Configuration for Project is given in **Exhibit 24**

Exhibit 10: Pavement Composition-Main Carriageway

S. No	Design MSA	As built drawings
Flexible Pavement		
1	**Adopted MSA – 10**	
2	BC in mm	40
3	DBM in mm	110
4	WMM in mm	250
5	GSB in mm	200
Rigid Pavement		
	PQC	**DLC**
1	300	150
Overlay Works		
The Overlay thickness proposed for design traffic of 50 MSA for the project corridor. Based on the BBD Test Result Concessionaire Proposed Overlay of 50 mm thickness with DMB of 50 mm thickness.		

As per the Preliminary Design Report (PDR), the concessionaire has stated that the existing bituminous layer in the JBP, NBP, and MR sections ranges between 140 to 150 mm, with a granular layer thickness of 325 to 330 mm. In contrast, the Udhampur Bypass section has a thinner bituminous layer of only 80 mm but a thicker base/sub-base layer of approximately 430 mm.

As per Approved Pavement Design Report the service road has been designed for 10 MSA & CBR-10%. The Pavement layer adopted for service road as given below:

Exhibit 11: Pavement Composition -Service Road

S. No	Design MSA	
	Adopted MSA – 10 years	**25**
1	BC in mm	40
2	DBM in mm	50
3	WMM in mm	250
4	GSB in mm	200

2.8 Project Completion Certificate and PCOD & FCOD

A. Partial Commercial Operation Date (PCOD):

- The scheduled completion date was 1 June 2014. (Letter attached as annexure)

B. Final Commercial Operation Date (COD):

- The final COD achieved date was 31st May 2018. (Letter attached as annexure)

2.9 Extension of Time

There is no extension of the concession period on the project.

2.10 Penalty

There is no penalty on project as of now.

2.11 Annuity Payment

As per the Concession Agreement, an annuity amount of ₹201.90 crore is payable every six months. To date, a total of 22 annuity payments has been made by the Authority. The detailed breakdown of these annuity payments is provided below

Exhibit 12: Details of Annuity Payments

Annuity No.	Amount Payable (₹-Crore)	Deductions (₹-Crore)	Amount Received (₹-Crore)	Remarks
1st Annuity	197.93	-	197.93	
2nd Annuity	201.90	-	201.90	
3rd Annuity	201.90	0.17	201.73	
4th Annuity	201.90	0.08	201.82	
5th Annuity	201.90	0.13	201.77	
6th Annuity	201.90	0.10	201.80	
7th Annuity	201.90	0.20	201.70	
8th Annuity	201.90	-	201.90	
9th Annuity	201.90	-	201.90	
10th Annuity	201.90	0.09	201.81	
11th Annuity	201.90	-	201.90	
12th Annuity	201.90	0.10	201.80	
13th Annuity	201.90	-	201.90	
14th Annuity	201.90	-	201.90	
15th Annuity	201.90	-	201.90	
16th Annuity	201.90	-	201.90	
17th Annuity	201.90	0.01	201.89	
18th Annuity	201.90	0.26	201.64	
19th Annuity	201.90	0.20	201.70	
20th Annuity	201.90	-	201.90	
21st Annuity	201.90	0.02	201.88	
22nd Annuity	201.90	-	201.90	01-06-25
23rd Annuity			-	01-12-25
Total Amount (₹-Crore)	**4,438**	**1.35**	**4,436**	
Deduction %		**0.030%**		

Based on the above, Knight Frank is of the opinion that the cumulative deductions amounting to only ₹1.35 crore across all 22 annuity payments reflect the consistently high standard of maintenance maintained by the concessionaire over the 11-year duration of the project.

2.12 Change of Scope

Following items considered under Change of scope.

Exhibit 13: Change of Scope Details

S. No.	Structure Type	Location (Chainage)	Change Details
1	Major Bridge (MJB)	Ch. 20+690 (MNB-V/2B)	Span changed from 55m (as per CA) to 150m (executed as MJB)
2	Major Bridge (MJB)	Ch. 11+886 (BHS, UBP Section)	Flyover constructed and considered under MJB
3	Major Bridge to Causeway	Ch. 9+928 (CD1 at NBP)	Executed as Causeway instead of MJB under Negative COS
4	Major Bridge (MJB) / Minor Bridge (MNB)	Ch. 36+923 (V-12)	RHS converted to MNB; LHS remains as MJB
5	Minor Bridge (MNB)	Ch. 12+607 (B31A at RHS)	Additional MNB executed at site
6	Minor Bridge (MNB)	Ch. 13+545 (B32 at LHS)	Additional MNB executed at site
7	Vehicular Overpass (VOP)	Not specified	Executed under COS
8	Foot Over Bridge (FOB)	Not specified	Executed under COS

2.13 Approvals & Permits

Since Project is in O & M stage therefore all necessary approvals required are in place with concessionaire.

C 3.

REVIEW OF PROJECT AGREEMENT

Chapter 3. Review of Project Agreements

3.1 Review of Concession Agreement

Concession Agreement was executed on **19th July 2010** between:

- **National Highways Authority of India (NHAI)**, (hereinafter referred to as the "Authority"); and **SP Jammu Udhampur Highway Private Limited**, (hereinafter referred to as the "Concessionaire").

The Agreement relates to the *Rehabilitation, Strengthening and Four Laning of Jammu–Udhampur Section from Km 15.000 (Jammu Bypass) to Km 67.000 of NH-1A in Jammu & Kashmir on DBFOT (Annuity) basis under NHDP Phase-II.*

Exhibit 14: Key Terms of Concession Agreement

Parameter	Details
Date of Agreement	19th July 2010
Appointed Date	Declared by NHAI after Conditions Precedent are fulfilled 16th June 2011
Employer (Authority)	**National Highways Authority of India (NHAI)**, Ministry of Road Transport & Highways, GoI
Concessionaire	**M/s Athang Jammu Udhampur Highway Private Limited**
Concession Period	20 years from Appointed Date
Length of Project	**Total Length: 64.579 km** (Km 15.000 to Km 67.000, NH-1A, J&K)
Total Project Cost	**₹1814 crore** (as per definition in Concession Agreement)
Project Milestones	Linked to Right of Way & completion schedule
Construction/Scheduled Completion	COD on achieving Completion Certificate
Premium / Concession Fee	₹1 per year (token concession fee)
Annuity Payment	₹201.90 crore per half year, payable by NHAI to Concessionaire post COD
Performance Security	₹90.70 crore Bank Guarantee, valid until 1 year from Appointed Date; replenishable if encashed
Extension of Time / COD	Permitted in case of NHAI default / Force Majeure
PCOD	Provisional Commercial Operation Date (partial completion)

Parameter	Details
FCOD	Final Commercial Operation Date (full completion & tests)
Respective Rights & Obligations	NHAI: ROW, support, annuity payment. Concessionaire: DBFOT design, construction, O&M, financing
Change in Ownership	No dilution below 51% during construction & 2 years post COD (without NHAI approval)
Dispute Resolution	Arbitration under ICADR Rules, New Delhi
Governing Law & Jurisdiction	Laws of India; Courts at Delhi

3.1.1 Obligations of the Authority & Concessionaire

Exhibit 15: Key Obligations of Parties

Authority	Concessionaire
Provide Right of Way (ROW) for the Project Highway, free from encumbrances	Design, engineer, finance, procure, construct, operate, and maintain the Project Highway on DBFOT (Annuity) basis
Assist in obtaining statutory approvals, permits, and clearances from Government authorities	Achieve Financial Close within 180 days (extendable with damages) and furnish Performance Security
Pay annuity of ₹201.90 crore (half yearly) post COD, as per Article 27	Maintain the Project Highway in accordance with Specifications, Standards, and O&M requirements (Schedule K)
Maintain existing highway during the development period until Appointed Date	Comply with safety requirements, traffic regulations, and emergency response obligations
Provide assistance for utilities shifting, police support, medical aid posts, and land acquisition (if required)	Ensure timely achievement of project milestones and Scheduled Completion Date (COD within 1,095 days of Appointed Date)
Not levy any additional local tax/toll on the Project Highway	Hand back the Project Highway to NHAI at the end of Concession Period or upon termination, free of encumbrances
Cooperate with Independent Engineer for monitoring construction and O&M	Bear project risks, costs, and liabilities, except as specifically allocated to NHAI under the Agreement

3.1.2 Financial Covenants

The Agreement (Articles 28, 29; Schedules L & R) sets out strict financial safeguards to protect cash flows and lender interests. All revenues and annuities flow through an escrow with defined payment priority, equity is locked in to ensure sponsor commitment, and lenders hold substitution rights in case of default. Provisions on insurance, change in law, and regular financial reporting further enforce financial discipline. **The detailed covenants are presented in the exhibit below.**

Exhibit 16: Key Financial covenants detail

Aspect	Details
Escrow Account	All project revenues, annuity payments, insurance proceeds, and other receivables to be deposited in an **Escrow Account** maintained with an Escrow Bank. Disbursements in priority order: (i) statutory dues, (ii) O&M expenses, (iii) senior debt servicing, (iv) reserve creation, (v) equity distribution.
Annuity Payments	NHAI to pay fixed annuity of **₹201.90 crore (semi-annually)** post COD. Payments routed through Escrow, first applied to debt servicing.
Debt Service Coverage	Senior lenders have priority rights over project cash flows. Any shortfall to be funded by Concessionaire through sponsor support until COD achieved.
Equity Lock-In	Minimum **51% equity shareholding** of lead sponsor (SP group) to be maintained during construction period and for **2 years after COD** without NHAI's prior approval.
Change in Law Compensation	Financial impact of change in law to be compensated on **Net Present Value (NPV)** principle, adjusted via annuity or concession period extension.
Insurance	Comprehensive insurance cover required during construction and O&M periods, with assignment of benefits to lenders and NHAI.
Substitution Rights	Lenders empowered to substitute Concessionaire in case of persistent default, through a **Substitution Agreement** (Schedule R).
Financial Reporting	Concessionaire to furnish audited accounts, progress reports, and financial statements to NHAI and Lenders periodically.

3.1.3 Delay Damages and Penalties under the Concession Agreement

Exhibit 17: Key Terms of Damages/ Penalty

Clause / Article	Situation	Damages / Penalty	Remarks
Clause 4.2 & 10.3	Delay by Authority in providing Right of Way beyond 90 days from Appointed Date	₹50 per day per 1,000 sq. m. of land delayed	Payable to Concessionaire until ROW is given
Clause 4.3 & 24.1	Delay by Concessionaire in achieving **Financial Close** within 180 days	0.1% of Performance Security per day (extendable up to 120 days); further extension possible at 0.2% per day; max 20% of Performance Security	Weekly advance payment required for extension
Article 15.2 (COD Delay)	COD not achieved within 91 days after Scheduled Completion Date (Appointed Date + 1095 days)	0.1% of Performance Security per day until COD	If not achieved within 270 days, Authority may terminate
Article 17.7.3 (Lane Closure)	Delay in reopening lanes after repair/maintenance	0.1% of Average Daily Annuity per 250 m stretch/day	Independent Engineer approval required for closures
Article 35 (Compensation for Breach)	Breach by Concessionaire or Authority (other than those with specified damages)	Compensation = direct costs incurred by non-defaulting party	Does not include consequential losses
Article 49 (Transitional Arrangements)	Delay in completing Affected Stretch (wildlife clearance pending) beyond 180 days after Scheduled COD	₹57,250 per day	Recoverable by deduction from annuity

3.1.4 Legal and Operational Framework:

- **Force Majeure Events:**
    - Covers natural events, political events, and indirect events.
    - Relief is available only if reported within 7 days.
    - Time extensions granted for achievement of milestones and COD.
    - Compensation limited to actual costs, no claim for indirect losses.
- **Compensation for Breach of Agreement**
    - Sets principles for damages due to breach.
    - Damages are pre-estimated, not penalties.
    - Both parties are obligated to mitigate costs/losses.
- **Termination:**
    - Covers natural events, political events, and indirect events.
    - Relief is available only if reported within 7 days.
    - Time extensions granted for achievement of milestones and COD.
    - Compensation limited to actual costs, no claim for indirect losses.
- **Divestment of Rights and Interest**
    - On termination, Concessionaire must hand over project assets free of encumbrance.
    - Obligations include O&M records, designs, clearances, contracts, and project facilities.
- **Defects Liability after Termination**
    - Concessionaire remains liable for construction defects discovered post-termination.
    - Liability period typically one year from termination/transfer date.

3.2 Review of Supplementary Agreement

The Concession Agreement of **19.07.2010** was modified through three Supplementary Agreements. The first, dated **14.03.2011**, revised termination and delayed payment provisions by linking payouts to debt due, adjusted equity, and 10-year Government Security (G-Sec) yield, thereby strengthening financial clarity. The second, dated **18.06.2015**, addressed delays in land availability by obligating completion of ~9.5 km balance works, waiving annuity interest claims, and proportionally extending the O&M period. The third, dated **15.05.2018**, implemented the **Hybrid ETC system**, mandating installation and O&M of RFID and tolling infrastructure under Change of Scope, with costs reimbursable and periodic escalation. Together, these agreements ensured financial certainty, addressed construction delays, and modernized project operations.

Exhibit 18: Summary of Supplementary Agreements

Date	Parties	Purpose / Context	Key Terms / Amendments
14.03.2011	NHAI & SP Jammu Udhampur Highway Pvt. Ltd.	Early Supplementary Concession Agreement	• Revised termination payment structure (Force Majeure, Defaults). • Linked delay interest to 10-year Government Security (G-Sec) yield. • Termination payments = full & final settlement.
18.06.2015	NHAI & SP Jammu Udhampur Highway Ltd.	Addressing ROW delays & pending works post COD	• Identified ~9.5 km "Remaining Sites". • Completion window: 18 months max. • No annuity reduction if admissible. - Extended maintenance obligations proportionately. • Concessionaire waived interest on delayed annuity.
15.05.2018	NHAI & SP Jammu Udhampur Highway Ltd.	Implementation of Hybrid ETC System	• Scope expanded for ETC installation & O&M. • Hybrid ETC to reduce congestion. • 5-year O&M cycle with NHAI cost. - Equipment handover at concession end. • Quarterly O&M charges with escalation.

3.3 Review of State Support Agreement

State Support Agreement was executed on **28th November 2011** between:

- **The Governor of Jammu & Kashmir**, (the *State Government*), and
- **The President of India**, represented by the Joint Secretary, Ministry of Road Transport & Highways (the *Authority*).

This agreement provides the framework for support from the State Government to ensure smooth implementation and operation of the *Jammu–Udhampur Highway Project* under the Concession Agreement.

Exhibit 19: Key Terms of the State Support Agreement

Parameter	Details
Date of Agreement	28th November 2011
Parties	The Governor of Jammu & Kashmir (State Government) & The President of India (Authority)
Purpose	To ensure State Government support for implementation and operation of the Jammu–Udhampur Highway BOT (Annuity) Project
Support by State Government	• Provide continued access to Site/ROW • Assist in obtaining permits & approvals • Facilitate shifting of utilities • Ensure no barriers/taxes imposed by local authorities • Provide police, traffic, and medical aid support • Prohibit competing roads or tollways except as per Agreement
Restriction on Competing Roads	State shall not construct any competing roads violating Concession Agreement; exceptions only if notified annually to Authority
Restriction on Additional Tollways	No additional Tollway construction except as per Concession Agreement
Restriction on Local Taxes	State Government shall not levy local taxes/tolls on project highways; existing revenue interests at Lakhanpur & Lower Munda protected
Substitution of Concessionaire	State acknowledges lenders and Authority's right to substitute Concessionaire under Concession Agreement
Obligations of Authority	Ensure Concessionaire complies with laws, permits, and Concession Agreement

Parameter	Details
State Default	Failure by State Government/Agency to cure breach within 60 days constitutes *State Default*; treated as breach under Concession Agreement
Compensation & Termination Payments	State Government liable for compensation/damages/termination payments arising from its breach or default, payable within 60 days (with interest for delay at Bank Rate +3%)
Duration	Effective from date of signing; continues till termination of all related Concession Agreements
Indemnity	Both Authority and State indemnify each other against losses due to their respective breaches
Dispute Resolution	First conciliation (under Arbitration & Conciliation Act, 1996), failing which arbitration under ICADR Rules, New Delhi
Governing Law & Jurisdiction	Laws of India; Courts at Delhi
Miscellaneous	• Waiver of sovereign immunity by State Govt • Agreement binding on successors/assigns • Notices to be in writing - Agreement in English

3.4 Review of Settlement Agreement

Settlement Agreement was executed on **15th March 2022** at NHAI HQ, New Delhi, between:

- **National Highways Authority of India (NHAI** (Authority); and **SP Jammu Udhampur Highway Limited**, (Concessionaire).

The Agreement was signed under **Section 73 of the Arbitration and Conciliation Act, 1996**, following conciliation proceedings by the Conciliation Committee of Independent Experts (CCIE-2). It records the settlement of disputes arising from the Concession Agreement dated 19.07.2010, including arbitration awards, counterclaims, and change in law claims.

Exhibit 20: Key Aspects of Settlement Agreement

Parameter	Details
Parties	National Highways Authority of India (NHAI) & SP Jammu Udhampur Highway Ltd.
Context	Settlement under Section 73 of Arbitration and Conciliation Act, 1996, resolving disputes from Concession Agreement (2010)
Reference 1 – Arbitration Award (25.02.2021)	Tribunal award ~₹333.55 Cr → Settled at **₹282.67 Cr**
Reference 2 – Pending Arbitration	Concessionaire claims ~₹275.48 Cr → Settled at **₹36.28 Cr**
Total Settlement Amount	**₹318.95 Cr (₹282.67 + ₹36.28)**
Financial Impact	Reduction of ~₹290 Cr (~48%) vs. total arbitral awards/claims
O&M Extension	Concessionaire to perform O&M for **36 days beyond concession end** (16.06.2031–22.07.2031)
NHAI Obligations	Pay settlement amounts; withdraw Section 34 & 36 petitions
Concessionaire Obligations	Withdraw claims; record settlement in arbitration award; indemnify NHAI from third-party claims
Finality	Full and final settlement; no residual claims or litigation permitted
Governing Law	Laws of India; Courts at Delhi

3.5 Review of Final Settlement Agreement

The **Final Settlement Agreement** was executed on **30th April 2025** at **NHAI HQ, New Delhi**, between:

- **National Highways Authority of India (NHAI)** – *Authority*
- **Athaang Jammu Udhampur Highway Pvt. Ltd.** – *Concessionaire*

This Settlement Agreement addresses the **financial settlement arising due to descoping of 16.995 km of maintenance obligations** from the Concessionaire's scope, following the **overlapping construction of Delhi–Amritsar–Katra (DAK) Expressway Packages 17 & 18** over the existing **Jammu–Udhampur NH-44 corridor**.

Exhibit 21: Overlapping Stretch Between DAK Expressway and Jammu–Udhampur NH-44

Section / Package	Chainage (Start – End)	Overlapping Length
DAK Expressway – Package 17	528.100 to 528.900 550.900 to 552.300	**0.8 km + 1.4 km**
DAK Expressway – Package 18	530.000 to 543.100 544.000 to 545.300	**13.395 km + 1.4 km**
Jammu–Udhampur Section (as per CA)	15.200 to 16.000 17.100 to 19.475 28.400 to 29.800 21.864 to 23.264	—
Total Overlapping / Affected Length	—	**2.2 km + 14.795 km = 16.995 km**

It implements a **financial reconciliation mechanism through annuity deductions**, based on the **Lenders' Financial Model shared by Standard Chartered Bank**, with **bi-annual recovery linked to Annexure-1 of Final Settlement Agreement (30 April 2025)**.

Exhibit 22: Key Aspects of Final Settlement Agreement

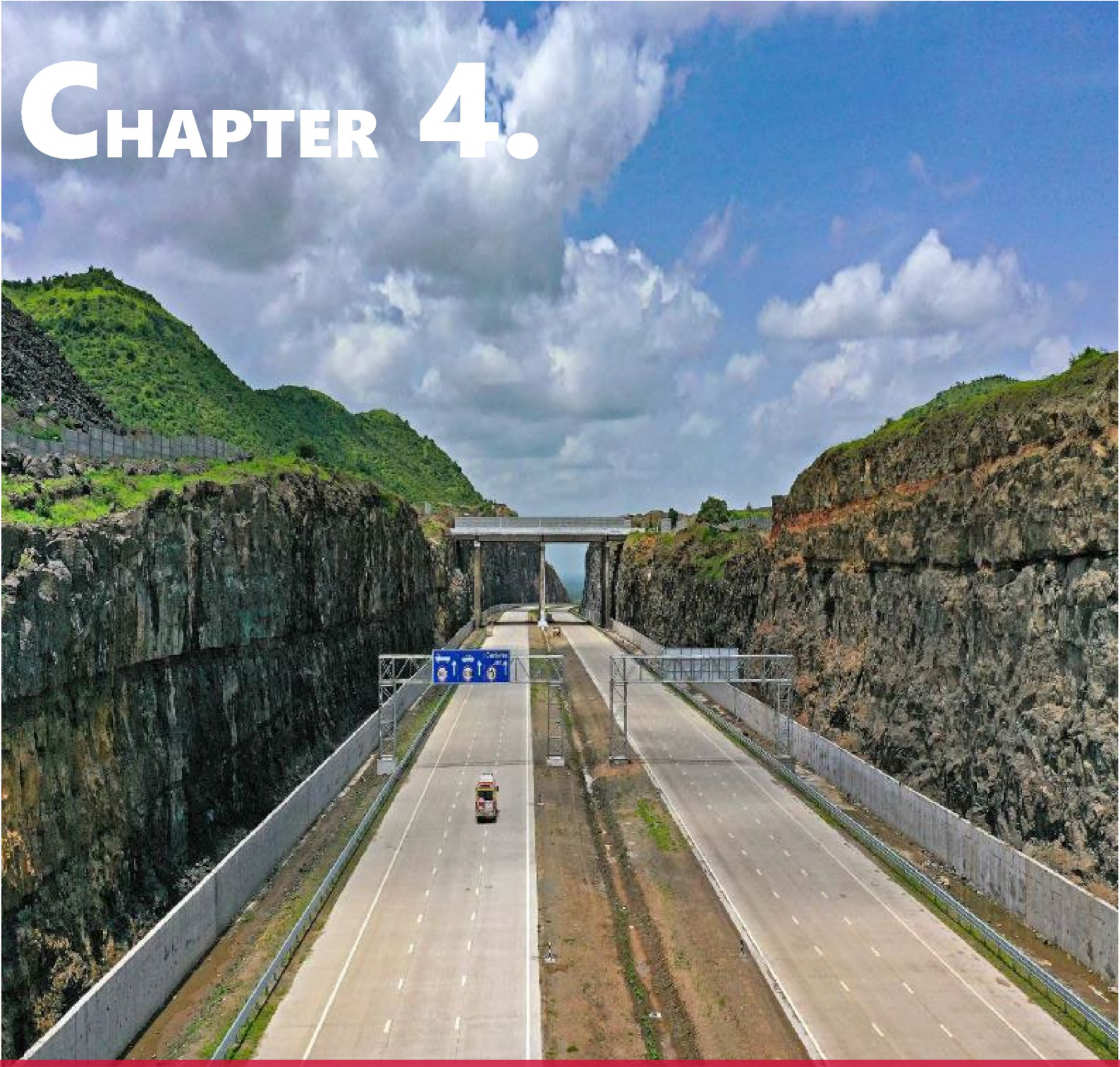
Parameter	Details
Parties	National Highways Authority of India (NHAI) & Athaang Jammu Udhampur Highway Pvt. Ltd.
Legal Basis	Settlement under **Section 73** of Arbitration & Conciliation Act, 1996 (Conciliation Outcome – Binding as Arbitral Consent Award)

<table>
<tr><th>Parameter</th><th>Details</th></tr>
<tr><td>Project Reference</td><td>Concession Agreement dated 19.07.2010 – NHDP Phase-II/BOT/VI/J&K, Jammu–Udhampur Highway Section</td></tr>
<tr><td>Trigger for Settlement</td><td>DAK Expressway (Pkg-17 & 18) overlap leading to descoping of 16.995 km maintenance length</td></tr>
<tr><td>Formal Descoping Notification</td><td>NHAI Letter No. 13020/1/2022/PIU-Udp/Cont./2227 dated 07.03.2024</td></tr>
<tr><td>Scope Affected</td><td>16.995 km out of original 65 km O&M stretch</td></tr>
<tr><td>Financial Model Applied</td><td>Standard Chartered Bank Financial Model (as used by Lenders)</td></tr>
<tr><td>Recovery Mechanism</td><td>Regular Recovery of ₹61.09 Cr from 07.03.2024 till end of concession on a bi-annual basis for reduced costs of maintenance, insurance, IE fees, and toll O&M for the descoped 16.995 km, as per the Standard Chartered Bank financial model.
Periodic renewal costs to be recovered in the year major maintenance is carried out by the Concessionaire for the non-descoped section, based on the lender's financial model.
The Authority also agreed that routine maintenance costs will not be levied in the year when major maintenance is done by the Concessionaire.</td></tr>
<tr><td>Routine Maintenance Recovery</td><td>Regular Recovery of ₹61.09 Cr from 07.03.2024 till end of concession on a bi-annual basis for reduced costs of maintenance, insurance, IE fees, and toll O&M for the descoped 16.995 km, as per the Standard Chartered Bank financial model.
<table>
<tr><th>As per FM - Length</th><th>Lender# (16.995 Km Descoped Length)</th></tr>
<tr><td>(IE) Fees</td><td>7.36</td></tr>
<tr><td>Insurance Costs</td><td>22.20</td></tr>
<tr><td>Administration Costs</td><td>10.07</td></tr>
<tr><td>Toll Annual Maintenance Costs</td><td>2.22</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Parameter</th><th>Details</th></tr>
<tr><td></td><td>
<table>
<tr><td>Total</td><td>41.84</td></tr>
<tr><td>Asset Management Cost</td><td>6.12</td></tr>
</table>
</td></tr>
<tr><td>Major Maintenance Recovery</td><td>Based on 5% escalation model, applicable only in the year of MMR event as per Lenders' Financial Table as per Annexure-1 Final Settlement Agreement (30 April 2025)
<table>
<tr><th>Financial Years</th><th>FY2025</th><th>FY2026</th><th>FY2027</th><th>FY2028</th><th>FY2029</th><th>FY2030</th><th>FY2031</th></tr>
<tr><td>For Descoped Length</td><td>36.87</td><td>38.72</td><td>40.65</td><td>42.69</td><td>44.82</td><td>47.06</td><td>49.41</td></tr>
</table>
</td></tr>
<tr><td>Relief Granted to Concessionaire</td><td>No routine O&M deduction in the year when Major Maintenance is executed</td></tr>
<tr><td>No Claim / Closure Clause</td><td>Both parties confirm no residual claims pending concerning this descoping matter (Clause 3.5)</td></tr>
<tr><td>Supremacy Clause</td><td>In case of conflict, Settlement Agreement prevails over Concession Agreement & Supplementary Agreements (Clause 3.10)</td></tr>
<tr><td>Cost Responsibility</td><td>Stamp duty cost borne by Concessionaire, both parties bear their own negotiation expenses</td></tr>
<tr><td>Indemnity</td><td>Concessionaire indemnifies NHAI from any third-party action related to this Settlement (Clause 3.8)</td></tr>
<tr><td>Governing Law & Jurisdiction</td><td>Indian Law, exclusive jurisdiction at New Delhi courts</td></tr>
</table>

Knight Frank reviewed and noted that an amount of ₹7,63,87,976/- towards IE Fees has been deducted by the Independent Engineer from the 22nd Annuity Bill, in accordance with the provisions of the Settlement Agreement-2 Signed on 30.04.2025. The deduction was made vide letter reference LION-HCPT/O&M1124/Athaang/Jammu-Udhampur/0239, dated 07.05.2025, issued by the Independent Engineer to the Concessionaire.

Chapter 4.



Condition Assessment of Project Road

Chapter 4. CONDITION ASSESMENT OF PROJECT ROAD

4.1 General

This chapter presents a detailed assessment of the existing condition of the Jammu–Udhampur Project Highway in accordance with the provisions of the Concession Agreement and relevant IRC guidelines. The objective of this assessment is to evaluate the current condition and performance of the pavement, structures, tunnels, toll plaza facilities, service roads, drainage systems, safety installations and other highway assets. The observations are based on site inspections, maintenance records, annuity performance, and interaction with the concessionaire's O&M team.

This section presents the findings of the **condition assessment** of the **Jammu–Udhampur Section of NH-44** (Km 15+000 to Km 67+000) in the **Union Territory of Jammu & Kashmir**. The assessment has been prepared based on **field observations** recorded during the **site inspection conducted on 08 October 2025** & Based on Result of **Falling Weight Deflectometer (FWD) survey** carried out in **June 2023**, and the **Mobile Bridge Inspection Unit (MBIU) survey** conducted in **November 2023**.

The integration of these three key datasets — **pavement deflection study (FWD)**, **structural evaluation of bridges (MBIU)**, and **visual field inspection** — provides a **comprehensive and reliable representation** of the current **structural and functional condition** of the project highway and its associated assets.

The **project corridor** traverses the **Shivalik foothills** of the outer Himalayas, characterized by **steep terrain, deep cuttings, and landslide-prone zones**, with sections passing through high embankments, tunnels, and major structures. The alignment commences near **Jammu (Km 15+000)** and terminates near **Udhampur (Km 67+000)**, covering the **Jammu Bypass, Nandni and Jakhani Hills**, and the **Udhampur Bypass**. The stretch forms a vital component of **NH-44**, serving as a strategic link for all-weather connectivity between **Jammu and Srinagar** and facilitating both civil and defense transport movement.

The assessment integrates **instrumental evaluations** (FWD and MBIU) and **visual observations** to provide a holistic appraisal of pavement condition, bridge integrity, drainage, and highway appurtenances.

This assessment has been carried out in accordance with the following key references:

- **IRC:115-2014** – Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements using FWD Technique
- **IRC:117-2014** – Guidelines for Structural Evaluation of Rigid Pavements
- **IRC:37-2018** – Guidelines for the Design of Flexible Pavements
- **IRC: SP:35-2015** – Code of Practice for Inspection and Maintenance of Bridges
- **IRC:83-2019 (Part I & II)** – Guidelines for Design and Condition Assessment of Bridge Components
- **IRC: SP:16** and **IRC: SP:83** – Guidelines for Maintenance and Management of Highways and Toll Facilities

4.2 Pavement Composition

The pavement has been designed in accordance with IRC:37-2001. The concessionaire has based the design on CBR values of 8% and 10%. Although the design traffic on the RHS is relatively lower than on the LHS, the concessionaire has opted to provide the same pavement thickness for both directions.

As mentioned in Pavement Design Report, design consultants summarized the calculated design traffic for the next 20 years for BT and Base and subbase layer respectively.

Exhibit 23: Design traffic in MSA for New Construction & Overlay Section

As per Concessionaire			
S. No	**Section Type**	**Design Traffic MSA for 20 years (Jammu to Udhampur)**	**Design Traffic MSA for 20years (Udhampur to Jammu)**
1	New Construction	41	16
2	Overlay	47	19

Pavement Configuration for Project is given in **Exhibit 24**

Exhibit 24: Pavement Composition-Main Carriageway

S. No	Design MSA	As built drawings
Flexible Pavement		
1	**Adopted MSA – 10**	
2	BC in mm	40
3	DBM in mm	110
4	WMM in mm	250
5	GSB in mm	200
Rigid Pavement		
	PQC	**DLC**
1	300	150
Overlay Works		
The Overlay thickness proposed for design traffic of 50 MSA for the project corridor. Based on the BBD Test Result Concessionaire Proposed Overlay of 50 mm thickness with DMB of 50 mm thickness.		

As per Approved Pavement Design Report the service road has been designed for 10 MSA & CBR-10%. The Pavement layer adopted for service road as given below:

Exhibit 25: Pavement Composition -Service Road

S. No	Design MSA	
	Adopted MSA – 10 years	**25**
1	BC in mm	40
2	DBM in mm	50
3	WMM in mm	250
4	GSB in mm	200

4.3 Assessment of Highway

Knight Frank carried out a detailed review and assessment of the **project highway assets**, which included **Service Roads (SR), Intersections, TLBs, BLBs, Sign Boards, MBCBs, and other related infrastructure components**. The assessment was undertaken through **comprehensive visual inspections** along the entire project stretch, supplemented by a **review of relevant reports and maintenance records** shared by the Client during site visit.

The objective of this exercise was to evaluate the **existing physical condition, functionality, and maintenance requirements** of each asset category. Based on the observations and data collected, a **maintenance strategy** has been formulated covering **regular repair, preventive, and routine maintenance activities** to ensure the long-term sustainability and serviceability of the highway assets.

Furthermore, the **pavement condition** was assessed through a combination of **visual inspection, Network Survey Vehicle (NSV) survey, and Falling Weight Deflectometer (FWD) testing**, providing a comprehensive understanding of surface condition, structural strength, and performance.

Overall, the review indicates that the **project highway assets are in satisfactory condition**, with all key components performing as intended. Minor deficiencies identified during the inspection can be addressed through routine and preventive maintenance measures as part of the recommended asset management plan.

a) Service Road/Slip:

Total length of service road is 20.180 kms. The width of service road is 5.50m to 7.00m. Service Road / Slip Roads is constructed along the project as flexible pavements. The overall pavement condition is good. Pavement Markings are also found in service roads but are faded at some places

b) Highway Lighting:

Highway lighting has been provided at key locations such as junctions, flyovers, tunnels, and toll plazas to ensure adequate visibility and road safety during night hours. High mast lighting systems are installed specifically at junctions and toll plaza areas for enhanced illumination. Additionally, solar-powered blinker signals have been installed at selected median openings to alert and guide motorists at potential conflict points.

c) Drainage:

As per CA, lined between MCW and Service Road to be provided and at outer edge of slip road at approach of grade separated structures.

Drainage arrangements are provided in the project. But these Roadside drainage along the Highway as well as lined drains at median needs appropriate maintenance by cleaning debris and vegetations to make the arrangement working. Total 9.47 Kms of RCC covered drains available at site.

The project includes a total drainage network comprising 30.536 km of median drain, 9.407 km of RCC cover drain, and 56.577 km of toe drain, ensuring effective surface water management along the highway.

d) Metal Beam & Wire Rope Safety Barrier:

The project stretch includes 31.588 km of RCC crash barriers, 21.007 km of W-Beam crash barriers, and 12.292 km of Brifen wire rope barriers, ensuring road safety across various sections of the highway.

Metal Beam Crash Barriers (MBCBs) have been installed along the main carriageway, at underpasses, on approach sections, and at high embankment locations along the inner side of service roads to enhance road safety and prevent vehicular run-off. During the inspection, it was observed that at a few locations, the wire ropes appear slightly loose. These minor deficiencies can be rectified through routine maintenance activities to restore the barriers to their optimal functional condition.

e) Bus Bays /Bus Shelters & Truck Lay Byes:

There are 28 numbers bus-bays both side along the project road, out of these at 02 locations bus bays are not there. Lighting has not been provided at any bus bay locations. Pavement condition of bus bays is satisfactory.

There are 13 Truck lay byes provided along the project highway.

f) Major/Minor Junctions

Intersections are the places where one or more roads shares the common space. These includes major and minor intersections. There is total 28 junctions along the project road. Out of these, there are 13 major junctions and 15 minor junctions. Junctions are provided with flexible pavement.

g) Traffic Signs Boards:

The project highway is equipped with various types of road signs, including roadside signs, overhead gantry-mounted signs, kerb-mounted signs, and median signs. The stretch features approximately 1,873 signboards, 15 overhead gantry signboards, and 19 cantilever gantry signboards.

h) Plantation

Landscaping and avenue plantation are present along the project highway; however, they are observed to be sparse and unevenly distributed. Shrubs and flowering plants have been intermittently planted within the median, though the variety of species is limited. Median plantation is available at certain stretches of the corridor, comprising a mix of shrubs and ornamental plants, but the overall continuity and density of plantation remain inconsistent throughout the project road.

i) Median & Median Opening:

Width of median is 1.5m/4.00m

Median openings have been provided in accordance with the Concession Agreement (CA) provisions and the requirements of local authorities and nearby residents along the project highway. These openings are generally equipped with pavement markings to guide traffic movement. A total of 46 median openings were identified during the site inspection. However, it was observed that at a few locations, blinker lights and signboards are missing, which should be reinstated as part of regular maintenance activities to ensure road safety and compliance with standards.

KF View:

Overall, the project highway is in satisfactory condition, with all major assets performing as intended. Minor deficiencies such as faded markings, missing blinkers, and loose barriers can be addressed through routine maintenance to ensure continued safe and efficient operation.

4.4 Assessment of Structures

A **visual condition survey** of all bridge and culvert structures was carried out jointly by the **Knight Frank (KF) team** and the **Concessionaire**, with the objective of **identifying and quantifying structural deterioration** arising from various factors such as **dead load, live load, wind load**, and **physical or chemical influences** exerted by the environment. In addition to examining **damages caused by unpredictable natural events** or **vehicular collisions**, the inspection also aimed to detect or monitor the impact of any **construction-related imperfections** that may affect long-term performance. Such periodic inspections play an important role in **enhancing the service life and safety** of both existing and newly built bridge structures.

Knight Frank reviewed the **structural condition assessment** of bridges and culverts along the **Jammu–Udhampur Section of NH-44 (Km 15+000 to Km 67+000)** during the **Operation & Maintenance phase**, based on **visual inspection** and findings from the **Mobile Bridge Inspection Unit (MBIU) survey** carried out in **November 2023 (attached as Para 5.4.2)**. The assessment encompassed all **major and minor bridges**, as well as **underpasses** along both the **left-hand and right-hand carriageways** of the corridor.

The objective of the inspection was to evaluate the **structural integrity, durability, and functional safety** of bridge assets through a **systematic visual examination**, supplemented by **limited Non-Destructive Testing (NDT)** wherever required. The assessment methodology adhered to the provisions of **IRC: SP:35-2015** (Code of Practice for Inspection and Maintenance of Bridges) and **IRC:83-2019 (Part I & II)** pertaining to bridge design and inspection standards.

A total of **335 structures** were covered under this assessment, comprising:

- **4 Major Bridges** – PSC Box Girder / PSC T-Beam Type
- **24 Minor Bridges** – RCC T-Beam and RCC Slab Type
- **1 Vehicular/Non-Vehicular Underpass** – RCC Box Type
- **44 Arch Culverts** – Masonry Arch / RCC Type
- **3 Pipe Culverts** – RCC Pipes (1.0–1.5 m dia.)
- **261 Slab Culverts** – RCC Slab Spans (2–6 m)
- **1 Grade Separator** – RCC Box Configuration

Most bridges are of **RCC T-Beam or PSC Box Girder construction**, supported by **reinforced concrete abutments and piers** with open foundations and **stone-pitched protection works**. The **superstructure and substructure** elements were generally found to be **structurally sound** and **stable**, with no significant distress reported.

KF View:

Overall, based on the review of the previous MBIU survey reports (conducted by the SPV in November 2023) and a comprehensive visual examination during the site visit, it was observed that most structures are in sound structural condition and maintained in a fair state of serviceability.

4.5 Assessment of Tunnels

The **Kashmir Himalaya** is divided into three main physiographic zones from south to north — the **Siwalik Himalaya**, the **Middle Himalaya**, and the **Greater Himalaya**. The project area primarily lies within the **Siwalik formation** of the Outer Himalaya, part of the **Siwalik Himalayan Belt (Foreland Basin)** comprising the **Siwalik and Murree formations**, which overlie the northern margin of the Indian shield.

The **Siwalik group** is subdivided into **Lower, Middle, and Upper Siwalik**, consisting mainly of **fine to medium-grained sandstone** (light grey to reddish brown), **siltstone**, **claystone**, and **shale**. The **Lower Murree formation** is predominantly **argillaceous** with hard sandstone bands, while the **Upper Murree** is **arenaceous**, comprising fine to medium-grained sandstone.

Tunnels 1, 2, 3, and 4 traverse through the **Middle Siwalik**, except for a portion of **Tunnel 4 (near Portal 2)**, which passes through the **Lower Siwalik**. **None of the tunnels in the Jammu–Udhampur section of NH-44 intersect major fault zones such as the Reasi Thrust.** All tunnels are located along the **southern limb of the Suruin–Mastgarh anticline**, whose axial plane passes through **Jhajjar Kotli**.

The highway features four twin-tube tunnels with a combined length of 2.77 km. An overview of the tunnel details for the project is provided below.

Exhibit 26: Details of Tunnel

Tunnel No.	Section	LHS/RHS	Design Chainage		length(m)
T-1	Main Road	LHS	23.72	23.89	170
		RHS	23.715	23.88	165
T-2	Main Road	LHS	24.48	24.711	231
		RHS	24.533	24.8	267
T-3	Main Road	LHS	24.94	25.37	430
		RHS	24.916	25.39	474
T-4	Main Road	LHS	25.49	26.02	530
		RHS	25.49	26.00	510

4.5.1 Power Supply & Substations in Tunnels:

- **Each tunnel portal is supported by a dedicated substation, totaling four substations across the project.**
    - **Substation 1** (Tunnel 1) receives an 11 KV HT power supply from JDPL, which also feeds **Substations 2 and 3**.
    - **Substation 4** (Tunnel 4) receives an independent 11 KV HT power supply from JDPL dedicated solely to that substation.
- **Tunnel Ventilation System & Safety Features**:

The tunnels at lengths of 530 m and 510 m operate using a longitudinal ventilation system. Both tubes are interconnected via a cross passage, which serves as an emergency escape route. Each tube is equipped with 8 jet fans to support ventilation. Additionally, 4 carbon monoxide (CO) sensors and 4 nitrogen dioxide (NO_2) sensors are installed on either side of the tunnel to monitor air quality. The entire ventilation system is currently operating on diesel generator (DG) power supply

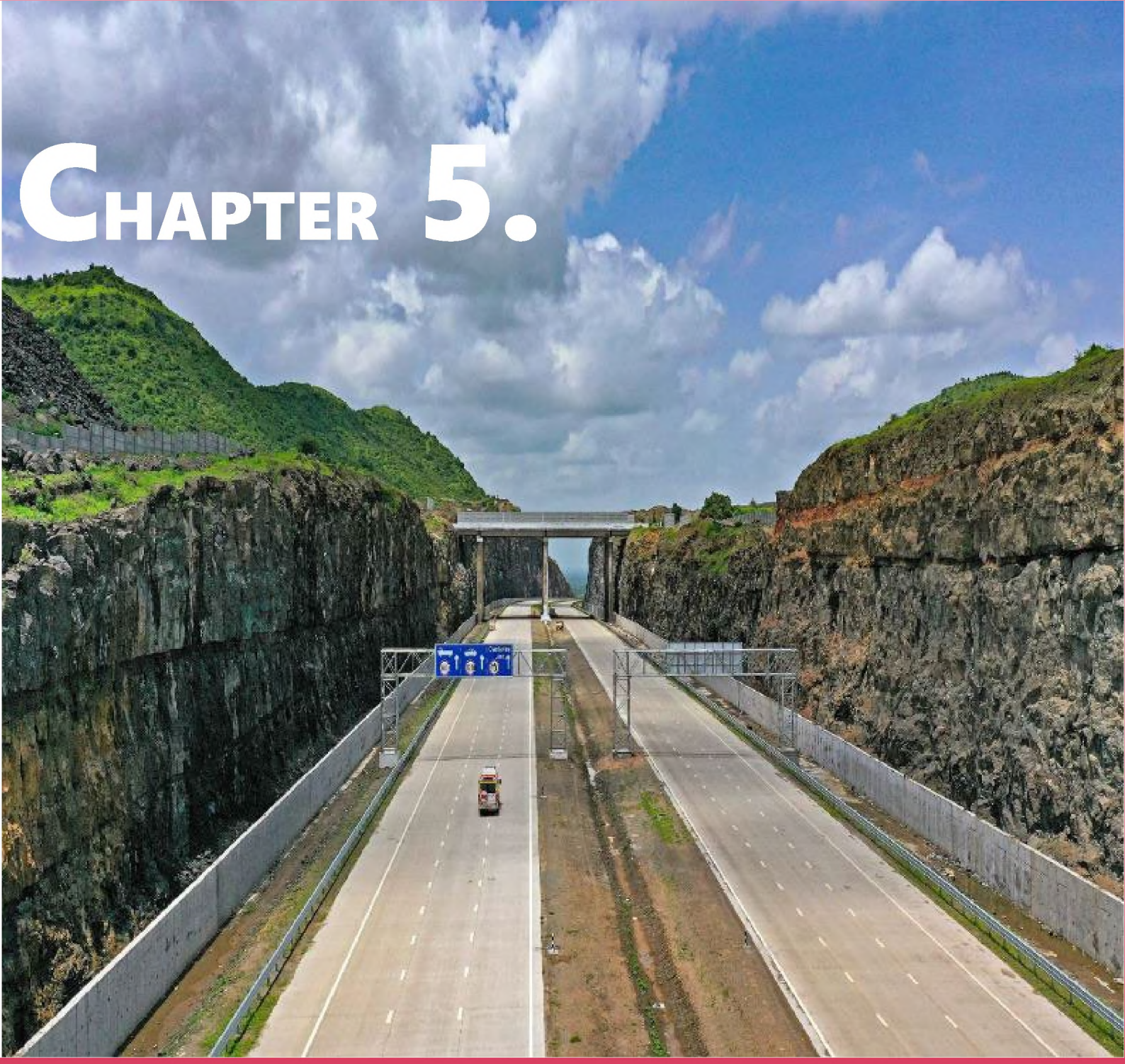
The tunnels are equipped with a comprehensive ventilation system that includes:

- 2 nos. of 500 KVA DG sets
- 1 DG synchronizing panel (with 3 nos. of 1600A ACBs)
- 1 ventilation panel (comprising 3 nos. of 1600A ACBs and 6 nos. of 400A MCCBs)
- 4 sub-panels (each with 1 no. 400A MCCB and 6 nos. of 100A MCCBs)
- 16 nos. of VFD (Variable Frequency Drive) panels

KF View:

The Jammu–Udhampur section of NH-44 has been operational for over nine years, and no major issues related to tunnel or slope stability have been reported during this period.

- ***During Site Visit, Minor erosion and distress of shotcrete have been observed, but no major mass movements were detected. The subsurface drainage system is functional and in good condition.***
- ***The false portal is protected with shotcrete wire mesh and berm, while longitudinal drains on both sides are in satisfactory condition.***



Chapter 5.

Review of Pavement Condition & Design

Chapter 5. REVIEW OF PAVEMENT CONDITION & DESIGN

5.1 Pavement Condition

The life of the Pavement has a co-relation with both its structural as well as Functional Condition. Inspecting and tracking of pavement condition, scheduling maintenance, and treating distress can have serious ramifications impinging on safety of road users and enhancing functional efficiency in end use of the Facility. It is therefore essential to carry out the assessment of the condition of the pavement on a given date taking into cognizance a variety of data to arrive at well-considered decisions and drawing up of the maintenance strategy and taking appropriate course of action to apply funds and resources in optimizing the desired levels of operations on the road assets. Condition data can include factors like roughness, specific distresses, friction, and overall structural health.

Once measurements of road condition are available, they are interpreted in such a way that allows the decision-making process to occur in a logical fashion. This might involve converting multiple physical parameters into a single index, allowing different sections of a road network to be directly compared against one another etc.

Pavement performance under prevailing environmental conditions is crucial as it has a direct bearing on the economic returns from the project development. While an under-designed pavement will fail prematurely, imposing undesirable Cost Over runs on the Project. It is therefore necessary to ensure the pavement layer thicknesses; configurations and materials are adequately designed and require minimal maintenance under the anticipated traffic loading throughout the life cycle of the project.

To achieve this objective and thereby to predict the performance of any pavement structure, it is necessary to analyze material characteristics, traffic condition, present physical condition of the pavement layers, local environment, and its impacts.

Due to the variety of variables involved, it is essential to determine the exact level of pavement performance through the project life. But, based on the assessment of present condition of pavement, analysis of available survey data, and estimations regarding the pavement life, future maintenance requirements can be estimated.

This part of the report deals with the details of the series of field investigations and analysis carried out to find out the present condition of pavement as well as to determine the future maintenance requirements for sound pavement performance throughout the project life.

5.2 Objectives

- Collect data regarding physical conditions of pavement.
- Prepare a plan for rectification as required for damaged/poor sections in consonance with requirements of the CA.
- Project maintenance requirement in physical and monetary terms over the life cycle of the project road.

5.3 Review of Pavement Design

A. Design Period

As per the four-laning manual and IRC: SP:84-2009, the sub-base and base layers of the pavement should be designed for a minimum period of 15 years, while the initial bituminous surfacing should be designed for a minimum of 10 years. ***However, the concessionaire has opted to design the flexible pavement for an extended design life of 20 years.***

B. Design CBR

As per the pavement design report, concessionaire considered the 8% and 10% CBR for pavement design. However, during execution time only 8% CBR is used.

C. Design MSA

As stated in the Pavement Design Report, the design consultants have provided a summary of the projected design traffic for the next 20 years, separately for the bituminous (BT) layer and the base and sub-base layers. The design of the new traffic construction and overlay is as detailed below:

Sl. No	Section Type	Design Traffic MSA for 20years (Jammu to Udhampur)	Design Traffic MSA for 20years (Udhampur to Jammu)
1	New Construction	41	16
2	Overlay	47	19

D. Pavement Crust of Main Carriageway

The adopted pavement crust for the Main Carriageway meets the requirements of IRC 37-2001 Concessionaire carried out the pavement design with 8% & 10% CBR values. Even though the design traffic in RHS direction is relatively less compared to the LHS direction, but the concessionaire is providing the same thickness for both directions

The crust thicknesses are as follows:

Exhibit 27 Pavement Design Composition of Main Carriageway

S. No	Design MSA	As built drawings
Flexible Pavement		
1	**Adopted MSA – 10**	
2	BC in mm	40
3	DBM in mm	110
4	WMM in mm	250
5	GSB in mm	200
Rigid Pavement		
	PQC	**DLC**
1	300	150
Overlay Works		
The Overlay thickness proposed for design traffic of 50 MSA for the project corridor. Based on the BBD Test Result Concessionaire Proposed Overlay of 50 mm thickness with DMB of 50 mm thickness.		

E. <u>For Service Road/Slip Road</u>

As per the Preliminary Design Report (PDR), the concessionaire has stated that the existing bituminous layer in the JBP, NBP, and MR sections ranges between 140 to 150 mm, with a granular layer thickness of 325 to 330 mm. In contrast, the Udhampur Bypass section has a thinner bituminous layer of only 80 mm but a thicker base/sub-base layer of approximately 430 mm.

As per Approved Pavement Design Report the service road has been designed for 10 MSA & CBR-10%. The Pavement layer adopted for service road as given below:

Exhibit 28: Pavement Composition -Service Road

S. No	Design MSA	
	Adopted MSA – 10 years	**25**
1	BC in mm	40
2	DBM in mm	50
3	WMM in mm	250
4	GSB in mm	200

F. Pavement Overlay design for Existing Carriageway

As per the Pavement Design Report (PDR), the concessionaire noted that the existing bituminous layer thickness ranges from 140 to 150 mm, and the granular layer thickness is around 325 to 330 mm in the JBP, NBP, and MR sections. In contrast, the Udhampur Bypass has a thinner bituminous crust of 80 mm, but a thicker base/sub-base layer of approximately 430 mm. A Benkelman Beam Deflection test was conducted on the existing surface in April 2011, and based on the analysis, the concessionaire proposed overlay thicknesses, details of which are provided in the below

Exhibit 29: Pavement Composition -Overlay Works

Section	Design Chainages	Jammu to Udhampur direction		Udhampur to Jammu direction	
		BC (mm)	DBM (mm)	BC (mm)	DBM (mm)
Main Road	21+940 to 26+710 27+250 to 33+971 34+975 to 41+695	50	50	50	50
	42+850 to 52+340	50	65	50	50
Nagrota Bypass	10+400 to 21+730	50	50	50	50
Udhampur Bypass	0+225 to 2+650 3+220 to 7+310 8+055 to 15+025	50	55	50	50
	15+540 to 16+550	50	50	50	50
Jammu Bypass	15+200 to 20+000	50	50	50	50

5.4 Pavement Evaluation by Falling Weight Deflectometer (FWD) Technique

FWD surveys were carried out to determine the present condition of pavement as well as finding out the future maintenance requirements.

a) Introduction:

The **Falling Weight Deflectometer (FWD) survey** was conducted in 2023 for the Jammu–Udhampur section of NH-44, covering chainage **Km 15+000 to Km 67+000**. The primary objective of this exercise was to evaluate the **structural strength of the in-service pavement**, determine the **moduli of individual pavement layers**, and estimate the **remaining life** of the pavement with respect to fatigue and rutting criteria.

This evaluation was carried out as per the provisions of **IRC:115-2014 "Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer"**. The survey results form a critical input for deciding the overlay requirements and long-term maintenance strategy of the project highway.

b) Project Road

The Jammu–Udhampur section of NH-44 serves as a vital north–south corridor, connecting Jammu city with Udhampur and further to Srinagar. The project alignment includes three distinct segments:

1. **Section I: Jammu Bypass (Km 15+200 to Km 20+260) -** Urban and peri-urban stretch with relatively high mixed traffic.
2. **Section II: MR & NBP (Km 9+380 to Km 52+450) -** A long intermediate stretch carrying a large share of heavy commercial vehicles.
3. **Section III: Udhampur Bypass (Km 0+000 to Km 16+352) -** A bypass section designed for smoother passage of highway traffic avoiding city areas.

The section passes through rolling to hilly terrain, experiencing climatic variations including hot summers and cold winters, both of which impact pavement performance

c) Falling Weight Deflectometer

The FWD survey was carried out using standard equipment with the following parameters:

- **Load Applied:** Equivalent to 40 kN impulse load (representing 80 kN standard axle).

- **Deflection Measurement:** At 7 radial offsets (D0 to D7) up to 1200 mm from the load center.
- **Survey Spacing:** 250–500 m interval along both carriageways.
- **Temperature Correction:** All bituminous layer moduli corrected to a reference temperature of 35°C.
- **Seasonal Correction:** Since the survey was conducted in winter (November 2023), appropriate seasonal correction factors were applied to granular and subgrade moduli.
- **Back-calculation Software:** KGPBACK (Genetic Algorithm based) used for determining layer moduli; IITPAVE used for fatigue and rutting life analysis

5.4.1.1 FWD Analysis

The FWD data collected has been analysed as per IRC:115-2014 guidelines with the suggested ranges for in-service pavements.

Description	Range
Subgrade Modulus	5 CBR to 20 CBR
Granular Layer Modulus	100 MPa to 500 MPa
Bituminous Layers –Thick without distress	750 MPa to 3000 MPa
Bituminous Layers in distressed condition	400 MPa to 1500 MPa

The above suggested ranges are for guidance only and pavement engineer shall use his judgment based on available data while fixing the above ranges. By looking at the age, condition and performance of the pavement following different set of ranges have been used in the analysis:

Layer	Bituminous Layers	Granular Layer Modulus	Subgrade
Modulus Value (MPa)	750-3000	100-500	50-75

Bituminous layer Moduli obtained from back calculations shall be corrected for a standard pavement temperature of 35°C using given equations. Whereas, for back calculated moduli values obtained for granular and subgrade layer shall be corrected for seasonal variations (using winter and summer equations). As FWD tests are performed during winter, accordingly winter correction factor is applied for granular and subgrade layers.

Remaining life in base year and overlay requirement (with VG-40 mix for >20 MSA) has been estimated in accordance with IRC: 115-2014 and IRC: 37-2018. The summary of the results is shown in tables below.

Exhibit 30 Remaining life of the existing pavement,

Sl. No.	Homogenous Sections (SCI)		Length	Thickness, mm		Total Crust	Moduli, Mpa			Strains		Life remains 90% reliability			Design MSA	Check
	From	To		Existing BT	Existing Granular		Mr of BT	Granular	Subgrade	Tensile (Et)	Vertical (Ev)	Fatigue (Nf)	Rutting (Nr)	Min		
Remaining Life of Existing Pavement for Section-I (Jammu Bypass From Km.15+200 to Km.20+260)																
Four Lane LHS																
1	15.2	17.75	2.55	160	450	610	2629	361	86	1.39E-04	2.08E-04	85.4	689	85.4	**50**	Safe
2	17.75	20.26	2.51	160	450	610	2629	358	86	1.40E-04	2.09E-04	84	680.1	84	**50**	Safe
Total Length			**5.06**													
Four Lane RHS																
1	15.2	17.35	2.15	160	450	610	2630	369	87	1.38E-04	2.06E-04	89.3	731	89.3	**50**	Safe
2	17.35	20.26	2.91	160	450	610	2530	371	86	1.40E-04	2.08E-04	86.5	698.1	86.5	**50**	Safe
Total Length			**5.06**													
Remaining Life of Existing Pavement for Section-II (MR & NBP From Km.9+350 to Km.52+450)																
Four Lane LHS																
1	9.38	18.85	9.47	160	450	610	2695	337	87	1.42E-04	2.11E-04	77.2	647.2	77.2	**50**	Safe
2	18.85	29.25	10.4	160	450	610	2700	315	87	1.47E-04	2.16E-04	68.4	587	68.4	**50**	Safe
3	29.25	36.5	7.25	160	450	610	2834	258	87	1.56E-04	2.27E-04	51.9	472.3	51.9	**50**	Safe
4	36.5	40.75	4.25	160	450	610	2855	271	87	1.52E-04	2.23E-04	56.8	505.9	56.8	**50**	Safe
5	40.75	43.85	3.1	160	450	610	3000	348	86	1.33E-04	2.06E-04	92.4	732.6	92.4	**50**	Safe
6	43.85	52.45	8.6	160	450	610	1589	368	86	1.74E-04	2.26E-04	54.8	480.9	54.8	**50**	Safe
Total Length			**43.07**													
Four Lane RHS																
1	9.38	14.25	4.87	160	450	610	2476	325	86	1.51E-04	2.19E-04	65.7	554.8	65.7	**50**	Safe
2	14.25	18.85	4.6	160	450	610	2389	329	87	1.53E-04	2.18E-04	64.7	561.8	64.7	**50**	Safe
3	18.85	31.85	13	160	450	610	2416	348	87	1.48E-04	2.13E-04	72.9	618.8	72.9	**50**	Safe
4	31.85	35.75	3.9	160	450	610	2392	320	86	1.55E-04	2.21E-04	61.4	525.9	61.4	**50**	Safe
5	35.75	42.35	6.6	160	450	610	2768	346	87	1.39E-04	2.08E-04	83.6	690.5	83.6	**50**	Safe
6	42.35	52.45	10.1	160	450	610	2536	326	87	1.49E-04	2.16E-04	67.9	583.3	67.9	**50**	Safe
Total Length			**43.07**													
Remaining Life of Existing Pavement for Section-III (Udhampur Bypass From Km.0+000 to Km.16+350)																
Four Lane LHS																
1	0	4.75	4.75	160	450	610	2258	381	86	1.46E-04	2.10E-04	81.7	664.1	81.7	**50**	Safe

Sl. No.	Homogenous Sections (SCI)		Length	Thickness, mm		Total Crust	Moduli, Mpa			Strains		Life remains 90% reliability			Design MSA	Check
	From	To		Existing BT	Existing Granular		Mr of BT	Granular	Subgrade	Tensile (Et)	Vertical (Ev)	Fatigue (Nf)	Rutting (Nr)	Min		
2	4.75	12.25	7.5	160	450	610	3000	386	86	1.26E-04	1.98E-04	111.7	863.1	111.7	**50**	Safe
3	12.25	16.35	4.1	160	450	610	2296	384	86	1.44E-04	2.09E-04	84.3	683.1	84.3	**50**	Safe
Total Length			**16.35**													
Four Lane RHS																
1	0	4.85	4.85	160	450	610	3000	382	87	1.27E-04	1.98E-04	109.6	869	109.6	**50**	Safe
2	4.85	10.85	6	160	450	610	3000	364	86	1.30E-04	2.03E-04	100.1	784.8	100.1	**50**	Safe
3	10.85	16.35	5.5	160	450	610	3000	388	87	1.26E-04	1.97E-04	112.7	891.2	112.7	**50**	Safe
Total Length			**16.35**													

The FWD survey results demonstrate that the Jammu–Udhampur corridor is **structurally sound and serviceable** for current and near-future traffic. The majority of sections have long fatigue and rutting lives, well above the design traffic demand. However, **localized deficiencies in Section II** require corrective overlays and rehabilitation to ensure uniform serviceability across the entire stretch.

This evaluation reinforces that **targeted strengthening, rather than uniform overlays**, is the most cost-effective maintenance approach for this corridor**.**

5.4.2 MBIU survey

a. Introduction:

The **Mobile Bridge Inspection Unit (MBIU) survey** was conducted in **November 2023** for the Jammu–Udhampur Section of NH-44, covering **Km 15+000 (Jammu Bypass) to Km 67+000 (Udhampur)**. This was undertaken as part of Independent Engineer services during the O&M period, in accordance with **Clause 6.4 of the Terms of Reference** of the Concession Agreement.

The primary objective of the inspection was to assess the **structural and functional condition of bridges and culverts**, covering superstructure, substructure, bearings, deck, joints, drainage spouts, crash barriers, and approaches. The inspection was carried out with the aid of a **truck-mounted Palfinger PK1901 articulated unit**, enabling access to the underside of bridge decks and otherwise inaccessible elements

b. Project Corridor:

The inspected section forms a crucial part of the North–South corridor. The Jammu–Udhampur stretch includes **Jammu Bypass, MR & Nagarota Bypass, and Udhampur Bypass**, covering a mix of **major bridges, minor bridges, vehicular underpasses (VUPs), pedestrian underpasses (PUPs), and causeways**.

The bridges traverse rivers, streams, and gorges, many of which are subject to **siltation, waterlogging, heavy monsoon flows, and vegetation growth** along slopes. Accessibility issues in high-level bridges made the MBIU indispensable for systematic inspection.

c. Instrumentation & Methodology:

Instrument: Palfinger PK1901 MBIU, electro-mechanically operated articulated arm system mounted on truck.

Working Range: Allows horizontal, vertical, and underneath access across long spans.

Supporting Equipment: Laser densitometer, crack measurement card, tape (5 m, 30 m), ladders, torches, hammer, and digital cameras.

Inspection Standard: Observations recorded in accordance with **IRC SP-35 (Guidelines for Inspection and Maintenance of Bridges) and IRC SP-52 (Bridge Condition Survey Manual).**

Procedure:

- Visual examination of deck slab, girders, expansion joints, spouts, parapets, crash barriers.
- Recording of defects like honeycombing, spalling, exposed reinforcement, vegetation growth, clogged drainage, cracks, silting at abutments and pier caps.
- Photographic evidence taken for all critical observations

Exhibit 31 List of Bridge Inspected

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
1	16+860	Vehicular Underpass	MCW	1 × 12.00	12	2 × 7.50	24.1	RCC Box	1. Drainage spouts are partially clogged. 2. Growth of vegetation on RE wall. 3. Honeycombing on superstructure.
2	17+510	Minor Bridge	LHS	2 × 4.80	9.6	8.7	12.9	RCC solid slab	1. Vegetation on side slopes of approaches and vent ways. 2. Drainage spouts clogged. 3. Vegetation and honeycombing on substructure.
2a	17+510	Minor Bridge	RHS	1 × 10.00	10	7.5	10.3	RCC solid slab	1. Vegetation on retaining wall. 2. Drainage spouts clogged.
3	18+250	Major Bridge	LHS	15 × 46.00	690	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes of approaches and abutment. 2. Abutment front protection partly damaged. 3. Silt & debris on abutment and pier cap. 4. Reinforcement exposed on superstructure. 5. Expansion joints filled with debris.
3a	18+250	Major Bridge	RHS	15 × 46.00	690	7.5	10.5	Box girder	1. Vegetation on side slopes of approaches and abutment. 2. Honeycombing on superstructure. 3. Reinforcement exposed on superstructure.
4	18+920	Minor Bridge	LHS	1 × 25.00	25	7.5	10.5	RCC deck slab + girder	1. Expansion joints filled with debris.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
									2. Vegetation on side slopes of abutment.
									3. Cracks on substructure, pavement surface and pedestal.
4a	18+920	Minor Bridge	RHS	2 × 13.25	26.5	7.75	8.75	RCC deck slab + girder	1. Vegetation on side slopes of approaches, abutment and retaining wall.
									2. Reinforcement exposed on superstructure.
									3. Spalling, reinforcement exposed and honeycombing on superstructure.
									4. Drainage spouts clogged.
5	19+320	Minor Bridge	LHS	1 × 25.00	25	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes of approaches and abutment.
									2. Cracks on substructure.
									3. Expansion joints filled with debris.
5a	19+320	Minor Bridge	RHS	1 × 26.40	26.4	7.5	8.5	RCC deck slab + girder	1. Vegetation on side slopes of approaches and abutment.
									2. Spalling and vegetation on wing wall.
									3. Expansion joints covered with bitumen.
6	19+560	Minor Bridge	LHS	2 × 20.00	40	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes of approaches and abutment.
									2. Expansion joints filled with debris.
6a	19+560	Minor Bridge	RHS	1 × 22.40	22.4	7.5	8.5	RCC deck slab + girder	1. Vegetation on side slopes of approaches.
									2. Spalling & honeycombing on superstructure.
									3. Reinforcement exposed on superstructure.
									4. Drainage spouts clogged.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
7	19+820	Minor Bridge	LHS	2 × 25.00	50	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes of approaches. 2. Expansion joints filled with debris.
7a	19+820	Minor Bridge	RHS	1 × 27.00	27	7.7	8.5	RCC deck slab + girder	1. Vegetation on side slopes of approaches. 2. Drainage spouts clogged. 3. Expansion joints filled with bitumen.
8	20+090	Vehicular Underpass	MCW	1 × 14.00	14	8	39.5	RCC deck slab + girder	Cracks on side walls and pavement surface.
MAIN ROAD & NAGAROTA BYPASS									
9	9+380	Minor Bridge	MCW	1 × 12.00	12	2 × 8.00	24.6	RCC box	1. Vegetation on side slopes of approaches. 2. Drainage spouts partially clogged.
10	9+928	Major Bridge cum Vehicular Underpass	LHS	5 × 20.00 + 1 × 10.00	110	8	11	RCC deck slab + solid slab + girder	1. Vegetation on side slopes of approaches & RE wall. 2. Expansion joints filled with debris. 3. Drainage spouts partially clogged. 4. Honeycombing on superstructure.
10a	9+928	Major Bridge cum Vehicular Underpass	RHS	5 × 20.00 + 1 × 10.00	110	8	11	RCC deck slab + solid slab + girder	1. Vegetation on side slopes; 2. Expansion joints filled with debris.
11	10+250	Causeway (vented)	LHS SR	28 × 1.20	46.5	7.5	10.3	Vented causeway	1. Flow obstructed due to silt & boulders in ventway. 2. Reinforcement exposed on superstructure.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
12	10+520	Vehicular Underpass	MCW	1 × 12.00	12	2 × 8.10	24.25	RCC box	1. Vegetation on RE plates. 2. Drainage spouts partially clogged.
13	10+800	Vehicular Underpass	MCW	1 × 12.00	12	2 × 8.10	24.25	RCC box	1. Vegetation on RE plates. 2. Drainage spouts partially clogged.
14	11+160	Vehicular Underpass	MCW	1 × 12.00	12	2 × 8.00	24.2	RCC box	1. Vegetation on RE plates. 2. Drainage spouts partially clogged.
15	11+600	Minor Bridge	LHS	2 × 20.00	40	8	11	RCC deck slab + girder	1. Vegetation on side slopes of approaches. 2. Expansion joints filled with debris.
15a	11+600	Minor Bridge	RHS	2 × 20.00	40	8	11	RCC deck slab + girder	1. Vegetation on side slopes; 2. Expansion joints filled with debris.
16	12+290	Pedestrian Underpass	MCW	1 × 7.00	7	2 × 8.00	25.2	RCC box	1. Vegetation on RE plates. 2. Drainage spouts partially clogged.
17	12+500	Major Bridge	LHS	7 × 20.00	140	8	11	RCC deck slab + girder	1. Stone pitching partially damaged. 2. Expansion joints filled with debris. 3. Vegetation on side slopes of approaches.
17a	12+500	Major Bridge	RHS	7 × 20.00	140	8	11	RCC deck slab + girder	1. Stone pitching partially damaged. 2. Vegetation on side slopes.
18	13+370	Major Bridge	LHS	12 × 20.00	240	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes of approaches. 2. Expansion joints filled with debris. 3. Drainage spouts partially clogged. 4. Honeycombing on superstructure & arrestor pedestal.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
18a	13+370	Major Bridge	RHS	12 × 20.00	240	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris. 3. Drainage spouts partially clogged.
19	14+280	Major Bridge	LHS	6 × 20.00	120	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes of approaches. 2. Expansion joints filled with debris.
19a	14+280	Major Bridge	RHS	6 × 20.00	120	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes and abutment. 2. Expansion joints filled with debris.
20	14+470	Major Bridge	LHS	3 × 20.00	60	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes & abutment. 2. Expansion joints filled with debris. 3. RCC crash barrier partially damaged.
20a	14+470	Major Bridge	RHS	3 × 20.00	60	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes & abutment. 2. Expansion joints filled with debris. 3. RCC crash barrier partially damaged.
21	15+450	Major Bridge	LHS	8 × 20.00 + 7 × 20.00 +1×10.00 (as reported)	150	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris. 3. RCC crash barrier partially damaged.
21a	15+450	Major Bridge	RHS	(same configuration)	150	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris. 3. RCC crash barrier partially damaged.
22	15+920	Major Bridge	LHS	8 × 20.00	160	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes & abutment. 2. Expansion joints filled with debris.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
22a	15+920	Major Bridge	RHS	8 × 20.00	160	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes & abutment. 2. Expansion joints filled with debris. 3. Soil erosion observed on embankment approaches.
23	16+860	Major Bridge	LHS	7 × 20.00	140	8	11.5	RCC deck slab + girder	1. Vegetation on side slopes of approaches and retaining wall. 2. Expansion joints filled with debris.
23a	16+860	Major Bridge	RHS	7 × 20.00	140	8	11.5	RCC deck slab + girder	1. Vegetation on side slopes & retaining wall. 2. Expansion joints filled with debris.
24	18+120	Vehicular Underpass	MCW	1 × 12.00	12	2 × 7.50	24.1	RCC box	1. Vegetation on RE plates. 2. Drainage spouts partially clogged.
25	18+910	Vehicular Underpass	MCW	1 × 12.00	12	2 × 8.20	24	RCC box	1. Vegetation on RE plates. 2. Drainage spouts not provided.
26	18+560	Major Bridge	LHS	5 × 20.00	100	8	11	RCC deck slab + girder	1. Vegetation on side slopes & retaining wall. 2. Expansion joints filled with debris.
26a	18+560	Major Bridge	RHS	5 × 20.00	100	8	11	RCC deck slab + girder	1. Vegetation on side slopes & retaining wall. 2. Expansion joints filled with debris.
27	19+420	Major Bridge	LHS	6 nos. & 1 × 33.00 m + 4 × 20.00 m + 1 × 30.00	143	8.3	11.3	RCC deck slab + girder	1. Vegetation on side slopes & retaining wall. 2. Expansion joints filled with debris. 3. Spalling & reinforcement exposed on substructure & superstructure.
27a	19+420	Major Bridge	RHS	6 nos. & same spans	143	8.3	11.3	RCC deck slab + girder	1. Vegetation on side slopes & retaining wall.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
									2. Expansion joints filled with debris.
28	20+360	Minor Bridge	LHS	1 × 24.00	24	8.4	11.2	RCC deck slab + girder	1. Vegetation on side slopes & abutment. 2. Expansion joints filled with debris.
28a	20+360	Minor Bridge	RHS	1 × 19.00	19	8.4	11.2	RCC deck slab + girder	1. Vegetation on side slopes & abutment. 2. Expansion joints filled with debris.
29	20+700	Major Bridge	LHS	7 nos. & 1×40.00 + 5×20.00 + 1×10.00	150	8.4	11.2	RCC deck slab + girder + composite girder	1. Vegetation on side slopes & retaining wall. 2. Expansion joints filled with debris. 3. Honeycombing on superstructure. 4. Edge beam repair ongoing at expansion joint.
29a	20+700	Major Bridge	RHS	7 nos. & 1×40 + 4×20 +1×10.00	130	8.4	11.2	RCC deck slab + girder + composite girder	1. Vegetation on side slopes; 2. Expansion joints filled with debris; 3. Honeycombing on superstructure.
30	23+000	Major Bridge (Service road)	LHS (service)	3 × 20.00	60	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Drainage spouts partially clogged. 3. Vegetation on side slopes and retaining wall.
31	23+060	Vehicular Underpass	MCW	1 × 12.00	12	2 × 7.50	21	RCC box	1. Vegetation on RE plates. 2. Drainage spouts partially clogged.
32	23+440	Major Bridge	LHS	18 nos. & 17 ×20.00 +1×10.00	350	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Reinforcement exposed & honeycombing on arrestor pedestals. 3. Vegetation on side slopes.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
32a	23+440	Major Bridge	RHS	same config	350	7.5	10.3	RCC deck slab + girder	same observations as LHS
33	24+050	Major Bridge	LHS	7 nos. & 3×20.50 + 4×20.00	141.5	8	10.8	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on side slopes.
33a	24+050	Major Bridge	RHS	same config	141.5	8	10.8	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Honeycombing & exposed reinforcement on superstructure. 3. Vegetation on side slopes.
34	24+280	Major Bridge	LHS	7 nos. & 6×40.00 + 1×29.50	269.5	8	10.8	RCC deck slab + girder + composite girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris. 3. Stone pitching partially damaged.
34a	24+280	Major Bridge	RHS	same	269.5	8	10.8	same	
35	24+880	Major Bridge	LHS	3 × 20.00	60	8	11	RCC deck slab + girder	1. Stone pitching partially damaged. 2. Expansion joints filled with debris. 3. Vegetation on side slopes & retaining wall. 4. RCC crash barrier partially damaged.
35a	24+880	Major Bridge	RHS	3 × 20.00	60	8	11	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Spalling & reinforcement exposed on superstructure. 3. Vegetation on side slopes. 4. RCC crash barrier partially damaged.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
36	25+460	Minor Bridge	LHS	3 × 10.00	30	7.5	10.3	RCC solid slab	Expansion joints filled with debris.
36a	25+460	Minor Bridge	RHS	3 × 10.00	30	7.5	10.3	RCC solid slab	Expansion joints filled with debris.
37	26+300	Minor Bridge	LHS	2 × 20.00	40	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris.
37a	26+300	Minor Bridge	RHS	2 × 20.00	40	7.5	10.5	RCC deck slab + girder	Expansion joints filled with debris; drainage spouts clogged.
38	28+600	Minor Bridge	LHS	1 × 25.50	25.5	7.5	10.5	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Drainage spouts clogged.
38a	28+600	Minor Bridge	RHS	1 × 25.50	25.5	7.5	10.5	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Drainage spouts clogged.
39	29+000	Minor Bridge	LHS	1 × 19.80	19.8	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Drainage spouts clogged.
39a	29+000	Minor Bridge	RHS	1 × 19.80	19.8	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Drainage spouts clogged.
40	31+435	Major Bridge	LHS	7 nos. & 4×20 + 1×40 +1×80 +1×40	240	7.5	10.5	Box girder + RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on retaining wall.
40a	31+435	Major Bridge	RHS	same	240	7.5	10.5	Box girder + RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on retaining wall. 3. Honeycombing on superstructure.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
41	31+920	Vehicular Overpass	MCW	2 × 14.50	29	5.5	6	RCC solid slab	1. Vegetation on side slopes. 2. Drainage spouts clogged.
42	35+480	Major Bridge	LHS	11 nos. & 7×10 + 3×20 +1×10	140	7.5	10.3	RCC deck slab + girder + RCC solid slab	1. Expansion joints filled with debris. 2. Vegetation on retaining wall.
42a	35+480	Major Bridge	RHS	same	140	7.5	10.3	RCC deck slab + girder + RCC solid slab	1. Expansion joints filled with debris. 2. Vegetation on retaining wall.
43	36+920	Major Bridge	LHS	4 × 20.00	80	8	11	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Toe wall partially damaged at abutment side. 3. Drain pipes not provided.
43a	36+920	Minor Bridge	RHS	2 × 20.00	40	8	11	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Drainage spouts partially clogged.
44	38+080	Minor Bridge	LHS	1 × 30.00	30	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on retaining wall & vent ways.
44a	38+080	Minor Bridge	RHS	1 × 30.00	30	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on retaining wall & vent ways.
45	39+500	Minor Bridge	LHS	1 × 30.00	30	7.5	10.3	RCC deck slab + girder	1. Expansion joint filled with debris. 2. Vegetation on side slopes and retaining wall.
46	39+600	Major Bridge	LHS	6 × 20.00	120	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on retaining wall.
46a	39+600	Major Bridge	RHS	5 × 20.00	100	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
									2. Vegetation on retaining wall.
47	39+860	Major Bridge	LHS	3 × 20.00	60	8.1	10.6	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on retaining wall. 3. Drainage spouts partially clogged.
48	40+040	Major Bridge	LHS	6 × 20.00	120	8.1	10.9	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on retaining wall.
48a	40+040	Major Bridge	RHS	4 × 20.00	80	8.1	10.9	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on side slopes.
49	40+950	Major Bridge	LHS	3 × 20.00	60	7.5	10.3	RCC deck slab + girder	Expansion joints filled with debris.
49a	40+950	Major Bridge	RHS	3 × 20.00	60	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on side slopes.
50	41+760	Minor Bridge	LHS SR	1 × 30.00	30	7.5	8.5	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Drainage spouts clogged.
50a	41+760	Minor Bridge	LHS	1 × 30.00	30	8.2	9.2	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Drainage spouts clogged.
50b	41+760	Minor Bridge	RHS	1 × 30.00	30	8.2	9.2	RCC deck slab + girder	1. Growth of vegetation on side slopes & abutment. 2. Expansion joints filled with debris. 3. Drainage spouts partially clogged.
51	42+460	Major Bridge	RHS	2 × 30.00	60	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on retaining wall & vent ways.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
									3. RCC crash barrier partially damaged.
52	44+160	Minor Bridge	LHS	1 × 25.00	25	7.5	10.3	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris.
53	46+120	Major Bridge	RHS	3 × 20.00	60	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on side slopes & vent ways. 3. Drainage spouts partially clogged.
54	46+600	Minor Bridge	MCW	1 × 7.00	7	2 × 7.50	22.4	RCC box	1. Vegetation on side slopes of approaches. 2. Drainage spouts not provided.
55	47+870	Minor Bridge	LHS	1 × 12.00	12	7.5	10.5	RCC box	1. Vegetation on side slopes & abutment. 2. Drainage spouts partially clogged; drain pipes not provided. 3. Toe wall partially damaged.
55a	47+870	Minor Bridge	RHS	1 × 12.00	12	7.5	8.5	RCC deck slab + girder	1. Vegetation on side slopes. 2. Reinforcement exposed on superstructure. 3. Toe wall and median crash barrier damaged. 4. Drainage spouts not provided.
56	48+660	Minor Bridge	RHS	1 × 12.00	12	7.5	10.5	RCC box	Growth of vegetation on side slopes & wing wall.
57	49+080	Minor Bridge	LHS	2 × 20.00	40	7.5	10.3	RCC deck slab + girder	1. Vegetation on side slopes & abutment. 2. Expansion joints filled with debris.
57a	49+080	Minor Bridge	RHS	2 × 20.00	40	7.5	10.3	RCC deck slab + girder	1. Vegetation on side slopes & abutment.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
									2. Expansion joints filled with debris.
									3. Drainage spouts partially clogged.
58	49+450	Major Bridge	LHS	7 × 20.00	140	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris.
									2. Vegetation on side slopes and pier cap.
58a	49+450	Major Bridge	RHS	7 × 20.00	140	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris.
									2. Vegetation on side slopes and pier cap. Minor cracks on substructure.
59	49+703	Major Bridge	LHS	3 × 20.00	60	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris.
									2. Vegetation on side slopes, substructure & superstructure.
59a	49+703	Major Bridge	RHS	6 × 20.00	120	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris.
									2. Vegetation on side slopes & substructure.
									3. Drainage spouts clogged. 4. RCC crash barrier partially damaged.
60	50+100	Minor Bridge	LHS	2 × 20.00	40	7.5	10.3	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris.
60a	50+100	Minor Bridge	RHS	2 × 20.00	40	7.5	10.3	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris.
61	50+250	Major Bridge	LHS	5 × 20.00	100	8	10.8	RCC deck slab + girder	1. Vegetation on side slopes & substructure.
									2. Expansion joints filled with debris.
									3. Drainage spouts clogged.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
61a	50+250	Major Bridge	RHS	5 × 20.00	100	8	10.8	RCC deck slab + girder	same as LHS
62	50+530	Major Bridge	LHS	7 × 20.00	140	7.5	10.3	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris.
62a	50+530	Major Bridge	RHS	7 × 20.00	140	7.5	10.3	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris. 3. Drainage spouts partially clogged.
63	52+220	Major Bridge	LHS	5 × 20.00	100	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on side slopes. 3. Drainage spouts partially clogged.
63a	52+220	Major Bridge	RHS	5 × 20.00	100	7.5	10.3	RCC deck slab + girder	same as LHS
—	**UDHAMPUR BYPASS**	—	—	—	—	—	—	—	—
64	0+150	Minor Bridge	LHS	1 × 30.00	30	7.5	10.3	RCC deck slab + girder	1. Vegetation on side slopes. 2. Drainage spouts partially clogged. 3. Expansion joints filled with debris.
65	0+230	Minor Bridge	LHS	1 × 30.00	30	7.5	10.3	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris.
66	0+730	Minor Bridge	LHS	1 × 20.00	20	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
66a	0+730	Minor Bridge	RHS	1 × 20.00	20	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris.
67	0+940	Minor Bridge	LHS	1 × 25.00	25	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris. 3. Vegetation on retaining wall.
67a	0+940	Minor Bridge	RHS	1 × 25.00	25	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris.
68	1+970	Minor Bridge	LHS	1 × 25.00	25	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris.
68a	1+970	Minor Bridge	RHS	1 × 20.00	20	7.5	10.5	RCC deck slab + girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris.
69	2+850	Major Bridge	LHS	6 nos. & 3×20 + 2×35 +1×70	200	7.5	10.5	RCC deck slab + girder + box girder	1. Vegetation on side slopes. 2. Honeycombing on super & substructure. 3. Expansion joints filled with debris.
69a	2+850	Major Bridge	RHS	1 × 60.00	60	7.5	10.5	RCC deck slab + box girder	1. Expansion joints filled with debris. 2. Vegetation on side slopes.
70	3+470	Minor Bridge	LHS	1 × 20.00	20	8.1	10.9	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on side slopes of approaches.
70a	3+470	Minor Bridge	RHS	1 × 20.00	20	8.1	10.9	RCC deck slab + girder	same as LHS

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
71	5+590	Major Bridge	LHS	(complex spans: 37 + 66 + 37 + 7×...)	300	7.5	10.5	RCC deck slab + girder + box girder	1. Vegetation on side slopes. 2. Expansion joints filled with debris.
72	5+680	Major Bridge	RHS	1 × 66.00	66	7.5	18.8	RCC deck slab + box girder	1. Vegetation on side slopes & abutment. 2. Expansion joints filled with debris. 3. RCC crash barrier partially damaged.
73	5+840	Minor Bridge	RHS	1 × 24.00	24	8.1	10.9	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on side slopes of approaches.
74	8+820	Pedestrian Underpass	MCW	1 × 7.00	7	2 × 8.20	25.2	RCC box	Pavement to be cleaned.
75	11+886	Major Bridge	LHS	4 nos. & 1×20 + 2×30 +1×22.50	102.5	7.5	10.3	RCC deck slab + girder + box girder	1. Expansion joints filled with debris. 2. Vegetation on side slopes of approaches.
75a	11+886	Major Bridge	RHS	same	102.5	7.5	12	Box girder	Expansion joints filled with debris.
76	12+580	Minor Bridge	RHS	1 × 21.40	21.4	7.5	12.1	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on side slopes. 3. Silt & debris on abutment cap. 4. Spalling & honeycombing on superstructure.
77	12+607	Major Bridge	LHS	4 nos. & 2×20 +2×30	100	8.1	11	RCC deck slab + girder	1. Vegetation on side slopes & abutment. 2. Expansion joints filled with debris. 3. Silt & debris on abutment cap.

S.No	Chainage (km)	Type of Structure	Side	No. of Spans	Total length (m)	Carriage way Width (m)	Deck Width (m)	Superstructure	General Observations
78	13+420	Minor Bridge	LHS	1 × 21.70	21.7	7.5	12.1	RCC deck slab + girder	1. Expansion joints buried with bitumen. 2. Vegetation on side slopes & retaining wall. 3. Silt & debris on abutment cap. 4. Spalling & exposed reinforcement on substructure. 5. Honeycombing on superstructure.
79	13+420	Major Bridge	RHS	4 nos. & 2×20 +2×25	90	7.5	10.5	RCC deck slab + girder	1. Vegetation on retaining wall, vent ways & abutment. 2. Expansion joints filled with debris. 3. Drain spouts partially clogged.
80	14+140	Minor Bridge	MCW	1 × 12.00	12	2 × 8.20	24.7	RCC box	1. Vent way choked. 2. Silt & debris accumulated on side slopes.
81	15+230	Major Bridge	LHS	1 × 61.00	61	8	11.6	Box girder	1. Reinforcement exposed on superstructure. 2. Expansion joints filled with bitumen. 3. Honeycombing & spalling on superstructure. 4. Drain spouts clogged.
81a	15+230	Major Bridge	RHS	2 × 30.00	60	7.5	10.3	RCC deck slab + girder	1. Expansion joints filled with debris. 2. Vegetation on side slopes. 3. Drain spouts clogged.
82	15+640	Vehicular Overpass	MCW	2 × 12.80	25.6	7.5	10.5	RCC box	Drainage spouts clogged.

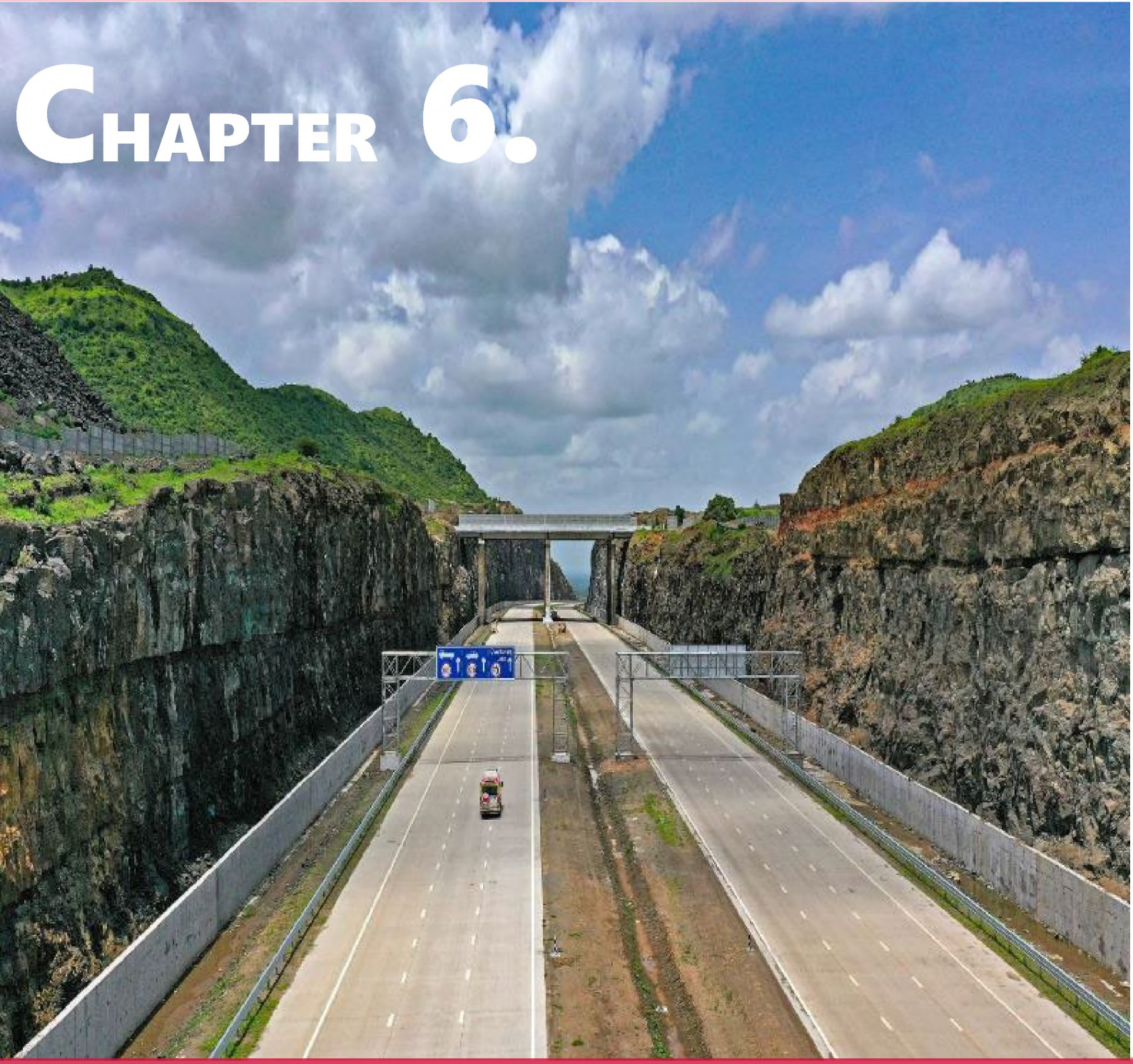
The MBIU survey of November 2023 has provided a comprehensive assessment of the bridge and culvert inventory of the Jammu–Udhampur section. The findings highlight that while the overall load-carrying capacity of structures remains adequate, the functional and durability-related deficiencies are substantial. Timely maintenance interventions are necessary to ensure the safety, serviceability, and long-term performance of the structures throughout the concession period.

5.5 Major Maintenance of Pavement

All pavements require maintenance. Stresses from traffic, weather, and moisture change effects on the Surface. Regardless of the reason, without maintenance, pavement deteriorates at a fast pace. An asphalt pavement is an essential asset which must always be maintained. Allowing the pavement to have minor problems will grow into major ones. No road user likes to hit potholes or step into a puddle of water. Sun, rain, and wind age the pavement. Friction from tires rolling wears away the asphalt glues and line stripping. Sunlight oxidizes and draws all the essential oils which results in the pavement breaking away. Water enters the lower layers of the pavement through cracks damaging the foundation which leads to potholes and failure. The summary of required overlay thickness in LHS direction as per FWD (MCW)

Major Maintenance details discussed at **Chapter 6**

Chapter 6.



Cost Estimate

Chapter 6. COST ESTIMATE

Based on the assessment carried out in above chapters, various costs were worked out by Knight Frank. The costs are divided into following categories

- Routine Maintenance
- Major Maintenance Cost
- Periodic Replacement of TMS/ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and Escalation.

6.1 Assumptions

The cost estimates are based on the following assumptions:

Following assumptions are considered for unit rates of various items while estimating the cost –

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per the MoRTH Standard data book. The input rates for MoRTH standard data book were adopted as below
   a) **Manpower and labor** – As per applicable minimum wages published by Ministry of Labour & Employment, Government of India
   b) **Bitumen** – Bitumen rates are considered to be sourced from IOCL Panipat Refinery. The distance (to- from) from the midpoint of Project Highway is considered as 550 kms. VG-30 and VG-40 grades of bitumen are considered in our cost estimate.

☛ ***Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.***

Therefore, Bitumen prices are considered as per the client's forecast. Current published of bitumen are considered for unit rates calculation for FY26 and FY27. Average 10 years of price of bitumen are considered for unit rates calculation for FY28 and onwards, since bitumen prices have been range bound over the last five-six years. Following rates of bitumen are considered

Exhibit 32 Bitumen Rates (in INR/MT) - Ex-MI supply excluding discount and GST

Refineries	Grade	Rate for FY24 and FY25	Rate for FY26 onwards
IOC Mathura	VG10	45522	33955
IOC Mathura	VG30	46322	34552
IOC Mathura	VG40	48652	36290
IOC Haldia	VG10	45922	33258
IOC Haldia	VG30	46722	33838
IOC Haldia	VG40	49052	35525
IOC Barauni	VG10	46952	34004
IOC Barauni	VG30	47752	34584
IOC Barauni	VG40	50082	36271
CPC Chennai	VG10	44922	33541
CPC Chennai	VG30	45722	34138
CPC Chennai	VG40	48052	35878
IOCL Panipat	**VG10**	**45,830**	**33,915**
IOCL Panipat	**VG30**	**46,630**	**34,506**
IOCL Panipat	**VG40**	**48,960**	**36,230**

c) **Sand and Aggregate** are sourced from the nearest quarry located on project highway.

d) **Cement** is procured from the nearest local market.

e) **Machinery Hire charges** of Plant and Machinery for various items of works have been considered from J&K SOR 2022 and some rates are considered from MORT&H Standard Data Book 2001-2002. Escalation has been considered on MORT&H Plant and Machinery rates to arrive at the present rates of 2024-25.

f) **Material Rates** are obtained from SOR of J&K, PWD 2021-22.

g) Some of the rates are based on Consultant's experience on similar ongoing projects in adjacent locations.

h) **Overheads and profits** have been considered based on MORT&H Standard Data Book. Applicable taxes have been considered in the Rate Analysis.

i) **Goods and Service Tax (GST)** is considered as 18% as per the latest Government Guidelines.

Exhibit 33: Adopted Unit Rates for Key items

S.nos	Items Description	Unit	Rates (₹)
1	Bituminous Concrete	Cum	10,249
	DBM	Cum	8,847
2	Milling	Cum	89
3	Tack Coat	Sqm	12
4	Road Marking	Sqm	432
5	Earthen Shoulder	Cum	294
6	Kerb Raising	Rm	311
7	Kerb Painting	Sqm	116
8	Road Studs	Nos.	191

- *The above unit rates are excluding GST.
- The unit rate of each item includes 10 % overhead for road works, 15 % overhead for structure works and 10 % contractor's profit.
- Details of components considered in rate analysis & quantification are presented in below **Exhibit 34.**

Exhibit 34: Major components detail for Key items

Sr. No.	Particular	Source	Reference
1	Rate Analysis	MORTH	Standard Data Books published by MORTH
2	**Material**		
A	Aggregate Rates	Nearby Project Corridor	As per Local Market Rates
B	ATMS, TMS cost		As per Vendor offer.
C	Cement	As provided in Local market	As per Local Market Rates
3	Equipment hire cost	Nearby project location	Standard Data Books published by MORTH
4	Labour	As per minimum wages	As per minimum wages

6.2 Routine Operation & Maintenance (O& M) Cost

Operations and Routine Maintenance work required as per the CA. During the concession period, the Concessionaire is fully responsible for Operation & Maintenance of Project Highway. Schedule K elaborates the requirements of various service factor desirable level and acceptable level during O & M period along with time if any parameter level of service beyond acceptable limit.

The CA Stipulates that the Concessionaire shall Operate and Maintain the Project Highway in accordance with Article 17 – Operation & Maintenance & Schedule –K Maintenance Requirements of Concession Agreement. The obligation of Concessionaire as per Article 17 is as follows:

- permitting safe, smooth, and uninterrupted flow of traffic on the Project Highway during normal operating conditions; collecting and appropriating the Fee.
- minimizing disruption to traffic in the event of accidents or other incidents affecting the safety and use of the Project Highway by providing a rapid and effective response and maintaining liaison with the emergency services of the State.
- carrying out periodic preventive maintenance of the Project Highway.
- undertaking routine maintenance including prompt repairs too, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and other traffic control devices.
- undertaking major maintenance such as replacement of panels in rigid pavement and associated activities
- preventing, with the assistance of concerned law enforcement agencies, any unauthorized use of the Project Highway
- preventing, with the assistance of the concerned law enforcement agencies, any encroachments on the Project Highway
- protection of the environment and provision of equipment and materials therefore
- operation and maintenance of all communication, control and administrative systems necessary for the efficient operation of the Project Highway
- maintaining a public relations unit to interface with and attend to suggestions from the Users, government agencies, media, and other agencies; and
- Complying with Safety Requirements in accordance with Article 18.

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have been made from the expenses of similar types of projects to arrive at the operating cost. The estimates are projected based on best industry practices and are compared with the operation cost in the vicinity of the project area. Same has been divided into following major head

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Incident Management Services
4. Electricity and Diesel Charges
5. TMS/HTMS/System Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Insurance Expense
10. IE Fees
11. Horticulture & ROW Maintenance
12. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or "wear-and-tear". Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

6.2.1 O & M Strategy

Important Operations and maintenance work have been outsourced by the SPV. Details of important work orders outsourced are listed below **Exhibit 35**

Exhibit 35: Work outsourcing for Operations and Maintenance work.

Sn	Activity	Strategy
1	Routine Maintenance	In-house
2	Preventive Maintenance	In-house
3	Management and Supervision Staff	In-house
4	Security	Outsource
5	Corridor Management	Outsource

6.2.2 Routine Maintenance

Routine and Preventive maintenance encompasses work that is performed in reaction to an event, season, or overall deterioration of the transportation asset. This work requires regularity and reoccurring in nature. Routine and Preventive Maintenance is essential to maintain the condition of the highway asset or to respond to specific conditions or events that restore the highway system to a functional state of operation.

Total Routine Maintenance cost estimated by Knight Frank is ₹ 16.50 Crore for the balance concession period of 05 years. The routine and preventive maintenance covers maintenance of the following assets:

- Cleaning of Main Carriageway, service road, bridge deck
- Pruning of median plantation, watering
- Maintenance of Avenue Plantation
- Cleaning of debris from carriageway and shoulder
- Plantation and Landscaping
- ROW Cleaning
- Cleaning of all road asset, Toll Plaza
- Tunnel, MEP & Slope Protection

The average cost for Routine Maintenance is ₹35,484/ km/ month including GST. Based on our previous projects experience & based on the thumb rule method routine maintenance costs are reasonable.

Exhibit 36: Routine Maintenance Cost

Sr. No.	Item Description	As per Knight Frank	Remarks
1)	Routine Maintenance Cost (₹-Crore) (5 Years Concession Period)	16.50	
2)	Routine Maintenance Cost Per Year (₹-Crore)	3.30	
3)	Routine Maintenance Cost Per Km/Year (₹-Lakh)	5.11	

Above cost is including of GST

6.2.3 Preventive Maintenance

Total Preventive maintenance cost considered is **₹7.44 Crore** for balance concession period of 05 years & following items considered for preventive maintenance work:

- Repair cost of pavement as and when pavement distress occurred.
- Repair of road Kerb, crash barrier, metal beam crash barrier and guard rail
- Repair of faded road marking
- Fixing of damaged sign boards, KM stones
- Shoulder maintenance
- Repair and maintenance of structure – bearing, expansion joint.
- Repair of crossroad junction
- Maintenance of Truck lay-bys

Average cost considered for Preventive Maintenance is ₹ 15,993/km/ month including GST. Based on our previous projects' experience & based on thumb rule method, preventive maintenance cost is reasonable.

Exhibit 37: Preventive maintenance Cost

Sr. No.	Item Description	As per KF	Remarks
1	Preventive Maintenance Cost (₹-Crore) (5 Years Concession Period)	7.44	
2	Preventive Maintenance Cost Per Year (₹-Crore)	1.49	
3	Preventive Maintenance Cost Per Km/Year (₹-Lakh)	2.30	

Above cost is including of GST

6.3 Highway Lighting

Electricity charge and maintenance cost of highway lighting is calculated as follows:

a) Each lighting post has counted from site and consider having LED light will be operated for 12 hours a day round the year.

b) Lighting post at median / separator are having with two halogen/LED lamp and service road shall be with single lamp only.

c) Tunnel & MEP OPEX

The O & M Cost estimated towards highway lighting is ₹2.23 Crore per year including GST.

6.4 Tunnel Opex

Following Items Considered for Tunnel Opex calculation as follows:

a) AMC Cost for MEP & ITCS Equipment = 20.88 lakh (annually)

b) Annual Cost of Spare/Consumable of MEP = 47.45 lakh (annually)

The O & M Cost estimated towards Tunnel Opex is ₹68.34 Lakh per year including GST.

6.5 Corridor Management

The following equipment along with operation manpower is required to provide as per Concession agreement.

a) 3 nos. of Crane

b) 3 nos. of route patrol vehicle

c) 3 nos. of Ambulance

O & M Cost estimated towards incident management with operation manpower is ₹1.12 Crore per year including GST.

6.6 Manpower Cost

The requirement of manpower is worked out to function all activity at project road for compliance of CA requirement, toll collection and security of asset. Requirement of manpower is classified into following broad division:

a) Management, Administration/HR and Supervision Staff: in-house manpower (**Cost considered towards SPV Manpower is ₹1.50 Crore per year)**

b) Toll Operation Manpower: outsource/In-house for providing 24-hour uninterrupted traffic flow at toll plaza and collection of tolls. Due to Nationwide implementation of Hybrid-ETC System, it is expected drop in toll collection manpower. However, where collection of overloading is expected, manpower for toll collection is not possible at this stage. The company is expecting revenue from overloading in this asset therefore curtailment of toll collectors is not expected. (**Cost considered towards SPV 3rd Party Manpower is ₹4.05 crore per year)**

The cost of manpower is estimated as ₹5.56 crore per year.

6.7 Office Expenses

Cost towards operation of office, insurance premium, professional fees for carrying out traffic, asset condition survey etc., IE fees, AMC for equipment installed at office, communication charge, conveyance cost etc. are considered under Office Expenses. **The cost considered regarding office expenses & operation are ₹5.59 crore per year which is bifurcated as follows.**

- ***₹1.57 crore per year for Independent Engineer (IE)/Authority Engineer (AE) and professional fees covering legal, arbitration, and audit certification during the O&M period***
- ***Actual cost of insurance policy: ₹3.63 crore per year (inclusive of 18% GST)***
- ***Survey and investigation charges: ₹0.09 crore per year (inclusive of 18% GST)***

6.8 Major Maintenance

As mentioned in earlier chapter, Currently, the Project Highway is maintained by existing Annuity Concessionaire.

Based on RI & FWD Test results, SPV team made 02 MM cycles for the overlay of projects. Following items were considered during each MM cycle based on the ground requirements.

A. Flexible Pavement

- Overlay of 30-40 mm BC on MCW based on ground conditions and Test results.
- Overlay of 30 mm BC on service road considered.

B. Rigid Pavement

- Dismantling for existing PQC
- Relaying of dismantled panels
- Grouting with cement mortar
- Replacement and relaying of joints
- Diamond grinding with texturing

C. Replacement of Wearing Coat on structures

It is assumed that the pavement will be overlaid before handing over of the project confirming the pavement parameters kept within the limits as per Detailed strategy at **Exhibit 38.** Hence, the major maintenance cycles are proposed between year 2029 and end of concession period.

6.9 Major Maintenance items

Based on detailed highway inventory carried out during site investigation and data provided by the concessionaire following items considered during major maintenance work

- Bituminous concrete for MCW using VG-30
- Dense Bituminous Macadam for MCW using VG-30
- Bituminous concrete for Service Road using VG-30
- Dense Bituminous Macadam for MCW using VG-30
- Micro surfacing
- Repair of Transverse & Longitudinal joints on MCW & Service Road for Rigid pavement area
- Joint Sealant replacement of rigid area
- PQC taxing for rigid pavement area
- Removal & Relaying of Panels
- Crack Sealing

6.10 Major Maintenance Cycles & Cost

Major maintenance works to be considered in 02 cycles up to the year 2032. A total Cost of ₹74.01 crore (Without Escalation) considered for major maintenance work Upto end of Concession period. Major maintenance Strategy is shown in **Exhibit 38. Detailed Cost Estimate attached as Annexure A.**

Exhibit 38: Major Maintenance Cycles & Cost

Major Maintenance Strategy & Cost Details for Jammu Udhampur Project			
Cycle	**Year**	**Strategy**	**KF Cost (₹-Crore)**
MM Cycle-01	**(Year 2028-2029)**	**A) Main Carriageway:** 01. 40 mm BC on LHS: 100% Length & 30mm BC on 20% length RHS 02. DBM Rectification: 5% Area 50 mm 03. Milling 04. Tack Coat: 100% LHS and 20% RHS 05. Road Marking: (100% LHS and 20% RHS) 06. Kerb Raising: 50% length 07. Kerb Painting: 100% Length 08. Road Studs: 100% **B) Service Road:** 01. 30 mm BC on 100% length 02. Road Marking 100% length	40.95

Major Maintenance Strategy & Cost Details for Jammu Udhampur Project			
Cycle	**Year**	**Strategy**	**KF Cost (₹-Crore)**
MM Cycle-02	**(Year 2031-32) Handover Period**	**A) Main Carriageways:** 01. 30 mm BC on 100% length RHS and 40mm BC on 20% on LHS 02. DBM Rectification: 5% Area 50 mm 03. Milling 05. Tack Coat: 100% RHS + 20% on LHS 05. Road Marking: (100% RHS and 20% LHS) 06. Kerb Raising: 50% length 07. Kerb Painting: 100% Length 08. Road Studs: 50%	33.06
Total MMR Cost (₹-Crore) with GST			**74.01**

6.11 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period as below.

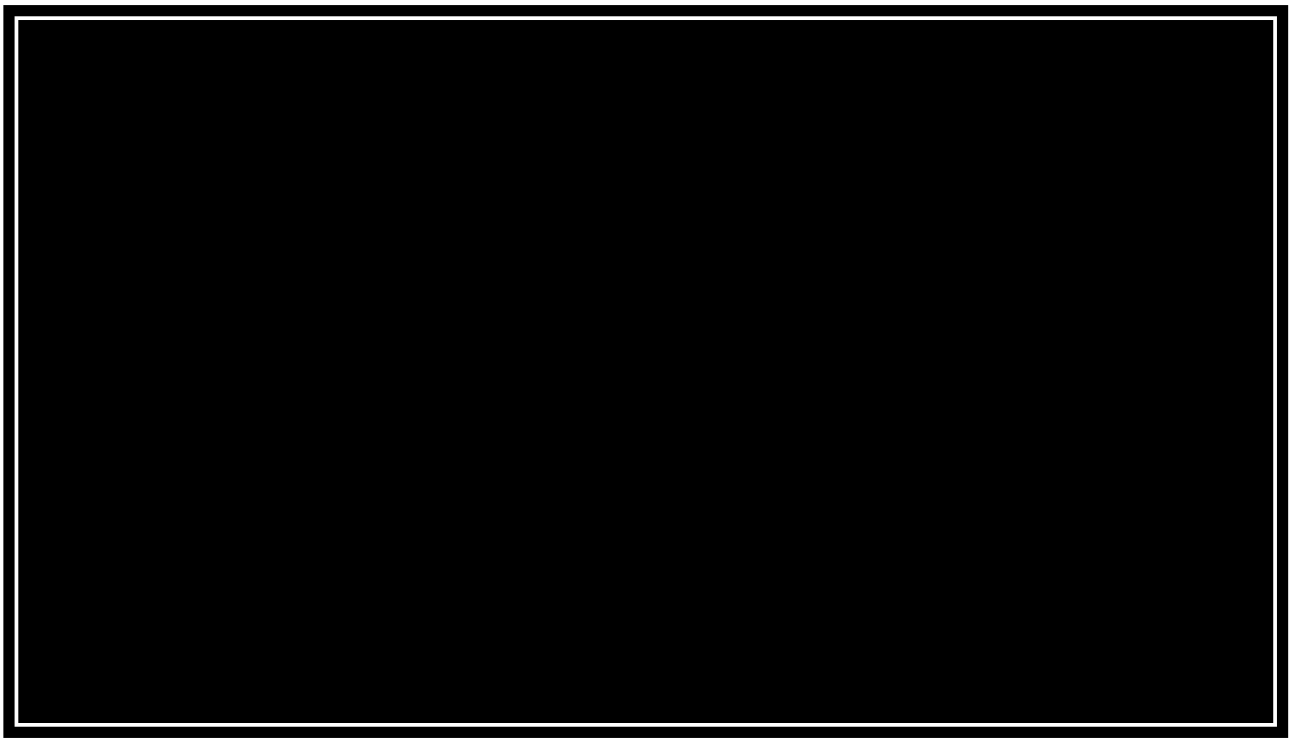
Exhibit 39: Summary O & M Cost for Remaining Concession Period

Summary of Cost (₹-Crore)									
S.nos	**Type/Year of Expenses**	**2025***	**2026**	**2027**	**2028**	**2029**	**2030**	**2031****	**Total Cost**
1	Routine O & M Cost								
1.01	Preventive Maintenance		1.31	1.53	1.41	1.45	1.44	0.30	**7.44**
1.02	Routine Maintenance		3.17	3.17	3.17	3.17	3.17	0.65	**16.50**
1.03	Tunnel OPEX		0.68	0.68	0.68	0.68	0.68	0.14	**3.56**
1.04	Highway Lighting		2.23	2.23	2.23	2.23	2.23	0.46	**11.63**
1.05	Corridor Management		1.13	1.13	1.13	1.13	1.13	0.23	**5.87**
1.06	AMC cost Toll Plaza		0.26	0.26	0.26	0.26	0.26	0.05	**1.38**
1.07	SPV Manpower Cost+OH		5.57	5.57	5.57	5.57	5.57	1.14	**28.97**
1.08	Transportation Cost		0.74	0.74	0.74	0.74	0.74	0.15	**3.87**
1.09	Other Office Operation Cost		5.60	5.60	5.60	5.60	5.60	1.15	**29.13**
	Sub Total of O & M Cost		20.70	20.91	20.79	20.83	20.83	4.28	**108.35**
2	**Major Maintenance Cost**			**20.48**	**20.48**			**33.06**	**74.01**
3	Periodic Cost of TMS/HTMS Replacement								0
	Total Cost		**20.70**	**41.39**	**41.27**	**20.83**	**20.83**	**37.34**	**182.36**

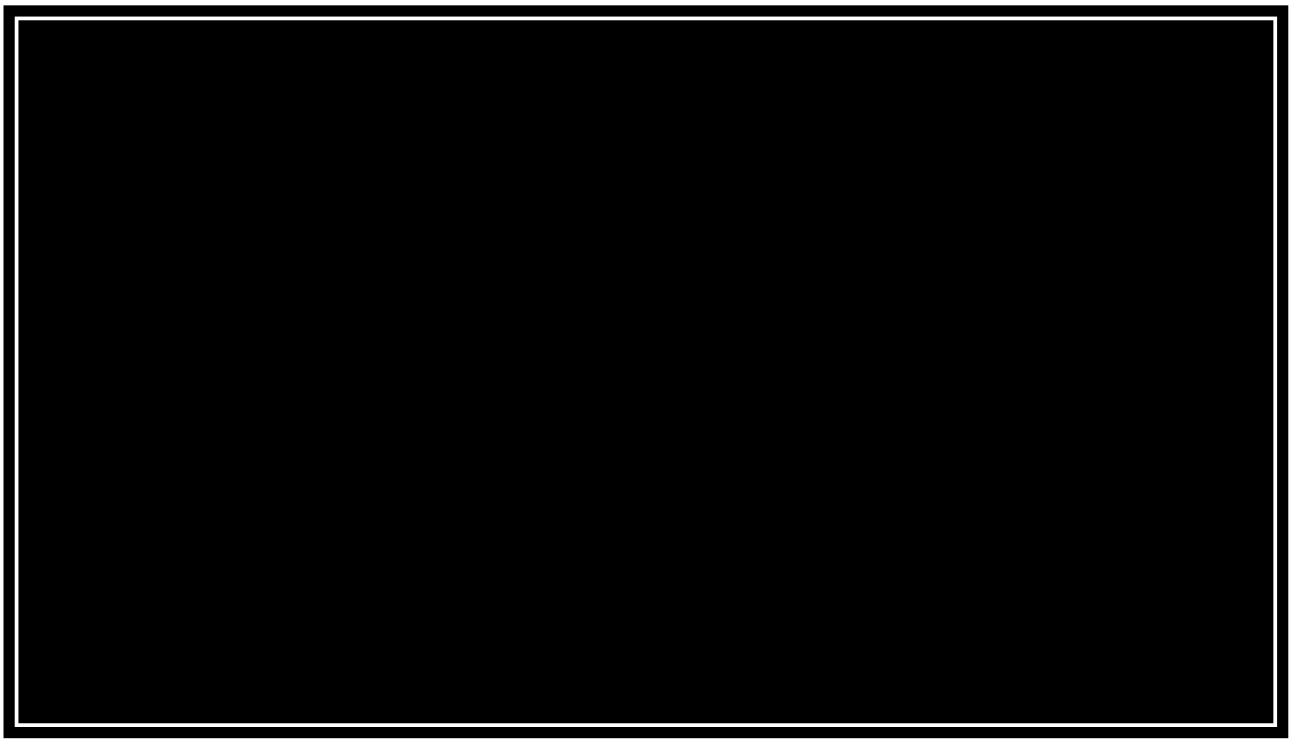
C 7.

PROJECT PHOTOGRAPHS

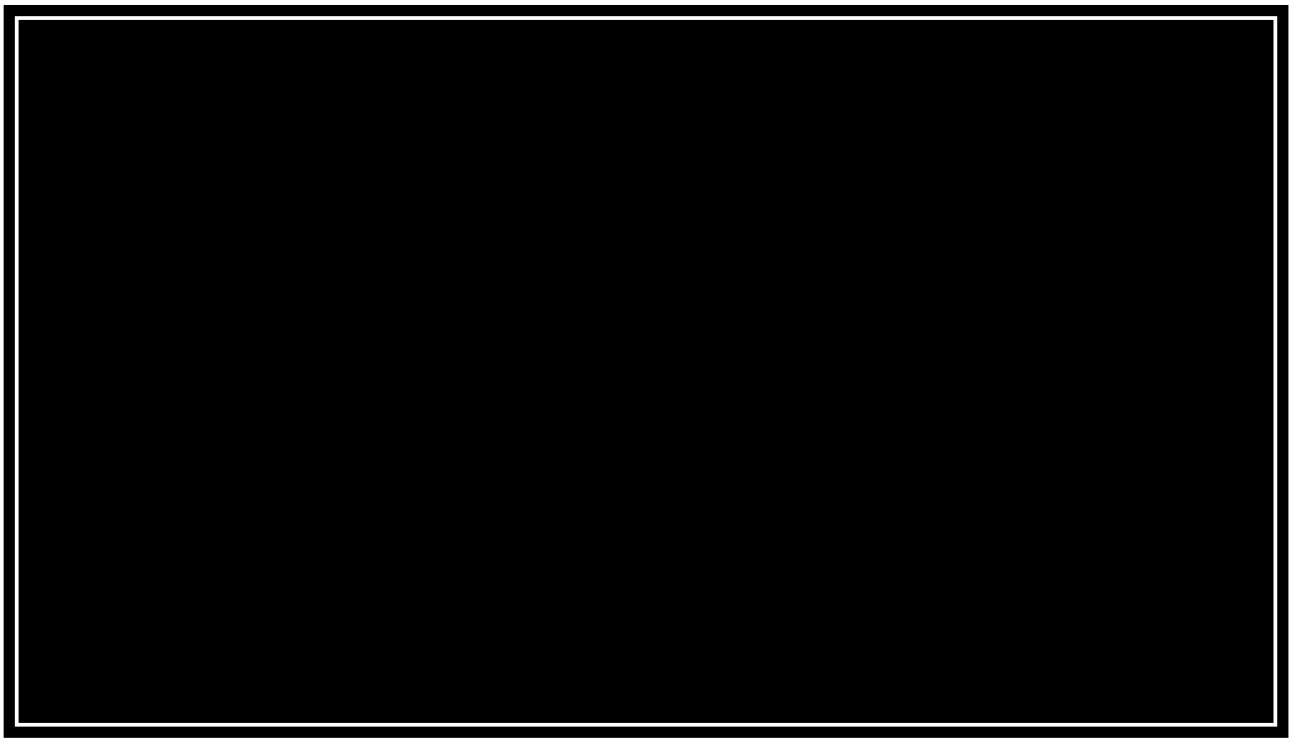
Chapter 7. PROJECT PHOTOGRAPHS



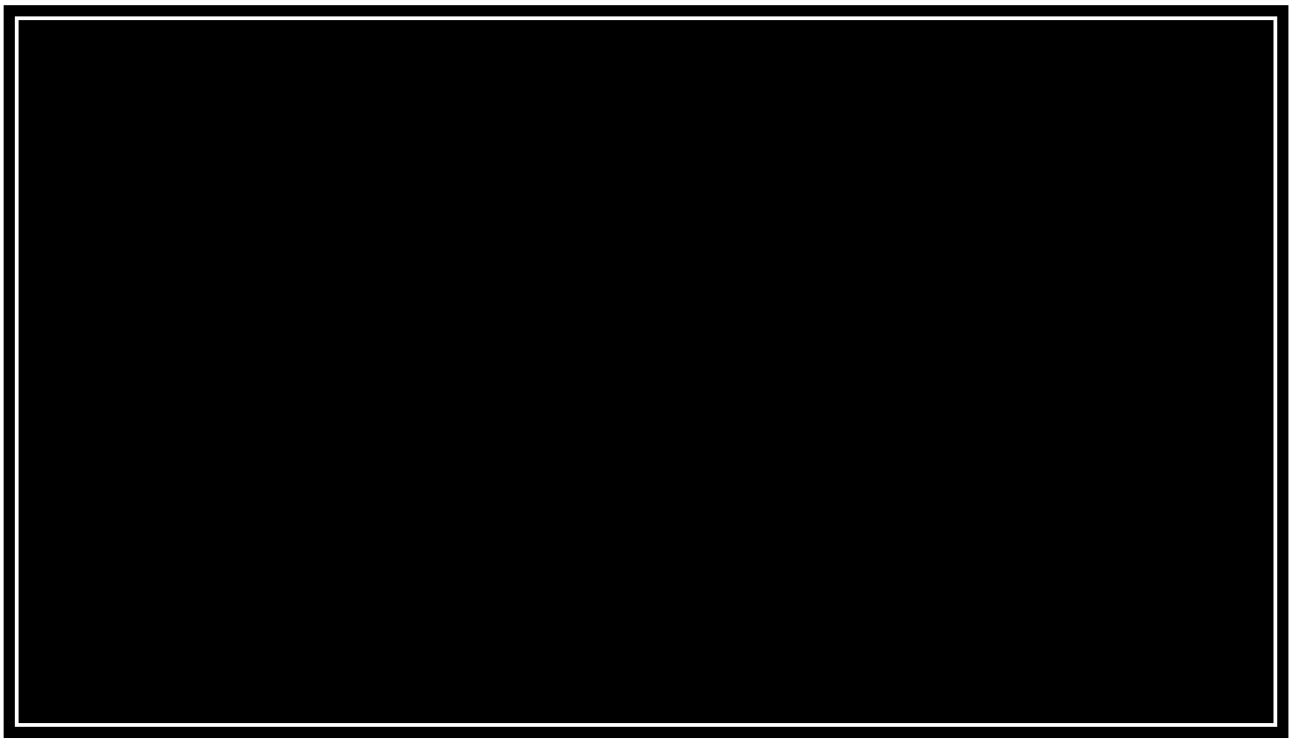
Toll Plaza @ 22+700 at Ban (Towards Udhampur)



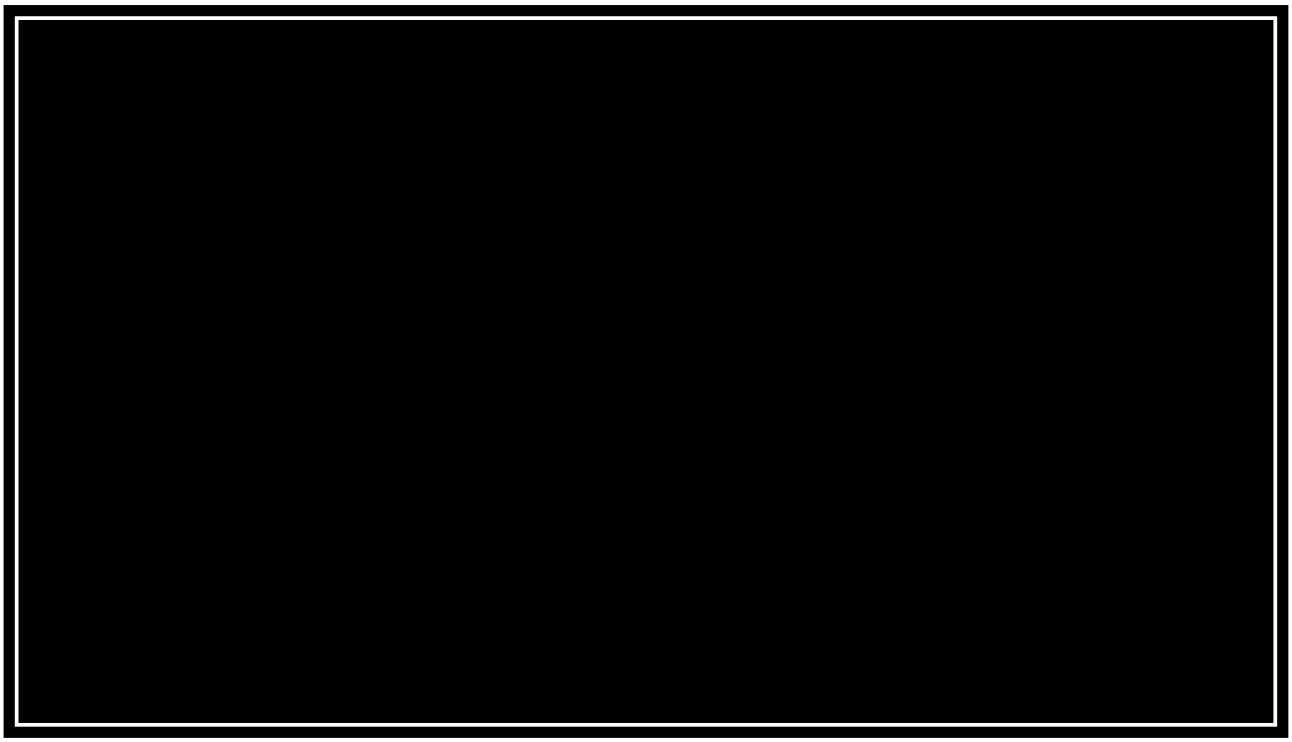
Toll Plaza @ 22+700 at Ban (Towards Jammu)



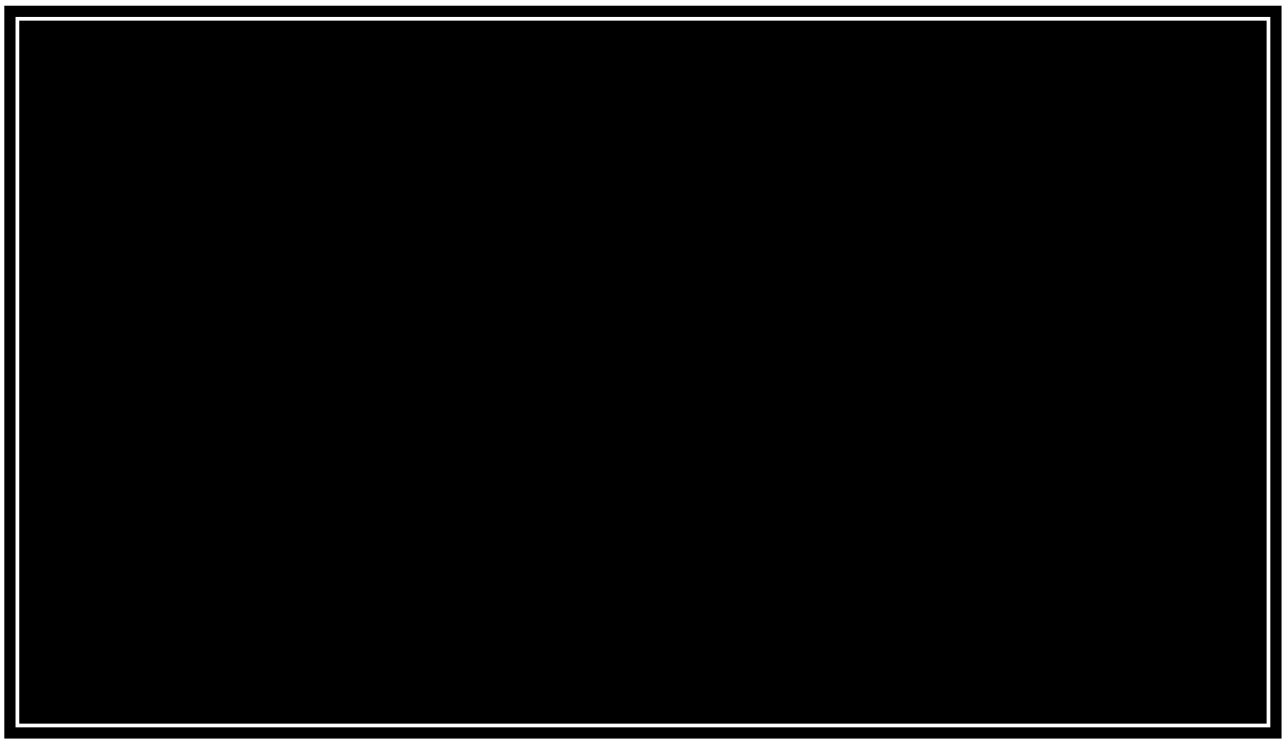
Main Carriageway



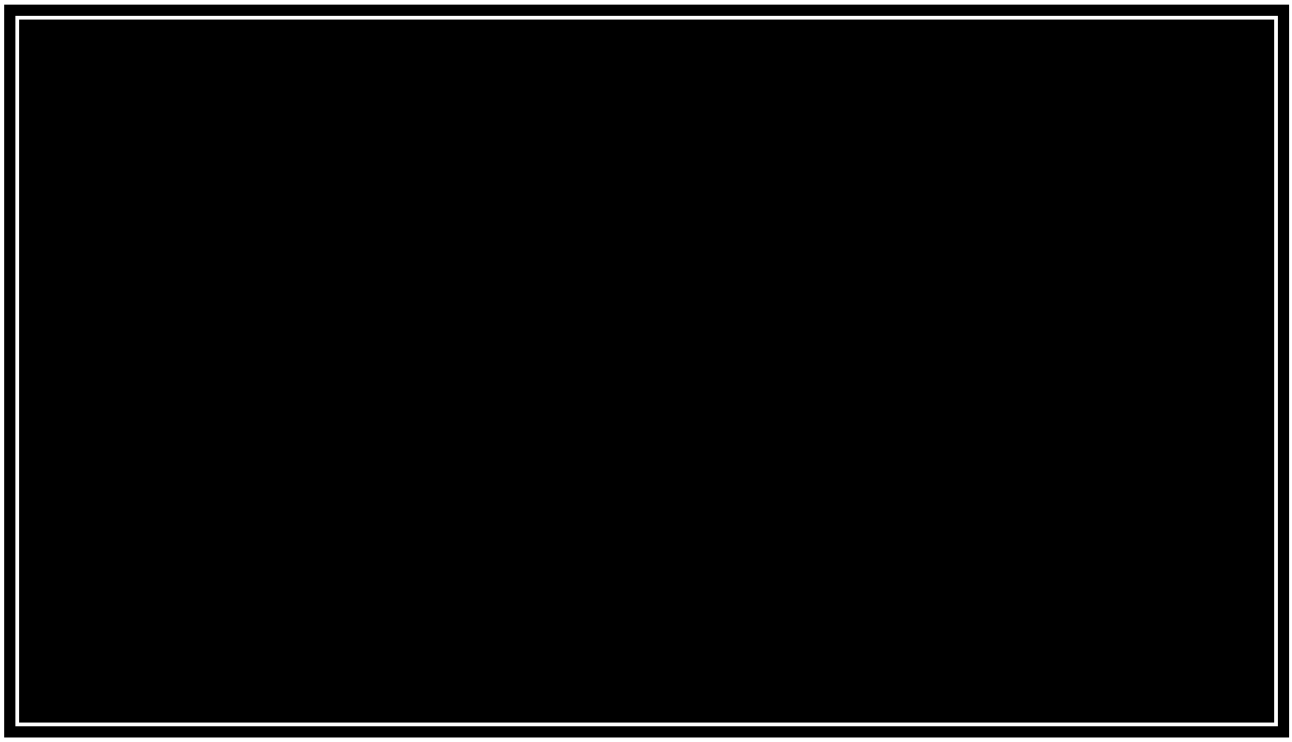
Service Road



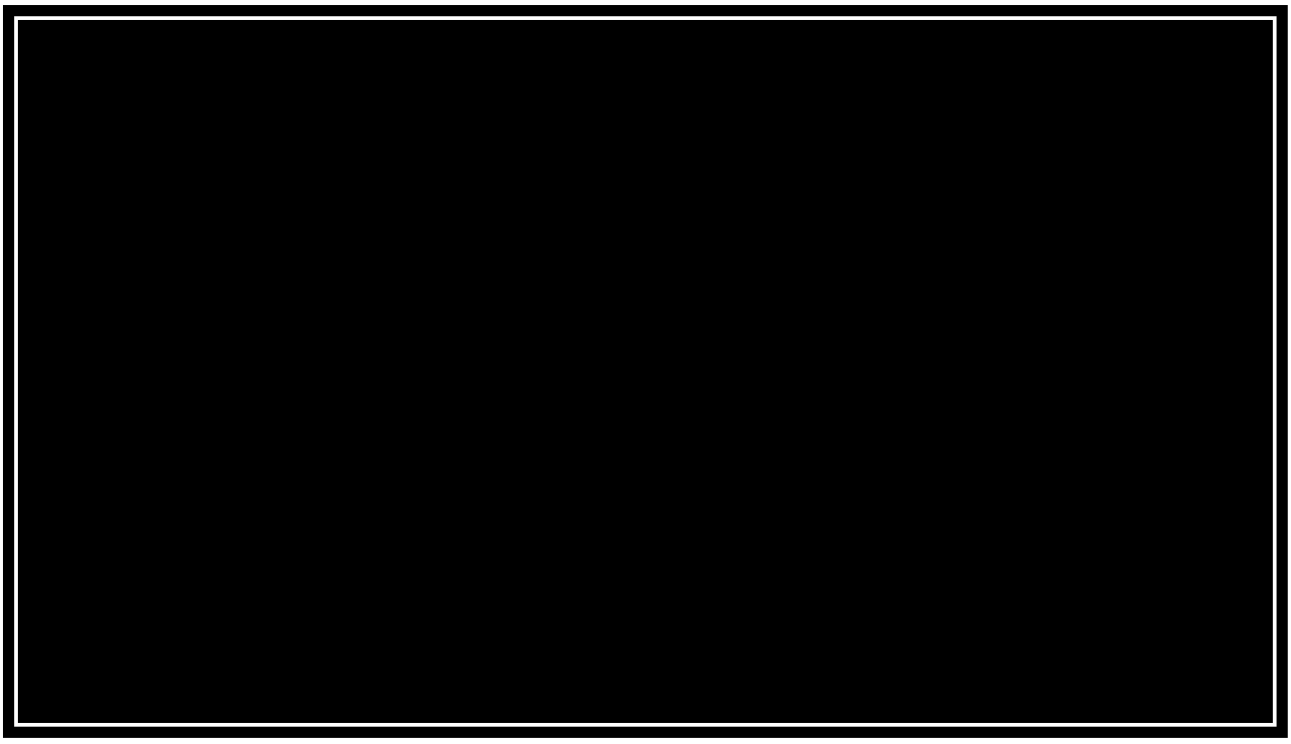
Project at Udhampur (VOP Portion)



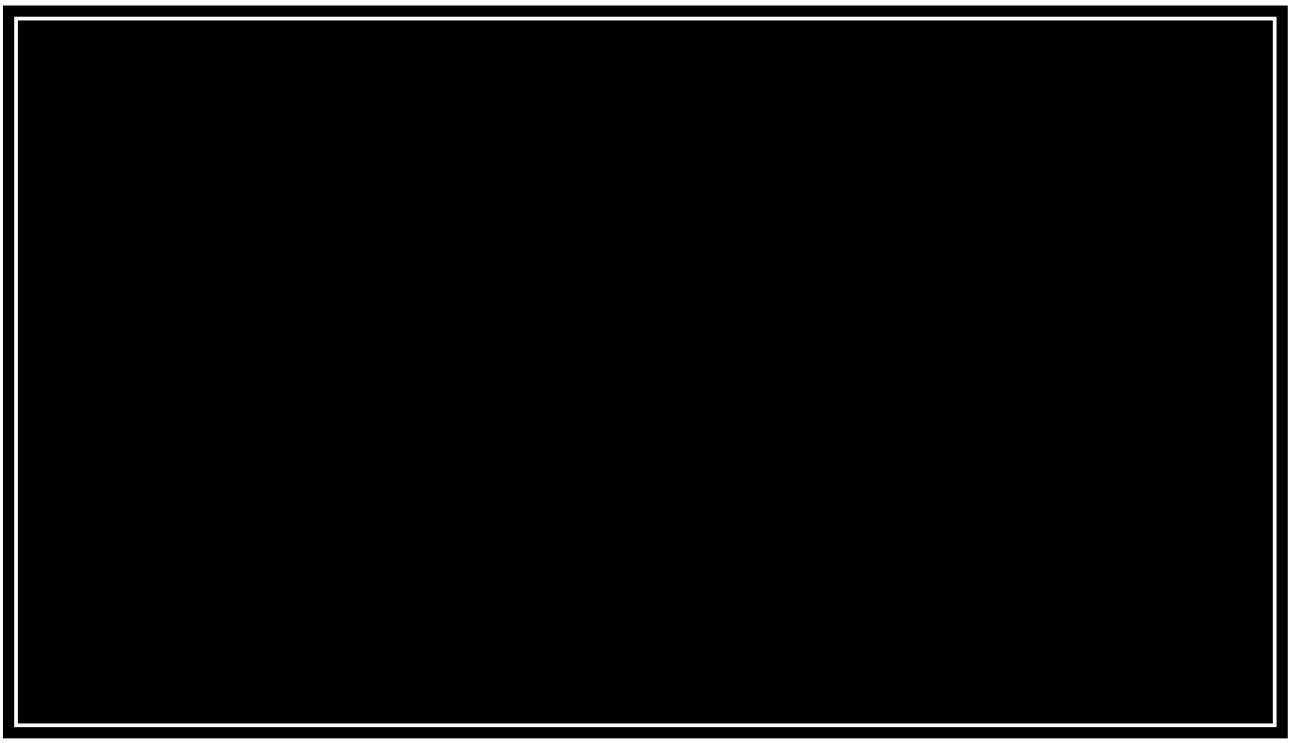
Project at Udhampur (VOP Portion)



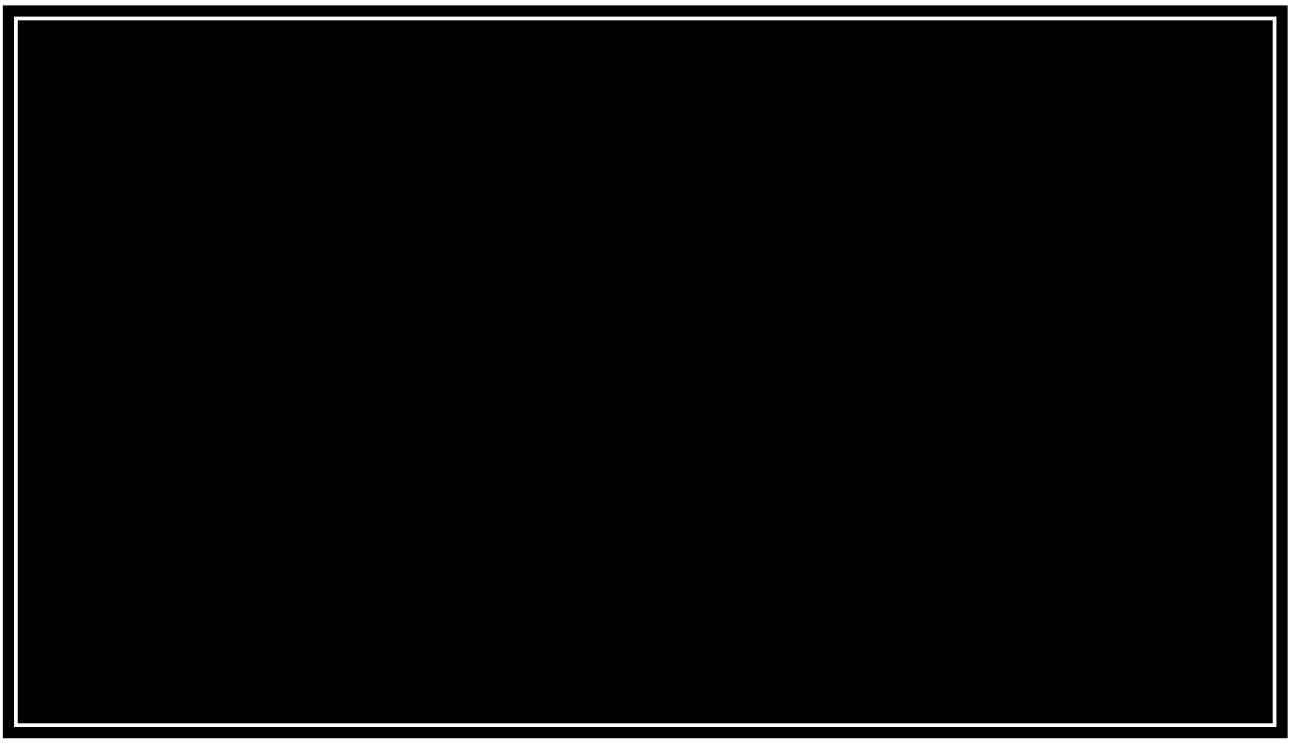
Tunnel-T-1



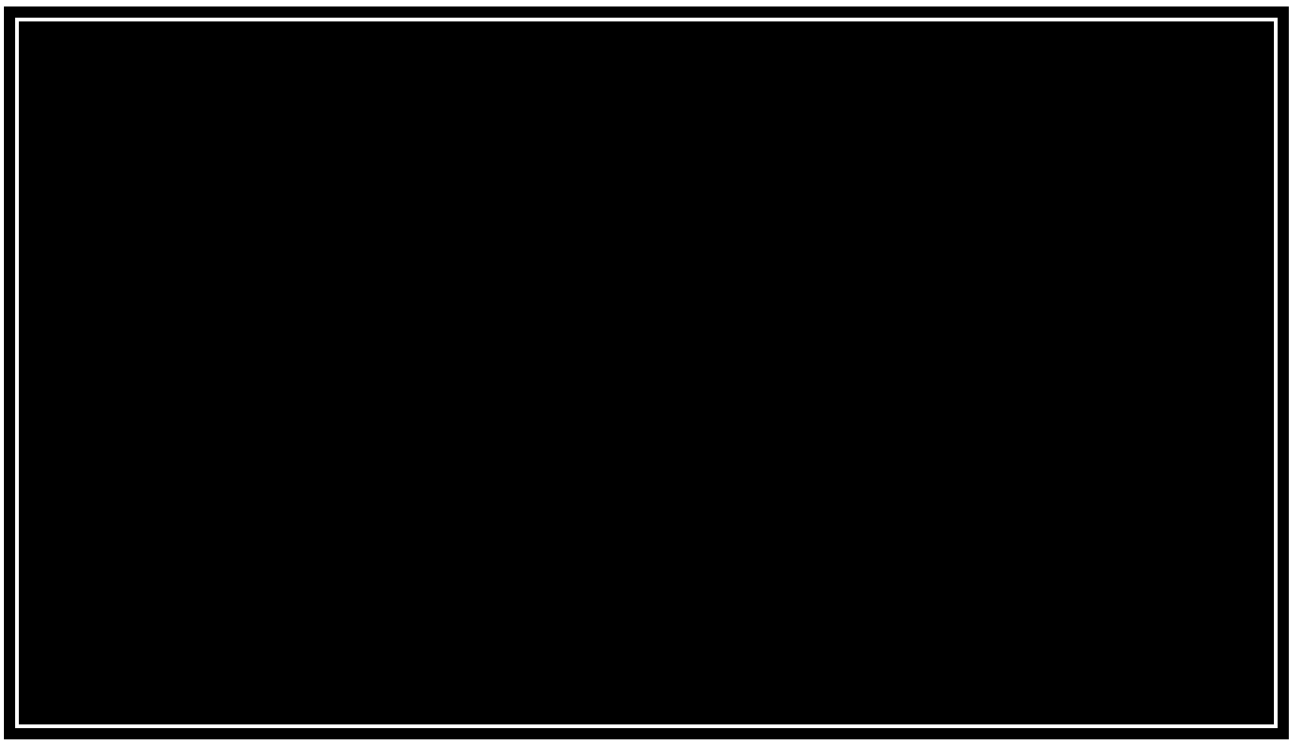
Tunnel-T-2



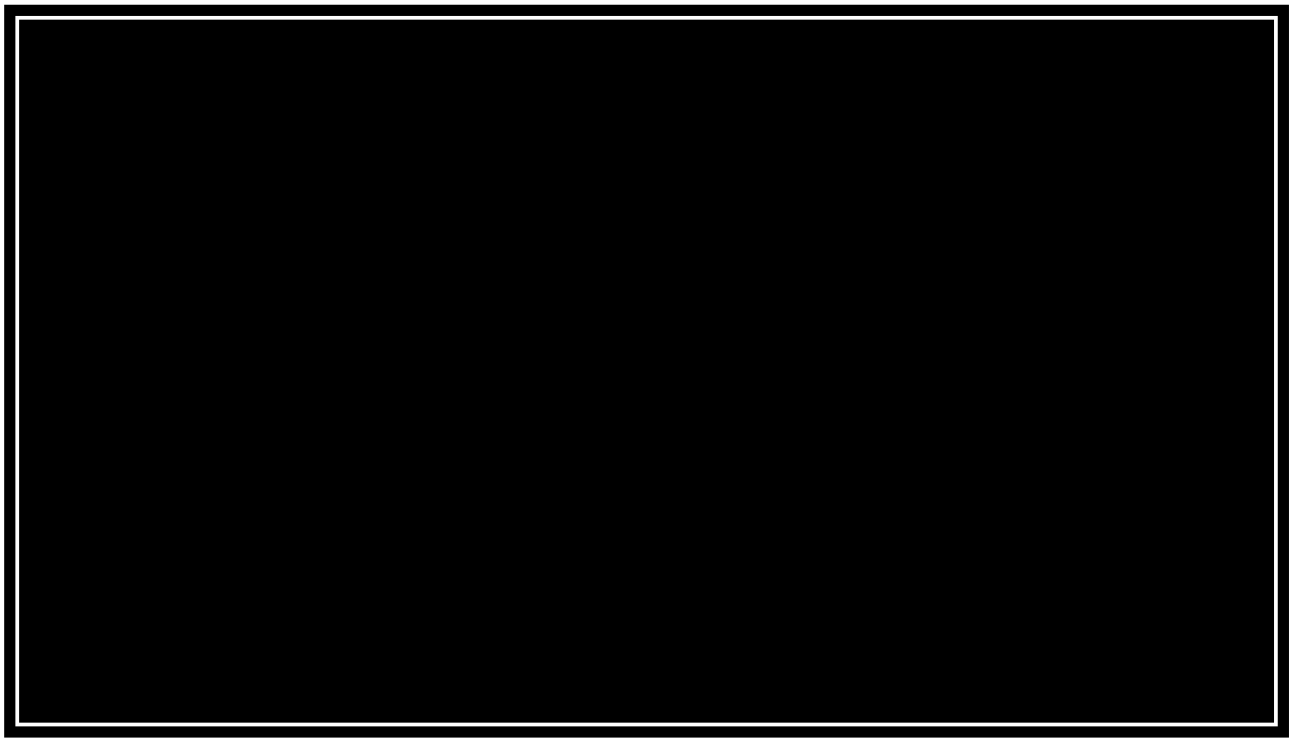
Tunnel-T-3



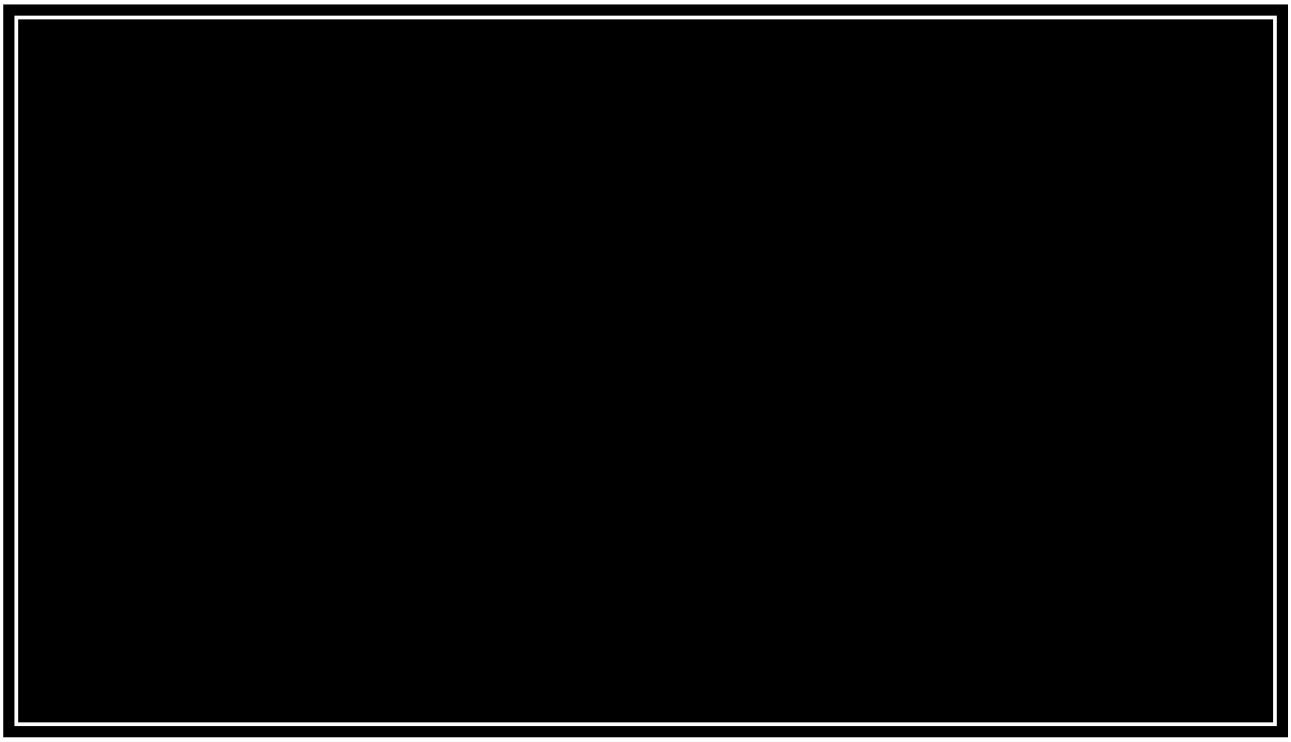
Tunnel-T-4



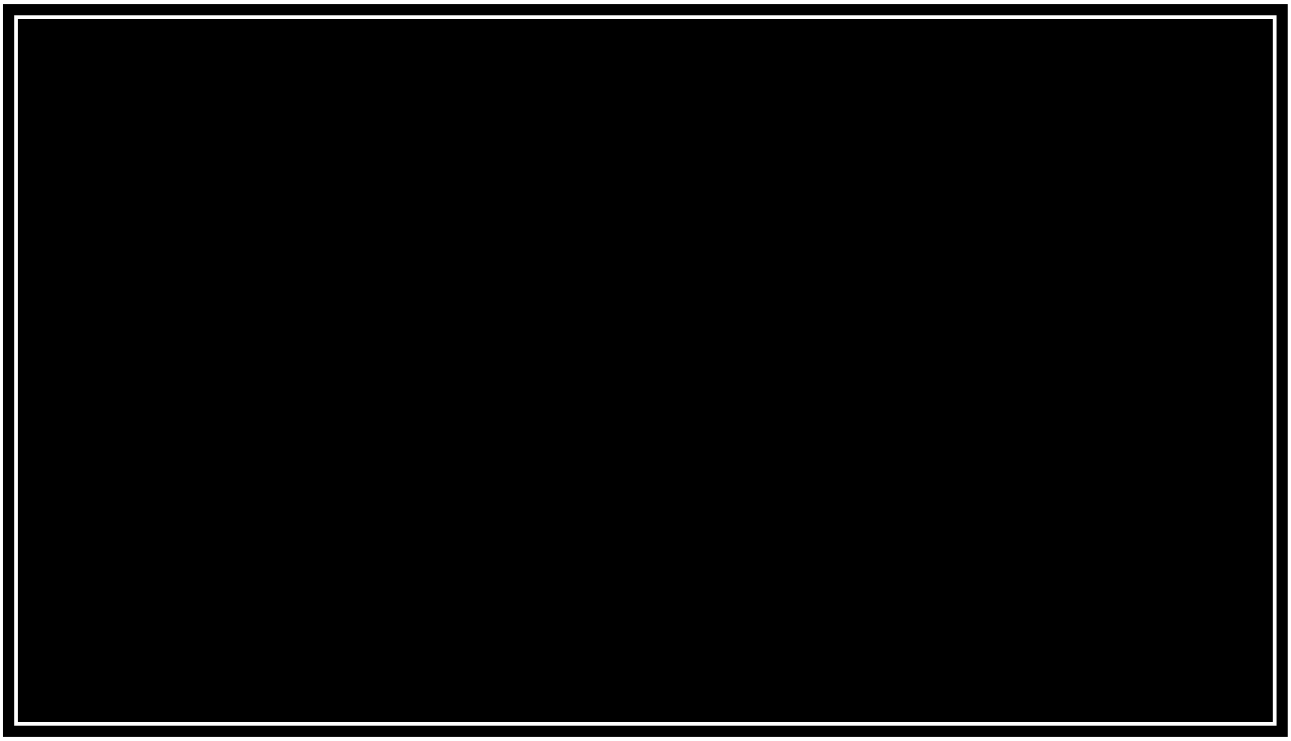
Bus bay



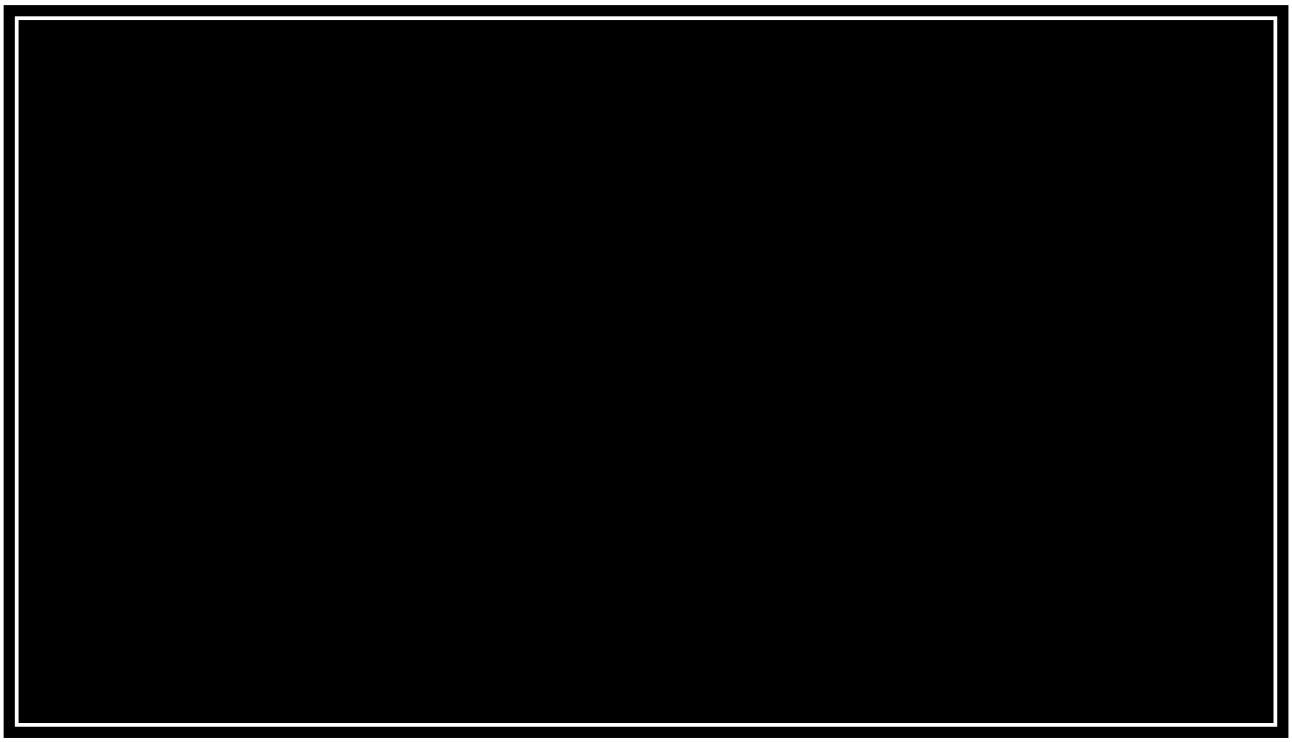
Truck lay bay



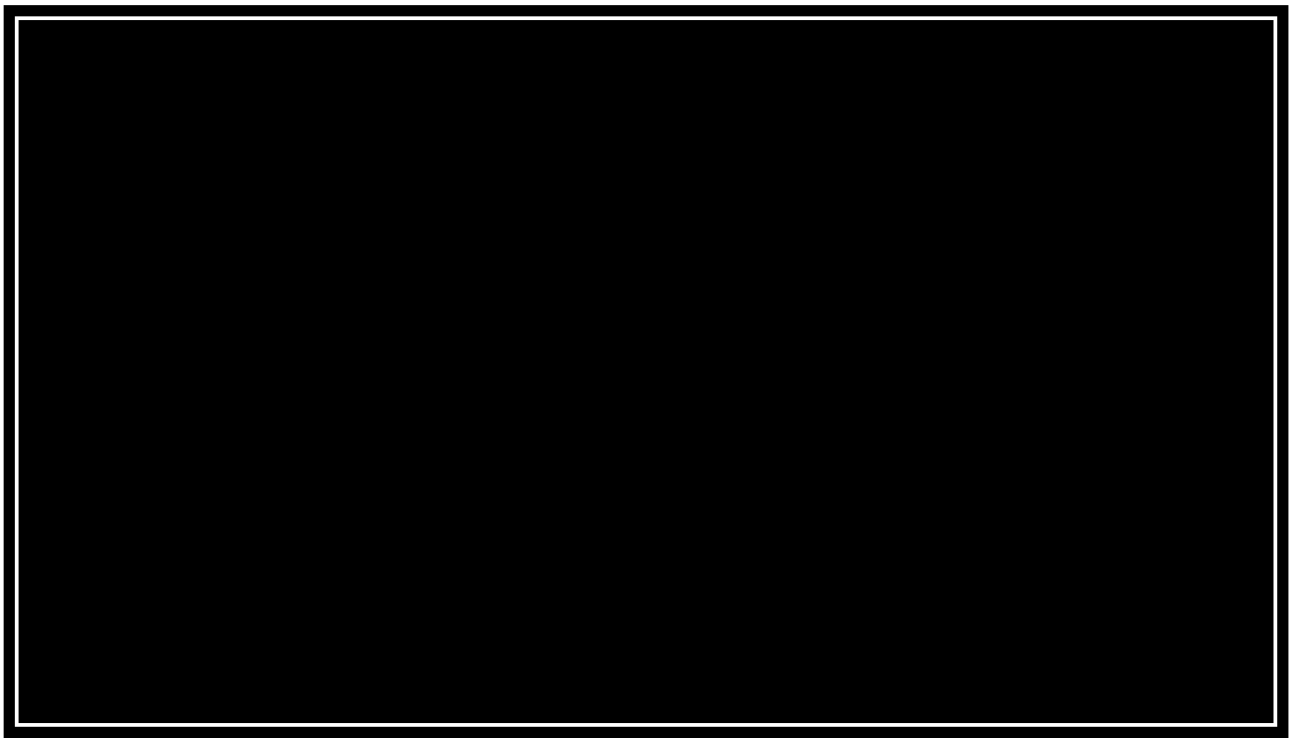
Median



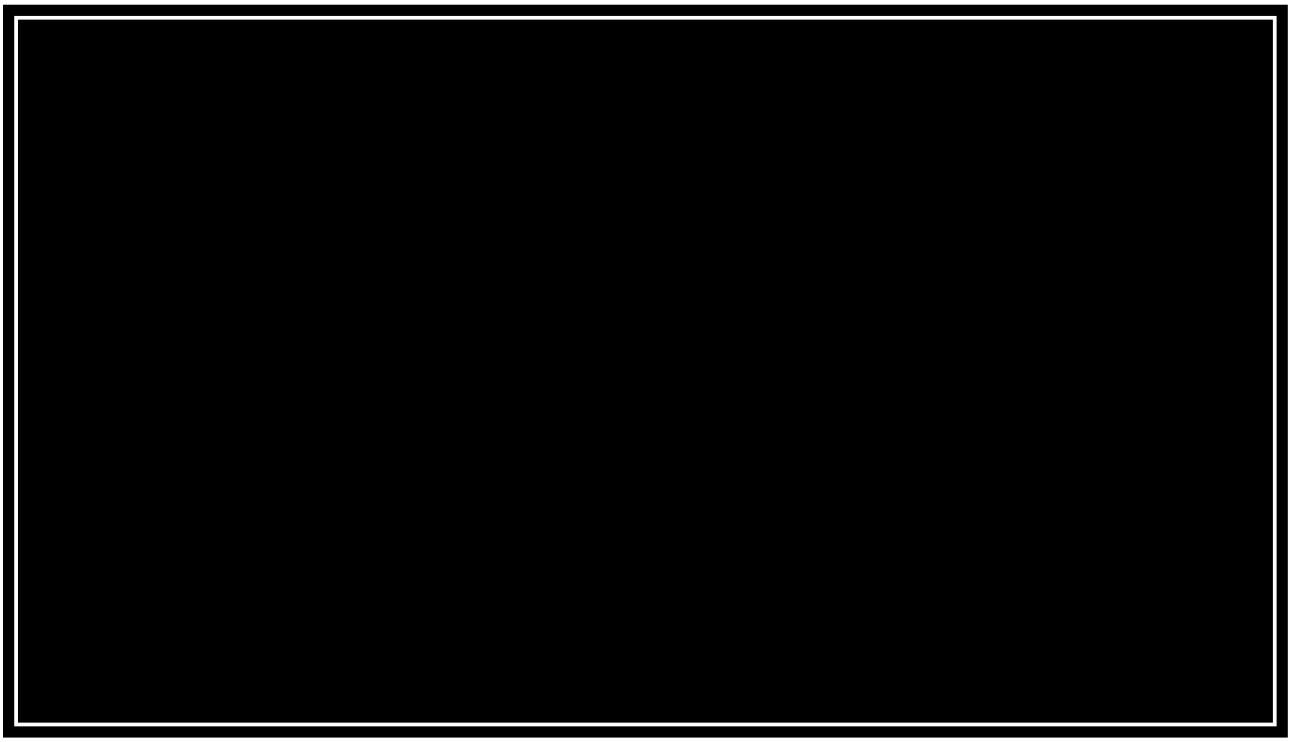
RCC Coverd Drain



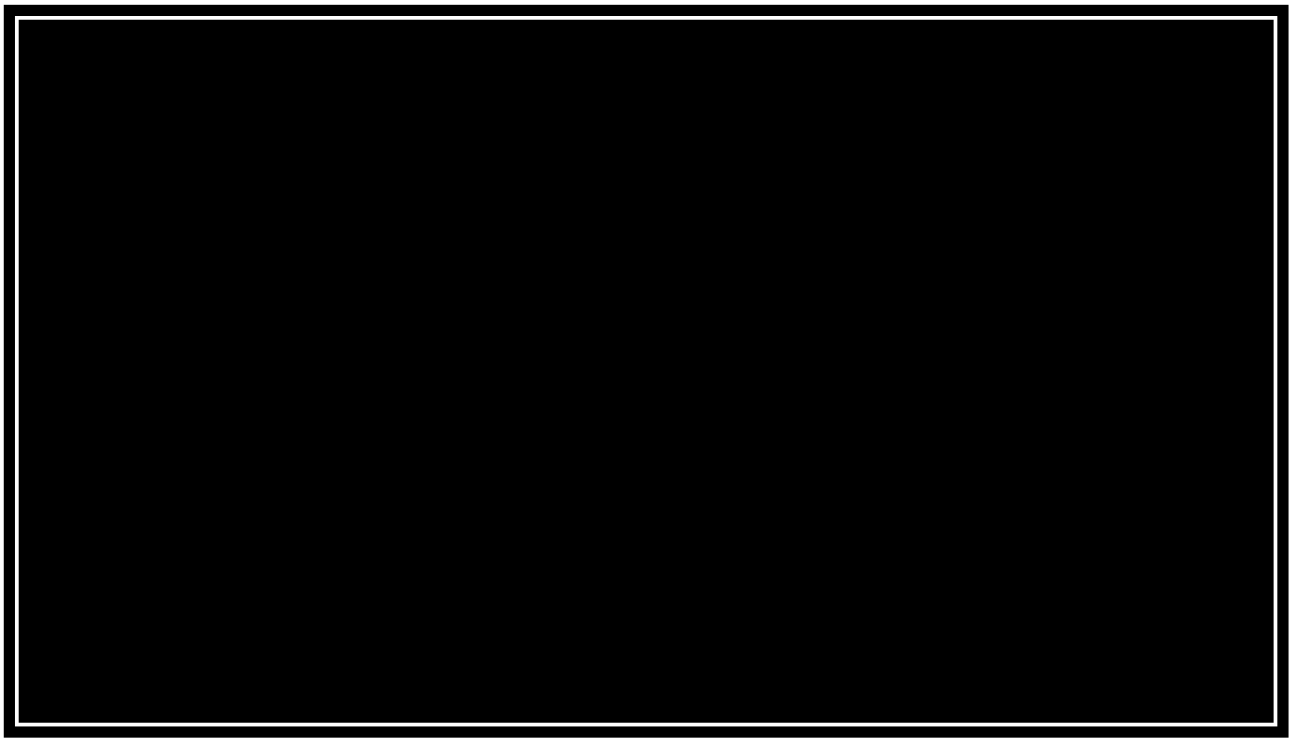
RCC Open Drain



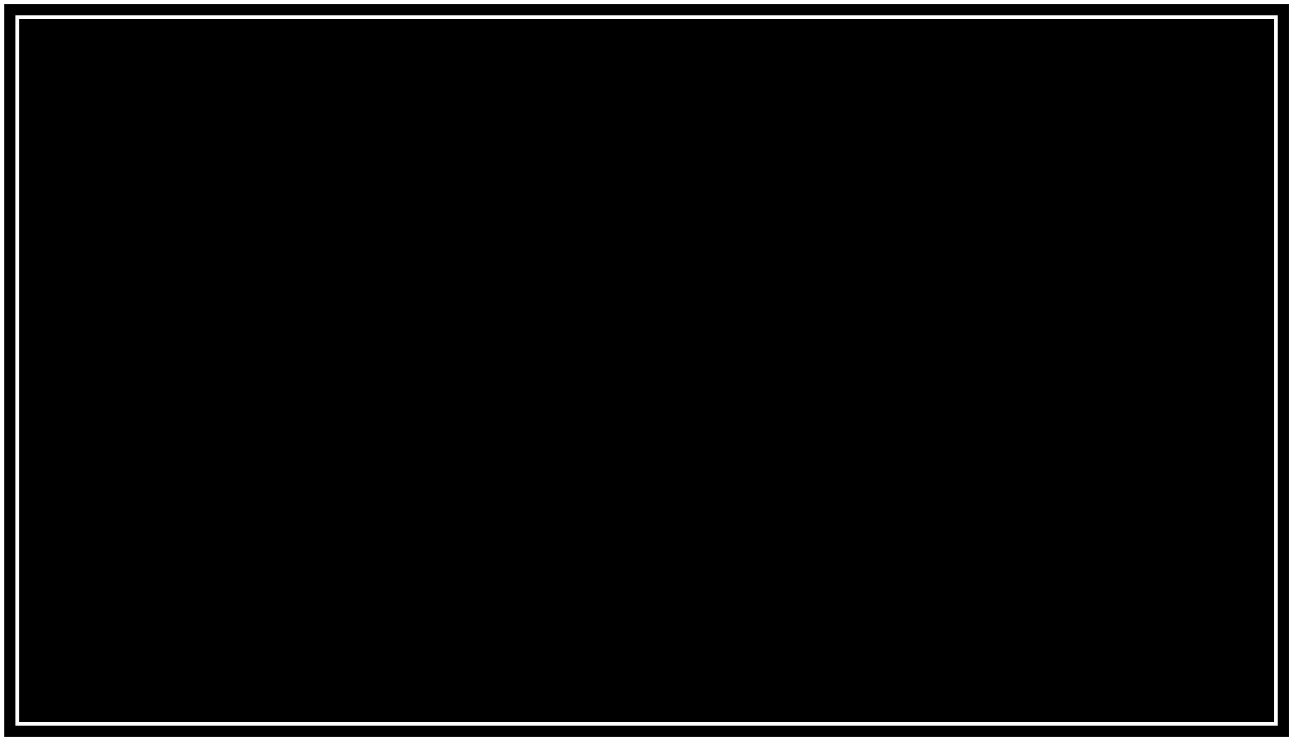
Highway Lighting- Double Arm



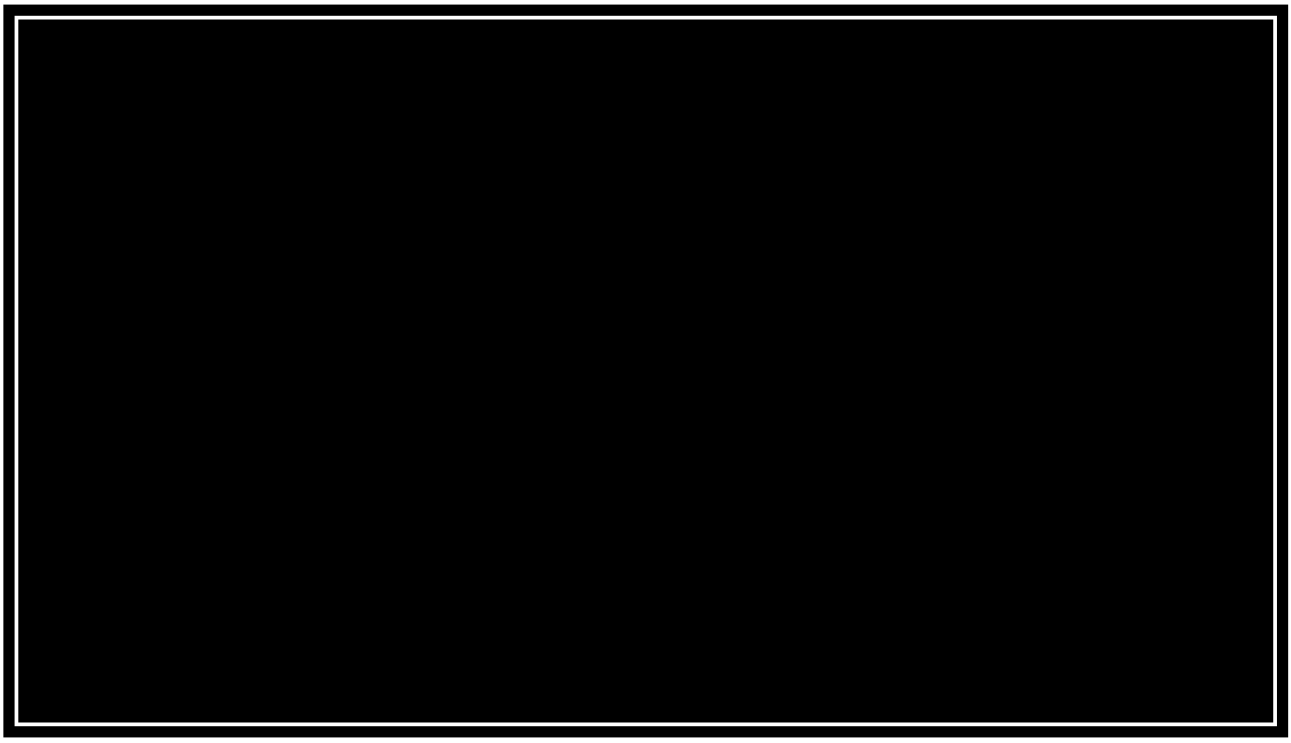
Highway Lighting- High mast Light



Solar Blinker



Metal beam crash barrier



Metal wire mesh crash barrier

Annexure- A

(Major Maintenance Cost)

Major Maintenance Strategy & Cost Details for Jammu Udhampur Project			
Cycle	**Year**	**Strategy**	**KF Cost (₹-Crore)**
MM Cycle-01	**(Year 2028-2029)**	**A) Main Carriageway:** 01. 40 mm BC on LHS: 100% Length & 30mm BC on 20% length RHS 02. DBM Rectification: 5% Area 50 mm 03. Milling 04. Tack Coat: 100% LHS and 20% RHS 05. Road Marking: (100% LHS and 20% RHS) 06. Kerb Raising: 50% length 07. Kerb Painting: 100% Length 08. Road Studs: 100% **B) Service Road:** 01. 30 mm BC on 100% length 02. Road Marking 100% length	40.95
MM Cycle-02	**(Year 2031-32) Handover Period**	***A) Main CArraigeway:*** 01. 30 mm BC on 100% length RHS and 40mm BC on 20% on LHS 02. DBM Rectification: 5% Area 50 mm 03. Milling 05. Tack Coat: 100% RHS + 20% on LHS 05. Road Marking: (100% RHS and 20% LHS) 06. Kerb Raising: 50% length 07. Kerb Painting: 100% Length 08. Road Studs: 50%	33.06
Total MMR Cost (₹-Crore)			**74.01**

A. Periodic Maintenance Cycle -01 (Year 2027-2028)						
S.no	**Description**	**Unit**	**Quantity**	**Rate**	**Amount (₹-Lakh)**	**Remarks**
A)	**Flexible Pavement (Main Carriageway)**					
1	Overlay (BC)	Cum	22,390	10,249	2,295	40 mm BC on 100% length only on LHS, 30mm BC on 20% length on RHS
2	DBM	Cum	2,434	8,847	215	50mm DBM on 5% of the project area
3	Milling	Sqm	1,61,174	89	143	Milling considered for DBM rehabilitation and 11% additional considered for cracks on the project stretch
4	Tack Coat	Sqm	6,32,759	12	73	Tackcoat considered for 60% MCW(100% LHS and 20% RHS) and for 5% DBM
5	Road Marking	Sqm	28,188	432	122	
6	Earthen Shoulder	Cum	7,054	294	21	50% earthern shoulder to be rectified
7	Kerb Raising	Rm	47,584	311	148	50% kerb raising considered
8	Kerb Painting	Sqm	36,164	116	42	
9	Road Studs	Nos.	9,687	191		
Total Flexible Cost (MCW+SR)					**3,059**	
B)	**Flexible Pavement (Service Road)**					
1	Overlay (BC)	Cum	2,316	10,249	237	30 mm BC on SR
2	Tack Coat	Sqm	77,212	12	9	
Total Flexible Cost (Service Road)					**246**	
Total Periodic Maintenance Cost					**3,305**	
Contigencies (5%)					**5.0%**	
Total Periodic Maintenance Cost (₹-Lakh)					**3,471**	
Total Periodic Maintenance Cost (₹-Crore)					**34.71**	
Total Periodic Maintenance Cost (₹-Crore) with GST					**40.95**	

B. Periodic Maintenance Cycle -02 (Year 2030-2031)-Handover Period						
S.no	**Description**	**Unit**	**Quantity**	**Rate**	**Amount (₹-Lakh)**	**Remarks**
A)	**Flexible Pavement (Main Carriageway)**					
1	Overlay (BC)	Cum	18,496	10,249	1,896	30 mm BC on 100% length only on RHS and 40mm BC on 20% on LHS
2	DBM	Cum	2,434	8,847	215	50mm DBM on 5% of the project area
3	Milling	Sqm	48,674	89	43	Milling considered for DBM rehabilitation
4	Tack Coat	Sqm	6,32,759	12	73	50% Area
5	Road Marking	Sqm	22,999	432	99	60% Length
6	Earthen Shoulder	Cum	7,054	294	21	50% earthern shoulder to be rectified
7	Kerb Raising	Rm	47,584	311	148	50% kerb raising considered
8	Kerb Painting	Sqm	36,164	116	42	100% Considered
9	Road Studs	Nos.	4,843	191	9	50% considred
Total Flexible Cost (MCW+SR)					**2,547**	
Total Periodic Maintenance Cost					**2,547**	
Contigencies (5%)					**10.0%**	
Total Periodic Maintenance Cost (₹-Lakh)					**2,801**	
Total Periodic Maintenance Cost (₹-Crore)					**28.01**	
Total Periodic Maintenance Cost (₹-Crore) with GST					**33.06**	

Contact

Rajeev Vijay

Executive Director - Government and Infrastructure Advisory

Rajeev.vijay@in.knightfrank.com

+91 99100 54852

Maj Gen K T Gajria

Senior Consultant - Government and Infrastructure Advisory

MajGenKT.Gajria@in.knightfrank.com

+91 98712 00483

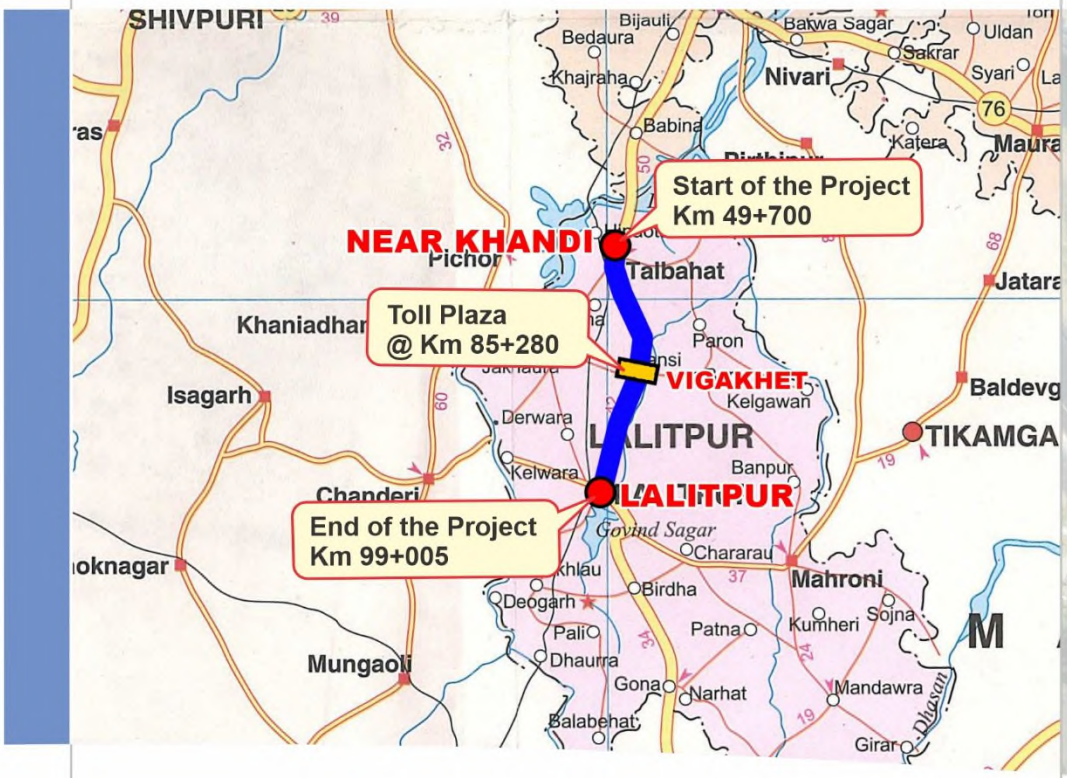
Aashif Ahmed

Associate Director- Government and Infrastructure Advisory

aashif.ahmed@in.knightfrank.com

+91 93114 10574

FP Project Management



Technical Due Diligence of Jhansi - Lalitpur Section [Package-II] of NH-44 (km. 49+700 to km. 99+005) in the State of Uttar Pradesh on TOT Mode

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	13-May-2026	DKR / STP	RMW	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 6
2.5 Abutting Land Use 6
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 9
3.3 Major / Minor Junctions 9
3.4 Condition Survey of Bridge 10
3.5 Condition Survey of Culverts 17
3.6 Drainage 19
3.7 Slope Protection 19
3.8 Road Furniture 20
3.9 Avenue Plantation and Median Plantation 24
3.10 Toll Plaza 24
3.11 Lane Equipment 25
3.11.1 RFID ETC Transceiver 26
3.11.2 Lane Controller with Industrial PC 26
3.11.3 Automatic Vehicle Classification (AVC) Sensors 26
3.11.4 Automatic Lane Barrier 27
3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 27

3.11.6 Incident Capture Camera (AVC Camera) 28
3.11.7 License Plate Image Capture Camera (LPIC) 28
3.11.8 Over Head Lane Signal (OHLS) 29
3.11.9 Toll Booth Equipment 29
3.11.10 Medium Speed Weigh in Motion (MSWIM) 30
3.12 Plaza Equipment 31
3.12.1 TMS Server 31
3.12.2 55" LED screen for CCTV monitoring 31
3.12.3 Workstations in Control Room, POS room 31
3.13 Advanced Traffic Management System (ATMS) 31
3.13.1 Automatic Traffic Counter cum classifier (ATCC) 32
3.13.2 Mobile Radio communication System (MRCS) 32
3.13.3 Emergency Call Boxes (ECB) 32
3.13.4 Portable Weigh in Motion (PWIM) 32
3.13.5 MET System 32
3.13.6 Variable Message Signboards (VMS) 32
3.13.7 CCTV Surveillance Cameras 32
3.13.8 Video Incident Detection System 33
3.13.9 Vehicle Actuated Speed Display (VASD) 33
3.13.10 Adequacy of Toll Collection System and ATMS 33
3.14 Bus Bays and Passenger Shelter 34
3.15 Traffic Aid Post and Medical Aid Post 34
3.16 Toilet Block 34
3.17 Balance Work Status 35
3.18 Operation and Maintenance 35
3.18.1 O&M Contract 35
3.18.2 Organization Chart 35
3.18.3 Operation 36
3.18.4 Routine Maintenance 36
4 Pavement Investigation and Assessment 37
4.1 General 37
4.2 Axle Load and VDF 37
4.3 Design Traffic 37
4.4 Network Survey Vehicles (NSV) Survey 38
4.5 Structural Investigations 38
4.6 Periodic Maintenance Strategy 38
5 Cost Estimates 40

5.1 General 40
5.2 Rate Assumption 40
5.3 Balance Work Cost 42
5.4 Routine O&M Cost 42
5.5 Major Maintenance Cost 43
5.6 Periodic Replacement of TMS / ATMS System 43
5.7 Escalation Assumption 44
5.8 Summary of Cost 44
Annexures 46
Annexure I - Routine Maintenance Cost 47
Annexure II - Major Maintenance Cost 51

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Summary for Structures 10
Table 3-2 Condition Survey of Major Structure 11
Table 3-3 Details of New Installation of Safety Barriers 20
Table 3-4 Details of Additional Gantry / Cantilever Sign 20
Table 3-5 Details of Summary for Road Furniture Items 21
Table 3-6 Details of Summary for Toll Plaza Items 24
Table 3-7 Details of Toilet Block 34
Table 4-1 Vehicle Damage Factor 37
Table 4-2 MSA Calculation 37
Table 4-3 Major Maintenance Cycle 39
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 40
Table 5-2 Summary of Unit Rates 41
Table 5-4 Summary of Operation Cost 42
Table 5-5 Escalation 44

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start of Project Road 5
Figure 2-3 End of Project Road 5
Figure 3-1 Photographs of Pavement Condition (MCW) 7
Figure 3-2 Photographs of Service Road 9
Figure 3-3 Photographs of Major / Minor Junctions 10
Figure 3-4 Photographs of Major Structures 14
Figure 3-5 Photographs of Culverts 18
Figure 3-6 Photograph of Drainage 19
Figure 3-7 Photographs of Slope Protection and Chute Drain 19
Figure 3-8 Photographs of Pavement Marking 22
Figure 3-9 Photographs of Road Signages / Km Stone / Kerb Painting 23
Figure 3-10 Photographs of Highway Light / MBCB / Crash Barrier 23
Figure 3-11 Photographs of Avenue Plantation and Median Plantation 24
Figure 3-12 Photographs of Toll Plaza 25
Figure 3-13 Photographs of Passenger Shelter 34
Figure 3-14 Photographs of Toilet Block 34

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Jhansi - Lalitpur section of NH-44 (old "NH-26") from km. 49+700 to km. 99+005 in the State of Uttar Pradesh (hereinafter referred as "Project Road").

M/s. Jhansi Vigakhet Tollway Private Limited (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance, and transfer of Jhansi to Lalitpur Section (from km. 49+700 to km. 99+005) of NH-44 or Project Road under TOT. The Project was awarded to Concessionaire on 20th October 2020 with a concession period of 30 years. The length of Project Road is 49.305 kms with one toll plaza at km. 85+280.

Accordingly, the Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

1. A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
2. Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
3. Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.
4. Formulation of future major maintenance strategy
5. Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
6. Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
7. Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period
8. Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyzing the same as per the best engineering / industry practices.

The site visit and inspection were carried out between the periods from **23rd March 2026** to **25th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features and overviews of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates**: The chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **M/s. Jhansi Vigakhet Tollway Private Limited**, is a company promoted by Cube Highways or a Special Purpose Vehicle (SPV) formed for implementing this project. The Appointed Date of the project was 20th October 2020 (as TOT Package). The concession period of the Project is 30 years including construction period. The project has received COD on 12th November 2014.

Presently, there are two Concessionaires for the Project Road. One is Cube Highways who maintains Toll Operation activities (TOT Concessionaire) and the other Concessionaire is Gayatri Group (Annuity Concessionaire) who maintains the project length as per their original scope of work.

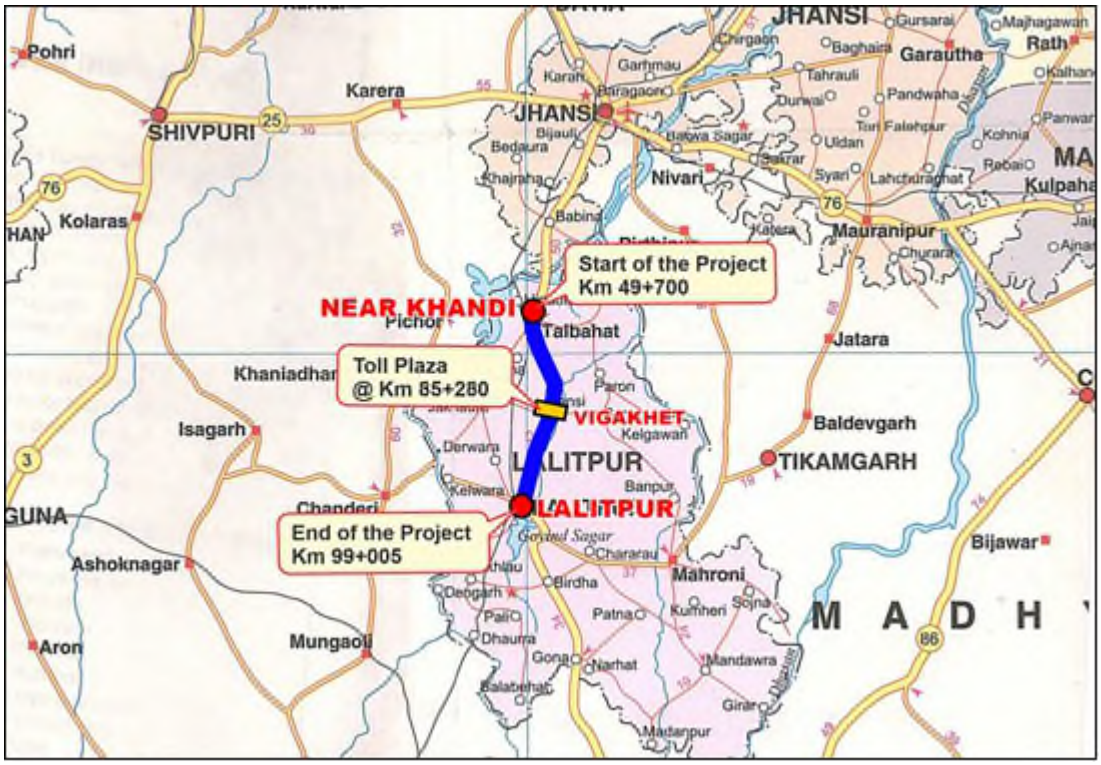
The project is being developed through Annuity BOT mode under TOT (Toll Operate Transfer) Bundle-3 with a concession period of 30 years from Appointed Date while O&M will start from April 2027 as per Clause 10.2.2 of Concession Agreement.

2.2 Location

The Project Road is part of National Highway No. 44 (old "NH-26") of Jhansi - Lalitpur section in the state of Uttar Pradesh. The total project length is 49.305 kms.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map



The photographs taken during the site visit are presented below.

Figure 2-2 Start of Project Road

km. 49+700

km. 49+700

Figure 2-3 End of Project Road

km. 99+005

km. 99+005

2.3 Climate

Project area being on a rocky plateau, Jhansi experiences extreme temperatures. Winter begins in October and peaks in mid-December. Temperature is about 4 °C minimum and 21 °C maximum. Summer begins by April and summer temperatures can peak 47 °C in May. The rainy season starts by the third week of June, while the monsoon rains gradually weaken in September and end before the last week of September. In the rainy season, the average daily high temperature hovers around 36 °C with high humidity. The average rainfall for the project is about 850 mm per year, occurring almost entirely within the three-and-a-half months of the Southwest Monsoon. In summer, temperatures as high as 45 to 47 °C while in winter the temperatures can fall as low as 0 to 1 °C as recorded in winter 2011.

2.4 Terrain

The Project Road traverses through plain / rolling terrain.

2.5 Abutting Land Use

The land use along the Project Road is predominantly agriculture or barren with intermittent built-up areas.

2.6 Right of Way

The width of the existing Right of Way (ROW) throughout the Project Road is 60 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC cables, etc.

2.8 Development as per Schedule-B

The Project Road from Jhansi to Lalitpur has been developed as a four-lane divided carriageway with median width of 2 m, service road and other arrangements. The Project Road passes through rural as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Construction of the project on the site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.
b) Tolling, operation, management, maintenance, and transfer of the Project Road subject to and in accordance with the provisions of this Agreement.
c) Performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all the obligations of the Concessionaire under this Agreement.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km.	49.305	
2	Construction of Service Road	km.	0.6	
3	Reconstruction of Pipe Culvert	Nos.	-	
4	Reconstruction of Box Culvert	Nos.	-	
5	New Construction of Box Culvert	Nos.	-	
6	Vehicular Underpasses	Nos.	01	
7	Reinforce Cement concrete cover Drain with footpath	km.	0.6	
8	Road marking by Thermoplastic Paint	km.	0.6	
9	Rigid Concrete Barrier	km.	-	
10	Additional cantilever Sign Boards	Nos.	-	

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 9.0 m with earthen shoulder of 1.5 m on either side. The Project Road has a median width of 2.0 m throughout its length.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

The pavement condition survey was conducted from 23rd March 2026 to 25th March 2026 through visual inspection along the entire project stretch. Based on the observations, approximately 30% of the pavement is in poor condition, 60% is in average condition, and the remaining 10% is in good condition. Further, it is assessed that about 15–20% of the roadway requires immediate repair to ensure safe and smooth traffic movement.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (MCW)

Pothole, Sattlement at km. 50+680 (LHS)

Pothole, Sattlement at km. 56+600 (LHS)

Cracks and Rutting at km. 58+600 (LHS)

Pothole, Sattlement at km. 68+600 (LHS)

Cracks and Rutting at km. 76+700 (LHS)

Pothole, Sattlement at km. 92+200 (LHS)

Pothole, Sattlement at km. 93+200 (RHS)

Cracks and Rutting at km. 82+100 (RHS)

Cracks and Rutting at km. 74+300 (RHS)

Pothole, Sattlement at km. 68+300 (RHS)

Cracks and Rutting at km. 55+940 (RHS)

Pothole, Sattlement at km. 54+540 (RHS)

3.2 Service Road / Slip Road

The service road with width 5.5 is constructed in built-up area and adjoining underpass locations. The Project Road has a total service road length of 600 m on both side (under construction).

The photographs taken during the site visit are presented below.

Figure 3-2 Photographs of Service Road

km. 96+500 to km. 97+100

km. 96+500 to km. 97+100

3.3 Major / Minor Junctions

There are 04 nos. of major junctions and 20 nos. of minor junction along Project Road.

The photographs taken during site visit is presented as below:

Figure 3-3 Photographs of Major / Minor Junctions

Y-Junction km. 98+950

Y-Junction km. 92+480

Y-Junction km. 77+220 (Minor)

Y-Junction km. 74+340 (Minor)

3.4 Condition Survey of Bridge

The inventory of structures including major bridges, minor bridges, ROB's, underpasses and culverts is presented in table as below:

Table 3-1 Summary for Structures

Type of Structure	Total Number of Structures
Road under Bridge (ROB)	-
Flyover	01
Major Bridges (MJB)	04
Minor Bridges (MNB)	16
Vehicular Underpass (VUP)	06
Light Vehicular Underpass (LVUP)	-
Pedestrian Underpass (PUP)	01
Cattle Underpass (CUP)	-
Foot over Bridge	-
Culverts (Box / Slab / HPC)	71
Total	**99**

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-2 Condition Survey of Major Structure

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway Width (m)	Deck Width (m)	Footpath (m)	Type of Super structure	Type of Sub structure	Type of Foundation	Remarks
Major Bridge										
1	51+440	Both	3 x 20	2 x 8.75	2 x 12	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of drainage spouts, weep holes, and vents is required.
2	66+168	LHS	3 x 30	1 x 8.75	-	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of drainage spouts, weep holes, and vents is required.
		RHS	3 x 30	1 x 8.75	-	1.5	Steel	RCC	Well	The structure is in good condition. However, cleaning of drainage spouts, weep holes, and vents is required.
3	74+108	Both	3 x 20	2 x 8.75	2 x 12	1.5	RCC	RCC	Well	The structure is in good condition. However, cleaning of drainage spouts, weep holes, and vents is required.
4	96+425	LHS	3 x 32	1 x 8.75	12	1.5	RCC	RCC	Well	The structure is in good condition. However, cleaning of drainage spouts, weep holes, and vents is required.
		RHS	3 x 32	1 x 8.75	12	1.5	RCC	RCC	Well	The structure is in good condition. However, cleaning of drainage spouts, weep holes, and vents is required.
Minor Bridge										
1	54+022	Both	1 x 13.5	2 x 7	2 x 9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
2	54+712	Both	1 x 15	2 x 7	2 x 9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
3	56+603	Both	1 x 20.7	2 x 7	2 x 9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
4	61+088	Both	1 x 15	2 x 7	2 x 9	1.5	RCC	RCC	Open	The structure is in good condition. However,

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway Width (m)	Deck Width (m)	Footpath (m)	Type of Super structure	Type of Sub structure	Type of Foundation	Remarks
										cleaning of vents is required.
5	66+950	Both	1 x 7.1	2 x 7.5	2 x 9	-	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
6	68+636	Both	1 x 7.5	2 x 7.5	2 x 9	-	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
7	68+789	Both	1 x 7	2 x 7.5	2 x 9	-	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
8	72+307	LHS	3 x 3.5	2 x 7	9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
		RHS	1 x 10	2 x 7	9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
9	81+268	Both	1 x 7	2 x 7	9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
10	83+928	Both	1 x 13.5	2 x 7	2 x 9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
11	85+714	LHS	3 x 3.5	2 x 7	9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
		RHS	1 x 10	2 x 7	9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
12	86+601	LHS	2 x 11.7 + 1 x 17.5	2 x 7	9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
		RHS	7 x 5.8	2 x 7	9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
13	89+453	LHS	1 x 17.3 + 1 x 14.8 + 1 x 7	2 x 7	9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
		RHS	5 x 6.7	2 x 7	9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
14	92+180	LHS	1 x 7	2 x 7	9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway Width (m)	Deck Width (m)	Footpath (m)	Type of Super structure	Type of Sub structure	Type of Foundation	Remarks
		RHS	1 x 7	2 x 7	9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
15	95+813	LHS	2 x 16.5 + 1 x 7.5	2 x 7	9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
		RHS	5 x 7.5	2 x 7	9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
16	97+848	Both	1 x 9	2 x 7	2 x 9	1.5	RCC	RCC	Open	The structure is in good condition. However, cleaning of vents is required.
Road Under Bridge (RUB)										
1	92+235 (skew)	Both	2 x 20	2 x 7	-	RCC	I-Girder	Wall	Open	The structure is in good condition. The side slope needs to be repaired.
Pedestrian Underpass (PUP)										
1	50+737	-	1 x 6 (sk), 1 x 5.6 (sq)	2 x 7	-	-	RCC	RCC	-	The structure is in good condition. The side slope needs to be repaired.
Vehicular Underpass (VUP)										
1	52+501	Both	1 x 12	2 x 7	24	1.5	RCC	RCC	Open	The structure is in good condition. The side slope needs to be repaired.
2	53+820 (skew)	Both	1 x 11 (sk), 1 x 10 (sq)	2 x 7	24	1.5	RCC	RCC	Open	The structure is in good condition. The side slope needs to be repaired.
3	56+280	Both	1 x 10	2 x 7	24	1.5	RCC	RCC	Open	The structure is in good condition. The side slope needs to be repaired.
4	75+665 (skew)	Both	1 x 10.5 (sk), 1 x 10 (sq)	2 x 7	24	1.5	RCC	RCC	Open	The structure is in good condition. The side slope needs to be repaired.
5	76+677 (skew)	Both	1 x 11.5 (sk), 1 x 10 (sq)	2 x 7	24	1.5	RCC	RCC	Open	The structure is in good condition. The side slope needs to be repaired.
6	82+978 (skew)	Both	1 x 10.5 (sk), 1 x 10 (sq)	2 x 7	24	1.5	RCC	RCC	Open	The structure is in good condition. The side slope needs to be repaired.

Figure 3-4 Photographs of Major Structures

Existing MJB at km. 51+444

Existing MJB at km. 66+168

Existing MJB at km. 74+108

Existing MJB at km. 96+425

Existing MNB at km. 54+022

Existing MNB at km. 54+712

Existing MNB at km. 56+603

Existing MNB at km. 61+088

Existing MNB at km. 66+949

Existing MNB at km. 68+636

Existing MNB at km. 68+768

Existing MNB at km. 72+307

Existing MNB at km. 81+267

Existing MNB at km. 83+927

Existing MNB at km. 85+713

Existing MNB at km. 86+600

Existing MNB at km. 89+453

Existing MNB at km. 92+180

Existing MNB at km. 95+813

Existing MNB at km. 97+848

Existing RUB at km. 92+235

Existing PUP at km. 50+680

Existing VUP at km. 52+520

Existing VUP at km. 53+840

Existing VUP at km. 56+280

Existing VUP at km. 75+665

Existing VUP at km. 76+677

Existing VUP at km. 82+978

Newly Constructed VUP at km. 96+795

3.5 Condition Survey of Culverts

The cross-drainage structure includes hume pipe culverts and box culverts at various locations. There are 23 Nos. of pipe culverts and 66 Nos. of box culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts is satisfactory. The RCC parapet, crash barrier or RCC railing has been provided at culvert locations which is maintained properly except culvert at km. 59+600 for which parapet wall is damaged.

In most of culverts, the waterway is clear. However, near to urban area and some location is found blocked due to debris, drainage water or bushes, tree growth, which will be removed by the Annuity Concessionaire. The Cement Concrete pitching or stone pitching has been provided for slope protection.

The culverts are maintained by the Annuity Concessionaire during O&M period. However, in case of some culverts, Cement Concrete pitching has been damaged which required to be addressed under routine repair work by the Annuity Concessionaire.

Figure 3-5 Photographs of Culverts

Box Culvert at km 58+590

Box Culvert at km 64+260

Box Culvert at km 70+140

Box Culvert at km 70+940

Box Culvert at km 71+680

Box Culvert at km 82+100

Box Culvert at km 87+960

HPC at km. 95+000

3.6 Drainage

There are existing drains on both side of the Project Road as per Concession Agreement. However, 600 m of RCC drain is additionally constructed in built-up areas and locations where service roads are provided. The photographs taken during site visit is presented as below:

Figure 3-6 Photograph of Drainage

km 89+450 Cute Drain

km. 68+280 Side Drain

3.7 Slope Protection

Slope protection and chute drains are found on Project Road at required locations. A few of the slope protection at various locations of Box Culvert and chute drains are damaged which will be rectified by the Annuity Concessionaire. The photographs taken during site visit is presented as below:

Figure 3-7 Photographs of Slope Protection and Chute Drain

km. 50+680 (LHS - VUP)

km. 56+280 (RHS - VUP)

km. 72+900 (RHS - Box Culvert)

Chute Drain at km. 75+665 (LHS - VUP)

3.8 Road Furniture

The Concessionaire has provided additional road furniture along the Project Road as per the standards and specifications mentioned in Schedule-C. Details of the items are provided below.

a) Lighting Along the Project Road

Lighting including fixing of poles and LED lights are provided at following locations on the Project Road in accordance with Clause 12.3 of IRC:SP:84-2014.

b) Transverse / Thermoplastic Bar Marking Locations

Transverse / thermoplastic bar markings on either side of carriageway on proposed service road / VUP / VUP approach locations are provided as per Section 11.2 of IRC:35-2015.

c) New Installation of Safety Barriers

Following are the details of new installation of safety barriers along the Project Road.

Table 3-3 Details of New Installation of Safety Barriers

Sr. No.	Chainage (km)		Length (m)	Location	Type of Barrier
	From	To			
1	96+500	97+100	600	BHS	Rigid barrier

d) Additional Gantry / Cantilever Sign Board

As per schedule-B, additional gantry / cantilever signs are provided at the following locations:

Table 3-4 Details of Additional Gantry / Cantilever Sign

Sr. No.	Chainage (km)	Location	Type
1	96+375	VUP	Cantilever Sign Boards
2	97+365	VUP	Cantilever Sign Boards

e) Summary of Quantity for Road Furniture Items

The following details show the summary of the quantity for road furniture items provided on Project Road.

Table 3-5 Details of Summary for Road Furniture Items

Sr. No.	Description	Unit	Quantity
1	Solar Blinkers	Nos.	Nil
2	Streetlights	Nos.	600
3	High Mast Lights	Nos.	Nil
4	Transverse Bar Makings / Thermoplastic Bar Markings	km.	1.200
5	New installation of Safety Barriers		
	W-Beam Safety Barriers	m	Nil
	Concrete Median Barrier	m	Nil
	Rigid Concrete Barrier	m	1200
6	Guard Posts	m	Nil
7	Pedestrian Guard Rails	m	Nil
8	Road Studs / Raised Pavement Markers		
9	Road Markings		
10	Traffic Delineators	As per Section-9 of IRC:SP:84-2014	
11	Kilometer / Hectometer / Boundary Stones		
12	Additional Sign Boards		
	Gantry Sign Boards	Nos.	Nil
	Cantilever Sign Boards	Nos.	Nil
	Shoulder Mounted Dual Post Sign Boards	As per Section 9 of IRC:SP:84-2014	
	Shoulder / Median Mounted Single Post Sign Boards		

Pavement Marking and Road Studs

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Pavement marking is faded at some locations which will be rectified by the Annuity Concessionaire.

Road studs / cat's eye fixing for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Road studs / cat's eye has been fixed at junction and zebra crossings. However, at few locations some cat eye has damaged which will be rectified by the Annuity Concessionaire.

Some of the photographs of road marking are presented below.

Figure 3-8 Photographs of Pavement Marking

Ghost island marking at Bus Bay

Pedestrian crossing

Road Direction marking

Longitudinal edge marking

Traffic Signage / Median Kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards and median kerb paint are faded at few locations which will be rectified by the Annuity Concessionaire.

Some of the photographs of sign boards, km stones and kerb paintings are presented below.

Figure 3-9 Photographs of Road Signages / Km Stone / Kerb Painting

km. 49+700

km. 51+480

km. 54+000

km. 60+000

km. 78+600

km. 96+930

Highway Lighting / Crash Barriers / Delineators

Highway lighting is provided at underpasses, flyovers, toll plaza, ROBs and built-up locations. High mast lighting is provided at toll plaza location. Highway lighting is also provided at approaches of underpass and flyovers.

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site.

The traffic delineators are not found for road users in abnormal condition of weather for the Project Road.

Some of the photographs of street lighting, MBCB and concrete crash barriers are presented below.

Figure 3-10 Photographs of Highway Light / MBCB / Crash Barrier

MBCB at km. 53+840

Concrete Crush Barrier at km. 54+022

Highway Lighting at km. 62+640

Road Land Boundary

Road land boundary pillar is not found / available on Project Road.

3.9 Avenue Plantation and Median Plantation

Avenue plantations are done only where ROW is available and median plantation has been providing in the project length as per IRC specification. The photographs taken during site visit is presented as below:

Figure 3-11 Photographs of Avenue Plantation and Median Plantation

km. 55+940 - Avenue Plantation

km. 54+000 - Median Plantation

3.10 Toll Plaza

As per the Concession Agreement, there is one existing toll plaza at km. 85+280 with the following infrastructure.

Table 3-6 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 85+280
2	Number of Tolling Lanes	8 (4+4) lanes for toll operation for vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	One in each direction
5	Number of Toll Booths	8
6	Canopy	Present
7	Administrative Building	Present (Temporary)
8	Parking cum Toilet Block	Present
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	NO
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	No
12	Storage facility for Overloaded Material	No
13	High mast Light	Yes

Sr. No.	Particulars	Details
14	Streetlight	Yes
15	Low mast Light	No
16	User Fee Boards	4
17	Cantilever/Gantry Boards	Yes
18	Automatic boom barrier	Yes

Note:

- *Presently, the Concessionaire is using Annuity Concessionaire's building as an administration building for toll plaza.*
- *The electricity supply for the existing streetlights is provided by the TOT Concessionaire. The maintenance of these streetlights is in the scope of Annuity Concessionaire.*
- *Toll plaza is completed as per rehabilitation work and as per scope given in schedule-B.*

Figure 3-12 Photographs of Toll Plaza

Toll Plaza at km. 85+280

Toll Administrative Building

Medical & Traffic Aid Post

Toll O&M Centre

3.11 Lane Equipment

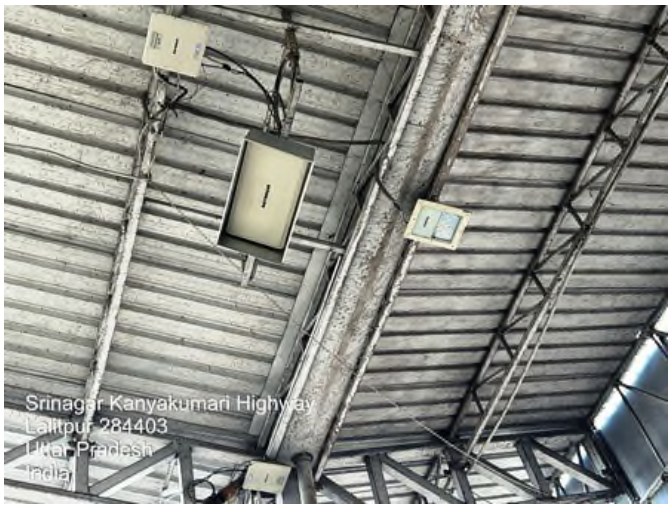
Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC

3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.11.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.



RFID

3.11.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data.

3.11.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVCC at TP

3.11.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at TP

3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at TP

3.11.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on the island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

AVC Camera

3.11.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

LPIC

3.11.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane "Open" and "Close" sign consists of a pair of "GREEN" (arrow) and "RED" (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at TP

3.11.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and type of ticket.

Toll Booth Equipment at Toll Plaza

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.
Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.
Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.11.10 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

MSWIM at TP

3.12 Plaza Equipment

3.12.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio WiFi module. Firewall with Sophos antivirus is provided.

3.12.2 55" LED screen for CCTV monitoring

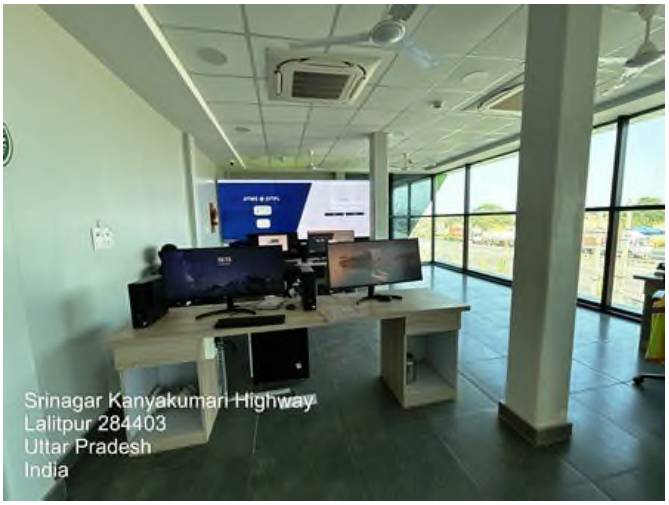
55" LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.12.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.

Control Room



POS Room

3.13 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) installed for the Project Road is controlled by the ATMS center at the toll plaza location. As per Concession Agreement, ATMS shall conform to ATMS Policy guidelines (2016) which comprises of the following:

- Automatic Traffic Counter cum Classifier (ATCC)
- Mobile Radio communication system
- Emergency Call Box
- Portable Weigh in Motion
- Meteorological Data system
- Variable Message Signboards (VMS)
- CCTV system
- Video Incident Detection System (VIDS)
- Vehicle actuated Speed Display (VASD)

Status of these systems at site is described below:

3.13.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is installed at Toll Plaza

3.13.2 Mobile Radio communication System (MRCS)

Mobile Radio communication System (MRCS) is not yet installed. Application for MRCS UHF band has been sought from WPC, DoT, Ministry of Communications which is not yet allocated.

3.13.3 Emergency Call Boxes (ECB)

It is not installed at site.

3.13.4 Portable Weigh in Motion (PWIM)

Portable Weigh in Motion is provided at the site.

3.13.5 MET System

Meteorological sensors comprise of sensors to measure the atmospheric temperature, humidity, pavement surface temperature, visibility and equipment for measuring wind speed and direction and installed at Toll Plaza km 85+260.

3.13.6 Variable Message Signboards (VMS)

Variable message sign boards are installed at 14 locations. These display specific messages to the users based on the prevailing conditions on the highway. The message can be changed at any point of time from the HTMS centre. About 250 customised messages can be stored on the system.

km. 59+500

km. 80+600

3.13.7 CCTV Surveillance Cameras

Surveillance cameras are installed at various locations along the Project Road. The ATMS control room has video wall to monitor these locations through the cameras installed.

3.13.8 Video Incident Detection System

62 fixed CCTV cameras are installed as part of Video incident detection system.

3.13.9 Vehicle Actuated Speed Display (VASD)

VASD is installed at locations each on LHS and RHS.

km. 56+600

km. 62+420

3.13.10 Adequacy of Toll Collection System and ATMS

- Adequacy-All lanes are hybrid ETC system as stipulated by NHAI in Technical Specifications of Hybrid ETC system. NHAI has approved maintenance costs for TMS. TMS shall be upgraded every 5 years at the cost of the Authority.
- Advanced Traffic Management System (ATMS) installed is as per specifications required by the Authority and in working condition.

3.14 Bus Bays and Passenger Shelter

There are 5 Nos. of bus bays / passenger shelter along Project Road. Some of the photographs of the bus bays are presented below.

Figure 3-13 Photographs of Passenger Shelter

km. 56+540

km. 92+680

3.15 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Post are in the scope of Annuity Concessionaire.

3.16 Toilet Block

There are two nos. toilet blocks and maintenance of the same is in Annuity Concessionaire's scope.

Table 3-7 Details of Toilet Block

Sr. No.	Chainage (km)	Remarks
1	85+300	RHS

Some of the photographs of the Toilet Block are presented below.

Figure 3-14 Photographs of Toilet Block

Toilet Block

3.17 Balance Work Status

During site visit it has been observed that construction of Toll Plaza Admin Building is completed. The construction of VUP at km. 96+795 is completed and traffic is moving on the same. Hence there is no balance work in the Project Road.

3.18 Operation and Maintenance

3.18.1 O&M Contract

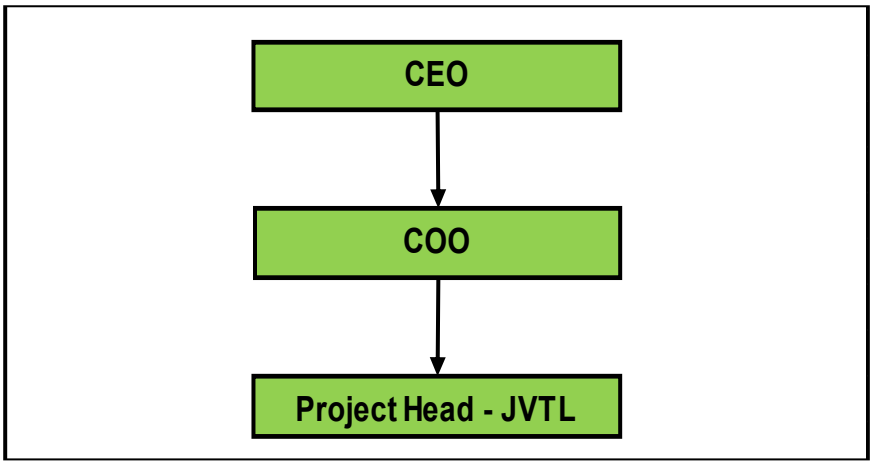
As per Clause 15.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall confirm to all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement.

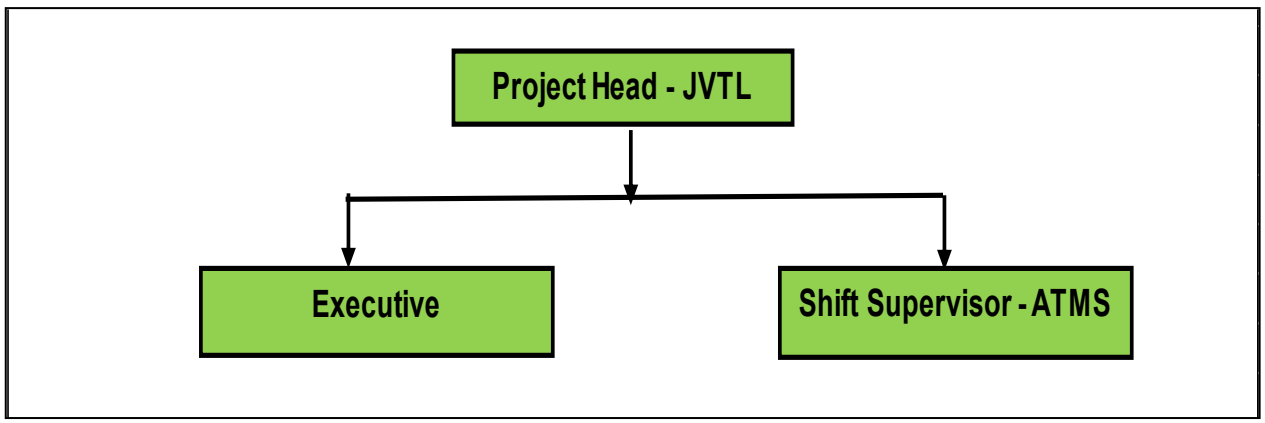
The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

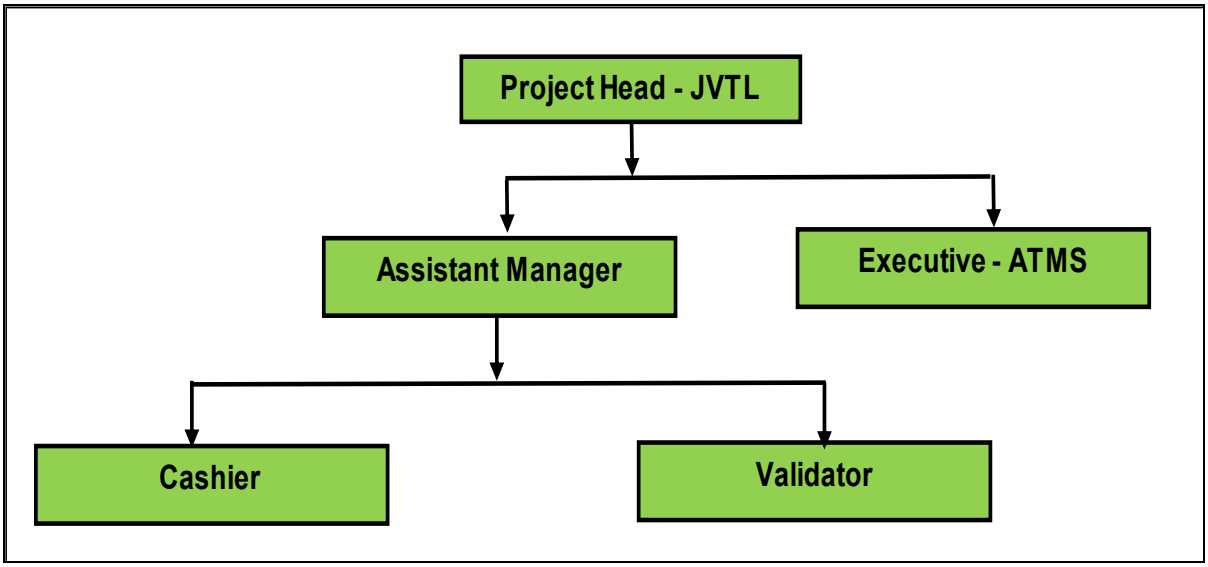
3.18.2 Organization Chart

The Concessionaire has given the Organization Chart at site for Operation and maintenance. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent sub-contractors.

Organization Chart







3.18.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have made from the expenses of similar types of projects to arrive at the operation cost. The estimates are projected based on the best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.18.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

Currently, the Project Road is maintained by Annuity Concessionaire.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Annuity Concessionaire as per Scope of Work. The Annuity Concessionaire has received the Completion Certificate on 19th March 2012.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 30 years from the Appointed Date (as TOT Package i.e., 20th October 2020) including construction period. The project will be handed over to TOT Concessionaire in March 2027.

4.2 Axle Load and VDF

The Concessionaire has conducted the Axle Load Survey on Project Road at km. 85+160 (near Toll Plaza) on19th July 2019 and 20th July 2019. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor

Vehicle Category	Vehicle Damage Factor	
	LHS	RHS
Bus	1.15	0.80
LCV	1.29	0.62
2A	3.91	2.61
3A	7.29	6.06
MAV	14.96	14.31

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data as provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
2024-25	5.91	**5.91**	5.24	**5.24**	
2025-26	6.23	**12.14**	5.52	**10.76**	
2026-27	6.29	**18.43**	5.59	**16.35**	Handing over from Annuity Concessionaire in FY2027
2027-28	6.56	**24.99**	5.84	**22.19**	
2028-29	6.91	**31.90**	6.16	**28.35**	
2029-30	7.25	**39.15**	6.47	**34.82**	
2030-31	7.61	**46.76**	6.80	**41.62**	MM Cycle 1

Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
2031-32	7.69	**54.45**	6.88	**48.50**	
2032-33	8.09	**62.54**	7.25	**55.75**	
2033-34	8.50	**71.04**	7.63	**63.38**	
2034-35	8.94	**79.98**	8.03	**71.41**	
2035-36	9.40	**89.38**	8.45	**79.86**	
2036-37	9.87	**99.25**	8.88	**88.74**	MM Cycle 2
2037-38	10.37	**109.62**	9.34	**98.08**	
2038-39	10.90	**120.52**	9.82	**107.90**	
2039-40	11.44	**131.96**	10.32	**118.22**	
2040-41	12.01	**143.97**	10.84	**129.06**	
2041-42	12.60	**156.57**	11.39	**140.45**	
2042-43	10.57	**167.14**	9.56	**150.01**	
2043-44	11.09	**178.23**	10.04	**160.05**	
2044-45	11.63	**189.86**	10.53	**170.58**	MM Cycle 3
2045-46	12.18	**202.04**	11.04	**181.62**	End of Concession Period

4.4 Network Survey Vehicles (NSV) Survey

The O&M is not under the scope of Concessionaire / Client.

4.5 Structural Investigations

The O&M is not under the scope of Concessionaire / Client.

4.6 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full-length periodic maintenance. Schedule-F of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. Only improvement to Riding Quality is expected if the roughness value exceeds 3000 mm/km.

Currently, the Project Road is maintained by the existing Annuity Concessionaire. The project will be handed over to TOT Concessionaire in March 2027. It is assumed that the pavement will be overlaid before handing over the project confirming the pavement parameters kept within the limits as per Table-1 (Maintenance Criteria for Pavements) of Schedule-F. Hence, the major maintenance cycles are proposed between the year 2029 and end of concession period i.e. FY 2046.

The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-3 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2027	Handing over of Project from Annuity Concessionaire	
2	FY 2028	-	-
3	FY 2029	-	-
4	FY 2030	Major Maintenance with 30 mm BC (PMB) (100%) + Milling & 50 mm DBM (100%)	Major Maintenance with 30 mm BC (VG-30) (50%) + Micro-surfacing (50%)
5	FY 2031 to FY 2036	-	-
6	FY 2037	Major Maintenance with 40 mm BC (PMB) (100%) + Milling & 50 mm DBM (5%)	Major Maintenance with 30 mm BC (VG-30) (50%) + Micro-surfacing (50%)
7	FY 2038 to FY 2044	-	-
8	FY 2045	Major Maintenance with 30 mm BC (PMB) (100%) + Milling & 50 mm DBM (5%)	Major Maintenance with 30 mm BC (VG-30) (50%) + Micro-surfacing (50%)
9	FY 2046*	End of Concession Period	

**Actual end of concession period as per Concession Agreement is October 2050. However, as per traffic details submitted by the Concessionaire, the revised concession period is up to FY 2046 as per provision of Article 14 of CA.*

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

   a. **Manpower and labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

   b. **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards. Following rates of bitumen are considered.

Polymer cost and modification costs are provided by client to work out BC rate with PMB.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY2027 (Rs. / MT)	Rate for FY2028 onwards (Rs. / MT)
1	Mathura,	All States	VG10	45,102	35,125
2			VG30	46,402	36,137
3			VG40	48,962	38,131
4	Panipat	All States	VG10	45,102	35,125
5			VG30	46,402	36,137
6			VG40	48,962	38,131
7	Koyali	All States	VG10	47,102	37,125
8			VG30	48,402	38,137
9			VG40	51,082	40,251
10	Haldia	All States	VG10	46,602	35,683

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY2027 (Rs. / MT)	Rate for FY2028 onwards (Rs. / MT)
11			VG30	47,402	36,295
12			VG40	49,962	38,256
13	Barauni	All States	VG10	47,132	36,213
14			VG30	48,432	37,325
15			VG40	50,992	39,286
16	CPCL	Kerala	VG10	47,402	35,519
17			VG30	48,402	36,395
18			VG40	50,762	38,120
19	CPCL	Tamil Nadu	VG10	47,902	36,019
20			VG30	48,402	36,395
21			VG40	50,962	38,320
22	CPCL	Telangana and Andhra Pradesh	VG10	44,602	32,719
23			VG30	45,402	33,395
24			VG40	47,962	35,320
25	CPCL	Karnataka	VG10	44,602	32,719
26			VG30	45,402	33,395
27			VG40	47,962	35,320

c. **Sand and Aggregate:** Market rates are considered from the quarry located nearest to Project Road.

d. **Cement:** Market rates are considered from the nearest local market.

e. **Steel :** Rate of steel is taken from Tata Tiscon website.

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable PWD SOR.

g. **Actual Rates of Items as per Work Order:** The rates of road marking, road stud, kerb raising, micro surfacing, milling etc. are considered as per the work order shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam (VG-40)	Cum	9,162
2	Bituminous Concrete (PMB)	Cum	11,638
3	Bituminous Concrete (VG-30)	Cum	10,261
4	Milling	Sqm	90
5	Micro-surfacing	Sqm	180
6	Kerb Re-laying	Rmt	460
7	Road Marking	Sqm	569
8	Road Studs	Nos.	244

5.3 Balance Work Cost

As discussed in the previous chapter, there are no balance works to be executed as per Concession Agreement. Hence, balance work cost is **NIL**.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Incident Management Services
4. Electricity and Diesel Charges
5. TMS / HTMS / System Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Insurance Expense
10. IE Fees
11. Horticulture & ROW Maintenance
12. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

Currently, the Project Road is maintained by existing Annuity Concessionaire. The project will be handed over to TOT Concessionaire in March 2027. Hence, the routine maintenance and horticulture maintenance is considered from FY 2028 till End of Concession Period.

The Routine Operation Cost is presented as below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027)	After Annuity Amount (FY 2028)
1	Salary and Welfare Expenses	92,40,000	92,40,000
2	Tolling Operations Services	2,32,74,281	2,32,74,281

Sr. No.	Particulars	Amount (FY 2027)	After Annuity Amount (FY 2028)
3	Toll Security Services	50,75,241	50,75,241
4	Incident Management & Emergency Services	-	1,58,83,842
5	Electricity and Diesel Charges	31,43,280	57,11,462
6	TMS/HTMS/System Expenses	23,14,000	47,46,278
7	Office Operating Expenses	35,57,712	35,57,712
8	Vehicle Running Expenses	35,40,000	35,40,000
9	Professional Fees Expense	63,57,827	63,57,827
10	Community Development	4,55,974	4,55,974
11	Communication Expenses	3,64,514	3,64,514
12	Conveyance Expenses	3,97,651	3,97,651
13	Insurance Expense	26,51,012	26,51,012
14	IE Fees	33,40,275	33,40,275
15	Routine Maintenance Cost (Project Highway)	-	2,02,32,341
16	Horticulture & ROW Maintenance	-	1,44,51,887
17	Miscellaneous including Contingency	25,48,471	33,83,843
	Total Cost (Rs.)	**6,62,60,237**	**12,26,64,139**
	Total Cost (Cr.)	6.63	12.27
	Per km Cost (Lakh)	**13.44**	**24.88**

5.5 Major Maintenance Cost

As mentioned in earlier chapter, Currently, the Project Road is maintained by existing Annuity Concessionaire. The project will be handed over to TOT Concessionaire in March 2027. It is assumed that the pavement will be overlaid before handing over of the project confirming the pavement parameters kept within the limits as per Table-1 (Maintenance Criteria for Pavements) of Schedule-F. Hence, the major maintenance cycles are proposed between year FY 2028 and End of Concession Period.

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II.**

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2030	97.62	
2	FY 2037	60.02	
3	FY 2045	47.00	
Total Cost (Cr.)		**204.64**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of cost of major TMS / ATMS system is considered. The same is provided as below:

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2027	5.15	
2	FY 2034	5.15	
3	FY 2041	5.15	
Total Cost (Cr.)		**15.45**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-4 Escalation

Year	Escalation	Year	Escalation
2027	-	**2041**	3.99%
2028	5.25%	**2042**	3.99%
2029	4.86%	**2043**	3.99%
2030	4.44%	**2044**	3.99%
2031	4.24%	**2045**	3.99%
2032	4.13%	**2046**	3.99%
2033	4.08%	**2047**	3.99%
2034	4.01%	**2048**	3.99%
2035	4.00%	**2049**	3.99%
2036	4.03%	**2050**	3.99%
2037	4.01%	**2051**	3.99%
2038	3.98%	**2052**	3.99%
2039	3.98%	**2053**	3.99%
2040	4.00%	**2054**	3.99%
2040	3.99%	**2055**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summarised yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (Cr.)

Sr. No.	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41	FY42	FY43	FY44	FY45	FY46
1	Routine O&M Cost																				
1.01	Salary and Welfare Expense	0.92	0.97	1.02	1.07	1.11	1.16	1.20	1.25	1.30	1.35	1.41	1.46	1.52	1.58	1.65	1.71	1.78	1.85	1.93	2.00
1.02	Tolling Operations Services	2.33	2.45	2.57	2.68	2.80	2.91	3.03	3.15	3.28	3.41	3.55	3.69	3.84	3.99	4.15	4.31	4.49	4.66	4.85	5.04
1.03	Toll Security Services	0.51	0.53	0.56	0.59	0.61	0.63	0.66	0.69	0.71	0.74	0.77	0.80	0.84	0.87	0.90	0.94	0.98	1.02	1.06	1.10
1.04	Incident Management Services	-	1.67	1.75	1.83	1.91	1.99	2.07	2.15	2.24	2.33	2.42	2.52	2.62	2.72	2.83	2.94	3.06	3.18	3.31	3.44
1.05	Electricity and Diesel Charges	0.31	0.60	0.63	0.66	0.69	0.71	0.74	0.77	0.80	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.19	1.24
1.06	TMS/HTMS/System Expenses	0.23	0.41	0.43	0.45	0.60	0.83	1.00	0.31	0.55	0.58	0.60	0.79	1.09	1.32	0.41	0.73	0.76	0.79	1.04	1.43
1.07	Office Operating Expenses	0.36	0.37	0.39	0.41	0.43	0.45	0.46	0.48	0.50	0.52	0.54	0.56	0.59	0.61	0.63	0.66	0.69	0.71	0.74	0.77
1.08	Vehicle Running Expenses	0.35	0.37	0.39	0.41	0.43	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.61	0.63	0.66	0.68	0.71	0.74	0.77
1.09	Professional Fees Expense	0.64	0.67	0.70	0.73	0.76	0.80	0.83	0.86	0.90	0.93	0.97	1.01	1.05	1.09	1.13	1.18	1.23	1.27	1.33	1.38
1.10	Community Development	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.09	0.09	0.10	0.10
1.11	Communication Expenses	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08
1.12	Conveyance Expenses	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09
1.13	Insurance Expense	0.27	0.28	0.29	0.31	0.32	0.33	0.35	0.36	0.37	0.39	0.40	0.42	0.44	0.45	0.47	0.49	0.51	0.53	0.55	0.57
1.14	IE Fees	0.33	0.35	0.37	0.39	0.40	0.42	0.43	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.60	0.62	0.64	0.67	0.70	0.72
1.15	Routine Maintenance Cost	-	2.13	2.23	2.33	2.43	2.53	2.63	2.74	2.85	2.96	3.08	3.21	3.33	3.47	3.61	3.75	3.90	4.05	4.22	4.38
1.16	Horticulture & ROW Maintenance	-	1.52	1.60	1.67	1.74	1.81	1.88	1.96	2.04	2.12	2.20	2.29	2.38	2.48	2.58	2.68	2.79	2.90	3.01	3.13
1.17	Miscellaneous and Contingency	0.25	0.36	0.37	0.39	0.41	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.63	0.65	0.68	0.71	0.73
	Subtotal of O&M Cost	6.63	12.82	13.45	14.04	14.77	15.58	16.36	16.28	17.16	17.85	18.57	19.48	20.52	21.53	21.43	22.58	23.48	24.42	25.62	26.99
2	Major Maintenance Cost	-	-	-	105.88	-	-	-	-	-	-	76.47	-	-	-	-	-	-	-	74.67	-
3	Periodic Cost of TMS/HTMS Replacement	5.15	-	-	-	-	-	-	6.98	-	-	-	-	-	-	9.19	-	-	-	-	-
	Total Cost	**11.78**	**12.82**	**13.45**	**119.92**	**14.77**	**15.58**	**16.36**	**23.27**	**17.16**	**17.85**	**95.04**	**19.48**	**20.52**	**21.53**	**30.61**	**22.58**	**23.48**	**24.42**	**100.29**	**26.99**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Jhansi Lalitpur Project - P2	
Ordinary Repair Cost for Flexible (with GST)	**2,02,32,341.24**
(Inclusive of GST)	**= 4.1 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD **2,40,039**	**Hilly** More than 4500 CVD **2,84,243**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
						Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	367260.00	434892.00	-	-	-	-
		Paved shoulder	1.70	408067.00	483214.00	48.71	-	1,98,74,903	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	480079.00	568487.00	-	-	-	-
		Paved shoulder	2.20	528087.00	625336.00	-	0.60	-	3,57,438
					TOTAL		**49.305**		**2,02,32,341**

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	1.00%
	Volume (cum)			5.00
	Rs/m^3			10416
	Cost in Rupees			52,080
	ii) Patch repair	100 % Patch less	As & when required	1.00%
	Area (sqm)			100
	Rs/m^2			417
	Cost in Rupees			41,664
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	1.50%
	Area (sqm)			150
	Rs/m^2			93
	Cost in Rupees			13,902
	b) Width less than 3 mm	75 % Crack Less	As & when required	1.50%
	Area (sqm)			112.5
	Rs/m^2			62
	Cost in Rupees			7,017
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			417
	Cost in Rupees			31,248
	v) Road marking	14%	Once in 7th year & @	30127

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
			Repaired location	
	SUB TOTAL			**1,76,038**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6322
	iii) Kuccha Drain Maintenance	100%	Twice in a Year	1111
	SUB TOTAL			**7,433**
3	**Maintenance of Cross Drainage works:**			
	ii) Repair of floors	100%	Once in a Year	5067
	iii) Repair of parapets	100%	As & when required	2111
	SUB TOTAL			**7,178**
4	**Maintenance of Minor & Major Bridges:**			
	i) Cleaning and removal of dirt & vegetation from pier caps, Bearings, Expansion Joints, Superstructure, Substructure and Retaining wall etc.	100%	As & when required	37,043
	ii) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints			
	iii) Repair of minor washouts, erosion scour and animal holes			
	iv) Sealing Cracks with Cement/ Epoxy Mortar			
	v) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**37,043**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometer stone etc.		Once in a Year	3704
	ii) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7409
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1235

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	iv) Traffic Census		Once in a Year	0
	v) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**12,348**
	GRAND TOTAL (Normal)			**2,40,039**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	866
	ii)Repairs to footpath	100%	As & when required	4939
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4939
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7655
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9878
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2470
	SUB TOTAL			**30,747**
	GRAND TOTAL (Urban)			**2,70,786**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY - 2030)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						15,68,014	15	2,42,25,822
	For BC	Sqm	2	48,265	8.75		8,44,631	8,44,631		
	For DBM	Sqm	2	48,589	7.00		6,80,241	6,80,241		
	For Misc. Location	Sqm	2	2,465	8.75		43,142	43,142		
2	BC with 30 mm	Cum	2	50,730	8.75	0.03	26,633	26,633	11,638	30,99,62,479
3	DBM with 50 mm	Cum	2	48,589	7.00	0.05	34,012	34,012	9,162	31,16,20,149
4	Milling	Sqm	2	48,589	7.00		6,80,241	6,80,241	90	6,12,21,699
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,079	3.50	4.50	432	432	120	51,814
6	Dismantling of CC Panels @ 2% area	Cum	2%		17,002	0.30	102	102	1,035	1,05,600
7	Replacement of Panels - PQC @ 2% area	Cum	2%		17,002	0.30	102	102	8,546	8,71,732
	Service Road									
8	Tack coat	Sqm	1	1,200	5.50		6,600	6,600	15	1,01,970
9	BC with 30 mm	Cum	1	600	5.50	0.03	99	99	10,065	9,96,442
10	Micro Surfacing	Sqm	1	600	5.50		3,300	3,300	180	5,94,000
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
10	Tack coat	Sqm	1	716	15.6		11,139	11,139	15	1,72,101
11	Wearing Coat BC with 30 mm	Cum	1	716	15.6	0.03	334	334	11,638	38,89,222
12	Milling of Ex. Wearing Coat	Sqm	1	716	15.6		11,139	11,139	90	10,02,532
13	Painting of Crash Barrier	Sqm	4	716		1.12	3,195	3,195	107	3,41,857
	Other Works									
14	Raising of Road Kerb	Rmt	2	48,265			96,529	96,529	460	4,44,03,478
15	Replacement of Road Stud									
	Normal Road Stud	Nos	2	6,027			12,054	12,054	244	29,41,176
	Solar Road Stud	Nos					-	-	1,647	-
16	Painting of Kerb	Sqm	2	48,265		0.315	30,407	30,407	107	32,53,520
17	Road Marking	Sqm					36,497	36,497	569	2,07,66,518

Major Maintenance Cost (FY - 2030)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	MCW									
	a) Median & Edge line	Sqm	4	51,770	0.15		31,062			
	b) Lane line	Sqm	2	17,084	0.10		3,417			
	Service Road									
	a) Edge line	Sqm	2	1,200	0.10		240			
	b) Lane line	Sqm	1	396	0.10		40			
	Junction crossing	Sqm					1,738			
18	Filling of Earthen shoulder	Cum					2,914	2,914	476	13,87,881
	MCW		2	48,265	1.00	0.03	2,896			
	Service Road		1	600	1.00	0.03	18			
19	Median Filling	Cum	-	-	-	-	-	-	457	-
20	Miscellaneous	5%								3,93,95,500
Total Major Maintenance Cost (Rs.)										**82,73,05,491**
Total Major Maintenance Cost with GST @18% (Rs.)										**97,62,20,479**
Total Major Maintenance Cost with GST (Cr.)										**97.62**
Per km Cost (lakh)										**198.00**
Escalation Factor for Major Maintenance Cost (FY - 2030)										**1.14**
Total Escalated Cost for Major Maintenance (FY-2030) (Cr.)										**105.88**

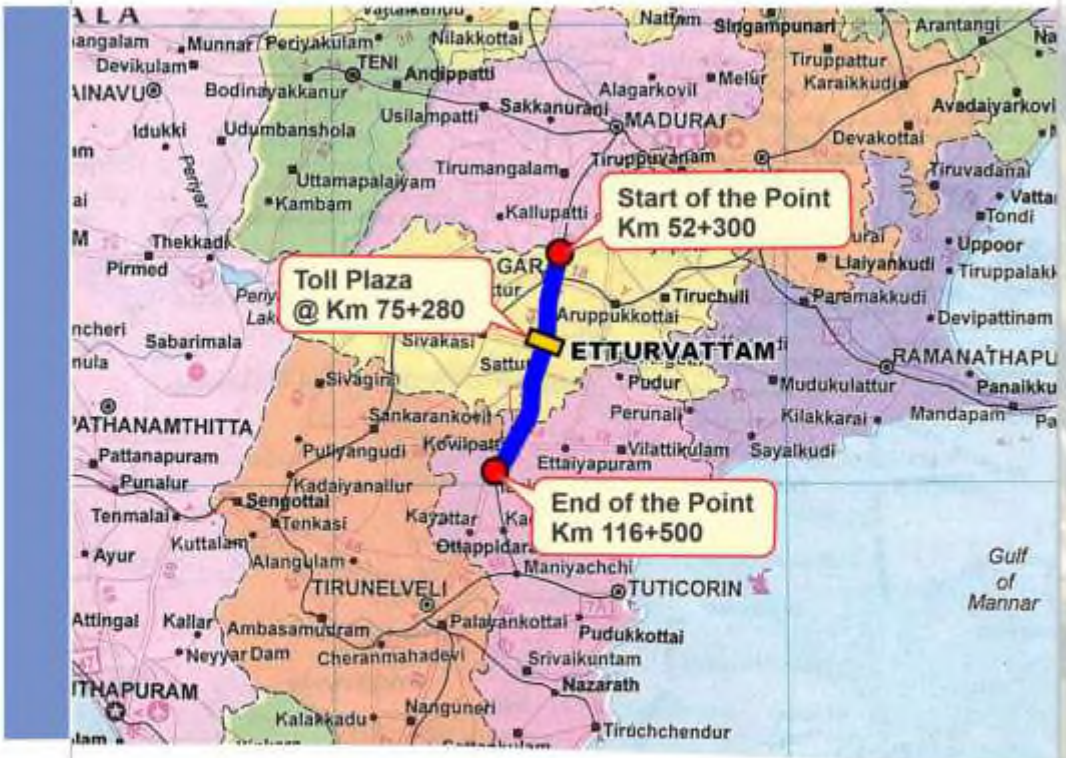
Major Maintenance Cost (FY - 2037)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						9,21,785	15	1,42,41,583
	For BC	Sqm	2	48,265	8.75		8,44,631	8,44,631		
	For DBM	Sqm	2	2,429	7.00		34,012	34,012		
	For Misc. Location	Sqm	2	2,465	8.75		43,142	43,142		
2	BC with 40 mm	Cum	2	50,730	8.75	0.04	35,511	35,511	11,638	41,32,83,306
3	DBM with 50 mm	Cum	2	2,429	7.00	0.05	1,701	1,701	9,162	1,55,81,007
4	Milling	Sqm	2	2,429	7.00		34,012	34,012	90	30,61,085
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,079	3.50	4.50	432	432	120	51,814
6	Dismantling of CC Panels @ 2% area	Cum	2%		17,002	0.30	102	102	1,035	1,05,600
7	Replacement of Panels - PQC @ 2% area	Cum	2%		17,002	0.30	102	102	8,546	8,71,732
	Service Road									
8	Tack coat	Sqm	1	1,200	5.50		6,600	6,600	15	1,01,970
9	BC with 30 mm	Cum	1	600	5.50	0.03	99	99	10,065	9,96,442
10	Micro Surfacing	Sqm	1	600	5.50		3,300	3,300	180	5,94,000
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
10	Tack coat	Sqm	1	716	15.6		11,139	11,139	15	1,72,101
11	Wearing Coat BC with 40 mm	Cum	1	716	15.6	0.04	446	446	11,638	51,85,629
12	Milling of Ex. Wearing Coat	Sqm	1	716	15.6		11,139	11,139	90	10,02,532
13	Painting of Crash Barrier	Sqm	4	716		1.12	3,195	3,195	107	3,41,857
	Other Works									
14	Raising of Road Kerb	Rmt	-	48,265			-	-	460	-
15	Replacement of Road Stud									
	Normal Road Stud	Nos	2	6,027			12,054	12,054	244	29,41,176
	Solar Road Stud	Nos	-				-	-	1,647	-
16	Painting of Kerb	Sqm	2	48,265		0.315	30,407	30,407	107	32,53,520
17	Road Marking	Sqm					36,497	36,497	569	2,07,66,518
	MCW									
	a) Median & Edge line	Sqm	4	51,770	0.15		31,062			

Major Maintenance Cost (FY - 2037)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	b) Lane line	Sqm		17,084	0.10		3,417			
	Service Road									
	a) Edge line	Sqm	2	1,200	0.10		240			
	b) Lane line	Sqm	1	396	0.10		40			
	Junction crossing	Sqm					1,738			
18	Filling of Earthen shoulder	Cum					3,879	3,879	476	18,47,650
	MCW		2	48,265	1.00	0.04	3,861			
	Service Road		1	600	1.00	0.03	18			
19	Median Filling	Cum						-	457	-
20	Miscellaneous	5%								2,42,19,976
Total Major Maintenance Cost (Rs.)										**50,86,19,498**
Total Major Maintenance Cost with GST @18% (Rs.)										**60,01,71,008**
Total Major Maintenance Cost with GST (Cr.)										**60.02**
Per km Cost (lakh)										**121.73**
Escalation Factor for Major Maintenance Cost (FY - 2037)										**1.51**
Total Escalated Cost for Major Maintenance (FY - 2037) (Cr.)										**76.47**

Major Maintenance Cost (FY - 2045)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						9,21,785	15	1,42,41,583
	For BC	Sqm	2	48,265	8.75		8,44,631	8,44,631		
	For DBM	Sqm	2	2,429	7.00		34,012	34,012		
	For Misc. Location	Sqm	2	2,465	8.75		43,142	43,142		
2	BC with 30 mm	Cum	2	50,730	8.75	0.03	26,633	26,633	11,638	30,99,62,479
3	DBM with 50 mm	Cum	2	2,429	7.00	0.05	1,701	1,701	9,162	1,55,81,007
4	Milling	Sqm	2	2,429	7.00		34,012	34,012	90	30,61,085
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,079	3.50	4.50	432	432	120	51,814
6	Dismantling of CC Panels @ 2% area	Cum	2%		17,002	0.30	102	102	1,035	1,05,600
7	Replacement of Panels - PQC @ 2% area	Cum	2%		17,002	0.30	102	102	8,546	8,71,732
	Service Road									
8	Tack coat	Sqm	1	1,200	5.50		6,600	6,600	15	1,01,970
9	BC with 30 mm	Cum	1	600	5.50	0.03	99	99	10,065	9,96,442
10	Micro Surfacing	Sqm	1	600	5.50		3,300	3,300	180	5,94,000
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
10	Tack coat	Sqm	1	716	15.6		11,139	11,139	15	1,72,101
11	Wearing Coat BC with 30 mm	Cum	1	716	15.6	0.03	334	334	11,638	38,89,222
12	Milling of Ex. Wearing Coat	Sqm	1	716	15.6		11,139	11,139	90	10,02,532
13	Painting of Crash Barrier	Sqm	4	716		1.12	3,195	3,195	107	3,41,857
	Other Works									
14	Raising of Road Kerb	Rmt	-	48,265			-	-	460	-
15	Replacement of Road Stud									
	Normal Road Stud	Nos	2	6,027			12,054	12,054	244	29,41,176
	Solar Road Stud	Nos	-				-	-	1,647	-
16	Painting of Kerb	Sqm	2	48,265		0.315	30,407	30,407	107	32,53,520
17	Road Marking	Sqm					36,497	36,497	569	2,07,66,518
	MCW									
	a) Median & Edge line	Sqm	4	51,770	0.15		31,062			

Major Maintenance Cost (FY - 2045)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	b) Lane line	Sqm	2	17,084	0.10		3,417			
	Service Road									
	a) Edge line	Sqm	2	1,200	0.10		240			
	b) Lane line	Sqm	1	396	0.10		40			
	Junction crossing	Sqm					1,738			
18	Filling of Earthen shoulder	Cum					2,914	2,914	476	13,87,881
	MCW		2	48,265	1.00	0.03	2,896			
	Service Road		1	600	1.00	0.03	18			
19	Median Filling	Cum						-	457	-
20	Miscellaneous	5%								1,89,66,126
Total Major Maintenance Cost (Rs.)										**39,82,88,645**
Total Major Maintenance Cost with GST @18% (Rs.)										**46,99,80,601**
Total Major Maintenance Cost with GST (Cr.)										**47.00**
Per km Cost (lakh)										**95.32**
Escalation Factor for Major Maintenance Cost (FY - 2045)										**2.06**
Total Escalated Cost for Major Maintenance (FY - 2045) (Cr.)										**74.67**

FP Project Management



Technical Due Diligence of Madurai-Kanyakumari (Package-2) of NH-44 from km. 52+300 to km. 116+500 in the state of Tamil Nadu

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	VKD / VMK	CSB	SMA

This report is to be regarded as confidential to our client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 5
2.7 Existing Utilities 5
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 8
3.3 Major / Minor Junctions 8
3.4 Condition Survey of Bridge 9
3.5 Condition Survey of Culverts 14
3.6 Drainage 14
3.7 Slope Protection 15
3.8 Road Furniture 15
3.9 Avenue Plantation and Median Plantation 20
3.10 Toll Plaza 21
3.11 Lane Equipment 22
3.11.1 RFID ETC Transceiver 22
3.11.2 Lane Controller with Industrial PC 23
3.11.3 Automatic Vehicle Classification (AVC) Sensors 23
3.11.4 Automatic Lane Barrier 23
3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 23

3.11.6 Incident Capture Camera (AVC Camera) 24
3.11.7 License Plate Image Capture Camera (LPIC) 24
3.11.8 Over Head Lane Signal (OHLS) 24
3.11.9 Toll Booth Equipment 25
3.11.10 Medium Speed Weigh in Motion (MSWIM) 26
3.12 Plaza Equipment 26
3.12.1 TMS Server 26
3.12.2 55" LED screen for CCTV monitoring 26
3.12.3 Workstations in Control Room, POS room 27
3.13 Advanced Traffic Management System (ATMS) 27
3.13.1 Automatic Traffic Counter cum classifier (ATCC) 27
3.13.2 Mobile Radio communication System (MRCS) 27
3.13.3 Emergency Call Boxes (ECB) 27
3.13.4 Portable Weigh in Motion (PWIM) 27
3.13.5 MET System 27
3.13.6 Variable Message Signboards (VMS) 27
3.13.7 CCTV Surveillance Cameras 28
3.13.8 Video Incident Detection System 28
3.13.9 Vehicle Actuated Speed Display (VASD) 28
3.13.10 Adequacy of Toll Collection System and ATMS 28
3.14 Traffic Aid Post and Medical Aid Post 28
3.15 Toilet Block 28
3.16 Bus Bays and Passenger Shelters 29
3.17 Balance Work Status 29
3.18 Operation and Maintenance 30
3.18.1 O&M Contract 30
3.18.2 Organization Chart 30
3.18.3 Operation 31
3.18.4 Routine Maintenance 32
4 Pavement Investigation and Assessment 33
4.1 General 33
4.2 Axle Load and VDF 33
4.3 Design Traffic 33
4.4 Network Survey Vehicles (NSV) Survey 34
4.5 Test pit and Subgrade Investigation 35
4.6 Falling Weight Deflectometer (FWD) Survey 38
4.7 Periodic Maintenance Strategy 39

5 Cost Estimates 40
5.1 General 40
5.2 Rate Assumption 40
5.3 Balance Work Cost 42
5.4 Routine O&M Cost 42
5.5 Major Maintenance Cost 43
5.6 Periodic Replacement of TMS / ATMS System 44
5.7 Escalation Assumption 44
5.8 Summary of Cost 44
Annexures 46
Annexure I : Routine Maintenance Cost 47
Annexure II : Major Maintenance Cost 52

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Details of Summary for Structures 9
Table 3-2 Condition Survey of Major Structure 10
Table 3-3 Details of Lighting 15
Table 3-4 Details of New Installation of Safety Barriers 16
Table 3-5 Details of Additional Gantry / Cantilever Sign 16
Table 3-6 Details of Summary for Road Furniture Items 16
Table 3-7 Details of Summary for Toll Plaza Items 21
Table 3-8 Details of Toilet Block 28
Table 4-1 Vehicle Damage Factor (VDF) 33
Table 4-2 MSA Calculation 33
Table 4-3 Summary of NSV Survey 34
Table 4-4 CBR Analysis 35
Table 4-5 Test Results Summary of Natural Ground Soil Samples 36
Table 4-6 Major Maintenance Cycle 39
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 40
Table 5-2 Summary of Unit Rates 41
Table 5-3 Summary of Operation Cost 43
Table 5-4 Summary of Major Maintenance Cost 43
Table 5-5 Escalation 44

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start and End of Project Road 5
Figure 3-1 Photographs of Pavement Condition (MCW) 7
Figure 3-2 Photographs of Service Road 8
Figure 3-3 Photographs of Junctions 9
Figure 3-4 Photographs of Major Structures 13
Figure 3-5 Photographs of Culverts 14
Figure 3-6 Photographs of Drainage 15
Figure 3-7 Photographs of Pavement Marking 17
Figure 3-8 Photographs of Road Studs 18
Figure 3-9 Photographs of Road Signages 18
Figure 3-10 Photographs of MBCB / Crash Barrier 19
Figure 3-11 Photographs of Delineator 20
Figure 3-12 Photographs of Pedestrian Guard Rail 20
Figure 3-13 Photographs of Avenue Plantation and Median Plantation 21
Figure 3-14 Photograph of Toll Plaza 22
Figure 3-15 Photograph of Toilet Block 29
Figure 3-16 Photograph of Bus Bay / Passenger Shelter 29

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Madurai to Kanyakumari section (Package-II) km. 52+300 to km. 116+500 in the State of Tamil Nādu (hereinafter referred as "Project Road").

Kanyakumari Etturavattam Tollway Private Limited (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance, and transfer of Madurai to Kanyakumari Section (from km. 52+300 to km. 116+500) of NH-44. The project was awarded to Concessionaire on 20th October 2020. The length of Project Road is 64.20 kms with one toll plaza at Etturavattam village at km. 75+280.

Accordingly, the Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, aaxle load, material investigations etc.
- Formulation of future major maintenance sstrategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period
- Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design, and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets, mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyze the same as per the best engineering / industry practices.

The site visit and inspection were carried out on **15th March 2026 and 16th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project feature overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates**: The chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **Kanyakumari Etturavattam Tollway Private Limited**, is a company promoted by Cube Highways or a Special Purpose Vehicle (SPV) formed for implementing this project on 27th December 2019. The Appointed Date for the Project Road is 20th October 2020.

The project is being developed under TOT (Toll Operate Transfer) Bundle-3 with a concession period of 30 years from the Appointed Date. The end of the concession period is 21st October 2050.

2.2 Location

The Project Road is part of National Highway No. 44 (old NH-7) of Madurai - Kanyakumari section in the state of Tamil Nādu. The total project length is 64.20 kms.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map

The photographs taken during the site visit are presented below.

Figure 2-2 Start and End of Project Road

Start of Project Road at km. 52+300

End of Project Road at km. 116+500

2.3 Climate

The project area being in the region under southeast of the western ghats, the area is hot and dry. Temperatures range between a maximum of 37 °C and a minimum of 22 °C. April to June are the hottest months and December and January are the coldest with temperatures rising towards the end of February. Rainfall occurs mostly during the north-east monsoon in the months of October to December. However, the project stretch receives little rainfall, averaging 840 mm. Annual rainfall has ranged from 964 mm to 228 mm during past decades.

2.4 Terrain

The Project Road traverses through plain terrain.

2.5 Abutting Land Use

The land use along the Project Road is predominantly agriculture or barren with intermittent built-up area.

2.6 Right of Way

The width of the existing Right of Way (ROW) for the Project Road is 60 m throughout its length.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, etc.

2.8 Development as per Schedule-B

The Project Road from Virudhunagar (km. 52+300) to Nanguneri village (km. 116+500) has been developed as a four-lane divided carriageway with median width of 2 m, service road at some built-up locations and other arrangements. The Project Road passes through rural as well as built-up sections.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km.	64.20	
2	Construction of Service Road	km.	1.14	Total (LHS+RHS)
3	Widening of Pipe Culvert	Nos.	02	
4	Repair & rehabilitation of Major Bridges	Nos.	20	
5	Repair & rehabilitation of Box Culvert	Nos.	41	
6	Repair & rehabilitation of Pipe Culvert	Nos.	48	
7	Repair & rehabilitation of ROB	Nos.	02	
8	Repair & rehabilitation Vehicular Underpass (VUP)	Nos.	10	
9	Improvement of Major Junction	Nos.	01	
10	Improvement of Minor Junction	Nos.	11	
11	Provision of Drain	km.	1.14	Total (LHS+RHS)
12	Construction of new LVUP	Nos.	01	

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 9.0 m with earthen shoulder of 1.5 m on either side. The Project Road has a median width of 2.0 m throughout its length.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

Pavement condition survey was carried out on **15th March 2026 and 16th March 2026** through visual inspection for the entire project length. From the visual inspection, it is found that the pavement condition of the Project Road is Good to Fair.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (MCW)

km. 53+600

km. 59+400

km. 64+140

km. 70+200

km. 98+700

km. 107+560

3.2 Service Road / Slip Road

The service road width varies from 7 m to 5.5 m and is constructed in built-up areas and adjoining underpass locations. The Project Road has total service road length of 56.05 kms (LHS + RHS).

The photographs taken during the site visit are presented below.

Figure 3-2 Photographs of Service Road

Service Road / Slip Road at km. 62+950 (LHS)

Service Road / Slip Road at km. 69+500 (RHS)

3.3 Major / Minor Junctions

There are 15 nos. of major junctions and 49 nos. of minor junctions along the Project Road. The photographs taken during site visit is presented as below:

Figure 3-3 Photographs of Junctions

Major Junction at km. 66+500

Minor Junction at km. 69+665

3.4 Condition Survey of Bridge

The inventory of structures including major bridges, minor bridges, ROB's, underpasses and culverts is presented in table as below:

Table 3-1 Details of Summary for Structures

Type of Structure	Total Number of Structures
Road Over Bridge (ROB)	2
Flyover	-
Major Bridges (MJB)	3
Minor Bridges (MNB)	20
Vehicular Underpass (VUP)	10
Culverts	89
Total	**124**

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-2 Condition Survey of Major Structure

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
Major Bridges								
1	69+350	LHS	14 x 11.9	6.75	7.45	RCC	Open	The structure is in sound condition.
		RHS	7 x 23.8	7.5	10	RCC	Open	The structure is in sound condition.
2	76+350	LHS	9 x 8.8	7.5	7.6	RCC	Open	The structure is in sound condition.
		RHS	3 x 26.4	7.5	10	RCC	Open	The structure is in sound condition.
3	79+300	LHS	12 x 18.3	5.5	6.9	RCC	Open	The structure is in sound condition.
		RHS	12 x 18.3	7.5	10	RCC	Open	The structure is in sound condition.

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
Minor Bridges								
1	52+720	SR+LHS	3 x 8.8	8.75 + 8.75	21.2	RCC	Open	The structure is in sound condition. The vegetation has to be cleared.
		RHS+SR	3 x 8.8	8 + 8	21.2	RCC	Open	
2	55+330	SR+LHS	1 x 8.8	8.75 + 8.75	9.25 + 9.25	RCC	Open	The structure is in sound condition. The vegetation has to be cleared.
						RCC	Open	
		RHS+SR	1 x 8.8	7.5 + 7.5	9.25 + 9.25	RCC	Open	
3	60+650	LHS	2 x 6.6	7.5	8.5	RCC	Open	The structure is in sound condition.
		RHS	2 x 6.6	7.5	10.5	RCC	Open	
4	60+920	LHS	2 x 6.9	7.5	8.5	RCC	Open	The structure is in sound condition.
		RHS	2 x 6.9	9	10	RCC	Open	
5	64+140	LHS	4 x 8.8	7.5	8.3	RCC	Open	The structure is in sound condition. The vegetation has to be cleared.
		RHS	4 x 8.8	7.5	10	RCC	Open	
6	64+260	LHS	3 x 6.8	8.5	9.5	RCC	Open	The structure is in sound condition. The vegetation has to be cleared.
		RHS	3 x 6.8	9	10	RCC	Open	
7	69+680	LHS	1 x 8.6	7.5	8.5	RCC	Open	The structure is in sound condition.
		RHS	1 x 8.6	7.5	10	RCC	Open	
8	70+200	LHS	1 x 8.6	7.5	8.5	RCC	Open	The structure is in sound condition.
		RHS	1 x 8.6	7.5	10	RCC	Open	
9	75+650	LHS	3 x 3	7 + 8.7	53.8	RCC	Open	The structure is in sound condition.

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
Minor Bridges								
		RHS	3 x 3	7 + 8.7	10.25	RCC	Open	
10	79+850	SR + LHS	2 x 4.4	8.75 + 8.75	19.2	RCC	Open	The structure is in sound condition. .
		RHS+SR	2 x 4.4	8 + 8	19.2	RCC	Open	
11	80+150	LHS	3 x 5.3	8 + 9	19.2	RCC	Open	The structure is in sound condition. The vegetation must be cleared.
		RHS	3 x 5.3	9 + 8	19.2	RCC	Open	
12	86+280	LHS	1 x 6	8.7	12.4	RCC	Open	The structure is in sound condition.
		RHS	1 x 6	8.7	12.4	RCC	Open	
13	86+350	LHS	2 x 8	10.5	10.75	RCC	Open	The structure is in sound condition The vegetation and Silt need to be cleared
		RHS	2 x 8	10.5	10.75	RCC	Open	
14	92+110	LHS	2 x 5.5	12.5	13.5	RCC	Open	The structure is in sound condition. The vegetation and Silt need to be cleared
		RHS	3 x 3.35	10.6	11.6	RCC	Open	
15	93+330	LHS	5.85 + 5 x 5.326 + 5 + 2 x 5.326 + 5.431	12.5	13.5	RCC	Open	The structure is in sound condition.
		RHS	5.85 + 5 x 5.326 + 5 + 2 x 5.326 + 5.431	7.5	8.5	RCC	Open	
16	94+985	LHS	1 x 8.8	12.5	13.5	RCC	Open	The structure is in sound condition. Silt needs to be cleared.
		RHS	1 x 8.8	8.5	9.5	RCC	Open	
17	97+780	SR + LHS	2 x 5.5	7 + 9	18	RCC	Open	The structure is in sound condition. Steel exposed on Pier cap.
		RHS +SR	2 x 5.5	9 + 7	18	RCC	Open	
18	98+700	SR + LHS	2 x 5.5	7 + 9	18	RCC	Open	The structure is in sound condition. The vegetation must be cleared.
		RHS +SR	2 x 5.5	9 + 7	18	RCC	Open	
19	101+250	SR + LHS	2 x 6	7 + 8	17.8	RCC	Open	The structure is in sound condition. Blockage of water.
		RHS +SR	2 x 6	8.75 + 7	17.75	RCC	Open	
20	107+530	LHS	1 x 8	12.5	13.5	RCC	Open	The structure is in sound condition.
		RHS	1 x 8	12.5	13.5	RCC	Open	

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Total Length of Bridge (m)	Carriageway (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
ROB									
1	54+460	LHS	1 x 5.3	5.3	7.5	8.5	RCC	Open	The structure is in sound condition.
		RHS	1 x 28.3	28.3	8.5	9.5	RCC	Open	
2	67+180	LHS	1 x 26.2	26.2	7.5	8.5	RCC	Open	The structure is in sound condition. Expansion joints need to be cleaned.
		RHS	1 x 26.2	26.2	7.5	8.5	RCC	Open	

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Total Length of Bridge (m)	Carriageway (m)	Deck Width (m)	Condition of Structure
Vehicular Underpass (VUP)							
1	52+450	LHS	2 x 10	20	11	27.5	The structure is in sound condition.
		RHS	2 x 10	20	11		
2	67+540	LHS	1 x 9.5	9.5	9	27.5	The structure is in sound condition.
		RHS	1 x 9.5	9.5	9		
3	75+850	LHS	2 x 10	20	11	27.6	The structure is in sound condition.
		RHS	2 x 10	20	11		
4	77+670	LHS	2 x 10	20	10.5	24.7	The structure is in sound condition. Down take water pipe is missing.
		RHS	2 x 10	20	10.5		
5	80+560	LHS	2 x 10	20	11	28	The structure is in sound condition.
		RHS	2 x 10	20	11		
6	81+795	LHS	1 x 10	10	9	23.5	The structure is in sound condition.
		RHS	1 x 10	10	9		
7	96+380	BHS	2 x 10	20	10.25	12.25	The structure is in sound condition.
8	100+150	LHS	2 x 10	20	11	27.5	The structure is in sound condition.
		RHS	2 x 10	20	11		
9	102+200	LHS	2 x 10	20	11	24.7	The structure is in sound condition.
		RHS	2 x 10	20	11		
10	106+700	LHS	2 x 10	20	11	24.5	The structure is in sound condition.
		RHS	2 x 10	20	11		

Figure 3-4 Photographs of Major Structures

View of Minor Bridge at km. 52+720

View of ROB at km. 54+460

View of VUP at km. 67+540

View of Major Bridge at km. 76+350

View of Major Bridge at km. 79+300

View of VUP at km. 80+560

View of ROB at km. 67+180

View of Major Bridge at km. 69+350

3.5 Condition Survey of Culverts

The cross-drainage structure includes hume pipe culverts and box culverts at various locations. There are 89 Nos. of culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During condition survey of structure, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts is satisfactory. The RCC parapet, crash barrier or RCC railing has been provided at culvert locations, which is maintained properly.

In most of culverts, the waterway is clear. However, near to urban area and some location is found blocked due to debris, drainage water or bushes, tree growth, which will be removed by the Concessionaire. The cement concrete pitching or stone pitching has been provided for slope protection.

The culverts are maintained by the Concessionaire during O&M period. However, in case of some culverts, cement concrete pitching has been damaged which required to be addressed under routine repair work by the Concessionaire.

Figure 3-5 Photographs of Culverts

Box Culvert at km. 90+810

Pipe Culvert at km. 63+150

3.6 Drainage

There is 27.40 kms of existing drain (which includes drain on both sides) on the Project Road as per Concession Agreement. However, 1.49 kms of RCC drain is additionally constructed in locations where service roads are provided. The photographs taken during site visit is presented as below.

Figure 3-6 Photographs of Drainage

Existing Drain at km. 59+400

Existing Drain at km. 81+170

3.7 Slope Protection

Slope protection and chute drains are found on Project Road at required locations.

3.8 Road Furniture

The Concessionaire has provided additional road furniture along the Project Road as per the standards and specifications mentioned in Schedule-C. Details of the items are provided below.

a) Lighting Along the Project Road

Lighting including fixing of poles and LED lights are provided at following locations on the Project Road in accordance with Clause 12.3 of IRC: SP:84-2014.

Table 3-3 Details of Lighting

Sr. No.	Chainage (km)		Side	Location	Length (m)
1	55+260	56+170	Both Side	For each number of light, the minimum specification shall be street lighting with a single pole and double arm fitting 45 W (5050 LUMENS)-Blue tooth enabled MPPT Based Charge Controller, 9 Mts octagonal pole with all accessories, Automatic switch on / off, Duty Cycle 12 hrs working each night.	910.00

In addition to above, suitable lighting arrangements is provided and maintained at underside of PUP, VUP and other Structures.

b) Transverse / Thermoplastic Bar Marking Locations

Transverse / thermoplastic bar markings on either side of carriageway on proposed service road / VUP / VUP approach locations are provided as per Section 11.2 of IRC:35-2015.

c) New Installation of Safety Barriers

Following are the details of new installation of safety barriers along the Project Road.

Table 3-4 Details of New Installation of Safety Barriers

Sr. No.	Chainage (km)		Length (m)	Location	Type of Barrier
	From	To			
2932.00 m					

d) Additional Gantry / Cantilever Sign Board

As per schedule-B, additional gantry / cantilever sign are provided at the following locations:

Table 3-5 Details of Additional Gantry / Cantilever Sign

Sr. No.	Chainage (km)	Side	Location	Type
1	52+400	BHS	Underpass	Cantilever Gantry Sign Board
2	80+560	BHS	Underpass	Cantilever Gantry Sign Board
3	96+350	BHS	Underpass	Cantilever Gantry Sign Board

e) Summary of Quantity for Road Furniture Items

The following details show the summary of quantity for road furniture items provided on Project Road.

Table 3-6 Details of Summary for Road Furniture Items

Sr. No.	Description	Unit	Quantity
1	Solar Blinkers	Nos.	04
2	Streetlights	m	910
3	High Mast Lights	Nos.	Nil
4	Transverse Bar Makings / Thermoplastic Bar Markings	km	64.200
	New installation of Safety Barriers		
5	W-Beam Safety Barriers	m	2932
6	Concrete Median Barrier	m	Nil
7	Rigid Concrete Barrier	m	800
8	Guard Posts	m	Nil
9	Pedestrian Guard Rails	m	14755
10	Road Studs / Raised Pavement Markers	As per Section-9 of IRC:SP:84-2014	
11	Road Markings		
12	Traffic Delineators		
13	Kilometer / Hectometer / Boundary Stones		
14	Additional Sign Boards		
15	Gantry Sign Boards	Nos.	Nil
16	Cantilever Sign Boards	Nos.	06
17	Shoulder Mounted Dual Post Sign Boards	As per Section-9 of IRC:SP:84-2014	
18	Shoulder / Median Mounted Single Post Sign Boards		

Pavement Marking

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Pavement marking is faded at some locations which will be rectified by the Concessionaire. Some of the photographs of road marking are presented below.

Figure 3-7 Photographs of Pavement Marking

km. 53+600 (RHS)

km. 62+700 (LHS)

km. 64+260 (RHS)

km. 111+530 (LHS)

Road Studs

Road studs / cat's eye for the project Road is done as per the design standards indicated in section 12 of Schedule-D. Road studs / cat's eye has been fixed at junction and zebra crossings. However, at few locations some cat's eye has damaged which will be rectified by the Concessionaire. Some of the photographs of road studs are presented below.

Figure 3-8 Photographs of Road Studs

km. 53+700(LHS)

km. 62+700 (RHS)

Traffic Signage / Median Kerb Painting / KM Stone

Traffic signs includes roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Roadside signs, overhead signs, kerb mounted signs, kilometre stones, vertical post of sign boards, chevron boards and median kerb paint are all in good condition. Some of the photographs of sign boards are presented below.

Figure 3-9 Photographs of Road Signages

km. 53+900

km. 54+100

km. 54+750

km. 55+200

km. 59+600

km. 60+000

km. 60+580

km. 63+150

km. 69+680

Kerb Painting at km.70+200

km. 94+630

km. 116+000

Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site. Some of the photographs of metal beam crash barriers are presented below.

Figure 3-10 Photographs of MBCB / Crash Barrier

km. 54+100 (RHS)

km. 107+515 (LHS)

Delineators

The traffic delineators are provided by Concessionaire for road users in abnormal condition of weather for the Project Road. The same is maintained by the Concessionaire. Some of the photographs of delineators are presented below.

Figure 3-11 Photographs of Delineator

km. 53+400

km. 111+530

Pedestrian Guard Rail

The pedestrian guard rails are provided in the median. It is maintained by the Concessionaire. Some of the photographs of pedestrian guard rails are presented below.

Figure 3-12 Photographs of Pedestrian Guard Rail

km. 66+500

km. 101+450

Road Land Boundary

Road land boundary pillar has been found / available on Project Road.

3.9 Avenue Plantation and Median Plantation

Avenue plantation is provided in open country locations and median plantation has been provided in the project length as per IRC specification. Some of the photographs of avenue plantation and median plantation are presented below.

Figure 3-13 Photographs of Avenue Plantation and Median Plantation

Avenue Plantation at km. 62+800

Median Plantation at km. 64+200

3.10 Toll Plaza

As per the Concession Agreement, there is one existing toll plaza at Etturavattam Village at km. 75+280 with the following infrastructure.

Table 3-7 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 75+280
2	Number of Tolling Lanes	8 lanes for toll operation plus 2 lanes for over dimensional vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	in each direction
5	Number of Toll Booths	9 singles
6	Canopy	Present
7	Administrative Building	Present
8	Parking cum Toilet Block	Present
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	Tunnel / No
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	No
12	Storage facility for Overloaded Material	No
13	High mast Light	Yes
14	Streetlight	Yes
15	Low mast Light	No
16	User Fee Boards	4
17	Cantilever/Gantry Boards	Yes
18	Automatic boom barrier	Yes

Figure 3-14 Photograph of Toll Plaza

Toll Plaza at km. 75+280

Toll Plaza at km. 75+280

3.11 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.11.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 5 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

RFID

3.11.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data.

3.11.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of camera based, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

3.11.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at Toll Plaza

3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at Toll Plaza

3.11.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

AVC Camera

3.11.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

3.11.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane “Open” and “Close” sign consists of a pair of “GREEN” (arrow) and “RED” (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at Toll Plaza

3.11.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for registration of toll operations and is customized for different vehicle types and type of ticket.

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

The violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Camera is provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.11.10 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

MSWIM at Toll Plaza

3.12 Plaza Equipment

3.12.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio WiFi module. Firewall with Sophos antivirus is provided.

3.12.2 55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.12.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.

3.13 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) installed for the Project Road is controlled by the ATMS center at the toll plaza location (km. 42+650). As per Concession Agreement, ATMS shall conform to ATMS Policy guidelines (2016) which comprises of the following:

- Automatic Traffic Counter cum Classifier (ATCC)
- Mobile Radio communication system
- Emergency Call Box
- Portable Weigh in Motion
- Meteorological Data system
- Variable Message Signboards (VMS)
- CCTV system
- Video Incident Detection System (VIDS)
- Vehicle actuated Speed Display (VASD)

Status of these systems at site is described below:

3.13.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is installed at Toll Plaza (km. 75+280).

3.13.2 Mobile Radio communication System (MRCS)

Mobile Radio communication System (MRCS) is not yet installed. Application for MRCS UHF band has been sought from WPC, DoT, Ministry of Communications which is not yet allocated.

3.13.3 Emergency Call Boxes (ECB)

ECB's are not installed at site.

3.13.4 Portable Weigh in Motion (PWIM)

PWIM is provided at site.

3.13.5 MET System

Meteorological sensors comprise of sensors to measure the atmospheric temperature, humidity, pavement surface temperature, visibility and equipment for measuring wind speed and direction and installed at Toll Plaza at km. 75+280.

3.13.6 Variable Message Signboards (VMS)

Variable message sign boards are installed at 11 locations. These display specific messages to the users based on the prevailing conditions on the highway. The message

can be changed at any point of time from the HTMS centre. About 250 customised messages can be stored on the system.

3.13.7 CCTV Surveillance Cameras

Surveillance cameras are installed at 35 locations along the Project Road. The ATMS control room has video wall to monitor these locations through the cameras installed.

3.13.8 Video Incident Detection System

44 nos. fixed CCTV cameras are installed as part of Video incident detection system.

3.13.9 Vehicle Actuated Speed Display (VASD)

VASD is installed at 9 locations each on LHS and RHS.

3.13.10 Adequacy of Toll Collection System and ATMS

- Adequacy-All lanes are hybrid ETC system as stipulated by NHAI in Technical Specifications of Hybrid ETC system. NHAI has approved maintenance costs for TMS. TMS shall be upgraded every 5 years at the cost of the Authority.

- The Advanced Traffic Management System (ATMS) installed is as per specifications required by the Authority and in working condition.

3.14 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Post are maintained by the Concessionaire.

3.15 Toilet Block

There is one no. of Toilet Block constructed at site and the same is maintained by the Concessionaire. The details of the same are tabulated below. Some of the photographs taken during the site visit are presented below.

Table 3-8 Details of Toilet Block

Sr. No.	Chainage (km)	Side		Remarks
		LHS	RHS	
1	75+280	Yes	-	

Figure 3-15 Photograph of Toilet Block

3.16 Bus Bays and Passenger Shelters

There are 27 Nos. of bus bays / passenger shelter along the Project Road. Some of the passenger shelters are damaged and the same will be rectified by the Concessionaire.

Some of the photographs of the bus bay / passenger shelter photographs are presented below.

Figure 3-16 Photograph of Bus Bay / Passenger Shelter

km. 60+580

km. 95+020

3.17 Balance Work Status

During site visit it has been observed that construction of 01 No. of LVUP at km. 55+750 along with approaches and highway lighting are balance due to change in proposal from LVUP to VUP. As informed the Concessionaire, now Concessionaire issued a work order to TMP Manoharan Infrastructure Pvt Ltd. for construction of VUP at km. 55+750.

The balance works cost is presented in the subsequent chapter.

3.18 Operation and Maintenance

3.18.1 O&M Contract

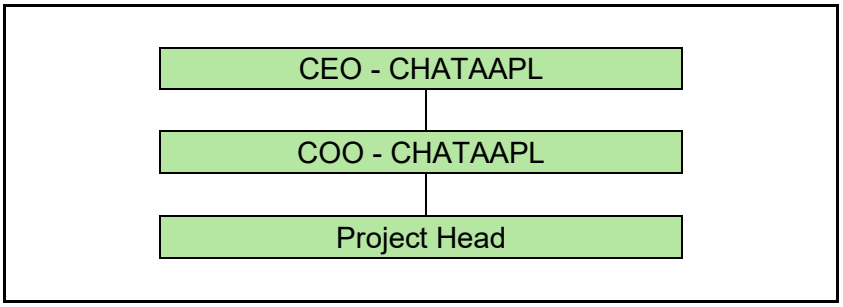
As per Clause 15.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall conform to all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement.

The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

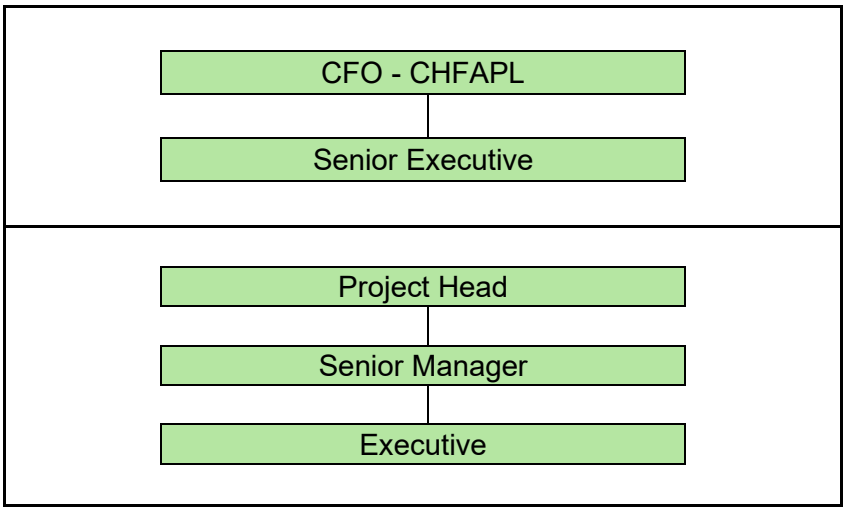
3.18.2 Organization Chart

The Concessionaire has shared the Organization Chart at site for Operation and maintenance. Accordingly, there is 01 Project Head, 01 Senior Executive, 01 Senior Manager, 01 Assistant Manager (HR), 02 Assistant Manager, 01 Senior Supervisor, 02 Supervisor, 07 Executive, 02 Electrician, 01 Manager, 01 Plaza Manager, 01 Assistant Plaza Manager, 03 Cashiers and 04 Validators to carry out O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent subcontractors.

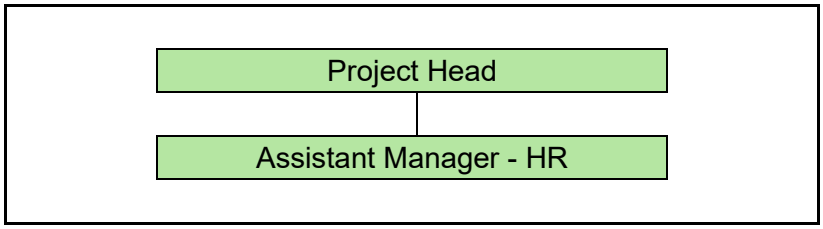
Organization Chart



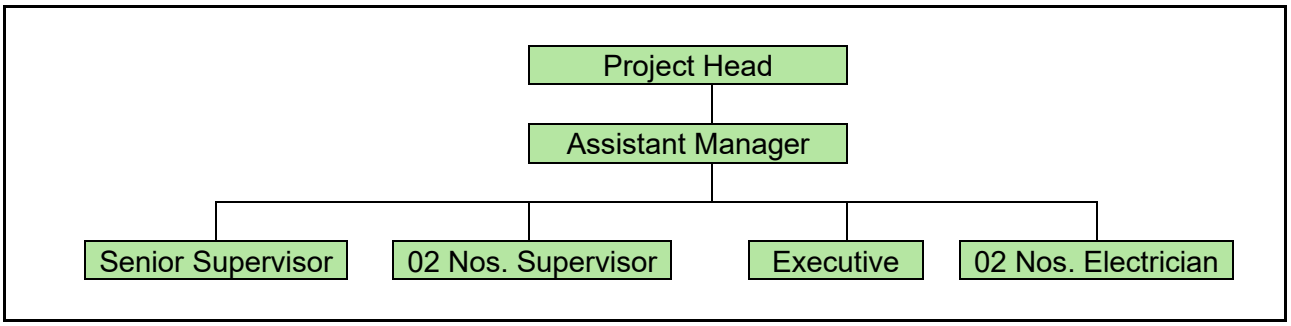
Finance & Accounts



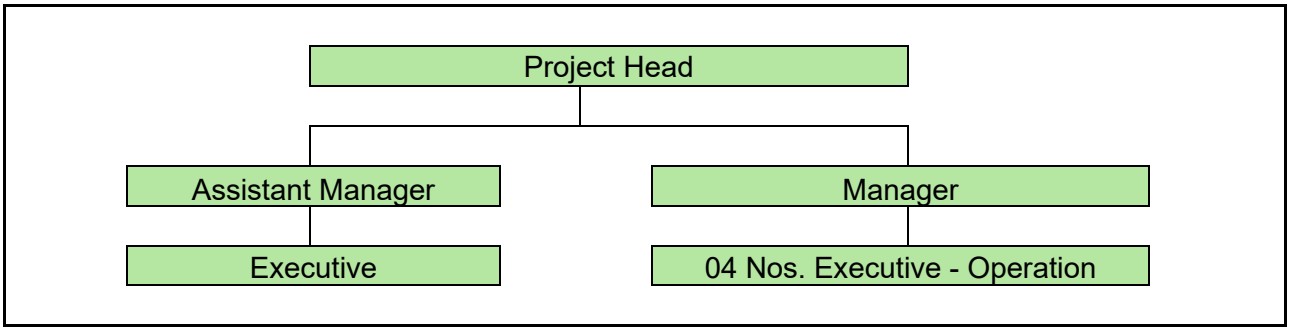
Human Resource



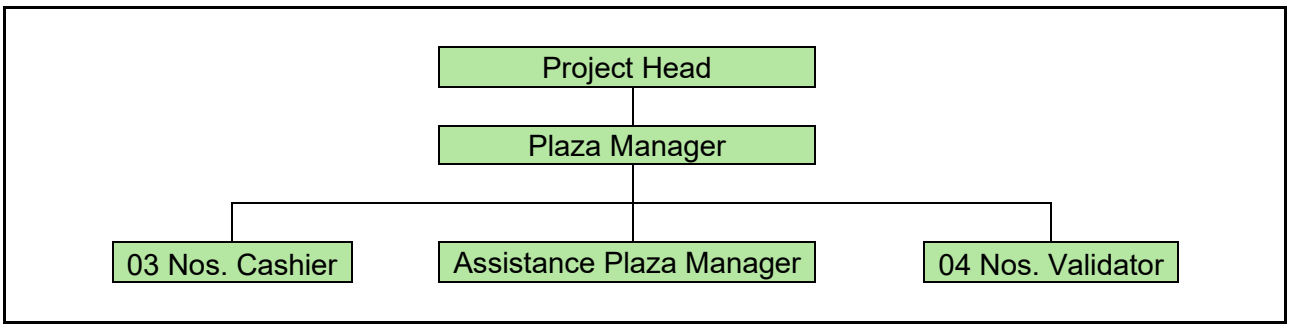
Maintenance



Operations System



Operations



3.18.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are

projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.18.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Article 15 and Schedule-F of the Concession Agreement defines the Operation and Maintenance requirement during the concession period.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 30 years from the Appointed Date (as TOT Package i.e., 20th October 2020) including construction period.

4.2 Axle Load and VDF

The Concessionaire has conducted the Axle Load Survey on Project Road at km. 75+280 (near Toll Plaza) from 14th March 2020 to 16th March 2020. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor (VDF)

Weighted Average VDF Values			
Sr. No	Vehicle Type	Direction	
		Madurai - Kanyakumari	Kanyakumari - Madurai
1	BUS	0.964	1.009
2	LCV	0.678	0.518
3	2-Axle	2.775	1.993
4	3-Axle	5.875	3.726
5	MAV	15.025	5.561

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

MSA Calculation					
Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
FY27	2.81	**2.81**	1.39	**1.39**	
FY28	2.91	**5.72**	1.44	**1.44**	
FY29	3.02	**8.74**	1.48	**2.92**	1st MM Cycle
FY30	3.12	**11.86**	1.53	**4.45**	1st MM Cycle
FY31	3.23	**15.09**	1.58	**6.03**	
FY32	3.34	**18.43**	1.63	**7.66**	
FY33	3.45	**21.88**	1.69	**9.35**	
FY34	3.57	**25.45**	1.74	**11.09**	
FY35	3.69	**29.14**	1.80	**12.89**	
FY36	3.81	**32.95**	1.85	**14.74**	2nd MM Cycle

MSA Calculation					
Year	**MSA**	**Cumulative**	**MSA**	**Cumulative**	**Remarks**
FY37	3.94	**36.89**	1.91	**16.65**	2nd MM Cycle
FY38	4.07	**40.96**	1.97	**18.62**	
FY39	4.19	**45.15**	2.03	**20.65**	
FY40	4.33	**49.48**	2.09	**22.74**	Crossing 40,000 PCU's limit
FY41	4.46	**53.94**	2.15	**24.89**	Crossing 40,000 PCU's limit
FY42	4.60	**58.54**	2.21	**27.10**	Crossing 40,000 PCU's limit
FY43	4.74	**63.28**	2.27	**29.37**	DPR & 3rd MM Cycle
FY44	4.88	**68.16**	2.34	**31.71**	DPR & 3rd MM Cycle
FY45	5.03	**73.19**	2.41	**34.12**	Augmentation 6-Laning (Assuming 3 years Construction Period)
FY46	5.18	**78.37**	2.47	**36.59**	
FY47	5.33	**83.70**	2.54	**39.13**	
FY48	4.39	**88.09**	2.09	**41.22**	
FY49	4.51	**92.60**	2.15	**43.37**	
FY50	4.64	**97.24**	2.21	**45.58**	
FY51	4.77	**102.01**	2.26	**47.84**	End of concession period as per Appointed date & CA

4.4 Network Survey Vehicles (NSV) Survey

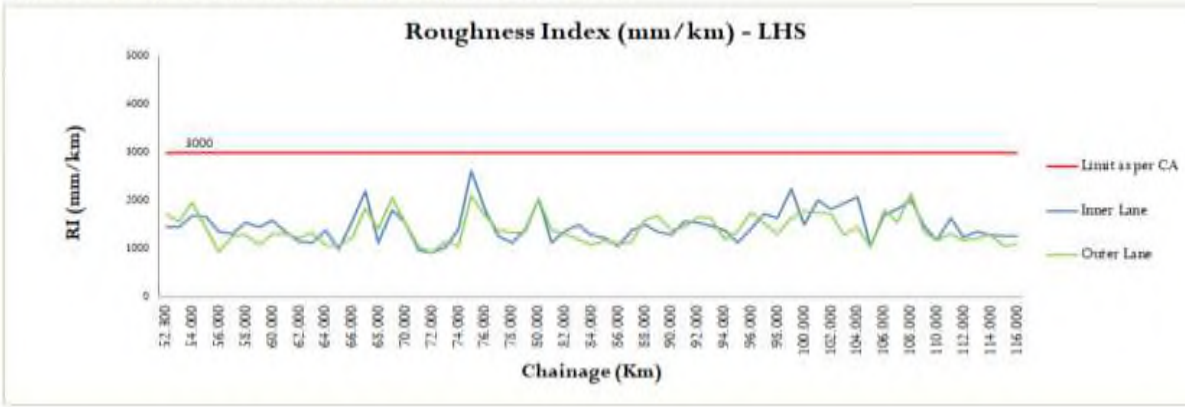
The Concessionaire has conducted pavement condition survey on each lane of carriageway through NSV. The NSV survey was conducted on the Project Road from 15th January 2025 to 18th January 2025. The summary of the same is presented below.

Table 4-3 Summary of NSV Survey

Table 2-1: Summary of RI Limit as per Schedule F of CA

Roughness Summary % as per Schedule F of CA (mm/km)					
Condition	Limit as per Schedule F of CA (mm/km)	LHS		RHS	
		Inner Lane	Outer Lane	Inner Lane	Outer Lane
Good	<3000	100.00%	100.00%	100.00%	100.00%
Poor	>3000	0.00%	0.00%	0.00%	0.00%

Figure 2-3: Roughness Summary for KETPL as per Schedule F of CA



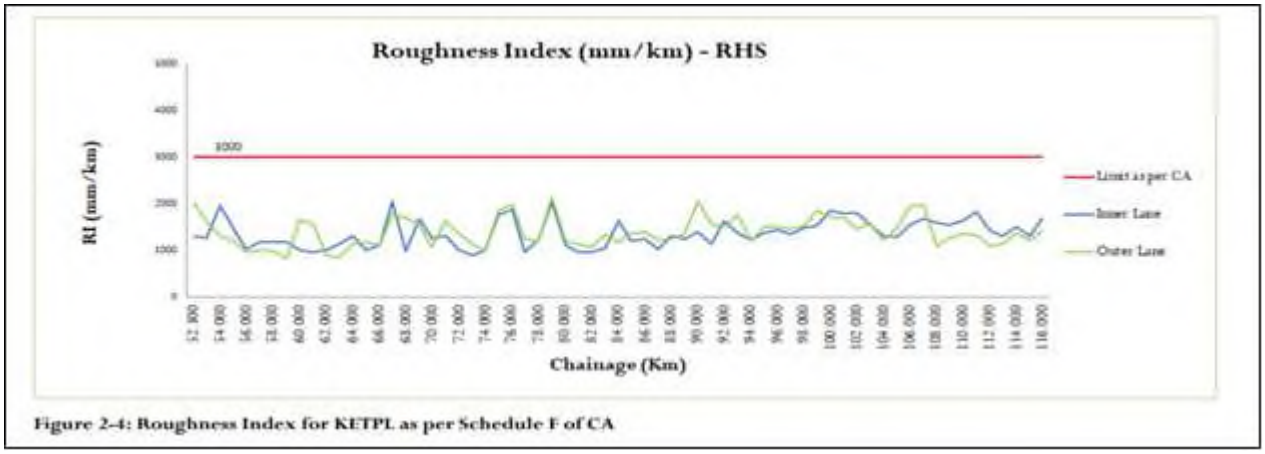


Figure 2-4: Roughness Index for KETPL as per Schedule F of CA

However, the maintenance can be carried out as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. However, improvement in riding quality is expected if the roughness value exceeds 3000 mm/km.

4.5 Test pit and Subgrade Investigation

The Concessionaire has carried out the subgrade investigation for Project Road. The results of the same as provided by the Concessionaire are tabulated as below.

Table 4-4 CBR Analysis

Sr. No.	Road Name	Existing Chainage (km)	Side	DCP-CBR
1	NH-7	54+950	LHS	14.1
2	NH-7	55+050	RHS	21.8
3	NH-7	60+050	LHS	21.1
4	NH-7	62+450	RHS	19.5
5	NH-7	65+000	LHS	17.3
6	NH-7	67+800	RHS	17.4
7	NH-7	68+600	LHS	15.1
8	NH-7	70+000	LHS	15.3
9	NH-7	72+500	RHS	19.6
10	NH-7	74+800	LHS	19.2
11	NH-7	79+950	LHS	9.6
12	NH-7	83+000	RHS	16.3
13	NH-7	85+000	LHS	24.8
14	NH-7	87+500	RHS	22.2
15	NH-7	89+900	LHS	15.6
16	NH-7	92+800	RHS	16.3
17	NH-7	95+000	LHS	17.5
18	NH-7	105+000	LHS	10.7
19	NH-7	107+500	RHS	20.1
20	NH-7	110+200	LHS	11.1
21	NH-7	112+450	RHS	18.5
22	NH-7	115+000	LHS	18.6
Average DCP-Equivalent CBR				**17.3**

Table 4-5 Test Results Summary of Natural Ground Soil Samples

Sr. No.	Location (km)	Side (LHS / RHS)	Soil Classification as per IS:1498	Gradation: Percent by weight passing through the Sieve (IS:2720-IV)						Clay & silt content %	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		4-Days Soaked CBR (%)	Free Swell Index (%)
				19.0 mm	10.0 mm	4.75 mm	2.0 mm	425 microns	75 microns		Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density (gm/cc)	OMC (%)		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	53+000	RHS	SC	100.0	95.5	88.5	76.0	65.0	44.9	44.9	29	21	8	1.94	9.5	9.7	15.0
2	53+800	RHS	CL	100.0	100.0	97.2	90.2	84.5	65.5	65.5	34	22	12	1.86	13.2	5.0	30.0
3	59+200	LHS	ML-CL	100.0	100.0	95.5	85.2	65.2	51.2	51.2	28	21	7	1.98	8.8	10.8	12.5
4	65+400	LHS	CL	100.0	99.1	88.5	72.5	68.0	61.1	61.1	32	21	11	1.85	12.2	5.2	30.0
5	65+400	RHS	ML-CL	100.0	100.0	85.1	5	70.2	68.2	58.2	28	21	7	1.95	9.3	8.7	15.0
6	83+000	LHS	SM	100.0	99.1	88.5	7	68.5	30.2	30.2	22	NP	NP	2.02	8.7	12.6	0.0
7	88+700	LHS	MI	100.0	100.0	100.0	6	88.2	78.5	78.5	38	28	10	1.82	12.9	5.1	22.2

Granular layer investigation

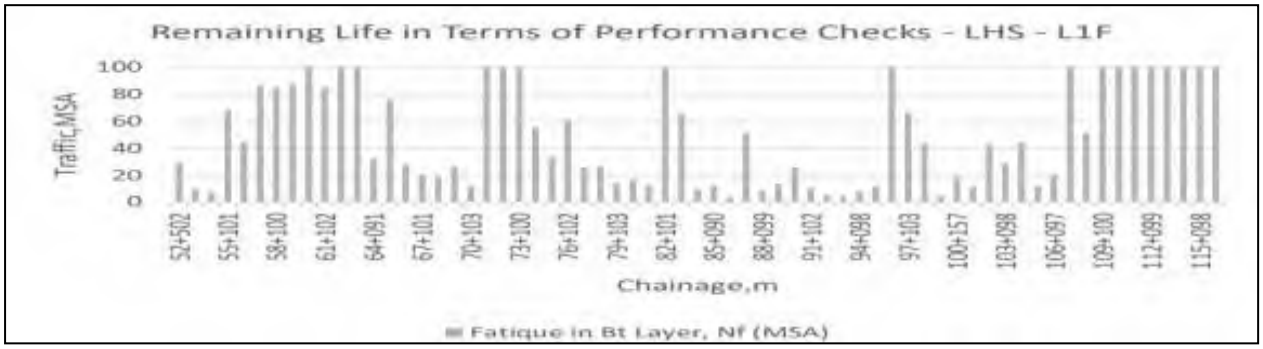
Sr. No.	Chainage (km)	Side (LHS/RHS)	Type of Sample	Cumulative Percentage of Passing through IS Sieve (mm)											MoRTH 5th Revision	MoRTH 4th Revision	Atterberg Limits			Specific Gravity	W.A (%)	AIV (%)
				75	53.0	45.0	26.5	22.4	11.2	9.5	4.75	2.36	0.600	0.425	0.075			Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)			
1	54+950	LHS	WMM	100.0	100.0	100.0	64.8	55.9	31.0	26.7	22.7	18.4	13.0	10.5	0.5	22.4mm,11.2mm & 4.75mmIS Sieve Material is Slightly Coarser Side in WMM Gradation	22.4mm,11.2mm & 4.75mmIS Sieve Material is Slightly Coarser Side in WMM Gradation	23	NP	NP	2.81	0.26	34.39
2	55+050	RHS	WMM	100.0	100.0	100.0	56.5	46.2	35.0	31.9	28.0	23.3	16.3	13.1	1.0	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	20	NP	NP	2.83	0.30	27.87
3	60+050	LHS	GSB	100.0	100.0	100.0	57.8	48.9	29.4	27.1	24.8	21.2	14.0	10.9	1.2	Conforming to GSB-III &IV	Conforming to GSB-IV & V	22	NP	NP	2.78	0.34	37.67
4	62+450	RHS	GSB	100.0	100.0	100.0	52.4	40.1	29.3	27.7	25.2	20.7	13.9	10.9	1.4	Confirming to GSB-IV	Confirming to GSB-V	20	NP	NP	2.81	0.29	35.16
5	65+000	LHS	WMM	100.0	100.0	100.0	65.9	56.0	27.9	21.2	15.7	12.0	8.5	7.0	1.1	Not Conforming to any Gradation	Not Conforming to any Gradation	22	NP	NP	2.80	0.35	30.25
6	67+800	RHS	WMM	100.0	100.0	100.0	91.9	78.6	41.0	32.7	24.6	20.7	11.8	9.4	1.0	4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	20	NP	NP	2.83	0.29	31.33
7	68+600	LHS	GSB	100.0	97.0	95.7	69.3	62.7	40.1	35.6	29.9	23.6	14.1	11.1	1.0	Conforming to GSB-I	Conforming to GSB-I &IV	20	NP	NP	2.83	0.22	35.47
8	70+000	LHS	GSB	100.0	100.0	100.0	60.4	57.0	34.9	27.9	22.0	17.4	11.8	9.4	1.2	Conforming to GSB-III &IV	Conforming to GSB-IV & V	23	NP	NP	2.81	0.28	32.75
9	72+500	RHS	GSB	100.0	100.0	100.0	57.1	45.0	28.9	26.1	23.4	20.0	14.9	12.5	0.7	Conforming to GSB-III &IV	Conforming to GSB-IV & V	20	NP	NP	2.86	0.25	31.64
10	74+800	LHS	WMM	100.0	100.0	100.0	69.8	52.4	36.1	30.2	25.9	19.8	10.2	8.0	1.6	22.4mm,11.2mm IS Sieve Material	22.4mm,11.2mm IS Sieve Material Slightly	21	NP	NP	2.86	0.23	30.77

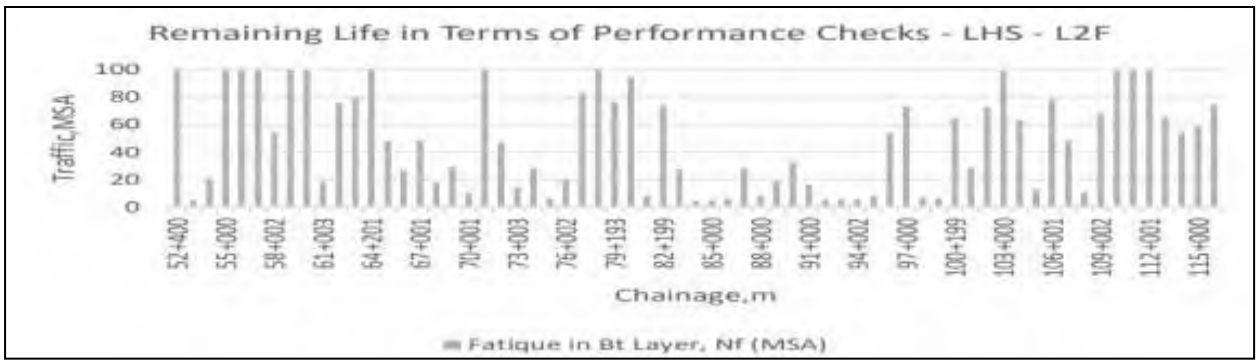
Sr. No.	Chainage (km)	Side (LHS/RHS)	Type of Sample	Cumulative Percentage of Passing through IS Sieve (mm)												MoRTH 5th Revision	MoRTH 4th Revision	Atterberg Limits			Specific Gravity	W.A (%)	AIV (%)
				75	53.0	45.0	26.5	22.4	11.2	9.5	4.75	2.36	0.600	0.425	0.075			Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)			
																Slightly Coarser side in WMM Gradation	Coarser side in WMM Gradation						
11	79+950	LHS	GSB	100.0	100.0	96.3	60.6	52.6	33.6	28.8	23.0	19.2	9.6	7.5	0.9	Confirming to GSB III & IV	Confirming to GSB IV & V	22	NP	NP	2.84	0.27	33.46
12	83+000	RHS	GSB	100.0	100.0	100.0	49.7	27.5	6.2	4.8	4.1	3.1	2.6	2.3	0.6	26.5mm &4.75mm IS Sieve Material is Slightly Coarser side in GSB III&IV	26.5mm &4.75mm IS Sieve Material is Slightly Coarser side in GSB IV&V	20	NP	NP	2.84	0.30	35.13
13	85+000	LHS	WMM	100.0	100.0	100.0	54.4	48.5	31.0	26.8	22.2	18.9	12.8	10.0	1.0	Not Conforming to any Gradation	Not Conforming to any Gradation	21	NP	NP	2.83	0.26	29.14
14	87+500	RHS	WMM	100.0	100.0	96.6	62.9	56.2	38.5	32.4	31.8	24.1	18.2	14.5	1.3	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	23	NP	NP	2.81	0.21	30.37
15	89+900	LHS	GSB	100.0	100.0	100.0	52.1	43.1	30.4	29.3	27.0	22.5	19.1	16.0	5.2	0.075mm IS Sieve Material is Slightly Finer Side in GSB-IV	Confirming to GSB-V	20	NP	NP	2.77	0.23	29.81
16	92+800	RHS	GSB	100.0	100.0	100.0	53.8	45.7	25.7	21.4	18.0	15.1	10.2	8.3	0.5	Conforming to GSB-IV	Conforming to GSB-V	20	NP	NP	2.74	0.16	31.33
17	95+000	LHS	WMM	100.0	100.0	100.0	67.5	65.0	32.2	27.4	22.7	19.4	10.6	8.4	0.9	11.2mm,4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	11.2mm,4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	23	NP	NP	2.76	0.24	30.73
18	105+000	LHS	WMM	100.0	100.0	100.0	86.1	78.8	45.0	37.1	28.2	20.7	9.2	6.9	2.0	Conforming to WMM gradation	Conforming to WMM gradation	23	NP	NP	2.78	0.29	29.64
19	107+500	RHS	WMM	100.0	100.0	100.0	72.7	60.7	36.9	31.9	26.9	23.0	11.7	9.2	1.0	11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	20	NP	NP	2.76	0.38	28.71
20	110+200	LHS	GSB	100.0	100.0	100.0	69.5	59.5	37.4	31.8	26.0	21.6	13.2	9.6	0.5	Conforming to GSB-IV	Conforming to GSB-IV & V	19	NP	NP	2.75	0.35	36.81
21	112+450	RHS	GSB	100.0	100.0	96.2	81.6	70.0	32.6	26.7	22.0	17.2	10.9	8.7	2.7	26.5mm IS Sieve Material is Slightly Coarser side in GSB-III&IV	26.5mm IS Sieve Material is Slightly Coarser side in GSB-IV&V	20	NP	NP	2.80	0.32	35.47
22	115+000	LHS	WMM	100.0	100.0	100.0	54.3	32.6	6.2	5.4	4.6	4.2	3.1	2.8	1.0	Not Confirming to any Gradation	Not Confirming to any Gradation	22	NP	NP	2.81	0.37	34.32

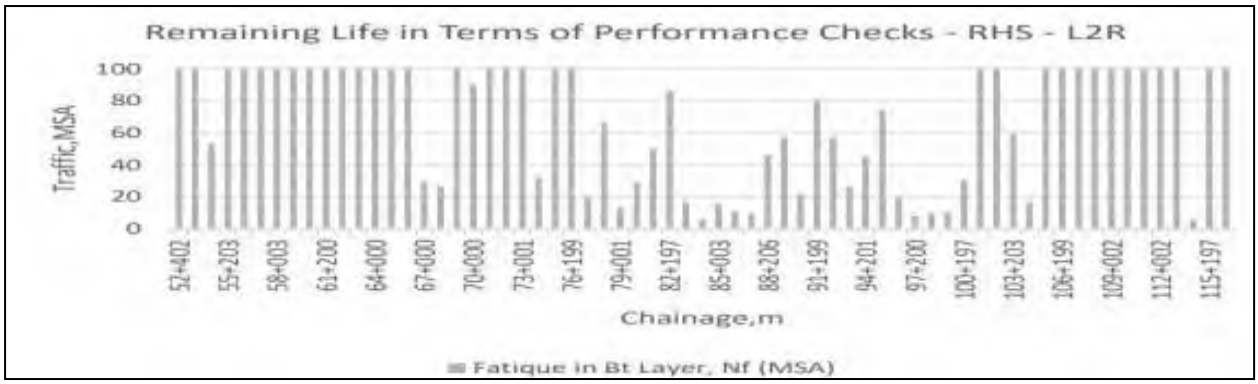
4.6 Falling Weight Deflectometer (FWD) Survey

The structural evaluation and analysis of the remaining life of project was carried out in conformity with IRC:115-2014"Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique".

The FWD survey was conducted on the Project Road from 27th January 2025 to 01st February 2025. The summary of the same is presented below.







4.7 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full-length periodic maintenance. Schedule-F of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. Only improvement to Riding Quality is expected if the roughness value exceeds 3000 mm/km.

Overlay work is completed at site on both side of the carriageway in the month of October 2021 i.e., FY 2022. Thus, next cycle of the overlay is proposed in FY 2029 after 7 years from previous MM cycle.

As per Article 14 of CA, the Authority shall carry out capacity augmentation under EPC contract if traffic exceeds 40,000 PCU for three consecutive accounting years. As per the traffic study report submitted by the Company it is observed that the project traffic crosses 40,000 PCU in FY 2040, FY 2041, FY 2042. Assumption has made that execution of 6-laning of Project Road will start in the year 2045 or 2046. It is also assumed that during 6-laning of Project Road, overlay of existing four lane road will be the part of the capacity augmentation. Hence, the major maintenance cycle is adjusted accordingly.

The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-6 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2027 to FY 2028	-	-
2	FY 2029	Major maintenance with 30 mm BC with PMB (100%) + Milling & 50 mm DBM (5%)	Major maintenance with 30 mm BC with VG40 (50%) + Micro-surfacing (50%)
3	FY 2030 to FY 2035	-	-
4	FY 2036	Major maintenance with 30 mm BC with PMB (100%) + Milling & 50 mm DBM (5%)	Major maintenance with 30 mm BC with VG40 (50%) + Micro-surfacing (50%)
5	FY 2037 to FY 2042	-	-
6	FY 2043	Major maintenance with 30 mm BC with PMB (100%) + Milling & 50 mm DBM (5%)	Major maintenance with 30 mm BC with VG40 (50%) + Micro-surfacing (50%)
7	FY 2044	-	-
8	FY 2045	Assumption of Capacity Augmentation to Six Lane Configuration	
9	FY 2046 to FY 2050		
10	FY 2051	End of Concession Period	

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

   a. **Manpower and labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

   b. **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

   Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards, since bitumen prices have been range bound over the last five-six years. Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Supply Location	Applicability of Rates	Product	Current Published Price (FY 2027)	Long term price (Avg last 10 years)
Mathura	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Panipat	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Koyali	All States	VG-10	47,102	37,125
		VG-30	48,402	38,137
		VG-40	51,082	40,251

Supply Location	Applicability of Rates	Product	Current Published Price (FY 2027)	Long term price (Avg last 10 years)
Haldia	All States	VG-10	46,602	35,683
		VG-30	47,402	36,295
		VG-40	49,962	38,256
Barauni	All States	VG-10	47,132	36,213
		VG-30	48,432	37,325
		VG-40	50,992	39,286
CPCL	Kerala	VG-10	47,402	35,519
		VG-30	48,402	36,395
		VG-40	50,762	38,120
CPCL	Tamil Nadu	VG-10	47,902	36,019
		VG-30	48,402	36,395
		VG-40	50,962	38,320
CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320
CPCL	Karnataka	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320

c. **Sand and Aggregate:** Rates are taken from Public works Department Tamilnadu SOR FY 2025-26.

d. **Cement:** Rates are taken from Public works Department Tamilnadu SOR FY 2025-26.

e. **Steel :** Rates are taken from Public works Department Tamilnadu SOR FY 2025-26.

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with NHAI standard data book.

g. **Actual Rates of items as per work order:** The rates of road marking, road stud, kerb raising, micro surfacing, milling, median filling rates etc. are considered as per the work order shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam	Cum	9,198
2	Bituminous Concrete (VG40)	Cum	10,335
3	Bituminous Concrete (PMB)	Cum	12,641
4	Milling	Sqm	90

Sr. No.	Item Description	Unit	Rates (Rs.)
5	Micro-surfacing	Sqm	162
6	Kerb Re-laying	Rmt	330
7	Road Marking on BC surface	Sqm	573
8	Road Marking on micro surface	Sqm	682
9	Road Studs	Nos.	202

5.3 Balance Work Cost

As discussed in previous chapters, construction of 01 Nos. of LVUP at km. 55+750 along with approaches and highway lighting are balance due to change in proposal from LVUP to VUP. However, Concessionaire has issued work order to TMP Manoharan Infrastructure Pvt Ltd. for construction of VUP at km. 55+750. The cost of construction of VUP as per workorder is Rs. 21.652 Cr. (including GST). The construction period is 12 months from the issued of work order.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1 Salary and Welfare Expenses
2 Tolling Operations Services
3 Toll Security Services
4 Incident Management & Emergency Services
5 Electricity and Diesel Charges
6 TMS/HTMS/System Expenses
7 Office Operating Expenses
8 Vehicle Running Expenses
9 Professional Fees Expense
10 Community Development
11 Communication Expenses
12 Conveyance Expenses
13 Insurance Expense
14 IE Fees
15 Routine Maintenance Cost (Project Road)
16 Horticulture & ROW Maintenance
17 Miscellaneous including Contingency

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs

due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation and Maintenance cost (Routine O&M) is presented below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027 to 48)	Amount FY 2049 onwards
1	Salary and Welfare Expenses	1,39,57,740	1,39,57,740
2	Tolling Operations Services	2,47,86,790	2,47,86,790
3	Toll Security Services	56,76,418	56,76,418
4	Incident Management & Emergency Services	2,34,64,198	2,34,64,198
5	Electricity and Diesel Charges	29,77,739	29,77,739
6	TMS / HTMS / System Expenses	52,18,594	45,45,802
7	Office Operating Expenses	38,26,851	38,26,851
8	Vehicle Running Expenses	27,60,000	27,60,000
9	Professional Fees Expense	67,99,844	1,04,24,868
10	Community Development	13,17,272	13,17,272
11	Communication Expenses	3,47,156	3,47,156
12	Conveyance Expenses	3,78,716	3,78,716
13	Insurance Expense	65,26,714	65,26,714
14	IE Fees	25,55,104	25,55,104
15	Routine Maintenance Cost (Project Road)	4,03,97,228	5,20,61,164
16	Horticulture & ROW Maintenance	2,15,35,916	2,15,35,916
17	Miscellaneous including Contingency	40,23,725	41,41,815
	Total Cost (Rs.)	**16,65,50,006**	**18,12,84,263**
	Total Cost (Cr.)	**16.66**	**18.13**
	Per km Cost (Lakhs)	25.94	28.24

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Table 5-4 Summary of Major Maintenance Cost

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2027 to FY 2028	-	
2	FY 2029	81.26	
3	FY 2030 to FY 2035	-	
4	FY 2036	90.98	
5	FY 2037 to FY 2042	-	
6	FY 2043	81.26	
7	FY 2044 to FY 2050	-	
8	FY 2051	-	End of concession period
	Total Cost (Cr.)	**253.50**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2027	7.56	
2	FY 2034	7.56	
3	FY 2041	7.56	
4	FY 2048	7.56	
Total Cost (Cr.)		**30.26**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-5 Escalation

Year	Escalation	Year	Escalation
2025	-	**2041**	3.99%
2026	-	**2042**	3.99%
2027	5.25%	**2043**	3.99%
2028	4.86%	**2044**	3.99%
2029	4.44%	**2045**	3.99%
2030	4.24%	**2046**	3.99%
2031	4.13%	**2047**	3.99%
2032	4.08%	**2048**	3.99%
2033	4.01%	**2049**	3.99%
2034	4.00%	**2050**	3.99%
2035	4.03%	**2051**	3.99%
2036	4.01%	**2052**	3.99%
2037	3.98%	**2053**	3.99%
2038	3.98%	**2054**	3.99%
2039	4.00%	**2055**	3.99%
2040	3.99%	**2056**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr.)

Sr.	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41	FY42	FY43	FY44	FY45	FY46	FY47	FY48	FY49	FY50	FY51
1	Routine O&M Cost																									
1.01	Salary and Welfare Expense	1.40	1.46	1.53	1.59	1.66	1.73	1.80	1.87	1.94	2.02	2.10	2.19	2.27	2.36	2.46	2.56	2.66	2.76	2.87	2.99	3.11	3.23	3.36	3.50	3.63
1.02	Tolling Operations Services	2.48	2.60	2.71	2.83	2.95	3.07	3.19	3.32	3.45	3.59	3.73	3.88	4.04	4.20	4.36	4.54	4.72	4.91	5.10	5.31	5.52	5.74	5.97	6.21	6.45
1.03	Toll Security Services	0.57	0.60	0.62	0.65	0.67	0.70	0.73	0.76	0.79	0.82	0.85	0.89	0.92	0.96	1.00	1.04	1.08	1.12	1.17	1.22	1.26	1.31	1.37	1.42	1.48
1.04	Incident Management Services	2.35	2.46	2.57	2.68	2.79	2.90	3.02	3.14	3.27	3.40	3.53	3.67	3.82	3.97	4.13	4.30	4.47	4.65	4.83	5.02	5.22	5.43	5.65	5.88	6.11
1.05	Electricity and Diesel Charges	0.30	0.31	0.33	0.34	0.35	0.37	0.38	0.40	0.41	0.43	0.45	0.47	0.48	0.50	0.52	0.55	0.57	0.59	0.61	0.64	0.66	0.69	0.72	0.75	0.78
1.06	TMS/HTMS/System Expenses	0.27	0.38	0.50	0.62	0.65	0.90	1.29	0.36	0.51	0.66	0.82	0.85	1.18	1.69	0.48	0.67	0.87	1.08	1.12	1.56	2.23	0.63	0.88	1.14	1.42
1.07	Office Operating Expenses	0.38	0.40	0.42	0.44	0.45	0.47	0.49	0.51	0.53	0.55	0.58	0.60	0.62	0.65	0.67	0.70	0.73	0.76	0.79	0.82	0.85	0.89	0.92	0.96	1.00
1.08	Vehicle Running Expenses	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.37	0.38	0.40	0.42	0.43	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.59	0.61	0.64	0.66	0.69	0.72
1.09	Professional Fees Expense	0.68	0.71	0.74	0.78	0.81	0.84	0.88	0.91	0.95	0.98	1.02	1.06	1.11	1.15	1.20	1.25	1.29	1.35	1.40	1.46	1.51	1.57	2.51	2.61	2.71
1.10	Community Development	0.13	0.14	0.14	0.15	0.16	0.16	0.17	0.18	0.18	0.19	0.20	0.21	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.31	0.32	0.33	0.34
1.11	Communication Expenses	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09
1.12	Conveyance Expenses	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09	0.09	0.10
1.13	Insurance Expense	0.65	0.68	0.71	0.75	0.78	0.81	0.84	0.87	0.91	0.95	0.98	1.02	1.06	1.11	1.15	1.20	1.24	1.29	1.34	1.40	1.45	1.51	1.57	1.63	1.70
1.14	IE Fees	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.37	0.38	0.40	0.42	0.43	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.59	0.62	0.64	0.67
1.15	Routine Maintenance Cost	4.04	4.24	4.42	4.61	4.80	5.00	5.20	5.41	5.62	5.85	6.08	6.32	6.58	6.84	7.11	7.40	7.69	8.00	8.32	8.65	9.00	9.35	12.54	13.04	13.56
1.16	Horticulture & ROW Maintenance	2.15	2.26	2.36	2.46	2.56	2.66	2.77	2.88	3.00	3.12	3.24	3.37	3.51	3.65	3.79	3.94	4.10	4.26	4.43	4.61	4.80	4.99	5.19	5.39	5.61
1.17	Miscellaneous and Contingency	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.61	0.63	0.66	0.68	0.71	0.74	0.77	0.80	0.83	0.86	0.90	0.93	1.00	1.04	1.08
	Subtotal of O&M Cost	16.41	17.30	18.17	19.04	19.83	20.86	22.05	21.96	22.97	24.02	25.11	26.11	27.45	29.01	28.89	30.21	31.59	33.03	34.34	36.10	38.15	37.99	43.43	45.39	47.44
2	Major Maintenance Cost	-	-	86.88	-	-	-	-	-	-	121.80	-	-	-	-	-	-	134.64	-	-	-	-	-	-	-	-
3	Periodic Cost of TMS/ HTMS Replacement	7.56	-	-	-	-	-	-	10.12	-	-	-	-	-	-	13.32	-	-	-	-	-	-	17.52	-	-	-
4	Balance Works Cost	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**23.97**	**17.30**	**105.04**	**19.04**	**19.83**	**20.86**	**22.05**	**32.08**	**22.97**	**145.82**	**25.11**	**26.11**	**27.45**	**29.01**	**42.21**	**30.21**	**166.22**	**33.03**	**34.34**	**36.10**	**38.15**	**55.50**	**43.43**	**45.39**	**47.44**

ANNEXURES

ANNEXURE I : ROUTINE MAINTENANCE COST

Routine Maintenance Cost (4-Lane)	
Ordinary Repair Cost for Flexible (with GST)	**4,03,97,228**
(inclusive of GST)	**= 6.29 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD **2,99,971**	**Urban** More than 4500 CVD **3,55,998**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
						Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	458956.00	544677.00	-	-	-	-
		Paved shoulder	1.70	509951.00	605197.00	36.17	-	1,84,46,203	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	599943.00	711997.00	-	-	-	-
		Paved shoulder	2.20	659937.00	783196.00	-	28.03	-	2,19,51,026
					TOTAL	**64.200**		**4,03,97,228**	

Routine Maintenance Cost (6-Lane)	
Ordinary Repair Cost for Flexible (with GST)	**5,20,61,164**
(inclusive of GST)	**= 8.11 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal**	**Urban**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				More than 4500 CVD	More than 4500 CVD				
				2,99,971	**3,55,998**				
						Normal	**Urban**	**Normal**	**Urban**
7	Six lane with divided carriageway	without Paved shoulder	2.09	626940.00	744037.00	-	-	-	-
		with Paved shoulder	2.26	677935.00	804556.00	36.17	-	2,45,22,604	-
8	Six lane with divided carriageway and service lane on either side	without Paved shoulder	2.56	767927.00	911356.00	-	-	-	-
		with Paved shoulder	2.76	827921.00	982555.00	-	28.03	-	2,75,38,560
					TOTAL	**64.200**		**5,20,61,164**	

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Potholes repair (50 mm deep)	100 % Pothole free	As & when required	1.00%
	Volume (cum)			5.00
	Rs/m^3			11417
	Cost in Rupees			57,083
	ii) Patch repair	100 % Patch less	As & when required	1.50%
	Area (sqm)			150
	Rs/m^2			457
	Cost in Rupees			68,499
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			80
	Cost in Rupees			20,051
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.50%
	Area (sqm)			187.5
	Rs/m^2			54
	Cost in Rupees			10,036
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.50%
	Area (sqm)			112.5
	Rs/m^2			457
	Cost in Rupees			51,374
	v) Road marking	14%	Once in 7th year & @ Repaired location	12854

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity More than 4500 CVD BT Surface**
1	**2**	**3**	**4**	**5**
	SUB TOTAL			**2,19,897**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6937
	ii) Jungle Clearance	100%	Twice in a Year	3
	iii) Kuccha Drain Maintenance	100%	Twice in a Year	1219
	SUB TOTAL			**8,159**
3	**Maintenance of Cross Drainage works:**			
	i) Cleaning of culvert bed	100%	Once in a Year	3072
	ii) Repair of floors	100%	Once in a Year	5560
	iii) Repair of parapets	100%	As & when required	2317
	SUB TOTAL			**10,949**
4	**Maintenance of Minor & Major Bridges:**			
	i) Cleaning and removal of dirt & vegetation from pier caps, Bearings, Expansion Joints, Superstructure, Substructure and Retaining wall etc.	100%	As & when required	40,644
	ii) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints			
	iii) Repair of minor washouts, erosion scour and animal holes			
	iv) Sealing Cracks with Cement/ Epoxy Mortar			
	v) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**40,644**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
5	**Miscellaneous Items:**			
	i) Turfing and Arboriculture		Once in a Year	2710
	ii) Maintenance of gang hut store, sheds, animal & debris removal		Once in a Year	4064
	iii) Lettering, Painting of Km stones & kerbs, sign boards, hectometre stone etc.		Once in a Year	4064
	iv) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	8129
	v) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1355
	vi) Traffic Census		Once in a Year	0
	vii) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**20,322**
	GRAND TOTAL (Normal)			**2,99,971**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Centre Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	23240
	ii)Repairs to footpath	100%	As & when required	5419
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	5419
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	8400
	vi) Repair of divider/ Railing in City portion	100%	As & when required	10839
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2710
	SUB TOTAL			**56,027**
	GRAND TOTAL (Urban)			**3,55,998**

ANNEXURE II : MAJOR MAINTENANCE COST

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						12,19,046	18	2,17,96,543
	For BC	Sqm	1	1	11,17,612.90		11,17,613	11,17,613		
	For DBM	Sqm	1	1	45,552.50		45,553	45,553		
	For Misc. Location	Sqm	1	1	55,880.65		55,881	55,881		
2	BC with 30 mm	Cum	1	1	11,73,493.55	0.03	35,205	35,205	12,641	44,50,24,309
3	DBM with 50 mm	Cum	1	1	45,552.50	0.05	2,278	2,278	9,198	2,09,50,665
4	Milling	Sqm	1	1	45,552.50		45,553	45,553	90	40,99,725
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,402	3.50	4.50	561	561	123	68,960
6	Dismantling of CC Panels @ 2% area	Cum	2%		22,076	0.30	132	132	1,020	1,35,103
7	Replacement of Panels - PQC @ 2% area	Cum	2%		22,076	0.30	132	132	9,461	12,53,092
	Service Road									
8	Tack coat	Sqm	1	28,028	7.00		1,96,193	1,96,193	18	35,07,922
9	BC with 30 mm	Cum	1	28,028	7.00	0.03	5,886	5,886	10,335	6,08,27,954
10	Micro Surfacing	Sqm	1	28,028	7.00		1,96,193	1,96,193	162	3,17,83,185
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	972	18.7		18,137	18,137	18	3,24,291
12	Wearing Coat BC with 30 mm	Cum	1	972	18.7	0.03	544	544	12,641	68,78,138
13	Milling of Ex. Wearing Coat	Sqm	1	972	18.7		18,137	18,137	90	16,32,339
14	Painting of Crash Barrier	Sqm	4	972		1.12	4,337	4,337	109	4,72,747
	Other Works									
15	Raising of Road Kerb	Rmt	-	1,18,937			-	-	330	-
16	Replacement of Road Stud									

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Normal Road Stud	Nos	2	7,848			15,696	15,696	202	31,64,314
17	Painting of Kerb	Sqm	2	1,18,937		0.375	89,202	89,202	109	97,23,063
18	Road Marking	Sqm					61,539	61,539	573	
	Road Marking on BC						54,682	54,682	573	3,13,33,034
	Road Marking on Micro surfacing						6,857	6,857	682	46,76,425
	MCW									
	a) Median & Edge line	Sqm	4	67,410	0.15		40,446			
	b) Lane line	Sqm	2	22,245	0.10		4,449			
	Service Road									
	a) Edge line	Sqm	2	58,858	0.10		11,772			
	b) Lane line	Sqm	1	19,423	0.10		1,942			
	Junction crossing	Sqm					2,930			
19	Filling of Earthen shoulder	Cum					18,455	18,455	444	81,92,118
	MCW		2	62,882	2.00	0.06	15,092			
	Service Road		1	28,028	2.00	0.06	3,363			
20	Median Filling	Cum	-	1,18,505	4.17	0.10	-	-	444	-
21	Miscellaneous	5%								3,27,92,196
Total Major Maintenance Cost (Rs.)										**68,86,36,123**
Total Major Maintenance Cost with GST (Rs.)										**81,25,90,626**
Total Major Maintenance Cost with GST (Cr.)										**81.26**
Per km Cost (lakh)										**126.57**
Escalation Factor for Major Maintenance (FY 2029)										**1.10**
Total Escalated Cost for Major Maintenance (FY 2029) (Cr.)										**86.88**

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						12,19,046	18	2,17,96,543
	For BC	Sqm	1	1	11,17,612.90		11,17,613	11,17,613		
	For DBM	Sqm	1	1	45,552.50		45,553	45,553		
	For Misc. Location	Sqm	1	1	55,880.65		55,881	55,881		
2	BC with 30 mm	Cum	1	1	11,73,493.55	0.03	35,205	35,205	12,641	44,50,24,309
3	DBM with 50 mm	Cum	1	1	45,552.50	0.05	2,278	2,278	9,198	2,09,50,665
4	Milling	Sqm	1	1	45,552.50		45,553	45,553	90	40,99,725
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,402	3.50	4.50	561	561	123	68,960
6	Dismantling of CC Panels @ 2% area	Cum	2%		22,076	0.30	132	132	1,020	1,35,103
7	Replacement of Panels - PQC @ 2% area	Cum	2%		22,076	0.30	132	132	9,461	12,53,092
	Service Road									
8	Tack coat	Sqm	1	28,028	7.00		1,96,193	1,96,193	18	35,07,922
9	BC with 30 mm	Cum	1	28,028	7.00	0.03	5,886	5,886	10,335	6,08,27,954
10	Micro Surfacing	Sqm	1	28,028	7.00		1,96,193	1,96,193	162	3,17,83,185
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	972	18.7		18,137	18,137	18	3,24,291
12	Wearing Coat BC with 30 mm	Cum	1	972	18.7	0.03	544	544	12,641	68,78,138
13	Milling of Ex. Wearing Coat	Sqm	1	972	18.7		18,137	18,137	90	16,32,339
14	Painting of Crash Barrier	Sqm	4	972		1.12	4,337	4,337	109	4,72,747
	Other Works									
15	Raising of Road Kerb	Rmt	2	1,18,937			2,37,873	2,37,873	330	7,84,98,123
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	7,848			15,696	15,696	202	31,64,314
17	Painting of Kerb	Sqm	2	1,18,937		0.375	89,202	89,202	109	97,23,063

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
18	Road Marking	Sqm					61,539	61,539	573	
	Road Marking on BC						54,682	54,682	573	3,13,33,034
	Road Marking on Micro surfacing						6,857	6,857	682	46,76,425
	MCW									
	a) Median & Edge line	Sqm	4	67,410	0.15		40,446			
	b) Lane line	Sqm	2	22,245	0.10		4,449			
	Service Road									
	a) Edge line	Sqm	2	58,858	0.10		11,772			
	b) Lane line	Sqm	1	19,423	0.10		1,942			
	Junction crossing	Sqm					2,930			
19	Filling of Earthen shoulder	Cum					18,455	18,455	444	81,92,118
	MCW		2	62,882	2.00	0.06	15,092			
	Service Road		1	28,028	2.00	0.06	3,363			
21	Miscellaneous	5%								3,67,17,102
Total Major Maintenance Cost (Rs.)										**77,10,59,152**
Total Major Maintenance Cost with GST (Rs.)										**90,98,49,800**
Total Major Maintenance Cost with GST (Cr.)										**90.98**
Per km Cost (lakh)										**141.72**
Escalation Factor for Major Maintenance (FY 2036)										**1.45**
Total Escalated Cost for Major Maintenance (FY 2036) (Cr.)										**121.80**

Major Maintenance Cost (FY 2043)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						12,19,046	18	2,17,96,543
	For BC	Sqm	1	1	11,17,612.90		11,17,613	11,17,613		
	For DBM	Sqm	1	1	45,552.50		45,553	45,553		
	For Misc. Location	Sqm	1	1	55,880.65		55,881	55,881		
2	BC with 30 mm	Cum	1	1	11,73,493.55	0.03	35,205	35,205	12,641	44,50,24,309
3	DBM with 50 mm	Cum	1	1	45,552.50	0.05	2,278	2,278	9,198	2,09,50,665
4	Milling	Sqm	1	1	45,552.50		45,553	45,553	90	40,99,725
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,402	3.50	4.50	561	561	123	68,960
6	Dismantling of CC Panels @ 2% area	Cum	2%		22,076	0.30	132	132	1,020	1,35,103
7	Replacement of Panels - PQC @ 2% area	Cum	2%		22,076	0.30	132	132	9,461	12,53,092
	Service Road									
8	Tack coat	Sqm	1	28,028	7.00		1,96,193	1,96,193	18	35,07,922
9	BC with 30 mm	Cum	1	28,028	7.00	0.03	5,886	5,886	10,335	6,08,27,954
10	Micro Surfacing	Sqm	1	28,028	7.00		1,96,193	1,96,193	162	3,17,83,185
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	972	18.7		18,137	18,137	18	3,24,291
12	Wearing Coat BC with 30 mm	Cum	1	972	18.7	0.03	544	544	12,641	68,78,138
13	Milling of Ex. Wearing Coat	Sqm	1	972	18.7		18,137	18,137	90	16,32,339
14	Painting of Crash Barrier	Sqm	4	972		1.12	4,337	4,337	109	4,72,747
	Other Works									
15	Raising of Road Kerb	Rmt	-	1,18,937			-	-	330	-
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	7,848			15,696	15,696	202	31,64,314
17	Painting of Kerb	Sqm	2	1,18,937		0.375	89,202	89,202	109	97,23,063

Major Maintenance Cost (FY 2043)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
18	Road Marking	Sqm					61,539	61,539	573	
	Road Marking on BC						54,682	54,682	573	3,13,33,034
	Road Marking on Micro surfacing						6,857	6,857	682	46,76,425
	MCW									
	a) Median & Edge line	Sqm	4	67,410	0.15		40,446			
	b) Lane line	Sqm	2	22,245	0.10		4,449			
	Service Road									
	a) Edge line	Sqm	2	58,858	0.10		11,772			
	b) Lane line	Sqm	1	19,423	0.10		1,942			
	Junction crossing	Sqm					2,930			
19	Filling of Earthen shoulder	Cum					18,455	18,455	444	81,92,118
	MCW		2	62,882	2.00	0.06	15,092			
	Service Road		1	28,028	2.00	0.06	3,363			
21	Miscellaneous	5%								3,27,92,196
Total Major Maintenance Cost (Rs.)										**68,86,36,123**
Total Major Maintenance Cost with GST (Rs.)										**81,25,90,626**
Total Major Maintenance Cost with GST (Cr.)										**81.26**
Per km Cost (lakh)										**126.57**
Escalation Factor for Major Maintenance (FY 2043)										**1.90**
Total Escalated Cost for Major Maintenance (FY 2043) (Cr.)										**134.64**

FP Project Management

Technical Due Diligence of Kotwa -Muzaffarpur Section (from km.440+000 to km. 520+000) of NH-28 in the State of Bihar on TOT Mode

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025
Tel: +91-22-6660 3901
e-mail: pfmumbai@fpindia.com www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	SG / VK	CSB	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location of the Project Road 4
2.3 Climate 5
2.4 Terrain 6
2.5 Abutting Land Use 6
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Development as per Schedule B 6
3 Condition Assessment of Project Road 8
3.1 Pavement 8
3.2 Pavement Condition Survey 8
3.3 Service Road / Slip Road 13
3.4 Major / Minor Junctions 14
3.5 Condition Survey of Bridge 15
3.6 Condition Survey of Culverts 38
3.7 Drainage 40
3.8 Slope Protection and Chute Drain 41
3.9 Road Furniture 42
3.10 Avenue Plantation and Median Plantation 52
3.11 Toll Plaza 53
3.12 Lane Equipment 55
3.12.1 RFID ETC Transceiver 56
3.12.2 Lane Controller with Industrial PC 56
3.12.3 Automatic Vehicle Classification (AVC) Sensors 56
3.12.4 Automatic Lane Barrier 57
3.12.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 57

3.12.6 Incident Capture Camera (AVC Camera) 58
3.12.7 License Plate Image Capture Camera (LPIC) 58
3.12.8 Over Head Lane Signal (OHLS) 59
3.12.9 Toll Booth Equipment 59
3.12.10 Medium Speed Weigh in Motion (MSWIM) 60
3.13 Plaza Equipment 60
3.13.1 TMS Server 60
3.13.2 55" LED screen for CCTV monitoring 61
3.13.3 Workstations in Control Room, POS room 61
3.14 Advanced Traffic Management System (ATMS) 62
3.14.1 Automatic Traffic Counter cum classifier (ATCC) 62
3.14.2 Mobile Radio communication System (MRCS) 62
3.14.3 Emergency Call Boxes (ECB) 62
3.14.4 MET System 63
3.14.5 Variable Message Signboards (VMS) 63
3.14.6 CCTV Surveillance Cameras 64
3.14.7 Vehicle Actuated Speed Display (VASD) 65
3.14.8 Adequacy of Toll Collection System and ATMS 65
3.15 Truck Layby 65
3.16 Traffic Aid Post and Medical Aid Post 66
3.17 Toilet Block 67
3.18 Bus Bays and Passenger Shelters 67
3.19 Balance Work Status 68
3.20 Operation and Maintenance 70
3.20.1 O&M Contract 70
3.20.2 Organization Chart 70
3.20.3 Operation 72
3.20.4 Routine Maintenance 72
4 Pavement Investigation and Assessment 73
4.1 General 73
4.2 Axle Load and VDF 73
4.3 Design Traffic 73
4.4 Network Survey Vehicles (NSV) Survey 74
4.5 Structural Investigations 75
4.6 Test pit and Subgrade Investigation 75
4.7 Periodic Maintenance Strategy 82
5 Cost Estimates 83

5.1 General 83
5.2 Rate Assumption 83
5.3 Balance Work Cost....84
5.4 Routine O&M Cost....85
5.5 Major Maintenance Cost....86
5.6 Periodic Replacement of TMS / ATMS System....86
5.7 Escalation Assumption 87
5.8 Summary of Cost....87
Annexures 89
Annexure I - Routine Maintenance Cost....90
Annexure II - Major Maintenance Cost....98

List of Tables

Table 3-1 Pavement Details 8
Table 3-2 Summary of Pavement Condition 8
Table 3-3 Summary of Structures 15
Table 3-4 Condition Survey of Major Structure 16
Table 3-5 Summary for Road Furniture Items 43
Table 3-6 Details of Summary for Toll Plaza Items 53
Table 4-1 Vehicle Damage Factor 73
Table 4-2 MSA Calculation 73
Table 4-3 Roughness Index Summary 74
Table 4-4 FWD Summary 75
Table 4-5 Test Results Summary of Natural Ground Soil Samples 76
Table 4-6 Granular Layer's Test Result Summary 76
Table 4-7 Test Results Summary of Subgrade 78
Table 4-8 Test Results Summary of Granular Layer's Test Result Summary 79
Table 4-9 DCP-Equivalent CBR Summary 80
Table 4-10 Major Maintenance Cycle 82
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 83
Table 5-2 Summary of Unit Rates 84
Table 5-3 Summary of Balance Works 85
Table 5-4 Summary of Operation Cost 86
Table 5-5 Summary of Major Maintenance Cost 86
Table 5-6 Escalation 87

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start and End of Project Road (LHS) 5
Figure 2-3 Start and End of Project Road (RHS) 5
Figure 3-1 Photographs of Pavement Condition (MCW) - RHS 9
Figure 3-2 Photographs of Pavement Condition (MCW) - LHS 11
Figure 3-3 Photographs of Service Road (RHS) 13
Figure 3-4 Photographs of Service Road (LHS) 13
Figure 3-5 Photographs of Major Junctions 14
Figure 3-6 Photographs of Minor Junctions 15
Figure 3-7 Photographs of Major Structures 28
Figure 3-8 Photographs of Box Culverts / Hume Pipe Culverts 39
Figure 3-9 Photographs of Existing Drain (RHS) 40
Figure 3-10 Photographs of Existing Drain (LHS) 41
Figure 3-11 Photographs of Slope Protection and Chute Drain 42
Figure 3-12 Photographs of Pavement Marking 44
Figure 3-13 Photographs of Road Studs 44
Figure 3-14 Photographs of Road Signages (RHS) 45
Figure 3-15 Photographs of Road Signages (LHS) 47
Figure 3-16 Photographs of Street Light 48
Figure 3-17 Photographs of Crash Barrier 49
Figure 3-18 Photographs of Delineator 50
Figure 3-19 Photographs of Pedestrian Guard Rail 51
Figure 3-20 Photographs of Road Land Boundary 52
Figure 3-21 Photographs of Avenue Plantation and Median Plantation 52
Figure 3-22 Photographs of Toll Plaza 54
Figure 3-23 Photographs of Truck Lay-bye 66
Figure 3-24 Photograph of Traffic Aid Post / Medical Aid Post 66
Figure 3-25 Photograph of Toilet Block 67
Figure 3-26 Photograph of Passenger Shelter 68

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an infrastructure investment trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed M/s. **FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Kotwa - Muzaffarpur section of NH-27 (Old NH-28) from km. 440+000 to km. 520+000 [Bundle-III] in the State of Bihar through Annuity BOT basis (hereinafter referred as "Project Road").

Kotwa Muzaffarpur Tollway Private Limited, (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance, and transfer of Kotwa - Muzaffarpur section (from km. 440+000 to km. 520+000) of NH-27 or Project Road under TOT Bundle-3. The project was awarded to Concessionaire on 20th October 2020 with a concession period of 30 years by National Highway Authority of India (NHAI). The length of Project Road is 80.0 km with one toll plaza at Parsonikhem at km. 467+700.

Accordingly, Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, Punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, Axle Load, material investigations etc.
- Formulation of future major maintenance strategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period
- Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our proposed team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study shall include review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement survey conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project as per the contract and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams are expected to carry out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection.
- The information like material sources and the probable cost is collected for the purpose of cost estimates.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity are gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the Consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyse the same as per the best engineering / industry practices.

The site visit and inspection for the reconnaissance, road inventory and condition survey were carried from **03rd April 2026** to **05th April 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features and overviews of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates:** The chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India had signed the Concession Agreement with **Kotwa Muzaffarpur Tollway Private Limited**, is a company promoted by Cube Highways or a Special Purpose Vehicle (SPV) formed for implementing this project on 27th December 2019. The Appointed Date for the Project Road is 20th October 2020.

The project is being developed through BOT mode under TOT (Toll Operate Transfer) Bundle-3 with a concession period of 30 years from the Appointed Date.

2.2 Location of the Project Road

The Project Road is a part of National Highway No. 27, (Old NH-28) of Kotwa - Muzaffarpur section in the state of Bihar. The total project length is 80.00 kms.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map

The Photographs taken during the site visit are presented as below.

Figure 2-2 Start and End of Project Road (LHS)

Figure 2-3 Start and End of Project Road (RHS)

2.3 Climate

The climate of the project area is characterized by general dryness (except in the southwest monsoon season), a hot summer and a cold winter. The year may be divided into four seasons. The period from about the middle of December to February is the cold season. This is followed by the summer season from March to about the end of June. The south-west monsoon season commences in June and continues up to about the end of September. The month with the most days of rain alone in Muzaffarpur is July, with an average of 20.0 days. Based on this categorization, the most common form of precipitation throughout the year is rain alone, with a peak probability of 66% in July. The period from mid-September to the middle of November constitutes the post-monsoon or transition season. The temperature ranges from a minimum of 9°C in winter to 38°C in summer. April, May and June are generally the hottest months and December and January are the coldest months. Relative humidity is high, averaging about 60% to 67% in May month and decrease it gradually up to 85% at the end of season due to gradual warming. The average annual rainfall in the district is 720 millimeters.

2.4 Terrain

This section of National Highway traverses through plain / rolling terrain.

2.5 Abutting Land Use

As NH-27 is a part of the East West Corridor, the following are the various developments that are anticipated in the Four Laning of Kotwa Muzaffarpur Section.

This Project Road reduces the travel time for getting access to Gorakhpur, Lucknow, Bongaigaon, Siliguri, Darbhanga and Porbandar which results in better industrial growth and economy.

Lots of development is anticipated in Kotwa Muzaffarpur Corridor, which transits through NH-27 / NH-28 and hence the development / maintenance of the Project Road would accelerate the development as majority of traffic would use the highway for getting access to Champaran region.

The tourism industry gets a great booster as majority of people using this highway, for going to foreign like Nepal etc.,

A lot of commercial establishments along the Project Road in the form of hotels, snack Parlors may be developed in coming future as tourist will use this road for going to Nepal/ Ashok Stambh.

2.6 Right of Way

The width of the existing Right of Way (Row) for the Project Road varies from 35 m to 45/ 120 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services located along the Project Road were shifted to the PROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, etc.

2.8 Development as per Schedule B

The Project Road from Kotwa (km. 440.000) to Muzaffarpur (km. 520.000) has been developed as a four-lane divided carriageway with median width 1.5 m to 4.5 m, service road and other arrangements. The Project Road passes through rural as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Tolling, operation, management, maintenance, and transfer of the Project Road subject to and in accordance with the provisions of this Agreement; and
b) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all the obligations of the Concessionaire under this Agreement.

The following is the Scope of Work as per Schedule-B of the Concession Agreement.

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km.	80.00	From October 2020
2	Construction of Service Road	km.	0.450	0.900 B/S
3	Widening of Existing Pipe Culvert	Nos.	01	
4	Widening of Existing Box Culvert	Nos.	01	
5	Improvement of Major Junction	Nos.	01	X Type
6	Improvement of Minor Junction	Nos.	21	
7	Reinforce Cement concrete cover Drain with footpath	km.	0.450	0.900 B/S
8	Solar Blinker	Nos.	74	As per Corrigendum-04
9	W-Beam Safety Barrier	km.	1.940	
10	Guard Post	km.	0.900	
11	Bar marking by Thermoplastic Paint	km.	80.00	
12	Cantilever Sign Boards	Nos.	04	

Note:

1. *The above quantities are the minimum to be provided and any addition to the above shall not be treated under change of scope.*

2. *The Concessionaire has completed most of the above-said work given in table and the same has been confirmed by the IE vide their letter no. CPCPL/IE/03-24/315 Dated 27.03.2024 and letter no. CPC/IE/06-24/335 Dated 14.06.2024. However, some work is balance due to land unavailability. The balance work details are as below.*

Sr. No.	Descriptions	Unit	Balance Quantity	Chainage (km)	Remark
1	Service Road	km	0.175	455+590 to 455+765	LHS
2	Drain	km	0.174	455+596 to 455+770	LHS
3	PGR	km	0.113	455+587 to 455+700	LHS

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 8.75 m with earthen shoulder of 1.0 m to 2.0 m on either side. The Project Road has a median width of 1.5 m to 4.5 m throughout its length. The entire stretch of Project Road including service road is constructed with flexible pavement (except few stretches of MCW). The pavement type for the toll plaza including taper and few stretches of main carriageway is of rigid pavement. The details of the existing pavement of the Project Road are tabulated below.

Table 3-1 Pavement Details

Sr. No.	Chainage (km)		Pavement Type		Length (km)
	From	To	LHS	RHS	
1	440.000	467.600	BT-Bituminous	BT-Bituminous	27.600
2	467.600	468.050	CC-Cement Concrete	CC-Cement Concrete	0.450
3	468.050	482.000	BT-Bituminous	BT-Bituminous	13.950
4	482.000	493.000	CC-Cement Concrete	BT-Bituminous	11.000
5	493.000	494.700	BT-Bituminous	BT-Bituminous	1.700
6	494.700	501.200	CC-Cement Concrete	BT-Bituminous	6.500
7	501.200	502.500	BT-Bituminous	BT-Bituminous	1.300
8	502.500	504.000	CC-Cement Concrete	BT-Bituminous	1.500
9	504.000	504.900	BT-Bituminous	BT-Bituminous	0.900
10	504.900	508.000	CC-Cement Concrete	BT-Bituminous	3.100
11	508.000	520.000	BT-Bituminous	BT-Bituminous	12.000

3.2 Pavement Condition Survey

The pavement condition survey was carried out from **03rd April 2026** to **05th April 2026** through visual inspection for the entire project length. From the visual inspection, it is found that the average pavement condition of the Project Road is Good to Fair. The summary of pavement condition survey is presented in table below:

Table 3-2 Summary of Pavement Condition

Rating	Main carriageway	
	LHS	RHS
Good	40%	75%
Fair	47%	25%
Fair / Poor	08%	-
Poor	05%	-
Very Poor	-	-
Total	**100%**	**100%**

The photographs taken during the site visit are presented below.

Figure 3-1 Photographs of Pavement Condition (MCW) - RHS

km. 519+000

km. 514+600

km. 509+000

km. 502+600

km. 493+600

km. 480+800

km. 471+800

km. 441+200

Shoulder - RHS

km. 502+600

km. 496+400

km. 491+725

km. 489+600

km. 486+000

km. 471+800

km. 465+600

km. 441+200

Figure 3-2 Photographs of Pavement Condition (MCW) - LHS

km. 440+650

km. 450+400

km. 460+650

km. 476+400

km. 481+500

km. 482+200

km. 485+800

km. 501+000

Shoulder - LHS

km. 440+650

km. 442+600

km. 448+000

km. 451+000

km. 458+000

km. 460+000

km. 471+600

km. 485+800

3.3 Service Road / Slip Road

a) Construction of New Service Road

Service Road with a partial width of 5.5 m to 7 m is constructed in a built-up area and adjoining underpass locations. The length of service road as per Concession Agreement / Corrigendum-05, 2019 is 53.870 kms on B/S. The photographs taken during the site visit are presented below.

Figure 3-3 Photographs of Service Road (RHS)

km. 519+600

km. 517+000

km. 515+600

km. 508+648

km. 481+255

km. 474+800

Figure 3-4 Photographs of Service Road (LHS)

km. 442+800

km. 451+400

km. 453+000

km. 454+000

km. 472+420

km. 501+600

3.4 Major / Minor Junctions

There are 07 nos. of major junctions and 86 nos. of minor junctions along Project Road. The photographs taken during the site visit are presented below.

Figure 3-5 Photographs of Major Junctions

Major Junction at km. 519+650

Major Junction at km. 516+900

Major Junction at km. 492+860

Major Junction at km. 491+350

Figure 3-6 Photographs of Minor Junctions

km. 508+648 **km. 504+500** **km. 501+800**

km. 493+937 **km. 482+800** **km. 481+255**

3.5 Condition Survey of Bridge

The inventory of structures including Major Bridges, Minor Bridges, ROB's, Underpasses and Culverts are presented in table as below:

Table 3-3 Summary of Structures

Type of Structure	Total No. of Structures	Remarks
Major Structures:		
Road Over Bridge (ROB)	2	
Flyover	2	
Vehicular Underpass (VUP)	2	
Light Vehicular Underpass (LVUP)	6	
Pedestrian Underpass (PUP)	1	
Cattle Underpass (CUP)	-	
Major Bridges (MJB)	1	
Minor Bridges (MNB)	7	
Culverts:		
Pipe Culverts	20	
Box Culverts	81	
Slab Culverts	16	
Total	**138**	

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-4 Condition Survey of Major Structure

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
1	442.280	Major Bridge (Canal) LHS- 1 x 26 + 1 x 24 + 1 x 26 m RHS – 6 x 12 m	Age	New - 2 Lane	New – 2 Lane	The structure is in sound condition. Drainage spouts to be clean at both sides. Expansion Joints need to be clean.
			Foundation	Pile Foundation	Well Foundation	
			Sub structure Abutment / Pier	Abutment - RCC Wall type Piers - RCC piers Condition - Satisfactory	Abutment - RCC Wall type Piers - RCC piers Condition - Satisfactory	
			Super Structure	3 Span RCC Girders and Slab Footpath - Shoulder side Condition - Satisfactory	6 Span RCC Girders and Slab Footpath – Not Available Condition - Satisfactory	
			Bearing	Bearing – POT/PTFE	Bearing – Tar Paper	
			Slope Protection	RCC Return and CC Pitching	RCC Return and CC Pitching	
			Nalla Bed	Flowing water	Flowing water	
			Parapet / Railing	RCC railing with Crash Barrier - Satisfactory	Crash Barrier -Satisfactory	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating clear	Water grating clear	
2	443.375	Minor Bridge LHS - 2 x 13.50 m for MCW LHS - 2 x 13.50 m for SR RHS - 2 x 13.50 m for MCW RHS - 2 x 13.50 m for SR	Age	New - 2 Lane	New – 2 Lane	The structure is in sound condition. Drainage spouts to be clean at both sides. Expansion Joints need to be clean.
			Foundation	Pile Foundation	Pile Foundation	
			Sub structure Abutment / Pier	Abutment - RCC Wall type Piers - RCC piers Condition - Satisfactory	Abutment - RCC Wall type Piers - RCC piers Condition - Satisfactory	
			Super Structure	2 Span RCC Girders and RCC Slab Footpath – Not Available Condition - Satisfactory	2 Span RCC Girders and RCC Slab Footpath - Shoulder side Condition - Satisfactory	
			Bearing	Bearing – Elastomeric	Bearing – Elastomeric	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	**LHS**	**RHS**	
			Slope Protection	RCC Return	RCC Return	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating clear	Water grating clear	
3	443.800	LVUP 1 x 10.0 m	Age	Old - 2 Lane	New – 2 Lane	The structure is in sound condition. Drainage spouts to be clean at both sides. Drainage arrangement not provided at approaches. Observed vegetation on RE wall, needs to be removed.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC Wall type Piers - NA Condition - Satisfactory	Abutment - RCC Wall type Piers - NA Condition - Satisfactory	
			Super Structure	1 Span RCC Slab Footpath – Shoulder side Condition - Satisfactory	1 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	
			Bearing	Bearing – Tar Paper	Bearing – Tar Paper	
			Slope Protection	RE Panel Wall	RE Panel Wall	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	-	-	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drainage spout to be clean	Drainage spout to be clean	
4	451.986	ROB 4 x 24.5 + 1 x 27.5 m	Age	New - 2 Lane	New – 2 Lane	The structure is in sound condition. Drainage spouts to be clean at both sides. Expansion
			Foundation	Pile Foundation	Pile Foundation	
			Sub Structure Abutment / Pier	Abutment – RE Wall & RCC Piers Piers - RCC Piers	Abutment - RE Wall & RCC Piers Piers - RCC Piers	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
				Condition - Satisfactory	Condition - Satisfactory	Joints need to be clean.
			Super Structure	5 Span PSC Girders and RCC Slab Footpath - Shoulder side Condition - Satisfactory	5 Span PSC Girders and RCC Slab Footpath - Shoulder side Condition - Satisfactory	
			Bearing	Bearing – POT/PTFE	Bearing – POT/PTFE	
			Slope Protection	RCC Return and Stone Pitching	RCC Return and Stone Pitching	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating clear	Water grating clear	
5	453.612	Flyover 1 x 35 + 4 x 24 m	Age	New-Single Lane	New-Single Lane	The structure is in sound condition. Expansion Joints need to be clean. Approach slab @ both sides settled, requires to be repaired. Drainage arrangement not provided at approaches.
			Foundation	Pile Foundation	Pile Foundation	
			Sub Structure Abutment / Pier	Abutment - RE Panel wall Pires – RCC Piers Condition - Satisfactory	Abutment - RE Panel wall Pires – RCC Piers Condition - Satisfactory	
			Super Structure	PSC Girders + RCC slab Condition - Satisfactory	PSC Girders + RCC slab Condition-Satisfactory (Epoxy done in girders)	
			Bearing	POT/PTFE	POT/PTFE	
			Slope Protection	RE Panel Wall	RE Panel Wall	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	Crash Barrier	Crash Barrier	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
			Drainage	Drain spout provided	Drain spout provided	
6	457.430	Minor Bridge 1 x 7 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition. Expansion Joints need to be clean. vegetation/ bushes from both waterway ends. Needs to be cleaned.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment – RCC Wall Condition - Satisfactory	Abutment – RCC Wall Condition - Satisfactory	
			Super Structure	1 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	1 Span RCC slab Footpath - Shoulder side Condition - Satisfactory	
			Bearing	Bearing – Tar Paper	Bearing – Tar Paper	
			Slope Protection	RE Panel Wall	RE Panel Wall	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating clear	Water grating clear	
7	461.678	LVUP 1 x 10 m	Age	Old - 2 Lane	New – 2 Lane	The structure is in sound condition. Drainage spouts to be clean at both sides. Drainage arrangement not provided at approaches.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC Box type Piers - NA Condition - Satisfactory	Abutment - RCC Box type Piers - NA Condition - Satisfactory	
			Super Structure	1 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	1 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	
			Bearing	Bearing – Tar Paper	Bearing – Tar Paper	
			Slope Protection	RE Panel Wall	RE Panel Wall	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
			Expansion Joint	-	-	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drainage spout to be clean	Drainage spout to be clean	
8	471.965	Minor Bridge 2 x 10.5 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition. Expansion joints need to be cleaned. vegetation/ bushes from both waterway ends. Needs to be cleaned.
			Foundation	Pile Foundation	Pile Foundation	
			Sub structure Abutment / Pier	Abutment – RCC Box Type Wall/Pier – RCC Wall Condition - Satisfactory	Abutment – RCC Box Type Wall/Pier – RCC Wall Condition - Satisfactory	
			Super Structure	2 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	2 Span RCC slab Footpath - Shoulder side Condition - Satisfactory	
			Bearing	Bearing – Elastomeric	Bearing – Elastomeric	
			Slope Protection	RCC Return and CC Pitching	RCC Return and CC Pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drain spout provided	Drain spout provided	
9	472.555	Minor Bridge 1 x 10.5 m	Age	New - 2 lane	New - 2 lane	The Structure is in sound condition, Expansion joints need to be clean. Observed vegetation / bushes from both waterway ends.
			Foundation	Pile Foundation	Pile Foundation	
			Sub Structure Abutment / Pier	Abutment – RCC Box Type Wall/Pier – RCC Wall Condition - Satisfactory	Abutment – RCC Box Type Wall/Pier – RCC Wall Condition - Satisfactory	
			Super Structure	1 Span RCC Slab Footpath - Shoulder side	1 Span RCC slab Footpath - Shoulder side	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
				Condition - Satisfactory	Condition - Satisfactory	Needs to be cleaned.
			Bearing	Bearing – Elastomeric	Bearing – Elastomeric	
			Slope Protection	RCC Return and CC Pitching	RCC Return and CC Pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	Crash Barrier with RCC Railing- Satisfactory	Crash Barrier with RCC Railing- Satisfactory	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drain spout provided	Drain spout provided	
10	472.982	LVUP 1 x 10 m	Age	Old - 2 Lane	New – 2 Lane	The Structure is in sound condition, Drainage spout to be clean at both sides. Drainage arrangement not provided at approaches.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC Box type Condition - Satisfactory	Abutment - RCC Box type Condition - Satisfactory	
			Super Structure	1 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	1 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	
			Bearing	Bearing – Tar Paper	Bearing – Tar Paper	
			Slope Protection	RE Panel Wall	RE Panel Wall	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	-	-	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drainage spout to be clean	Drainage spout to be clean	
11	481.255	LVUP 1 x 10 m	Age	Old - 2 Lane	New – 2 Lane	The Structure is in sound condition, Drainage spout to
			Foundation	Open Foundation	Open Foundation	
			Sub Structure	Abutment - RCC Box type	Abutment - RCC Box type	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
			Abutment / Pier	Condition - Satisfactory	Condition - Satisfactory	be clean at both sides. Drainage arrangement not provided at approaches.
			Super Structure	1 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	1 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	
			Bearing	Bearing – Tar Paper	Bearing – Tar Paper	
			Slope Protection	RE Panel Wall	RE Panel Wall	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	-	-	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drainage spout to be clean	Drainage spout to be clean	
12	488.155	Minor Bridge 1 x 44.5 m	Age	New - 2 lane (Bottleneck)	New - 2 lane	The structure is in sound condition. Expansion joints need to be clean. vegetation / bushes from both waterway ends. Needs to be cleaned.
			Foundation	Well Foundation	Well Foundation	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	1 Span RCC Slab Footpath - NA Condition - Satisfactory	1 Span RCC slab Footpath - Shoulder side Condition - Satisfactory	
			Bearing	POT/PTFE	Plate Bearing	
			Slope Protection	RCC Return and CC Pitching	RCC Return and CC Pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drain spout provided	Drain spout provided	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
13	490.558	Minor Bridge 1 x 13.50 m	Age	New - 2 lane	New - 2 lane (Bottleneck)	The structure is in sound condition. Expansion joints need to be clean. vegetation / bushes from both waterway ends. Needs to be cleaned.
			Foundation	Pile Foundation	Pile Foundation	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	1 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	1 Span RCC slab Footpath - NA Condition - Satisfactory	
			Bearing	Elastomeric	Elastomeric	
			Slope Protection	RCC Return & CC Pitching	RCC Return & CC Pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable	Stable	
			Drainage	Drain spout provided	Drain spout provided	
14	493.937	VUP 2 x 12.56 m	Age	Old - 2 Lane	New – 2 Lane	The Structure is in sound condition. Drainage spouts to be clean at both sides. Drainage arrangement not provided at approaches. Expansion Joints need to be clean.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC Box type Condition - Satisfactory	Abutment - RCC Box type Condition - Satisfactory	
			Super Structure	2 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	2 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	
			Bearing	Elastomeric	Elastomeric	
			Slope Protection	RE Panel Wall	RE Panel Wall	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat /	BC - Satisfactory	BC - Satisfactory	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
			Surface			
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drainage spout to be clean	Drainage spout to be clean	
15	496.842	Minor Bridge 2 x 13.5 m	Age	New - 2 lane	New - 2 lane (Bottleneck)	The structure is in sound condition. Expansion joints to be clean. vegetation / bushes from both waterway ends. Needs to be cleaned.
			Foundation	Pile Foundation	Pile Foundation	
			Sub structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	2 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	2 Span RCC slab Footpath -NA Condition - Satisfactory	
			Bearing	Elastomeric	Elastomeric	
			Slope Protection	RCC Return & CC Pitching	RCC Return & CC Pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	Crash Barrier- Satisfactory	Crash Barrier- Satisfactory	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable	Stable	
			Drainage	Drainage spout to be clean	Drainage spout to be clean	
16	501.800	LVUP 1 x 10 m	Age	Old - 2 Lane	New – 2 Lane	The structure is in sound condition. Drainage spouts to be clean at both sides. Drainage arrangement not provided at approaches.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC Box type Condition - Satisfactory	Abutment - RCC Box type Condition - Satisfactory	
			Super Structure	1 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	1 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	
			Bearing	Tar Paper	Tar Paper	
			Slope Protection	RE Panel Wall	RE Panel Wall	
			Nalla Bed	Service Road	Service Road	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	-	-	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drainage spout to be clean	Drainage spout to be clean	
17	508.648	VUP 2 x 12.56 m	Age	Old - 2 Lane	New – 2 Lane	The structure is in sound condition. Drainage spouts to be clean at both sides. Drainage arrangement not provided at approaches. Expansion Joints need to be clean.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC Box type Condition - Satisfactory	Abutment - RCC Box type Condition - Satisfactory	
			Super Structure	2 Span RCC Slab Footpath - Shoulder Side Condition - Satisfactory	2 Span RCC Slab Footpath - Shoulder Side Condition - Satisfactory	
			Bearing	Elastomeric	Elastomeric	
			Slope Protection	RE Panel Wall	RE Panel Wall	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drainage spout to be clean	Drainage spout to be clean	
18	511.735	LVUP 1 x 10 m	Age	Old - 2 Lane	New – 2 Lane	The structure is in sound condition. Drainage spouts to be clean at both sides. Drainage arrangements not provided at approaches.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC Box type Condition - Satisfactory	Abutment - RCC Box type Condition - Satisfactory	
			Super Structure	1 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	1 Span RCC Slab Footpath - Shoulder side Condition - Satisfactory	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
			Bearing	Tar Paper	Tar Paper	
			Slope Protection	RE Panel Wall	RE Panel Wall	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	-	-	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drainage spout to be clean	Drainage spout to be clean	
19	515.600	PUP 1 X 3 m	Age	Old - 2 Lane	New – 2 Lane	The structure is in sound condition.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC Box type Condition - Satisfactory	Abutment - RCC Box type Condition - Satisfactory	
			Super Structure	Single Span RCC Slab Footpath - Not Available Condition - Satisfactory	Single Span RCC Slab Footpath - Not Available Condition - Satisfactory	
			Bearing	-	-	
			Slope Protection	Stone Pitching	Stone Pitching	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	MBCB - Satisfactory	MBCB- Satisfactory	
			Expansion Joint	Not Available	Not Available	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Not Available	Not Available	
20	516.035	ROB 6 x 21.7 + 1 x 37.5 m (Skew)	Age	New - 2 Lane	New – 2 Lane	The structure is in sound condition. Expansion Joints need to be clean.
			Foundation	Pile Foundation	Pile Foundation	
			Sub Structure Abutment / Pier	Abutment - RE Wall & RCC Piers Piers - RCC Piers	Abutment - RE Wall & RCC Piers Piers - RCC Piers	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
				Condition - Satisfactory	Condition - Satisfactory	
			Super Structure	7 Span PSC Girders and RCC Slab Footpath - Shoulder side Condition - Satisfactory	7 Span PSC Girders and RCC Slab Footpath - Shoulder side Condition - Satisfactory	
			Bearing	Bearing – POT/PTFE	Bearing – POT/PTFE	
			Slope Protection	RCC Return and Stone Pitching	RCC Return and Stone Pitching	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating clear	Water grating clear	
21	519.600	Flyover 1 x 35 + 4 x 24 m	Age	New-Single Lane	New-Single Lane	The structure is in sound condition. Expansion Joints need to be clean. Approach slab @ both ends settled, require to be repaired.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment - RE Panel wall Pires – RCC Piers Condition - Satisfactory	Abutment - RE Panel wall Pires – RCC Piers Condition - Satisfactory	
			Super Structure	PSC Girders + RCC slab Condition - Satisfactory	PSC Girders + RCC slab Condition – Satisfactory	
			Bearing	POT/PTFE	POT/PTFE	
			Slope Protection	RE Panel Wall	RE Panel Wall	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available (Require cleaning)	Available (Require cleaning)	
			Wearing Coat / Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drain spout provided	Drain spout provided	

Figure 3-7 Photographs of Major Structures

Structural, Bottom & REW view at km. 519+600 **Flyover ROB at km. 516+035**

Structural, Drainage & Expansion view of ROB at km. 516+035

W.C at ROB at km. 516+035

Structural view of PUP at km. 515+600

Structural view of LVUP at km. 511+735

RE Wall view of LVUP at km. 511+735

Structural, Drainage & REW view of VUP at km. 508+648

Structural, RE Wall view of LVUP at km. 501+800

Structural, Expansion view of MNB at km. 496+842

WC of MNB at km. 496+842

Structural, Ceiling, Drainage view of VUP at km. 493+937

RE Wall of VUP at km. 493+937 **Structural, Expansion & WC view of MNB at km. 490+558**

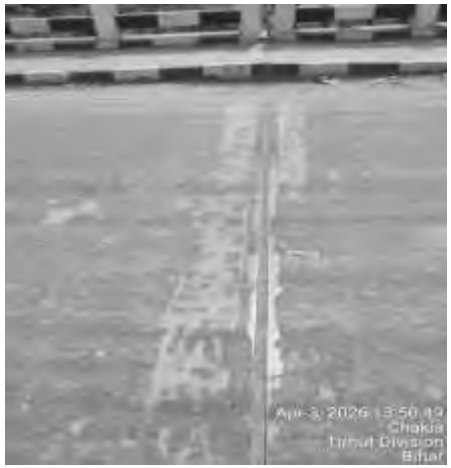
Structural, Expansion Joint, WC & mid portion view of MNB at km. 488+155

Structural & RE Wall at km. 472+982,

WC View of LVUP at km. 481+255 Structural view of LVUP

RE Wall & WC view of LVUP at km. 472+982

Structural view of MNB B/S at km. 472+555



Expansion Joint & WC view of MNB B/S at km. 472+555 **Structural view of MNB B/S at km. 471+965**

Mid portion, Expansion Joint & WC view of MNB at km. 471+965 **Structural View of LVUP at km. 461+678**

RE Wall & WC view of LVUP at km. 461+678

Structural & Mid portion view of MNB at km. 457+430

WC view of MNB at km. 457+430

Structural and RE Wall view of Flyover at km. 453+612

Expansion Joint & WC view of FO at km. 453+612 **Structural view of ROB at km. 451+986**

Structural, expansion, WC and new FOB IP view of ROB at km. 451+986

Structural & General, RE Wall view of LVUP at Km. 443+800

Structural View of MNB at km. 443+375

View of Expansion Joint & WC of MNB at km. 443+375

Structural view of MJB B/S at km. 442+200

Expansion Joint & WC, Mid portion view of MJB at km. 442+200

3.6 Condition Survey of Culverts

The cross-drainage structure includes hume pipe culverts, box culverts and slab culverts at various locations. There are 20 Nos. of pipe culverts, 16 Nos. of slab culverts and 81 Nos. of box culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts and slab culverts is satisfactory. The RCC railing has been provided at culvert locations, which is maintained properly.

In most of culverts, the waterway is clear. However, near to urban area and some location, it is found blocked due to debris, drainage water or bushes, tree growth, which must be removed and cleaned before monsoon. The wing wall has been provided for slope protection.

The culverts are maintained by the Concessionaire during O&M period. However, in case of some culverts, damaged wing walls have been observed at culverts, which need to be addressed under routine repair work.

Figure 3-8 Photographs of Box Culverts / Hume Pipe Culverts

km. 507+200

km. 506+100

km. 502+450

km. 498+540

km. 493+320

km. 465+050

km. 461+320

km. 451+100

3.7 Drainage

There are 0.9 kms of existing drain on both side of the Project Road as per Concession Agreement. However, there also exist 26.780 kms of shoulder drain (BHS) and 22.06 kms of median drain along the Project Road. The photographs taken during site visit is presented as below:

Figure 3-9 Photographs of Existing Drain (RHS)

km. 517+000

km. 513+800

km. 511+735

km. 504+500

km. 501+800

km. 481+255

km. 474+800

km. 462+000

Figure 3-10 Photographs of Existing Drain (LHS)

km. 442+800

km. 453+000

km. 455+500

km. 472+420

km. 480+950

km. 493+400

km. 504+600

km. 508+648

km. 511+600

3.8 Slope Protection and Chute Drain

Slope protection for high embankment areas has been done / being done by providing revetment, chute drain and pitching at some locations. It has been found as per the standards of O&M contract. The photographs taken during the site visit are presented below.

Figure 3-11 Photographs of Slope Protection and Chute Drain

km. 516+035

ROB km. 515+600

PUP km. 496+842 MNB

km. 490+558

km. 488+155

km. 496+842

km. 490+558

3.9 Road Furniture

The Concessionaire has provided additional road furniture along Project Road as per the standards and specifications mentioned in Schedule-C. The details of the items are provided below.

a) Solar Blinkers

The Concessionaire has provided a total of 74 Nos. solar blinkers at median opening locations for the entire length of Project Road.

b) Transverse / Thermoplastic Bar Marking Locations

Transverse / Thermoplastic Bar Marking is provided on either side of carriageway for the entire length of Project Road.

c) New Installation of Safety Barriers

The Concessionaire has newly installed 1940 m of safety barrier wherever required along the Project Road.

d) Pedestrian Guard Rails

The Concessionaire has additionally provided pedestrian guard rail for 450 m length along the Project Road.

e) Additional Gantry / Cantilever Sign Board

The Concessionaire has additionally provided gantry / cantilever sign boards (4 Nos.) at VUP and flyover locations along the Project Road.

f) Summary of Quantity for Road Furniture Items

Following are the details of the summary of quantity for road furniture's items provided at Site.

Table 3-5 Summary for Road Furniture Items

Sr. No.	Description	Unit	Quantity
1	Solar Blinkers	Nos.	74
2	Transverse Bar Makings / Thermoplastic Bar Markings	km.	80.0
3	New installation of Safety Barriers		
a	W-Beam Safety Barriers	Rmt	1940.00
4	Pedestrian Guard Rails	Rmt	900.00
5	Road Studs / Raised Pavement Markers	As per Section-9 of IRC:SP:84-2014	
6	Road Markings		
7	Traffic Delineators		
8	Kilometer / Hectometer / Boundary Stones		
9	Additional Sign Boards		
10	Cantilever Sign Boards	Nos.	4
11	Shoulder Mounted Dual Post Sign Boards	As per Section-9 of IRC: SP:84-2014	
12	Shoulder / Median Mounted Single Post Sign Boards		

Pavement Marking

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Pavement marking is faded at some locations which needs rectification. Some of the photographs of road marking are presented below.

Figure 3-12 Photographs of Pavement Marking

km. 441+400-LHS

km. 446+00-LHS

km. 516+900-LHS

km. 514+600-RHS

km. 502+00-RHS

km. 474+200-RHS

Road Studs

Cat's eye / road studs for the Project Road are done as per the design standards indicated in section 12 of Schedule-D. Cat's eye has been fixed at junction and zebra crossings. However, at few locations some cat's eyes have damaged which need rectification in O&M. Some of the photographs of road studs are presented below.

Figure 3-13 Photographs of Road Studs

km. 491+400-RHS

km. 482+800-RHS

km. 479+200-RHS

km. 450+400-LHS

km. 458+00-LHS

km. 476+400-LHS

Traffic signage / Median Kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards and median kerb paint are faded at few locations. The Concessionaire needs to rectify the same. Some of the photographs of sign boards are presented below:

Figure 3-14 Photographs of Road Signages (RHS)

km. 519+600

km. 515+035

km. 515+100

km. 513+380

km. 508+648

km. 504+500

km. 501+800

km. 501+240

km. 496+100

km. 491+600

km. 482+100

Figure 3-15 Photographs of Road Signages (LHS)

km. 442+600

km. 445+200

km. 446+00

km. 447+300

km. 448+00

km. 449+050

km. 450+400

km. 452+800

km. 454+000

km. 455+400

km. 458+450

Highway Lighting / Solar Blinker

Highway lighting is provided at underpasses, flyovers, toll plaza, ROBs and built-up locations. High mast lighting is provided at toll plaza location.

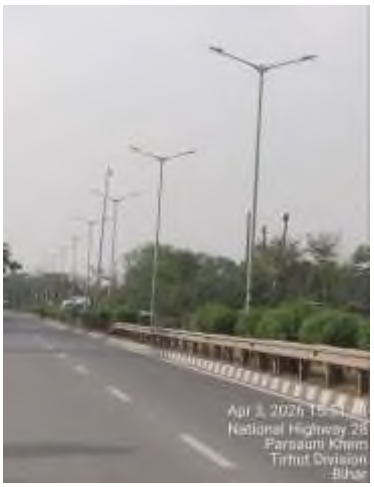
At underpass and flyover locations, highway lighting is provided at the structure locations and at its approaches.

Solar amber blinker signals are provided at each median opening location. These lights are properly maintained and are in good working condition. Regular maintenance work is carried out to ensure their efficient operation. Some of the photographs of highway lightings are presented below.

Figure 3-16 Photographs of Street Light

km. 519+600

km. 518+400


km. 467+290

km. 515+100

km. 504+500

km. 479+200

Crash Barriers

Metal beam/ concrete crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are properly maintained except at few locations. Some of the photographs of metal beam crash barriers are presented below.

Figure 3-17 Photographs of Crash Barrier

km. 516+035

km. 496+842

km. 496+842

km. 490+558

km. 472+555

km. 453+612

km. 451+986

km. 451+986

km. 442+800

km. 442+200

Delineators

The traffic delineators are provided by Concessionaire for road users in abnormal condition of weather in the Project Road. It is maintained by the Concessionaire. Some of the photographs of delineators are presented below.

Figure 3-18 Photographs of Delineator

km. 504+500

km. 496+100

km. 491+400

km. 482+600

km. 463+200

km. 458+000

Pedestrian Guard Rail

The pedestrian guard rails are provided in the median between service road and main carriageway. It is maintained by the Concessionaire. Pedestrian Guard Rail are damaged at few locations which needs rectification. Some of the photographs of pedestrian guard rails are presented below.

Figure 3-19 Photographs of Pedestrian Guard Rail

km. 517+000

km. 514+600

km. 495+800

km. 474+800

km. 462+00

km. 453+400

Road Land Boundary

Road land boundary pillars are available along project length. It is maintained by the Concessionaire. Painting on ROW pillar is required as it has faded at some locations. Some of the photographs of road boundary pillars are presented below.

Figure 3-20 Photographs of Road Land Boundary

km. 505+660-RHS

km. 495+050-RHS

km. 451+00-LHS

3.10 Avenue Plantation and Median Plantation

Avenue plantations are provided within the available ROW and median plantation has been provided along the project length as per IRC specification. The photographs taken during the site visit are presented below.

Figure 3-21 Photographs of Avenue Plantation and Median Plantation

km. 505+660

km. 500+380

km. 496+100

km. 518+400-RHS

km. 506+00-RHS

km. 491+600-RHS

km. 440+650-LHS

km.459+400-LHS

km. 494+550-LHS

3.11 Toll Plaza

As per the Concession Agreement, there is one existing toll plaza at km. 467+700 near Parsoni Khem village with the following infrastructure.

Table 3-6 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 467.700
2	Number of Tolling Lanes	10 lanes including 2 for over dimensional lanes
3	Weigh in Motion Facility (Number of Lanes)	Yes, in every lane
4	No. of ETC Lanes	10
5	Number of Toll Booths	10 Nos.
6	Canopy	Yes
7	Administrative Building	Yes
8	Parking cum Toilet Block	Yes (02 Nos.) LHS & RHS
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	No
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading / Unloading Facility for	Not Available

Sr. No.	Particulars	Details
	Overloaded Vehicles	
12	Storage facility for Overloaded Material	Not Available
13	High mast Light	Yes
14	Streetlight	Yes
15	Low mast Light	Not Available
16	User Fee Boards	Yes
17	Cantilever / Gantry Boards	Available
18	Automatic boom Barrier	Yes

Note:

- *Rehabilitation work and scope given in schedule-B for Toll Plaza is generally completed.*
- *New construction of Administrative Building is completed and finishing work is in progress.*
- *The Concessionaire is maintaining the Project Road including Toll Plaza as per scope of work.*
- *ATMS / HTMS is in the scope of Concessionaire and the work is completed.*

Some of the photographs of toll plaza are presented below.

Figure 3-22 Photographs of Toll Plaza

Toll Plaza Signages

Toll Plaza View

RO water Weigh Bridge Administrative Building

Computer Training Centre DG Room

O&M Centre Fog Lite O&M Office

3.12 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights

9. Toll Booth Equipment

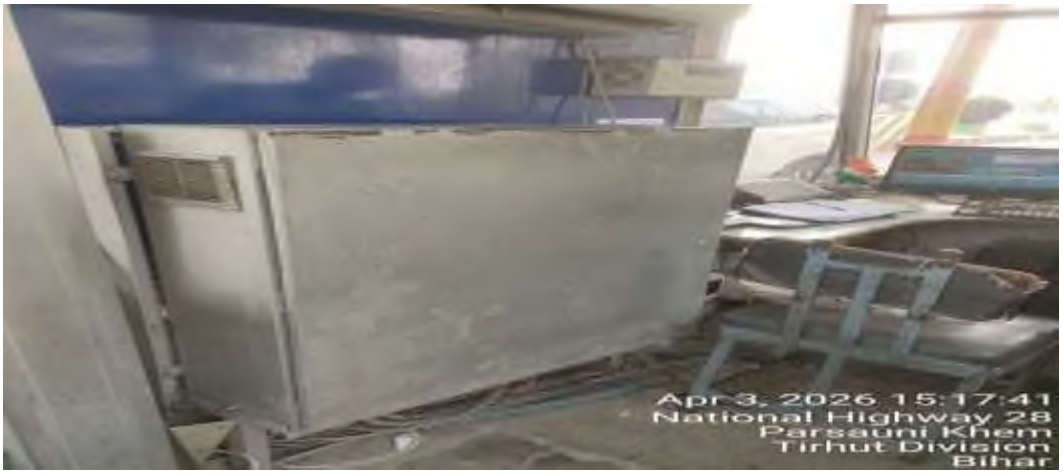
3.12.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 3 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

RFID

3.12.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data.



Lane Controller in Toll Booth at TP

3.12.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVCC at TP

3.12.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. Torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at TP

3.12.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at TP

3.12.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on the island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

AVC Camera

3.12.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3m pole facing incoming vehicle to capture the image of the vehicle number plate.

LPIC

3.12.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane "Open" and "Close" sign consists of a pair of "GREEN" (arrow) and "RED" (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at TP

3.12.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and type of ticket.

TBE

Thermal Printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.12.10 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

MSWIM at TP

3.13 Plaza Equipment

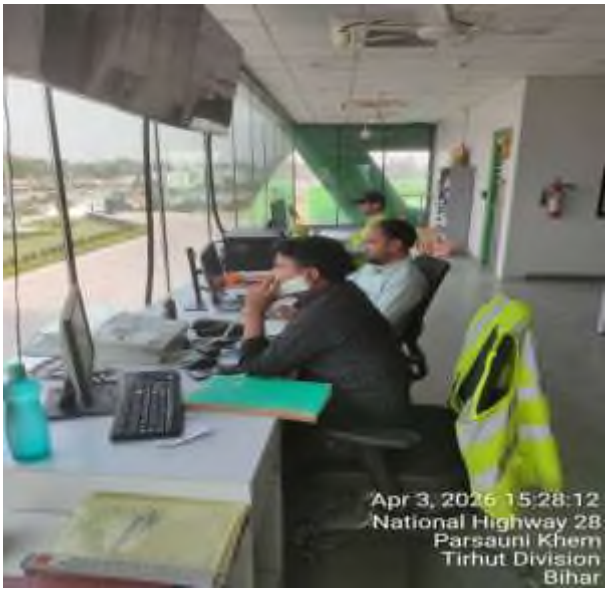
3.13.1 TMS Server

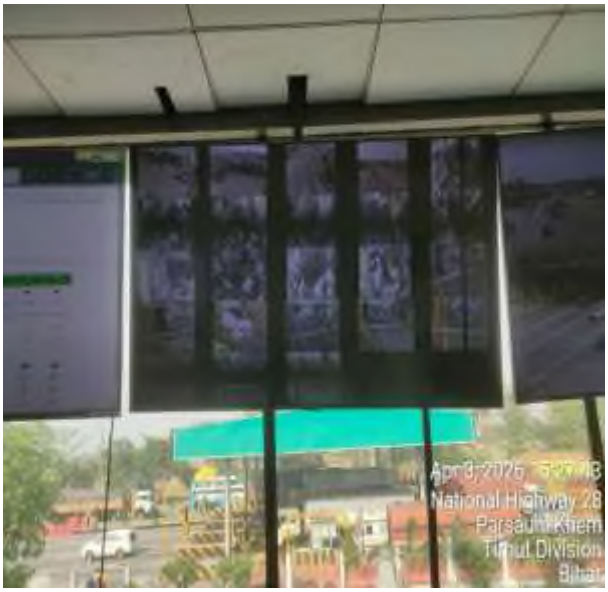
Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio WiFi module. Firewall with Sophos antivirus is provided.

Server

3.13.2 55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).





Control Room

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.13.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.

3.14 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) installed for the project road is controlled by the ATMS center at the toll plaza location (km. 467.700). As per Concession agreement ATMS shall conform to ATMS Policy guidelines (2016) which comprises of the following:

- Automatic Traffic Counter cum Classifier (ATCC)
- Mobile Radio communication system
- Emergency Call Box
- Portable Weigh in Motion
- Meteorological Data system
- Variable Message Signboards (VMS)
- CCTV system
- Video Incident Detection System (VIDS)
- Vehicle actuated Speed Display (VASD)

Status of these systems at site are described below:

3.14.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is installed at km. 467+290 and at km. 450+510.

ATCC

3.14.2 Mobile Radio communication System (MRCS)

Mobile Radio communication System (MRCS) is not yet installed. Application for MRCS UHF band has been sought from WPC, DoT, Ministry of Communications which is not yet allocated.

3.14.3 Emergency Call Boxes (ECB)

It is not installed at site.

3.14.4 MET System

Meteorological sensors comprise of sensors to measure the atmospheric temperature, humidity, pavement surface temperature, visibility and equipment for measuring wind speed and direction and installed at Toll Plaza at km. 467+700.

MET

3.14.5 Variable Message Signboards (VMS)

Variable message sign boards are installed at 17 locations out of which 4 nos. are full and 13 nos. are compact type. These display specific messages to the users based on the prevailing conditions on the highway. The message can be changed at any point of time from the HTMS centre. About 250 customised messages can be stored on the system.

km. 518+550-RHS

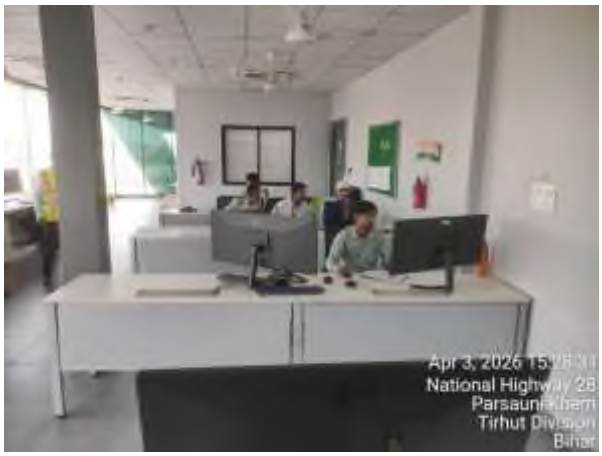
km. 483+900-RHS

km. 440+650-LHS

km.460+450-LHS

3.14.6 CCTV Surveillance Cameras

Surveillance Cameras are installed at 56 locations along the project corridor. The ATMS control room has video wall to monitor these locations through the cameras installed.



At Toll Plaza Building

km. 519+750

km. 516+800

km. 483+900

3.14.7 Vehicle Actuated Speed Display (VASD)

VASD is installed at 12 locations each on LHS and RHS.

km. 491+800-RHS

km. 456+100-RHS

km. 450+350-LHS

km. 471+600-LHS

3.14.8 Adequacy of Toll Collection System and ATMS

- Adequacy - All lanes are hybrid ETC system as stipulated by NHAI in technical specifications of Hybrid ETC system. NHAI has approved maintenance costs for TMS. TMS shall be upgraded every 5 years, at the cost of the authority.
- Advanced Traffic Management System (ATMS) installed is as per specifications required by the Authority and in working condition. Some components such as ECB and MRCS have not been installed.

3.15 Truck Layby

There are 14 Nos. of truck lay-bye in the Project Road. The photographs taken during the site visit are presented below.

Figure 3-23 Photographs of Truck Lay-bye

km. 450+400-LHS

km. 456+200-LHS

km. 475+680-RHS

km. 475+850-RHS

3.16 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Post have been shifted to newly constructed buildings at Toll Plaza. It is being maintained by the Concessionaire.

Figure 3-24 Photograph of Traffic Aid Post / Medical Aid Post

Medical Aid Post Ambulance

Medical Aid Post Hydra Crane

3.17 Toilet Block

The Concessionaire has constructed 02 No. of Toilet Block along the Project Road at Toll Plaza. The photographs taken during the site visit are presented below.

Figure 3-25 Photograph of Toilet Block

3.18 Bus Bays and Passenger Shelters

The Concessionaire has constructed 20 Nos. of bus bays and passenger shelters along Project Road. The photographs taken during the site visit are presented below.

Figure 3-26 Photograph of Passenger Shelter

km. 515+100-RHS

km. 513+380-RHS

km. 505+660-RHS

km. 491+140-LHS

km. 494+550-LHS

km. 505+300-LHS

3.19 Balance Work Status

During the site visit, it is observed that the Concessionaire has completed most of the civil work. However, due to unavailability of land the following work is balance at site and the same has been confirmed by the IE vide their letter no. CPCPL/IE/03-24/315 Dated 27.03.2024 and letter no. CPC/IE/06-24/335 Dated 14.06.2024. The balance work details are as below.

The same is presented as below:

- The civil work of toll plaza building is completed.
- ATMS and other civil work has been completed, and IE has confirmed for the same in their letters (COD).
- Work between km. 455+400 to km. 455+850 (BHS) i.e. service road drain and its associate work etc. is in progress. It is being delayed due to LA and not shifting the utility. However, as on date Concessionaire has started the SR work where utility shifting, and LA has done.

Sr. No.	Description	Unit	Balance Quantity	Chainage (km)	Remark
1	Service Road	km	0.175	455+590 to 455+765	LHS
2	Drain	km	0.174	455+596 to 455+770	LHS
3	PGR	km	0.113	455+587 to 455+700	LHS

- During visual condition survey, it is observed at site, NHAI has awarded new Structures and Service Road work under COS through separate tender. NHAI has appointed M/s. Dhariwal Builtech. Ltd. With JV M/s. Evarascon Uarpal to execute these COS work vide their letter no. NHAI/PIU-DBGVUP's/DBL/ATMS/1465 Dated 29.11.2024. Details are as under.

Sr. No	Chainage (km)		Length (m)	Location	Structure Name	Contractor Name	Work Status
	From	To					
1	502+960	503+820	860	Kharika Chowk	LVUP	M/s Dhariwal Builtech Limited.	In Progress
2	507+270	508+090	820	Near Maa Chhinmastika Mandir	LVUP	M/s Dhariwal Builtech Limited.	In Progress
3	509+200	510+210	1010	Kanti Thermal Power	FLYOVER	M/s Dhariwal Builtech Limited.	In Progress
4	510+210	511+100	890	Neta Chowk	LVUP	M/s Dhariwal Builtech Limited.	In Progress
5	469+550	470+500	950	Banjhula Chowk	VUP & LVUP	M/s EVRASCON UARPL JV	In Progress
6	486+850	488+040	1190	Bargi Bazar	-	M/s EVRASCON UARPL JV	Work yet to start
7	492+100	493+425	1325	Kali Mandir Motipur	-	M/s EVRASCON UARPL JV	Work yet to start
8	496+700	497+870	1170	Pansalwa Chowk	Widening of Box Culvert	M/s EVRASCON UARPL JV	In Progress
9	498+824	499+790	966	Narriyar	-	M/s EVRASCON UARPL JV	Work yet to start
10	453+650	455+055	1405	Piprakothi	Service Road	M/s EVRASCON UARPL JV	In Progress

- During site visit it has been observed at site that NHAI has awarded some additional work under COS to annuity concessionaire vide their letter no. NHAI/2025/PIU-Muzaffarpur/TOT/Kot-Mehsi/IE/1704 dated 02.02.2026. Details are as under:

Sr. No.	COS Item	Amount (Rs.)
1	Construction of missing RCC drain (5870 m + 1093 m)	8,26,29,162/-
2	Shifting of 11 KVA Pole & DTR Metering	5,06,777/-
3	Development of Junction (VUP)	48,01,58,356/-
	Total Cost	**56,32,94,295**

3.20 Operation and Maintenance

3.20.1 O&M Contract

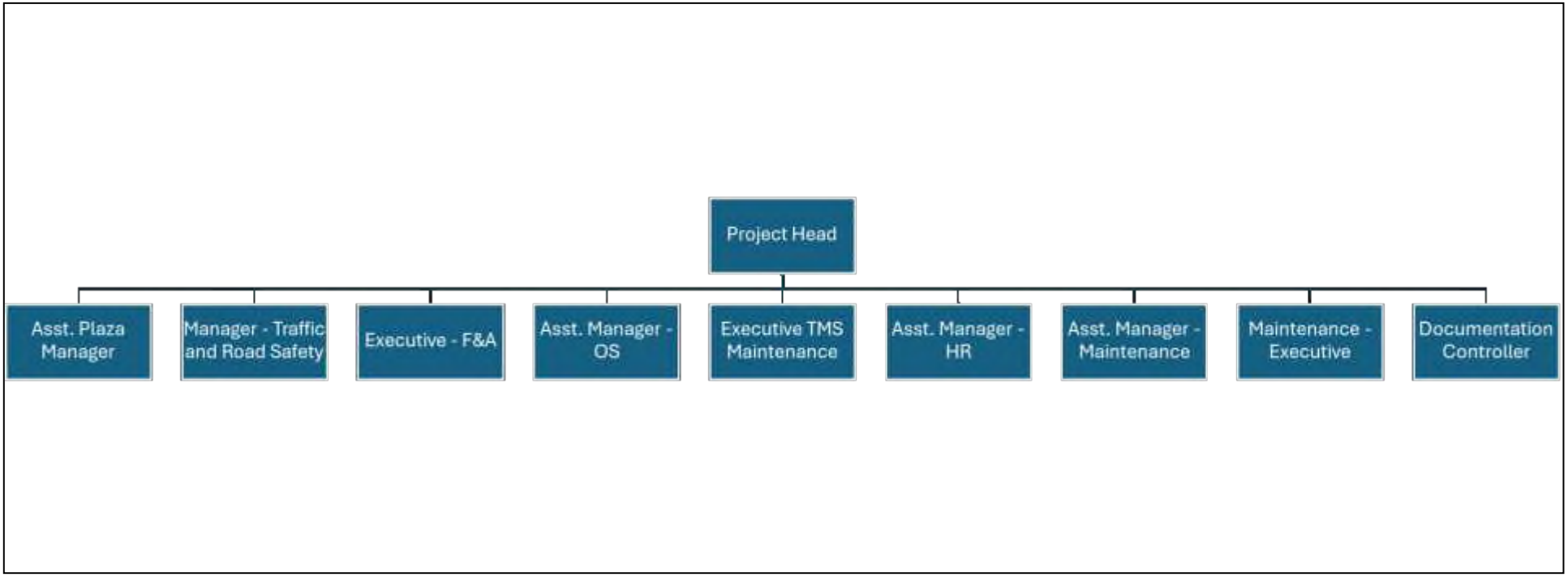
As per Clause 15.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall confirm to all the requirements laid down in MoRT&H, IRC Specifications, and the Concession Agreement.

The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

3.20.2 Organization Chart

The Concessionaire has given the Organization Chart at site for Operation and maintenance. Accordingly, there is 01 Project Head, 01 Plaza Manager, 01 Manager (Traffic and Road Safety), 01 Asst. Manager (IT), 01 Executive (F&A), 01 Asst. Manager (HR), Manager (Maintenance) to carry out O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent subcontractors.

Organization Chart



3.20.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have been made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.20.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

The project is currently under the Operation and Maintenance stage. The concession period of the project is 30 years from the Appointed Date (as TOT Package i.e., 20th October 2020) including construction period.

4.2 Axle Load and VDF

The Concessionaire has conducted the Axle Load Survey on Project Road at km. 467+700 (near Toll Plaza) on 16th March 2020 and 17th March 2020. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor

Sr. No.	Vehicle Type	Direction	
		Muzaffarpur - Kotwa	Kotwa - Muzaffarpur
1	BUS	1.954	1.477
2	LCV	1.712	0.602
3	2-Axle	3.039	2.811
4	3-Axle	9.576	5.875
5	MAV	14.097	11.301

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
2026-27	7.36	**7.36**	5.67	**5.67**	
2027-28	7.70	**15.06**	5.95	**11.62**	
2028-29	8.06	**23.12**	6.24	**17.86**	MM Cycle on 4 Lane highway
2029-30	8.42	**31.54**	6.53	**24.39**	
2030-31	8.79	**40.33**	6.83	**31.22**	
2031-32	9.18	**49.51**	7.14	**38.36**	
2032-33	9.61	**59.12**	7.49	**45.85**	
2033-34	10.06	**69.18**	7.84	**53.69**	
2034-35	9.43	**78.61**	7.37	**61.06**	
2035-36	9.58	**88.19**	7.50	**68.56**	MM Cycle on 4 Lane highway
2036-37	10.02	**98.21**	7.85	**76.41**	
2037-38	10.48	**108.69**	8.22	**84.63**	

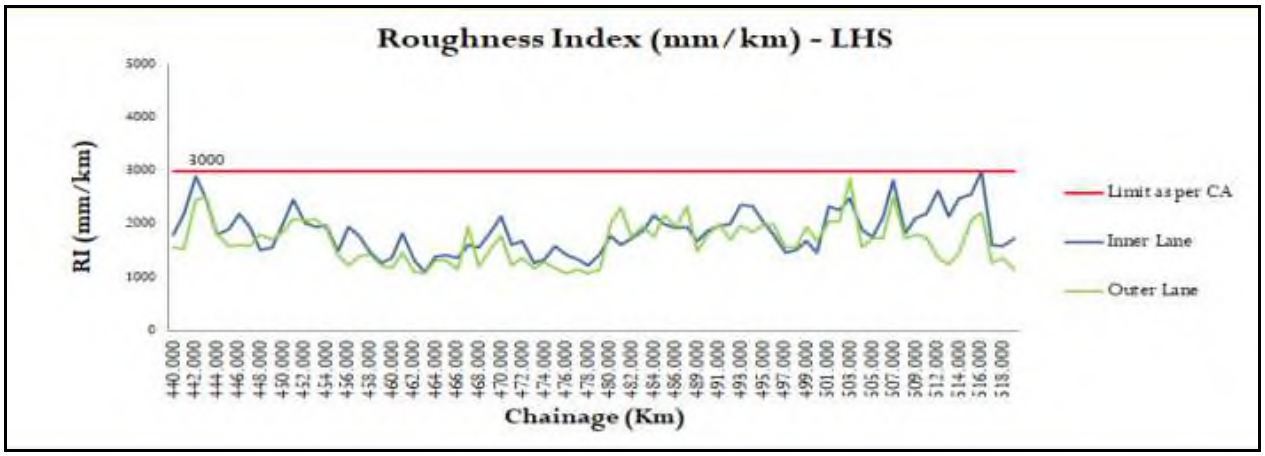
Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
2038-39	10.96	**119.65**	8.61	**93.24**	
2039-40	11.46	**131.11**	9.01	**102.25**	Crossing 40000 PCU's
2040-41	11.98	**143.09**	9.43	**111.68**	Crossing 40000 PCU's
2041-42	12.52	**155.61**	9.86	**121.54**	Crossing 40000 PCU's
2042-43	13.08	**168.69**	10.31	**131.85**	Preparation of DPR
2043-44	13.66	**182.35**	10.78	**142.63**	Preparation of DPR
2044-45	14.26	**196.61**	11.27	**153.90**	Six Laning
2045-46	14.89	**211.50**	11.77	**165.67**	Six Laning / End of Concession Period as per target revenue
2046-47	12.43	**223.93**	9.84	**175.51**	
2047-48	13.05	**236.98**	10.34	**185.85**	
2048-49	13.61	**250.59**	10.79	**196.64**	
2049-50	14.19	**264.78**	11.25	**207.89**	
2050-51	14.76	**279.54**	11.72	**219.61**	End of concession period as per Appointed date & CA

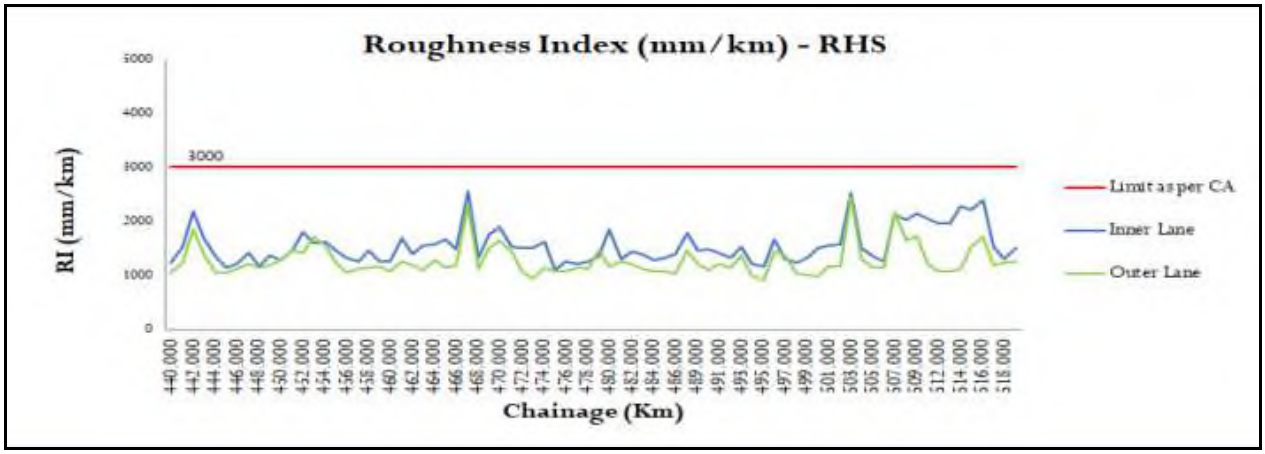
4.4 Network Survey Vehicles (NSV) Survey

The Concessionaire has provided NSV survey data conducted in November 2025. The NSV data is used to assess the riding quality and pavement condition of project road. The summary Roughness Index is given in the table below:

Table 4-3 Roughness Index Summary

Rating	Roughness Value	Length (km)			
		LHS		RHS	
		Inner Lane	Outer Lane	Inner Lane	Outer Lane
Good	<2000	53.30	60.90	67.30	73.90
Fair	2000-3000	23.60	16	9.60	3
Poor	>3000	0	-	-	-





4.5 Structural Investigations

Falling Weight Deflectometer survey was conducted for flexible pavement by the Concessionaire in FY 2025. The summary of the FWD survey report is presented in the table below.

Table 4-4 FWD Summary

Fatigue in BT Layer, N_f (MSA)	Length (km)			
	LHS		RHS	
	Inner Lane	Outer Lane	Inner Lane	Outer Lane
<50	-	2.00	2.00	13.00
50-100	19.00	19.00	30.00	4.00
100-200	21.00	16.70	-	32.70
200-300	13.70	16.00	18.70	-
300-400	-	-	-	1.00
400-500	-	-	-	-
>500	-	-	28.00	26.00
Total Length	**53.70**	**53.70**	**78.70**	**76.70**

From the above table, it is observed that the residual life of the pavement exceeds the cumulative design MSA up to FY 2029, i.e., up to the first Major Maintenance Cycle, except for 1 km on the LHS and 3 km on the RHS. These deficient stretches will be addressed under routine maintenance. Based on these observations, periodic maintenance of the project road has been proposed accordingly.

4.6 Test pit and Subgrade Investigation

The Concessionaire has carried out the subgrade investigation for Project Road. The results of the same as provided by the Concessionaire are tabulated as below.

Table 4-5 Test Results Summary of Natural Ground Soil Samples

Sr. No.	Location (Km.)	Side (LHS/RHS)	Soil Classification as per IS: 1498	Gradation: Percent by weight passing through the Sieve (IS:2720-IV)						Clay & silt content %	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		4-Days Soaked CBR (%)	Free Swell Index (%)
				19.0 mm	10.0 mm	4.75 mm	2.0 mm	425 micron	75 micron		Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density (gm/cc)	OMC (%)		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	19	18
1	455+420	LHS	ML	100.0	98.6	96.8	96.0	93.4	78.6	78.6	26	NP	NP	1.82	9.3	6.4	0.0
2	455+600	RHS	ML	100.0	100.0	99.6	98.8	95.6	81.0	81.0	28	NP	NP	1.79	9.4	6.1	0.0

Table 4-6 Granular Layer's Test Result Summary

Sr. No.	Chainage (km)	Side (LHS/RHS)	Type of Sample	Cumulative Percentage of Passing through IS Sieve (mm)											
				75	53.0	45.0	26.5	22.4	11.2	9.5	4.75	2.36	0.600	0.425	0.075
1	440+700	LHS	WMM	100.0	100.0	100.0	78.3	69.3	43.5	36.4	28.2	21.2	11.6	8.6	0.8
2	442+500	RHS	WMM	100.0	100.0	92.3	72.3	59.3	52.3	43.1	36.8	23.9	16.2	5.6	1.3
3	445+100	LHS	GSB	100.0	83.0	63.2	28.1	24.6	15.9	14.3	13.0	11.4	8.9	7.5	0.1
4	447+700	RHS	GSB	100.0	100.0	98.7	22.0	17.4	13.5	12.6	11.5	10.3	8.3	7.2	0.3
5	450+250	LHS	WMM	100.0	100.0	100.0	76.8	68.8	56.3	40.6	22.8	14.3	12.6	8.6	1.9
6	451+200	RHS	WMM	100.0	100.0	98.8	73.5	60.5	41.4	37.5	32.6	25.3	16.8	14.6	0.9
7	455+000	LHS	GSB	100.0	100.0	100.0	55.9	46.3	29.3	26.3	23.3	21.0	16.8	15.3	4.9
8	457+700	RHS	GSB	100.0	100.0	100.0	46.7	34.0	28.0	0.7	0.3	0.2	0.2	0.2	0.0
9	459+900	LHS	WMM	100.0	100.0	98.0	62.8	49.9	16.0	12.3	10.4	9.2	7.6	7.0	1.0
10	462+300	RHS	WMM	100.0	100.0	100.0	57.9	44.0	16.9	15.0	13.8	12.4	9.8	8.9	0.2
11	465+050	LHS	GSB	100.0	100.0	97.4	45.6	33.6	7.8	4.0	1.9	1.4	1.0	0.9	0.3
12	467+000	RHS	GSB	100.0	100.0	97.2	31.2	20.1	9.7	9.0	8.4	7.9	7.0	6.6	0.6

Sr. No.	Chainage (km)	Side (LHS/RHS)	Type of Sample	Cumulative Percentage of Passing through IS Sieve (mm)											
				75	53.0	45.0	26.5	22.4	11.2	9.5	4.75	2.36	0.600	0.425	0.075
13	469+700	LHS	WMM	100.0	100.0	100.0	86.4	78.1	42.8	31.6	21.3	15.6	8.7	6.9	0.9
14	472+800	RHS	WMM	100.0	100.0	100.0	81.3	58.1	34.2	31.5	28.7	23.3	16.3	14.5	1.5
15	475+250	LHS	GSB	100.0	100.0	95.3	42.2	31.8	12.8	10.9	9.5	8.3	6.5	5.7	0.8
16	477+300	RHS	GSB	100.0	93.0	83.8	40.1	35.6	19.3	16.7	14.8	12.9	10.5	9.3	2.0
17	479+950	LHS	WMM	100.0	100.0	100.0	73.5	62.3	30.8	25.6	20.0	16.8	12.5	11.1	0.9
18	482+160	RHS	WMM	100.0	97.5	84.5	44.3	33.0	15.7	12.6	10.8	9.3	7.9	6.8	0.4
19	484+400	LHS	GSB	100.0	100.0	90.4	63.2	56.9	41.4	36.5	32.5	29.6	24.4	21.4	2.0
20	487+520	RHS	GSB	100.0	82.8	64.7	26.7	22.8	14.3	13.0	11.8	10.7	9.1	8.3	0.5
21	489+400	LHS	GSB	100.0	84.6	64.3	52.3	38.6	29.1	18.8	12.3	9.0	5.2	2.6	0.8
22	492+460	RHS	WMM	100.0	100.0	98.1	86.0	55.1	38.1	36.2	28.0	19.2	15.3	13.6	1.1
23	494+800	LHS	GSB	100.0	97.1	91.6	44.7	38.9	26.1	23.5	20.6	19.0	16.1	14.4	1.4
24	497+300	RHS	GSB	100.0	97.6	94.0	56.3	45.8	23.3	16.5	10.6	7.6	4.9	4.1	0.8
25	500+000	LHS	GSB	100.0	89.3	69.2	54.1	41.2	32.5	21.0	14.2	11.2	6.1	3.4	0.9
26	501+180	RHS	WMM	100.0	100.0	96.9	83.2	55.8	43.8	30.4	27.6	19.6	12.9	8.4	2.1
27	505+000	LHS	GSB	100.0	97.0	82.0	40.6	35.7	26.4	24.6	22.6	21.0	17.3	14.7	0.9
28	506+900	RHS	GSB	100.0	97.8	92.1	29.8	21.8	14.9	14.0	13.3	12.4	9.9	8.9	1.4
29	509+800	RHS	WMM	100.0	100.0	98.5	34.7	25.8	12.7	10.2	8.2	6.9	5.3	4.7	0.2
30	511+180	LHS	WMM	100.0	100.0	96.0	78.3	70.0	50.5	47.6	44.7	42.5	39.2	37.3	28.2
31	515+200	LHS	GSB	100.0	98.1	73.5	39.4	32.9	19.5	17.4	15.5	14.0	11.8	9.8	0.3
32	517+400	RHS	GSB	100.0	92.4	85.5	32.2	26.4	14.4	12.9	11.4	9.9	7.9	6.6	0.3
33	520+000	LHS	WMM	100.0	100.0	95.4	61.1	56.2	39.2	32.5	25.6	19.6	15.2	10.9	2.1

Table 4-7 Test Results Summary of Subgrade

Sr. No.	Location (km)	Side (LHS/RHS)	Soil Classification as per IS: 1498	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR (%)	Free Swell Index (%)	Degree of Compaction (%)
				Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density (gm/cc)	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
1	440+700	LHS	CL	31	22	9	1.85	11.3	1.78	12.5	7.5	15.2	96.2
2	442+500	RHS	CL	31	19	12	1.84	12.0	1.78	12.5	7.3	20.0	96.7
3	445+100	LHS	ML	26	NP	NP	1.85	9.4	1.77	12.5	7.2	12.5	95.7
4	447+700	RHS	ML	25	NP	NP	1.79	10.0	1.72	14.5	5.0	0.0	96.1
5	450+250	LHS	ML-CL	29	22	7	1.88	12.6	1.75	12.0	4.7	18.2	93.1
6	451+200	RHS	ML	23	NP	NP	1.91	10.7	1.80	11.5	7.8	0.0	94.2
7	455+000	LHS	ML-CL	30	24	6	1.82	10.3	1.76	12.5	6.3	12.5	96.7
8	457+700	RHS	ML	28	NP	NP	1.79	10.7	1.78	12.5	5.1	7.1	99.4
9	459+900	LHS	ML	26	NP	NP	1.93	8.7	1.85	12.5	11.5	0.0	95.9
10	462+300	RHS	ML	25	NP	NP	1.91	8.6	1.83	10.0	10.1	0.0	95.8
11	465+050	LHS	ML	27	NP	NP	1.86	9.8	1.80	13.0	8.3	0.0	96.8
12	467+000	RHS	SM	25	NP	NP	1.97	9.2	1.84	10.5	12.4	0.0	93.4
13	469+700	LHS	ML	26	NP	NP	1.91	10.3	1.80	14.5	9.0	0.0	94.2
14	472+800	RHS	ML	24	NP	NP	1.89	9.8	1.83	10.5	7.2	12.5	96.8
15	475+250	LHS	ML	35	25	10	1.93	10.1	1.85	8.0	8.5	22.2	95.9
16	477+300	RHS	ML	27	NP	NP	1.81	9.7	1.78	9.5	6.9	0.0	98.3
17	479+950	LHS	SM	26	NP	NP	1.94	9.7	1.79	7.5	9.8	0.0	92.3
18	482+160	RHS	CL	32	23	9	1.83	11.6	1.79	11.0	4.7	20.0	97.8
19	484+400	LHS	ML	27	NP	NP	1.83	9.4	1.77	7.0	6.6	0.0	96.7
20	487+520	RHS	SM	23	NP	NP	1.99	9.0	1.86	10.0	12.5	0.0	93.5
21	489+400	LHS	ML-CL	31	25	6	1.86	9.6	1.82	7.5	7.1	15.2	97.8
22	492+460	RHS	ML	22	NP	NP	1.82	10.0	1.78	10.5	5..5	10.0	97.8
23	494+800	LHS	ML	25	NP	NP	1.85	9.5	1.79	8.5	6.7	11.1	96.8
24	497+300	RHS	CL	33	22	11	1.77	13.5	1.76	10.0	5.4	25.2	99.4
25	500+000	LHS	ML	20	NP	NP	1.86	9.6	1.75	7.5	6.7	7.1	94.1

Sr. No.	Location (km)	Side (LHS/RHS)	Soil Classification as per IS: 1498	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR (%)	Free Swell Index (%)	Degree of Compaction (%)
				Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density (gm/cc)	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
26	501+180	RHS	CL	32	21	11	1.81	11.7	1.78	10.5	5.0	25.2	98.3
27	505+000	LHS	ML-CL	29	24	5	1.84	10.1	1.75	9.5	6.5	12.5	95.1
28	506+900	RHS	CL	33	19	14	1.79	12.9	1.75	10.0	5.1	30.0	97.8
29	509+800	RHS	CL	29	21	8	1.92	10.6	1.81	10.5	6.3	20.0	94.3
30	511+180	LHS	CL	33	22	11	1.84	12.7	1.77	10.0	5.6	25.2	96.2
31	515+200	LHS	CL	30	22	8	1.83	11.4	1.75	10.0	6.2	18.2	95.6
32	517+400	RHS	ML	22	NP	NP	1.91	9.0	1.82	10.0	10.1	0.0	95.3
33	520+000	LHS	ML	22	NP	NP	1.92	9.5	1.85	10.0	8.9	0.0	96.4

Table 4-8 Test Results Summary of Granular Layer's Test Result Summary

Sr. No.	Side (RHS/LHS)	Pavement Composition (mm)					Total Thickness (mm)
		Flexible Pavement		Rigid Pavement			
		Bituminous Layer (mm)	Granular Layers (mm)	PQC (mm)	DCL (mm)	GSB (mm)	
1	LHS	180	460	-	-	-	640
2	RHS	180	440	-	-	-	620
3	LHS	200	460	-	-	-	660
4	RHS	220	470	-	-	-	690
5	LHS	220	480	-	-	-	700
6	RHS	260	430	-	-	-	690
7	LHS	230	490	-	-	-	720
8	RHS	190	450	-	-	-	640
9	LHS	250	470	-	-	-	720
10	RHS	200	440	-	-	-	640
11	LHS	180	500	-	-	-	680
12	RHS	220	480	-	-	-	700

Sr. No.	Side (RHS/LHS)	Pavement Composition (mm)					
		Flexible Pavement		Rigid Pavement			Total Thickness (mm)
		Bituminous Layer (mm)	Granular Layers (mm)	PQC (mm)	DCL (mm)	GSB (mm)	
13	LHS	200	450	-	-	-	650
14	RHS	150	470	-	-	-	620
15	LHS	240	480	-	-	-	720
16	RHS	190	440	-	-	-	630
17	LHS	220	480	-	-	-	700
18	RHS	260	430	-	-	-	690
19	LHS	-	-	300	150	320	770
20	RHS	270	450	-	-	-	720
21	LHS	-	-	310	140	300	750
22	RHS	270	440	-	-	-	710
23	LHS	-	-	330	130	240	700
24	RHS	230	480	-	-	-	710
25	LHS	-	-	280	140	290	710
26	RHS	210	450	-	-	-	660
27	LHS	-	-	300	150	260	710
28	RHS	250	450	-	-	-	700
29	RHS	160	460	-	-	-	620
30	LHS	170	480	-	-	-	650
31	LHS	190	450	-	-	-	640
32	RHS	220	440	-	-	-	660
33	LHS	240	440	-	-	-	680

Table 4-9 DCP-Equivalent CBR Summary

Sr. No.	Road Name	Existing Chainage (km)	Side	DCP-CBR
1	NH-28	440+700	LHS	14.2
2	NH-28	442+500	RHS	12.1
3	NH-28	445+100	LHS	17.8
4	NH-28	447+700	RHS	10.7
5	NH-28	450+250	LHS	9.9

Sr. No.	Road Name	Existing Chainage (km)	Side	DCP-CBR
6	NH-28	451+200	RHS	13.3
7	NH-28	455+000	LHS	11.0
8	NH-28	457+700	RHS	9.1
9	NH-28	459+900	LHS	11.0
10	NH-28	462+300	RHS	14.4
11	NH-28	465+050	LHS	14.6
12	NH-28	467+000	RHS	16.1
13	NH-28	469+700	LHS	15.0
14	NH-28	472+800	RHS	10.0
15	NH-28	475+250	LHS	15.4
16	NH-28	477+300	RHS	14.9
17	NH-28	479+950	LHS	15.5
18	NH-28	482+160	RHS	6.2
19	NH-28	484+400	LHS	13.0
20	NH-28	487+520	RHS	26.6
21	NH-28	489+400	LHS	12.7
22	NH-28	492+460	RHS	12.9
23	NH-28	494+800	LHS	15.0
24	NH-28	497+300	RHS	10.6
25	NH-28	500+000	LHS	10.0
26	NH-28	501+180	RHS	8.8
27	NH-28	505+000	LHS	10.0
28	NH-28	506+900	RHS	11.1
29	NH-28	509+800	RHS	8.9
30	NH-28	511+180	LHS	11.0
31	NH-28	515+200	LHS	11.4
32	NH-28	517+400	RHS	9.8
33	NH-28	520+000	LHS	13.5
Average DCP - Equivalent CBR				**12.6**

4.7 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full-length periodic maintenance. Schedule-F of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. Only improvement to Riding Quality is expected if the roughness value exceeds 3000 mm/km.

As per Article 14 of CA, the Authority shall carry out capacity augmentation under EPC contract if traffic exceeds 40,000 PCU for three consecutive accounting years. As per the traffic study report submitted by the Company it is observed that the project traffic crosses 40,000 PCU in FY 2040, FY 2041, FY 2042. Assumption has made that execution of 6-laning of project highway will start in the year 2045 or 2046. It is also assumed that during the 6-laning of project highway, overlay of existing four lane road will be the part of the capacity augmentation. As informed by the Concessionaire, major maintenance for the entire length of the Project Road was carried out in FY 2022. The major maintenance cycle is adjusted accordingly.

The table below shows the major/ periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-10 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2027 to FY 2028	-	-
2	FY 2029	Major Maintenance with 30 mm BC (PMB) (100%) + Milling & 50 mm DBM (VG-40) (10%)	Major Maintenance with 30 mm BC (VG-30) (50%) + Micro-surfacing (50%)
3	FY 2030 to FY 2035	-	-
4	FY 2036	Major Maintenance with 30 mm BC (PMB) (100%) + Milling & 50 mm DBM (VG-40) (5%)	Major Maintenance with 30 mm BC (VG-30) (50%) + Micro-surfacing (50%)
6	FY 2037 to FY 2044	-	-
8	FY 2045 to FY 2046	Assumption of Capacity Augmentation to Six Lane Configuration	
9	FY 2046*	End of Concession Period	

**Actual end of concession period as per Concession Agreement is October 2051. However, as per traffic details submitted by the Concessionaire, the revised concession period is up to FY 2046 as per provision of Article 14 of CA.*

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per PWD SoR 2026. The input rates for PWD SoR were adopted as below:

2. **Manpower and labour**: As per applicable minimum wages published by Schedule of Rates, Government of Bihar.

3. **Bitumen**: Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards, since bitumen prices have been range bound over the last five-six years. Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Supply Location	Applicability of Rates	Product	Current Published Price (FY 2027)	Long term price (Avg last 10 years)
Mathura	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Panipat	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Koyali	All States	VG-10	47,102	37,125
		VG-30	48,402	38,137
		VG-40	51,082	40,251
Haldia	All States	VG-10	46,602	35,683
		VG-30	47,402	36,295
		VG-40	49,962	38,256
Barauni	All States	VG-10	47,132	36,213

Supply Location	Applicability of Rates	Product	Current Published Price (FY 2027)	Long term price (Avg last 10 years)
		VG-30	48,432	37,325
		VG-40	50,992	39,286
CPCL	Kerala	VG-10	47,402	35,519
		VG-30	48,402	36,395
		VG-40	50,762	38,120
CPCL	Tamil Nadu	VG-10	47,902	36,019
		VG-30	48,402	36,395
		VG-40	50,962	38,320
CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320
CPCL	Karnataka	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320

a. Sand and Aggregate: Market rates are considered from the quarry located nearest to Project Road.

b. Cement: Market rates are considered from the nearest local market.

c. Steel : Rate of steel is taken from Market rate.

d. Machinery Hire charges: Hire charges for the machinery are considered in accordance with applicable PWD SOR.

e. Actual Rates of items as per work order: The rates of road marking, road stud, kerb raising, micro surfacing, milling, aggregate rates etc. are considered as per the work order shared by the client.
Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam (VG-40)	Cum	10,833
2	Bituminous Concrete (VG-30)	Cum	11,669
3	Bituminous Concrete (PMB)	Cum	14,248
4	Milling	Sqm	92
5	Micro-surfacing	Sqm	162
6	Kerb Re-laying	Rmt	311
7	Road Marking	Sqm	625
8	Road Studs	Nos.	296

5.3 Balance Work Cost

The Concessionaire has provided the detail of balance work. The summary of balance cost is presented in below table.

Table 5-3 Summary of Balance Works

Sr. No.	Items of Work	Cost (Rs.)
1	Earth Work	13,52,632
2	Subbase, Base (Non-Bituminous) & Shoulder	91,26,847
3	Bases and Surface course (Bituminous layer)	1,49,60,241
4	Box Culvert	18,99,198
5	Pipe Culvert	30,19,368
6	Junction	95,23,644
7	Drain	10,90,554
8	Miscellaneous	39,93,214
	Total Balance Amount (Rs.)	**4,49,65,699**
	Total Balance Amount (Cr.)	**4.50**

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance, and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Incident Management Services
4. Electricity and Diesel Charges
5. TMS / HTMS / System Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Insurance Expense
10. IE Fees
11. Horticulture & ROW Maintenance
12. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation and Maintenance cost (Routine O&M) is presented below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-4 Summary of Operation Cost

Sr. No.	Particulars	Amount after (FY 2027-45)	Amount after Capacity Augmentation (FY 2046)
1	Salary and Welfare Expenses	1,44,91,008	1,44,91,008
2	Tolling Operations Services	2,68,83,688	2,68,83,688
3	Toll Security Services	66,73,070	66,73,070
4	Incident Management & Emergency Services	3,38,63,048	3,38,63,048
5	Electricity and Diesel Charges	35,50,783	35,50,783
6	TMS / HTMS / System Expenses	48,09,046	75,75,936
7	Office Operating Expenses	37,22,696	37,22,696
8	Vehicle Running Expenses	27,75,000	27,75,000
9	Professional Fees Expense	84,66,978	1,01,60,373
10	Community Development	19,44,294	19,44,294
11	Communication Expenses	3,62,250	3,62,250
12	Conveyance Expenses	3,95,182	3,95,182
13	Insurance Expense	2,04,17,728	2,04,17,728
14	IE Fees	46,10,454	46,10,454
15	Routine Maintenance Cost (Project Road)	3,69,62,427	4,91,00,048
16	Horticulture & ROW Maintenance	2,38,39,776	2,38,39,776
17	Miscellaneous including Contingency	53,17,808	54,97,020
	Total Cost (Rs.)	**19,90,85,236**	**21,58,62,354**
	Total Cost (Cr.)	**19.91**	**21.59**
	Per km Cost (Lakhs)	24.89	26.98

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Table 5-5 Summary of Major Maintenance Cost

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2027 to FY 2028	-	
2	FY 2029	100.10	
3	FY 2030 to FY 2035	-	
4	FY 2036	106.73	
5	FY 2037 to FY 2046	-	
Total Cost (Cr.)		**206.82**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2027	8.77	
2	FY 2034	8.77	
3	FY 2041	8.77	
Total Cost (Cr.)		**26.31**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-6 Escalation

Year	Escalation	Year	Escalation
2026	-	**2042**	3.99%
2027	5.25%	**2043**	3.99%
2028	4.86%	**2044**	3.99%
2029	4.44%	**2045**	3.99%
2030	4.24%	**2046**	3.99%
2031	4.13%	**2047**	3.99%
2032	4.08%	**2048**	3.99%
2033	4.01%	**2049**	3.99%
2034	4.00%	**2050**	3.99%
2035	4.03%	**2051**	3.99%
2036	4.01%	**2052**	3.99%
2037	3.98%	**2053**	3.99%
2038	3.98%	**2054**	3.99%
2039	4.00%	**2055**	3.99%
2040	3.99%	**2056**	3.99%
2041	3.99%	**2057**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr)

	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41	FY42	FY43	FY44	FY45	FY46
1	Routine O&M Cost																				
1.01	Salary and Welfare Expense	1.45	1.52	1.59	1.65	1.72	1.79	1.86	1.94	2.02	2.10	2.18	2.27	2.36	2.45	2.55	2.65	2.76	2.87	2.98	3.10
1.02	Tolling Operations Services	2.69	2.82	2.94	3.07	3.20	3.33	3.46	3.60	3.74	3.89	4.05	4.21	4.38	4.55	4.73	4.92	5.12	5.32	5.54	5.76
1.03	Toll Security Services	0.67	0.70	0.73	0.76	0.79	0.83	0.86	0.89	0.93	0.97	1.00	1.04	1.09	1.13	1.18	1.22	1.27	1.32	1.37	1.43
1.04	Incident Management Services	3.39	3.55	3.71	3.87	4.03	4.19	4.36	4.53	4.71	4.90	5.10	5.30	5.51	5.73	5.96	6.20	6.45	6.71	6.97	7.25
1.05	Electricity and Diesel Charges	0.36	0.37	0.39	0.41	0.42	0.44	0.46	0.48	0.49	0.51	0.53	0.56	0.58	0.60	0.63	0.65	0.68	0.70	0.73	0.76
1.06	TMS / HTMS / System Expenses	0.19	0.32	0.46	0.61	0.63	0.94	1.41	0.25	0.42	0.60	0.80	0.83	1.23	1.86	0.33	0.55	0.79	1.05	1.09	1.62
1.07	Office Operating Expenses	0.37	0.39	0.41	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.61	0.63	0.66	0.68	0.71	0.74	0.77	0.80
1.08	Vehicle Running Expenses	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.37	0.39	0.40	0.42	0.43	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.59
1.09	Professional Fees Expense	0.85	0.89	0.93	0.97	1.01	1.05	1.09	1.13	1.18	1.23	1.27	1.33	1.38	1.43	1.49	1.55	1.61	1.68	1.74	2.18
1.10	Community Development	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.37	0.38	0.40	0.42
1.11	Communication Expenses	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08
1.12	Conveyance Expenses	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.08
1.13	Insurance Expense	2.04	2.14	2.24	2.33	2.43	2.53	2.63	2.73	2.84	2.96	3.07	3.20	3.32	3.46	3.60	3.74	3.89	4.04	4.20	4.37
1.14	IE Fees	0.46	0.48	0.50	0.53	0.55	0.57	0.59	0.62	0.64	0.67	0.69	0.72	0.75	0.78	0.81	0.84	0.88	0.91	0.95	0.99
1.15	Routine Maintenance Cost	3.70	3.88	4.05	4.22	4.39	4.57	4.76	4.95	5.15	5.35	5.57	5.79	6.02	6.26	6.51	6.77	7.04	7.32	7.61	10.51
1.16	Horticulture & ROW Maintenance	2.38	2.50	2.61	2.72	2.83	2.95	3.07	3.19	3.32	3.45	3.59	3.73	3.88	4.04	4.20	4.37	4.54	4.72	4.91	5.10
1.17	Miscellaneous and Contingency	0.53	0.56	0.58	0.61	0.63	0.66	0.68	0.71	0.74	0.77	0.80	0.83	0.87	0.90	0.94	0.97	1.01	1.05	1.09	1.18
	Subtotal of O&M Cost	**19.62**	**20.69**	**21.73**	**22.78**	**23.72**	**24.97**	**26.41**	**26.25**	**27.47**	**28.74**	**30.05**	**31.25**	**32.87**	**34.76**	**34.54**	**36.13**	**37.79**	**39.52**	**41.10**	**46.22**
2	Major Maintenance Cost	-	-	106.25	-	-	-	-	-	-	139.16	-	-	-	-	-	-	-	-	-	-
3	Periodic Cost of TMS/HTMS Replacement	8.77	-	-	-	-	-	-	11.73	-	-	-	-	-	-	15.43	-	-	-	-	-
4	Balance Works Cost	4.50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**32.88**	**20.69**	**127.98**	**22.78**	**23.72**	**24.97**	**26.41**	**37.98**	**27.47**	**167.90**	**30.05**	**31.25**	**32.87**	**34.76**	**49.98**	**36.13**	**37.79**	**39.52**	**41.10**	**46.22**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost (Up to FY 2045)	
Ordinary Repair Cost (with GST)	**3,69,62,427**
(Inclusive of GST)	**= 4.62 lakhs per km**

National Highways / State Highways (Flexible Pavement)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal**	**Urban**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				More than 4500 CVD	More than 4500 CVD				
				2,27,719	**2,91,363**	**Normal**	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	348410.00	445785.00	-	-	-	-
		Paved shoulder	1.70	387123.00	495317.00	39.27	-	1,52,00,385	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	455439.00	582726.00	-	-	-	-
		Paved shoulder	2.20	500982.00	640998.00	-	27.39	-	1,75,53,730
					TOTAL		**66.650**		**3,27,54,115**
National Highways / State Highways (Rigid Pavement)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal**	**Urban**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				More than 4500 CVD	More than 4500 CVD				
				1,31,950	**1,61,756**	**Normal**	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	201884.00	247487.00	-	-	-	-
		Paved shoulder	1.70	224315.00	274985.00	13.35	-	29,94,605	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	263900.00	323512.00	-	-	-	-
		Paved shoulder	2.20	290290.00	355863.00	-	-	-	-
3	Replacement of damaged panels		0.20					12,13,707	
					Sub Total		**13.350**		**42,08,312**
					Grand Total		**80.000**		**3,69,62,427**

Routine Maintenance Cost (For FY 2046)	
Ordinary Repair Cost (with GST)	**4,91,00,048**
(Inclusive of GST)	**= 6.14 lakhs per km**

National Highways / State Highways (Flexible Pavement)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD	**Urban** More than 4500 CVD	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				2,27,719	**2,91,363**	**Normal**	**Urban**	**Normal**	**Urban**
1	Six lane with divided carriageway	without Paved shoulder	2.09	475933.00	608948.00	-	-	-	-
		with Paved shoulder	2.26	514646.00	658480.00	39.27	-	2,02,07,575	-
2	Six lane with divided carriageway & service lane on either side	without Paved shoulder	2.56	582961.00	745889.00	-	-	-	-
		with Paved shoulder	2.76	628505.00	804161.00	-	27.39	-	2,20,21,949
					TOTAL	**66.650**			**4,22,29,524**
National Highways / State Highways (Rigid Pavement)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD	**Urban** More than 4500 CVD	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				1,31,950	**1,61,756**	**Normal**	**Urban**	**Normal**	**Urban**
1	Six lane with divided carriageway	without Paved shoulder	2.09	475933.00	608948.00	-	-	-	-
		with Paved shoulder	2.26	514646.00	658480.00	13.35	-	68,70,524	-
2	Six lane with divided carriageway & service lane on either side	without Paved shoulder	2.56	582961.00	745889.00	-	-	-	-
		with Paved shoulder	2.76	628505.00	804161.00	-	-	-	-
					Sub Total	**13.350**			**68,70,524**
					Grand Total	**80.000**			**4,91,00,048**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	0.50%
	Volume (cum)			2.50
	Rs/m^3			13246
	Cost in Rupees			33,114
	ii) Patch repair	100 % Patch less	As & when required	0.60%
	Area (sqm)			60
	Rs/m^2			530
	Cost in Rupees			31,789
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			85
	Cost in Rupees			21,231
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.00%
	Area (sqm)			150
	Rs/m^2			62
	Cost in Rupees			9,266
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.20%
	Area (sqm)			90
	Rs/m^2			530
	Cost in Rupees			47,684
	v) Road marking	14%	Once in 7th year & @ Repaired location	20793
	SUB TOTAL			**1,63,877**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**7,414**
3	**Maintenance of Cross Drainage works:**			
	i) Repair of floors	100%	Once in a Year	5055
	ii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			**7,161**
4	**Maintenance of Minor & Major Bridges:**			
	i) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints	100%	As & when required	36,950
	ii) Repair of minor washouts, erosion scour and animal holes			
	iii) Sealing Cracks with Cement/ Epoxy Mortar			
	iv) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometer stone etc.		Once in a Year	3695
	ii) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7390
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232
	iv) Traffic Census		Once in a Year	0
	v) Provision for roughness measurement		Twice in a Year	0

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
	SUB TOTAL			**12,317**
	GRAND TOTAL (Normal)			**2,27,719**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	33837
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**63,643**
	GRAND TOTAL (Urban)			**2,91,363**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	0.00%
	Volume (cum)			0.00
	Rs/m^3			13246
	Cost in Rupees			0
	ii) Patch repair	100 % Patch less	As & when required	0.00%
	Area (sqm)			0
	Rs/m^2			530
	Cost in Rupees			0
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			85
	Cost in Rupees			21,231
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.50%
	Area (sqm)			187.5
	Rs/m^2			62
	Cost in Rupees			11,582
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	0.00%
	Area (sqm)			0
	Rs/m^2			530
	Cost in Rupees			0
	v) Road marking	14%	Once in 7th year & @ Repaired location	35295
	SUB TOTAL			**68,108**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**7,414**
3	**Maintenance of Cross Drainage works:**			
	i) Repair of floors	100%	Once in a Year	5055
	ii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			**7,161**
4	**Maintenance of Minor & Major Bridges:**			
	i) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints	100%	As & when required	36,950
	ii) Repair of minor washouts, erosion scour and animal holes			
	iii) Sealing Cracks with Cement/ Epoxy Mortar			
	iv) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometer stone etc.		Once in a Year	3695
	ii) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7390
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232
	iv) Traffic Census		Once in a Year	0
	v) Provision for roughness measurement		Twice in a Year	0

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	SUB TOTAL			**12,317**
	GRAND TOTAL (Normal)			**1,31,950**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	0
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**29,806**
	GRAND TOTAL (Urban)			**1,61,756**

ANNEXURE II - MAJOR MAINTENANCE COST

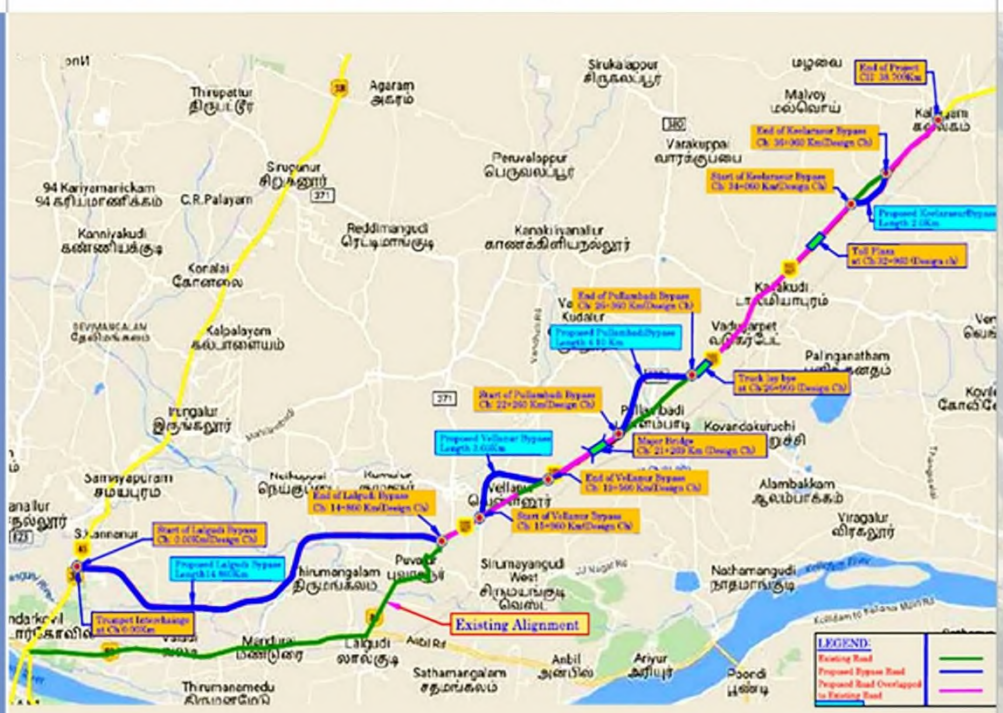
Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						13,83,991	17	2,39,98,402
	For BC	Sqm	2	65,749	8.77		11,52,922	11,52,922		
	For DBM	Sqm	2	6,485	7.00		90,788	90,788		
	For Misc. Location	Sqm	2	8,000	8.77		1,40,281	1,40,281		
2	BC with 30 mm	Cum	2	73,749	8.77	0.03	38,796	38,796	14,248	55,27,73,812
3	DBM with 50 mm	Cum	2	6,485	7.00	0.05	4,539	4,539	10,833	4,91,74,253
4	Milling	Sqm	2	6,485	7.00		90,788	90,788	92	83,52,538
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 10% length	Rmt	10%	16,002	3.50	4.50	12,802	12,802	50	6,40,085
6	Dismantling of CC Panels @ 3% area	Cum	3%	2,52,034		0.27	2041	2041	664	13,55,946
7	Replacement of Panels - PQC @ 3% area	Cum	3%	2,52,034		0.27	2041	2041	7,966	1,62,63,000
	Service Road									
8	Tack coat	Sqm	1	32,862	5.65		1,85,646	1,85,646	17	32,19,102
9	BC with 30 mm	Cum	1	32,862	5.65	0.03	5,569	5,569	11,669	6,49,88,037
10	Micro Surfacing	Sqm	1	21,908	5.65		1,23,764	1,23,764	162	2,00,49,768
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	901	14.6		13,136	13,136	17	2,27,774
12	Wearing Coat BC with 30 mm	Cum	1	901	14.6	0.03	394	394	14,248	56,14,826
13	Milling of Ex. Wearing Coat	Sqm	1	901	14.6		13,136	13,136	92	12,08,490
14	Painting of Crash Barrier	Sqm	4	901		1.12	4,016	4,016	121	4,85,991
	Other Works									
15	Raising of Road Kerb	Rmt	-	1,20,519			-	-	311	-
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	9,779			19,558	19,558	296	57,89,168
	Solar Road Stud	Nos	1				-	-	1,800	-
17	Painting of Kerb	Sqm	2	79,099		0.315	49,833	49,833	142	70,76,237
18	Road Marking	Sqm								

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	On PQC						9,336	9,336	688	64,18,263
	On BC						55,763	55,763	625	3,48,51,924
	On Micro surfacing						6,381	6,381	620	39,58,200
	MCW-Flexible									
	a) Median & Edge line	Sqm	4	69,037	0.15		41,422			
	b) Lane line	Sqm	2	22,782	0.10		4,556			
	MCW-Rigid									
	a) Median & Edge line	Sqm	4	14,018	0.15		8,411			
	b) Lane line	Sqm	2	4,626	0.10		925			
	Service Road									
	a) Edge line	Sqm	2	54,770	0.10		10,954			
	b) Lane line	Sqm	1	18,074	0.10		1,807			
	Junction crossing	Sqm					3,404			
19	Filling of Earthen shoulder	Cum					4,931	4,931	289	14,24,023
	MCW		2	65,749	1.00	0.03	3,945			
	Service Road		1	32,862	1.00	0.03	986			
20	Median Filling	Cum	-	65,209	4.17	0.10	-	-	278	-
21	Miscellaneous	5%								4,03,93,492
Total Major Maintenance Cost (Rs)										**84,82,63,330**
Total Major Maintenance Cost with GST (Rs)										**1,00,09,50,729**
Total Major Maintenance Cost with GST (Cr)										**100.10**
Per km Cost (lakh)										**125.12**
Escalation Factor (FY 2029)										**1.10**
Total Escalated Cost (FY 2029) (Cr)										**106.25**

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						13,38,597	17	2,32,11,266
	For BC	Sqm	2	65,749	8.77		11,52,922	11,52,922		
	For DBM	Sqm	2	3,242	7.00		45,394	45,394		
	For Misc. Location	Sqm	2	8,000	8.77		1,40,281	1,40,281		
2	BC with 30 mm	Cum	2	73,749	8.77	0.03	38,796	38,796	14,248	55,27,73,812
3	DBM with 50 mm	Cum	2	3,242	7.00	0.05	2,270	2,270	10,833	2,45,87,126
4	Milling	Sqm	2	3,242	7.00		45,394	45,394	92	41,76,269
	Main Carriageway - Rigid Pavement									
5	Diamond Grinding	Sqm	41%	2,52,034			1,03,228	1,03,228	190	1,96,13,305
6	Joint Sealant	Rmt	16%	16,002	3.50	4.50	20,646	20,646	120	24,77,514
7	Dismantling of CC Panels @ 3% area	Cum	3%	2,52,034		0.27	2041	2041	664	13,55,946
8	Replacement of Panels - PQC @ 3% area	Cum	3%	2,52,034		0.27	2041	2041	7,966	1,62,63,000
	Service Road									
9	Tack coat	Sqm	1	32,862	5.65		1,85,646	1,85,646	17	32,19,102
10	BC with 30 mm	Cum	1	32,862	5.65	0.03	5,569	5,569	11,669	6,49,88,037
11	Micro Surfacing	Sqm	1	21,908	5.65		1,23,764	1,23,764	162	2,00,49,768
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
12	Tack coat	Sqm	1	901	14.6		13,136	13,136	17	2,27,774
13	Wearing Coat BC with 30 mm	Cum	1	901	14.6	0.03	394	394	14,248	56,14,826
14	Milling of Ex. Wearing Coat	Sqm	1	901	14.6		13,136	13,136	92	12,08,490
15	Painting of Crash Barrier	Sqm	4	901		1.12	4,016	4,016	121	4,85,991
	Other Works									
16	Raising of Road Kerb	Rmt	1	1,86,269			1,86,269	1,86,269	311	5,78,36,493
17	Replacement of Road Stud									
	Normal Road Stud	Nos	2	9,779			19,558	19,558	296	57,89,168
	Solar Road Stud	Nos	1				-	-	1,800	-
18	Painting of Kerb	Sqm	2	79,099		0.315	49,833	49,833	142	70,76,237
19	Road Marking	Sqm								
	On PQC						9,336	9,336	688	64,18,263

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	On BC						55,763	55,763	625	3,48,51,924
	On Micro surfacing						6,381	6,381	620	39,58,200
	MCW-Flexible									
	a) Median & Edge line	Sqm	4	69,037	0.15		41,422			
	b) Lane line	Sqm	2	22,782	0.10		4,556			
	MCW-Rigid									
	a) Median & Edge line	Sqm	4	14,018	0.15		8,411			
	b) Lane line	Sqm	2	4,626	0.10		925			
	Service Road									
	a) Edge line	Sqm	2	54,770	0.10		10,954			
	b) Lane line	Sqm	1	18,074	0.10		1,807			
	Junction crossing	Sqm					3,404			
20	Filling of Earthen shoulder	Cum					4,931	4,931	289	14,24,023
	MCW		2	65,749	1.00	0.03	3,945			
	Service Road		1	32,862	1.00	0.03	986			
21	Median Filling	Cum	1	65,209	4.17	0.10	13,596	13,596	278	37,74,297
22	Miscellaneous	5%								4,30,69,042
Total Major Maintenance Cost (Rs)										**90,44,49,872**
Total Major Maintenance Cost with GST (Rs)										**1,06,72,50,849**
Total Major Maintenance Cost with GST (Cr)										**106.73**
Per km Cost (lakh)										**133.41**
Escalation Factor for (FY 2036)										**1.45**
Total Escalated Cost for (FY 2036) (Cr)										**139.16**

FP Project Management



Technical Due Diligence of Tiruchirappalli to Kallagam of NH-227 from km. 0+000 to km. 38+700 in the state of Tamil Nadu

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	13-May-2026	VKD / STP	CSB	SMA

This report is to be regarded as confidential to our client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 5
2.7 Existing Utilities 5
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 9
3.3 Junctions / Intersections 9
3.4 Condition Survey of Bridges 10
3.5 Condition Survey of Culverts 17
3.6 Drainage 18
3.7 Slope Protection 18
3.8 Road Furniture 19
3.8.1 Pavement Marking 19
3.8.2 Road Studs 20
3.8.3 Traffic Signage / Median Kerb painting / KM Stone 20
3.8.4 Highway Lighting 22
3.8.5 Crash Barriers 23
3.8.6 Delineators 23
3.8.7 Road Land Boundary 23
3.9 Avenue Plantation and Median Plantation 24

3.10 Toll Plaza 24
3.11 Lane Equipment 25
3.11.1 RFID ETC Transceiver 26
3.11.2 Lane Controller with Industrial PC 26
3.11.3 Automatic Vehicle Classification (AVC) Sensors 27
3.11.4 Automatic Lane Barrier 27
3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 27
3.11.6 Incident Capture Camera (AVC Camera) 28
3.11.7 License Plate Image Capture Camera (LPIC) 28
3.11.8 Over Head Lane Signal (OHLS) 28
3.11.9 Toll Booth Equipment 29
3.11.10 Medium Speed Weigh in Motion (MSWIM) 30
3.12 Plaza Equipment 30
3.12.1 TMS Server 30
3.12.2 55” LED screen for CCTV monitoring 30
3.12.3 Workstations in Control Room, POS room 31
3.13 Advanced Traffic Management System (ATMS) 31
3.13.1 Automatic Traffic Counter cum classifier (ATCC) 32
3.13.2 Mobile Radio communication System (MRCS) 32
3.13.3 Emergency Call Boxes (ECB) 32
3.13.4 Portable Weigh in Motion (PWIM) 32
3.13.5 MET System 32
3.13.6 Variable Message Signboards (VMS) 33
3.13.7 CCTV Surveillance Cameras 33
3.13.8 Video Incident Detection System 33
3.13.9 Vehicle Actuated Speed Display (VASD) 33
3.13.10 Adequacy of Toll Collection System and ATMS 34
3.14 Traffic Aid Post and Medical Aid Post 34
3.15 Toilet Block 34
3.16 Bus Bays and Passenger Shelters 35
3.17 Truck Lay Bye 35
3.18 Balance Work Status 35
3.19 Operation and Maintenance 36
3.19.1 O&M Contract 36
3.19.2 Organization Chart 36
3.19.3 Operation 37
3.19.4 Routine Maintenance 37

4 Pavement Investigation and Assessment 39
4.1 General 39
4.2 Axle Load and VDF 39
4.3 Design traffic 39
4.4 Network Survey Vehicles (NSV) Survey 40
4.5 Falling Weight Deflectometer (FWD) Survey 41
4.6 Test pit and Subgrade Investigation 41
4.7 Periodic Maintenance Strategy 42
5 Cost Estimates 43
5.1 General 43
5.2 Rate Assumption 43
5.3 Balance Work Cost 45
5.4 Routine O&M Cost 45
5.5 Major Maintenance Cost 46
5.6 Periodic Replacement of TMS / ATMS System 46
5.7 Escalation Assumption 46
5.8 Summary of Cost 47
Annexures 49
Annexure I - Routine Maintenance Cost 50
Annexure II - Major Maintenance Cost 54

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Details of Summary for Structures 10
Table 3-2 Condition Survey of Major Structure 11
Table 3-3 Details of Summary for Toll Plaza Items 24
Table 4-1 Vehicle Damage Factor 39
Table 4-2 MSA Calculation 39
Table 4-3 Summary of Roughness 40
Table 4-4 Summary Pavement Crust Details 41
Table 4-5 Summary of Subgrade CBR along the project corridor 42
Table 4-6 Major Maintenance Cycle 42
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 43
Table 5-2 Summary of Unit Rates 44
Table 5-3 Summary of Operation Cost 46
Table 5-4 Escalation 47

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start and End of the Project Road 5
Figure 3-1 Photographs of Pavement Condition (Main Carriageway) 8
Figure 3-2 Photographs of Service Road 9
Figure 3-3 Photographs of Junctions 10
Figure 3-4 Photographs of Major Structures 13
Figure 3-5 Photographs of Culverts 17
Figure 3-6 Photographs of Drainage 18
Figure 3-7 Photographs of Slope Protection and Chute Drain 19
Figure 3-8 Photographs of Pavement Marking 19
Figure 3-9 Photographs of Road studs 20
Figure 3-10 Photographs of Sign Boards and km stones 21
Figure 3-11 Photographs of Highway Lighting 22
Figure 3-12 Photographs of MBCB / Crash Barrier 23
Figure 3-13 Photographs of Delineator 23
Figure 3-14 Photographs of Avenue and Median Plantation 24
Figure 3-15 Photographs of Toll Plaza 25

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Tiruchirappalli to Kallagam section from km. 0+000 to km. 38+700 in the State of Tamil Nādu (hereinafter referred as "Project Road").

M/s. SRIRANGAM INFRA PRIVATE LIMITED (SIPL) (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for operation, maintenance, and transfer of Tiruchirappalli to Kallagam section from km. 191+000 to km. 229+700 of NH-81 (from km. 0+000 to km. 38+700 of old NH-44). The project has been taken over by the Concessionaire in January 2023. The length of Project Road is 38.700 kms with one toll plaza at Kappalur village at km. 223+460.

Accordingly, the Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets.
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, aaxle load, material investigations etc.
- Formulation of future major maintenance strategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence.
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period.
- Review of balance work cost for Project Road including estimation of quantities and item rates.

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified Engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design, and drawings.
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted.
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority.
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets, mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyze the same as per the best engineering / industry practices.

The site visit and inspection were carried out between the periods from **28th February 2026 to 2nd March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies**.**

Chapter 2 **Project Description:** The chapter describes existing project features, and overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit**.**

Chapter 4 **Pavement Investigation and Assessment:** This chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance

Chapter 5 **Cost Estimates**: This chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **M/s. SRIRANGAM INFRA PRIVATE LIMITED**, is a company promoted by Cube Highway or company a Special Purpose Vehicle (SPV) formed for implementing this project on 11th April 2018. The Appointed Date for the Project Road is 01st March 2019.

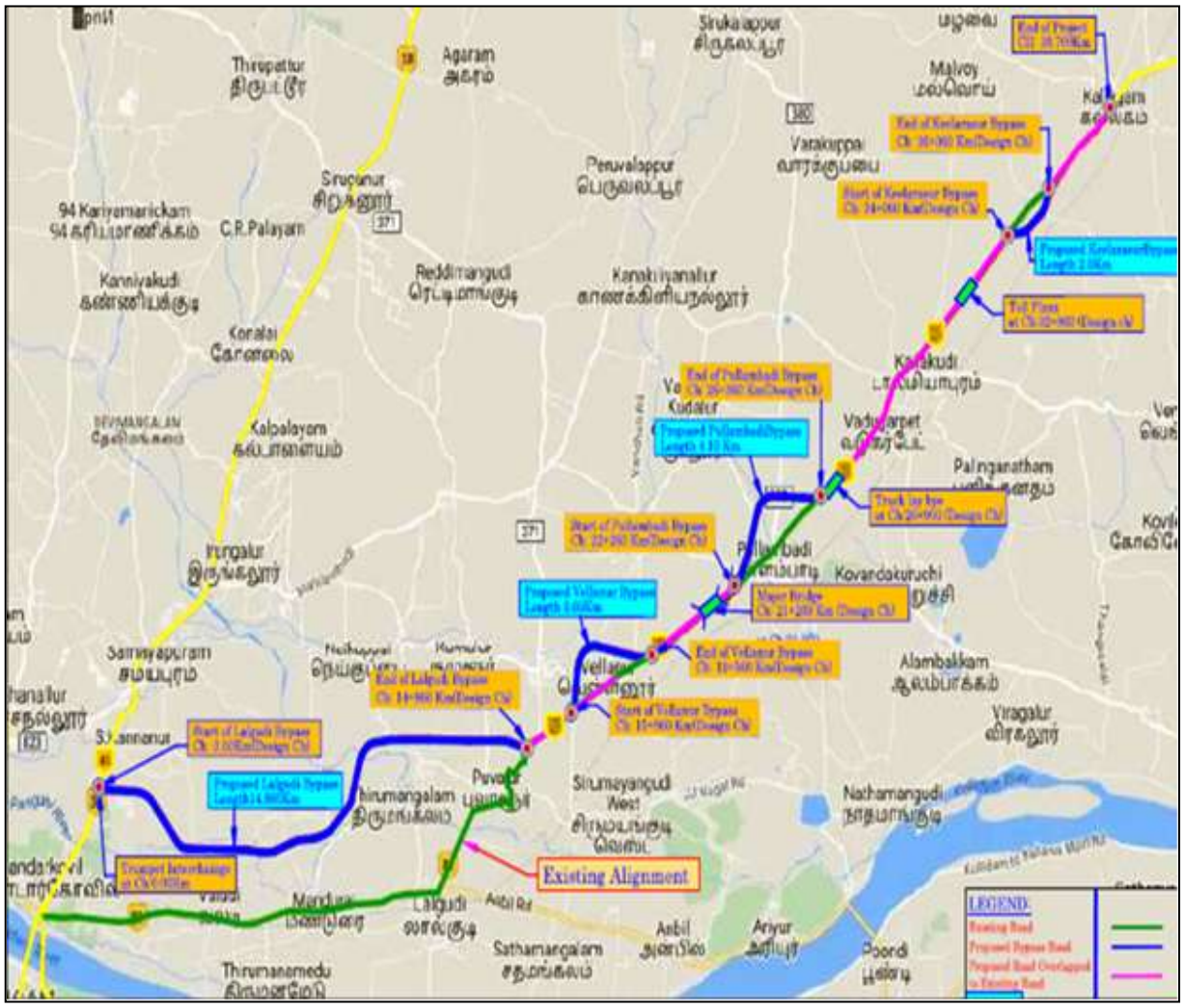
The project has been developed under HAM (Hybrid Annuity Mode) with a concession period of 15 years from COD. The end of the concession period is in the year 2038.

2.2 Location

The Project Road is part of National Highway No. 81 of Tiruchirappalli to Kallagam section in the state of Tamil Nadu, total project length is 38.700 kms.

The Location Map of the Project Road is presented below.

Figure 2-1 Location Map



The photographs taken during the site visit are presented below.

Figure 2-2 Start and End of the Project Road

Start of the Project Road at km. 191+000

End of the Project Road at km. 229+700

2.3 Climate

As the is on the Deccan Plateau, the days are extremely warm and dry; evenings are cooler because of cold winds that blow from the South-East. From June to September, the project experiences a moderate climate tempered by heavy rain and thundershowers. Rainfall is heaviest between October and December because of the North-East monsoon winds, and from December to February the climate is cool and moist. The average annual rainfall is 841.9 mm (33.15 in). Fog and dew are rare and occur only during the winter season. The project experiences a dry-summer tropical savanna climate with no major change in temperature between summer and winter. The climate is generally characterized by high temperature and low humidity, with an annual mean temperature of 28.9 °C (84.0 °F) and monthly average temperatures ranging between 25 °C (77 °F) and 32 °C (90 °F). The warmest months are from April to June

2.4 Terrain

The Project Road traverses through plain terrain.

2.5 Abutting Land Use

The land use along the Project Road is predominantly agriculture or barren with intermittent built-up area.

2.6 Right of Way

The existing Right of Way (ROW) for the Project Road is 45 m throughout its length.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC cables, etc.

2.8 Development as per Schedule-B

The Project Road from Tiruchirappalli (km. 191+000) to Kallagam (km. 229+700) has been developed as a four-lane divided carriageway with median width of 3.50 m, service road at some underpass locations and other arrangements. The Project Road passes through rural as well as built-up sections.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km.	38.70	
2	Construction of Service Road	km.	30.72	Both side
3	Construction of Major Bridge	Nos.	01	
4	Repair & rehabilitation of Minor Bridges, widening of existing Minor Bridges	Nos.	02	
5	Minor Bridges-Reconstruction	Nos.	03	
6	Minor Bridges-New construction	Nos.	16	
7	Trumpet Interchange	Nos.	01	
8	Vehicular Underpass (VUP & LVUP)	Nos.	17	VUP-13 Nos., LVUP-04 Nos.
9	Box Culverts	Nos.	89	
10	Minor Intersections	Nos.	10	
11	Bus Bays	Nos.	35	
12	Truck Parking	No.	02	
13	Toll Plaza	No.	01	

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 9.0 m with earthen shoulder of 1.5 m on either side. The Project Road has a median width of 3.50 m throughout its length.

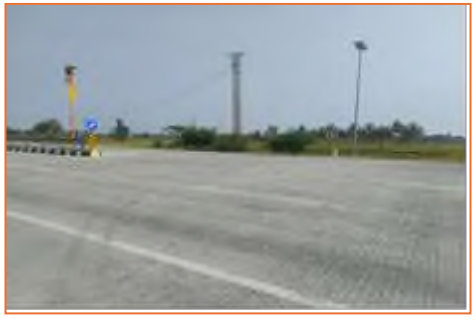
The entire stretch of Project Road is constructed with flexible pavement and rigid pavement. The pavement type for the Toll Plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

Pavement condition survey was carried out from **28th February 2026 to 2nd March 2026** through visual inspection for the entire project length. From the visual inspection, it is found that the pavement condition of the Project Road is found to be Good to Fair.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (Main Carriageway)



km. 203+000

km. 201+900 (RHS)

km. 200+600 (RHS)

km. 207+668 (LHS)

km. 213+780(LHS)

km. 207+800 (RHS)

km. 210+970 (LHS)

km. 198+280 (RHS)

km. 228+700 (LHS)

km. 227+750 (RHS)

km. 226+900 (RHS)

km. 212+150 (LHS)

3.2 Service Road / Slip Road

The width of the service road varies from 5.5 m to 7.5 m. The service road is constructed in built-up area and adjoining underpass locations. The Project Road has total service road length of 30.720 kms.

The photographs taken during the site visit are presented below.

Figure 3-2 Photographs of Service Road

Service Road at km. 201+500 (RHS)

Service Road at km. 204+100(LHS)

Service Road at km. 220+300 (LHS)

Service Road at km. 221+310 (LHS)

3.3 Junctions / Intersections

There are total 38 No. of junctions / Intersections along Project Road, all of which are minor junctions only.

The photographs taken during site visit is presented as below:

Figure 3-3 Photographs of Junctions

Minor Junction at km. 220+500

Minor Junction at km. 201+500

3.4 Condition Survey of Bridges

The inventory of structures including major bridges, minor bridges, underpasses and culverts is presented in table as below:

Table 3-1 Details of Summary for Structures

Type of Structure	Total Number of Structures
Major Bridges (MJB)	01
Minor Bridges (MNB)	21
Vehicular Underpass (VUP)	13
Light Vehicular Underpass (LVUP)	05
SVUP / PUP	02
Culverts (including crossroad culverts)	111

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below.

Table 3-2 Condition Survey of Major Structure

Major Bridge

Sr. No.	Chainage as per CA (km)	Chainage as per Site (km)	Structure	Span	Length (m)	Remarks
1	21+268	212+269	MJB(W)	16 x 10.5	168.00	Overall structure is in good condition. Pavement, Expansion joints are in sound condition on both sides.

Minor Bridge

Sr. No.	Chainage as per CA (km)	Chainage as per Site (km)	Structure	Span	Length (m)	Remarks
1	2+978	193+978	MNB(N)	2 x 10.00	20.00	Structure is in sound condition.
2	3+082	194+082	MNB(N)	1 x 8.00	8.00	Structure is in sound condition.
3	5+190	196+190	MNB(N)	2 x 10.00	20.00	Structure is in sound condition.
4	5+762	196+762	MNB(N)	1 x 8.00	8.00	Structure is in sound condition.
5	9+420	200+420	MNB(N)	2 x 10.00	20.00	Structure is in sound condition.
6	11+520	202+520	MNB(N)	1 x 8.00	8.00	Structure is in sound condition.
7	16+668	207+668	MNB(N)	1 x 10.00	10.00	Structure is in sound condition.
8	16+785	207+785	MNB(N)	2 x 10.00	20.00	Structure is in sound condition.
9	17+832	208+832	MNB(N)	2 x 8.00	16.00	Structure is in sound condition.
10	23+273	214+273	MNB(N)	1 x 12	12.00	Structure is in sound condition.
11	23+419	214+419	MNB(N)	1 x 12	12.00	Structure is in sound condition.
12	23+620	214+620	MNB(N)	1 x 12.00	12.00	Structure is in sound condition.
13	24+336	215+336	MNB(N)	2 x 12.00	24.00	Structure is in sound condition.
14	25+740	216+740	MNB(N)	1 x 12	12.00	Structure is in sound condition.
15	28+715	219+715	MNB(R)	2 x 10	20.00	Structure is in sound condition.
16	30+660	221+660	MNB(R)	1 x 10	10.00	Structure is in sound condition.
17	32+055	223+055	MNB(R)	2 x 10 x 2.5	20.00	Structure is in sound condition.
18	33+560	224+560	MNB(W)	4 x 7.4	29.60	Structure is in sound condition.
19	34+490	225+490	MNB(N)	1 x 10	10.00	Structure is in sound condition.
20	35+361	226+361	MNB(N)	2 x 8.00	16.00	Structure is in sound condition.
21	36+787	227+787	MNB(W)	6 x 7 x 1.5	42.00	Structure is in sound condition.

Vehicular Underpass (VUP)

Sr. No.	Chainage as per CA (km)	Chainage as per Site (km)	Structure	Span	Length	Status
1	7+510	197+510	VUP(N)	1 x 25 x 5.5	25.00	Structure is in sound condition.
2	10+390	201+402	VUP(N)	1 x 15 x 5.5	15.00	Structure is in sound condition.
3	13+350	204+350	VUP(N)	1 x 12 x 5.5	12.00	Structure is in sound condition.
4	14+460	205+460	VUP(N)	1 x 12 x 5.5	12.00	Structure is in sound condition.
5	16+260	207+260	VUP(N)	1 x 12 x 5.5	12.00	Structure is in sound condition.
6	19+215	210+215	VUP(N)	1 x 12 x 5.5	12.00	Structure is in sound condition.
7	22+720	193+260	VUP(N)	1 x 12 x 5.5	12.00	Structure is in sound condition.
8	24+915	215+915	VUP(N)	1 x12 x 5.5	12.00	Structure is in sound condition.
9	26+030	217+030	VUP(N)	1 x 12 x 5.5	12.00	Structure is in sound condition.
10	28+803	219+803	VUP	1 x 12 x 5.5	12.00	Structure is in sound condition.
11	29+003	220+003	VUP	1 x 12 x 5.5	12.00	Structure is in sound condition.
12	34+360	225+360	VUP(N)	1 x 12 x 5.5	12.00	Structure is in sound condition.
13	35+800	226+800	VUP(N)	1 x 12 x 5.5	12.00	Structure is in sound condition.

Light Vehicular Underpass (LVUP)

Sr. No.	Chainage as per CA (km)	Chainage as per Site (km)	Structure	Span	Length	Status
1	3+900	194+900	LVUP	1 x 12 x 5	12.00	Structure is in sound condition.
2	23+990	214+990	LVUP(N)	1 x 12 x 4	12.00	Structure is in sound condition.
3	30+960	221+960	LVUP(N)	1 x 12 x 4	12.00	Structure is in sound condition.
4	38+190	229+190	LVUP(N)	1 x 12 x 4	12.00	Structure is in sound condition.

Figure 3-4 Photographs of Major Structures

Trumpet at km. 191+000

Trumpet at km. 191+000 (Abutment & RE Wall)

Trumpet at km. 191+000 (Girders & Pier condition)

Trumpet at km. 191+000 (Exp. joint & pavement condition)

MJB at km. 212+269 (LHS)

MJB at km. 212+269 (RHS)

MJB at km. 212+269

MJB at km. 212+269 (Pavement & footpath condition)

VUP at km. 198+510

VUP at km. 201+402

VUP at km. 204+350

VUP at km. 205+460

VUP at km. 207+260

VUP at km. 210+215

VUP at km. 215+915

VUP at km. 225+360

LVUP at km. 194+900

LVUP at km. 213+650

LVUP at km. 214+990

LVUP at km. 221+960

LVUP at km. 229+190

PUP at km. 192+350

PUP at km. 219+300

SVUP at km. 221+360

MNB at km. 193+978

MNB at km. 194+082

MNB at km. 196+190

MNB at km. 200+420

MNB at km. 202+520

MNB at km. 215+336

MNB at km. 225+490

MNB at km. 227+787

3.5 Condition Survey of Culverts

The cross-drainage structure includes hume pipe culverts and box culverts at various locations. There is total 111 Nos. of culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involved strengthening and widening of existing road to four lane divided carriageway. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts is satisfactory. The RCC parapet, metal beam crash barrier or RCC railing has been provided at culvert locations wherever required, which is maintained properly.

Figure 3-5 Photographs of Culverts

HPC at km. 201+850

BC at km. 200+700

BC at km. 200+350

BC at km. 194+900

BC at km. 204+350

BC at km. 210+220

3.6 Drainage

There is 7.618 kms of existing drain (which includes drain on both sides) along the Project Road as per Concession Agreement.

Figure 3-6 Photographs of Drainage

Drain at km. 219+300 (LHS)

Drain at km. 221+310 (RHS)

3.7 Slope Protection

Slope protection and chute drains are found on Project Road at required locations.

Photographs taken during the site visit are presented below.

Figure 3-7 Photographs of Slope Protection and Chute Drain

Slope Protection at km. 202+700

Slope Protection at km. 215+360

3.8 Road Furniture

The Concessionaire has provided road furniture along the Project Road as per the standards and specifications mentioned in Schedule-C.

3.8.1 Pavement Marking

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. The pavement marking is found to be Good throughout the Project Road.

Some of the photographs of road marking are presented below.

Figure 3-8 Photographs of Pavement Marking

Pavement marking at km. 204+300

Pavement marking at km. 201+900

Pavement marking at km. 227+750

Pedestrian crossing at km. 202+970

3.8.2 Road Studs

Road studs / cat's eye for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Road studs / cat's eye has been fixed at junction and zebra crossings.

Some of the photographs of Road studs are presented below.

Figure 3-9 Photographs of Road studs

Road studs at km. 203+010 (Median opening)

Road studs at km. 214+200 (RHS)

3.8.3 Traffic Signage / Median Kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Roadside signs, overhead signs, kerb mounted signs, vertical post of sign boards, chevron boards and median kerb paint are all in good condition.

Some of the photographs of sign boards are presented below.

Figure 3-10 Photographs of Sign Boards and km stones

Km Stone at km. 191+000

Hazard marker sign board at km. 198+920

Informatory sign board at km. 201+500 (RHS)

Gantry sign board at km. 211+000

Informatory sign board at km. 226+355 (RHS)

Caution sign board at km. 225+700 (LHS)

Kerb painting at km. 216+745

Caution sign board at km. 191+100

Hectometer stone at km. 203+200 (BHS)

Boundary stone at km. 229+600

3.8.4 Highway Lighting

Highway lighting is provided at underpasses, flyovers, toll plaza and built-up locations. High mast lighting is provided at toll plaza location. Highway lighting is also provided at approaches of underpass and flyovers.

Some of the photographs of highway lighting are presented below.

Figure 3-11 Photographs of Highway Lighting

Highway Lighting at km. 191+050

Highway Lighting at km. 225+700

3.8.5 Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site.

Some of the photographs of crash barriers are presented below.

Figure 3-12 Photographs of MBCB / Crash Barrier

Metal beam crash barrier at km. 204+300

RCC crash barrier at km. 228+700 (LHS)

3.8.6 Delineators

The traffic delineators are provided by the Concessionaire for road users in abnormal condition of weather for the Project Road. The same is maintained by the Concessionaire.

Some of the photographs of delineators are presented below.

Figure 3-13 Photographs of Delineator

Delineator at km. 201+900

Delineator at km. 191+800

3.8.7 Road Land Boundary

Road land boundary pillar has been found / available on Project Road.

3.9 Avenue Plantation and Median Plantation

Avenue plantation is provided in open country locations and median plantation has been provided in the project length as per IRC specification. Some of the photographs of avenue plantation and median plantation are presented below.

Figure 3-14 Photographs of Avenue and Median Plantation

Median Plantation at km. 193+950

Avenue Plantation at km. 205+100

3.10 Toll Plaza

As per the Concession Agreement, there is 01 No. of Toll plaza at Kallakudi Village at km. 223+955 with the following infrastructure.

Table 3-3 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 223+955 (km. 32+955)
2	Number of Tolling Lanes	14 lanes for toll operation plus 2 lanes for over dimensional vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	in each direction
5	Number of Toll Booths	15 singles
6	Canopy	Present
7	Administrative Building	Present
8	Parking cum Toilet Block	Present
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	Tunnel
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	No
12	Storage facility for Overloaded Material	No
13	High mast Light	Yes
14	Streetlight	Yes (only 20 nos. near Toll Plaza. 10 nos. in both direction)
15	Low mast Light	No
16	User Fee Boards	4
17	Cantilever/Gantry Boards	Yes
18	Automatic boom barrier	Yes

Figure 3-15 Photographs of Toll Plaza

View of Toll Plaza at km. 223+955

Admin Building at Toll Plaza

DG Room at Toll Plaza

Highway Patrol Vehicle

Crane at Toll Plaza

3.11 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors

4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.11.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

RFID

3.11.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data.

Lane Controller at Toll Booth

3.11.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of camera based, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVCC at Toll Plaza

3.11.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at Toll Plaza

3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at Toll Plaza

3.11.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on the island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

3.11.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

LPIC at Toll Plaza

3.11.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane “Open” and “Close” sign consists of a pair of “GREEN” (arrow) and “RED” (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at Toll Plaza

3.11.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and types of ticket.

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.11.10 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

MSWIM at Toll Plaza

3.12 Plaza Equipment

3.12.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio WiFi module. Firewall with Sophos antivirus is provided.

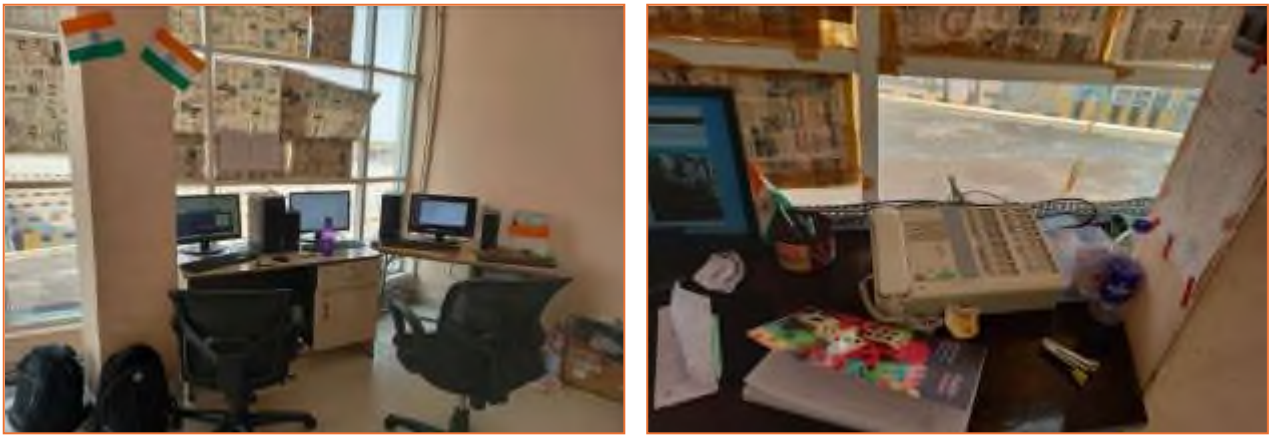
3.12.2 55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.12.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.



Control Room at Toll Plaza

3.13 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) installed for the Project Road is controlled by the ATMS center at the Toll plaza location (km. 32+955). As per Concession Agreement, ATMS shall conform to ATMS Policy guidelines (2016) which comprises of the following:

- Automatic Traffic Counter cum Classifier (ATCC)
- Mobile Radio communication system
- Emergency Call Box
- Portable Weigh in Motion
- Meteorological Data system
- Variable Message Signboards (VMS)
- CCTV system
- Video Incident Detection System (VIDS)
- Vehicle actuated Speed Display (VASD)

Status of these systems at site are described below:

3.13.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is installed at Toll Plaza (km. 32+955).

3.13.2 Mobile Radio communication System (MRCS)

Mobile Radio communication System (MRCS) is installed.

3.13.3 Emergency Call Boxes (ECB)

These are installed / available at site.

3.13.4 Portable Weigh in Motion (PWIM)

It is not provided at the project site.

3.13.5 MET System

Meteorological sensors comprise of sensors to measure the atmospheric temperature, humidity, pavement surface temperature, visibility and equipment for measuring wind speed and direction and installed at Toll Plaza km. 32+955.

3.13.6 Variable Message Signboards (VMS)

Variable message sign boards are installed at 04 locations. These display specific messages to the users based on the prevailing conditions on the highway. The message can be changed at any point of time from the HTMS centre. About 250 customised messages can be stored on the system.

3.13.7 CCTV Surveillance Cameras

There are 06 nos. PTZ cameras and 07 nos. of VIDS cameras are installed along the Project Road. The ATMS control room has video wall to monitor these locations through the cameras installed. At toll plaza 4 PTZ and 10 lane cover cameras are installed.

3.13.8 Video Incident Detection System

Fixed CCTV cameras are installed as part of Video incident detection system.

3.13.9 Vehicle Actuated Speed Display (VASD)

VASD is installed at 02 No. of locations each on LHS and RHS.

3.13.10 Adequacy of Toll Collection System and ATMS

- Adequacy - All lanes are hybrid ETC system as stipulated by NHAI in Technical Specifications of Hybrid ETC system. NHAI has approved maintenance costs for TMS. TMS shall be upgraded every 7 years at the cost of the Authority.

- The Advanced Traffic Management System (ATMS) installed is as per specifications required by the Authority and in working condition.

3.14 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Posts are located at Toll Plaza location.

Traffic and Medical Aid Post at TP

Ambulance at Toll Plaza

3.15 Toilet Block

There are 02 Nos. of toilet blocks at Toll Plaza location.

Toilet Block at Toll Plaza

3.16 Bus Bays and Passenger Shelters

There are 35 Nos. of bus bays / passenger shelters provided along the Project Road.

Passenger Shelter with Bus Bay

Passenger Shelter

3.17 Truck Lay Bye

There is 01 No. of Truck lay bye provided at km. 216+400 along the Project Road.

Truck lay bye at km. 216+400

Toilet block at Truck lay bye

3.18 Balance Work Status

There are no balance works to be executed as per CA. Hence, the balance work is **NIL**.

3.19 Operation and Maintenance

3.19.1 O&M Contract

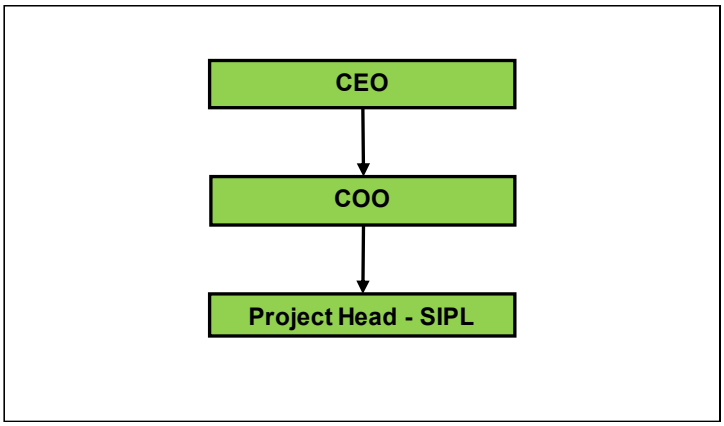
As per Clause 17.1.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall conform to all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement.

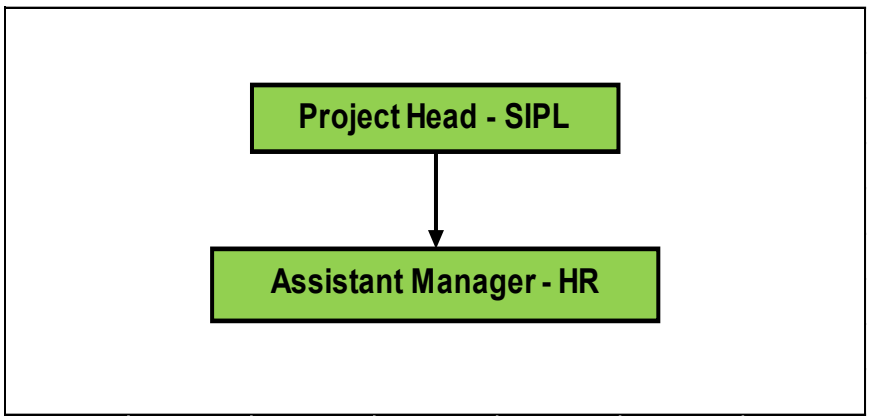
The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

3.19.2 Organization Chart

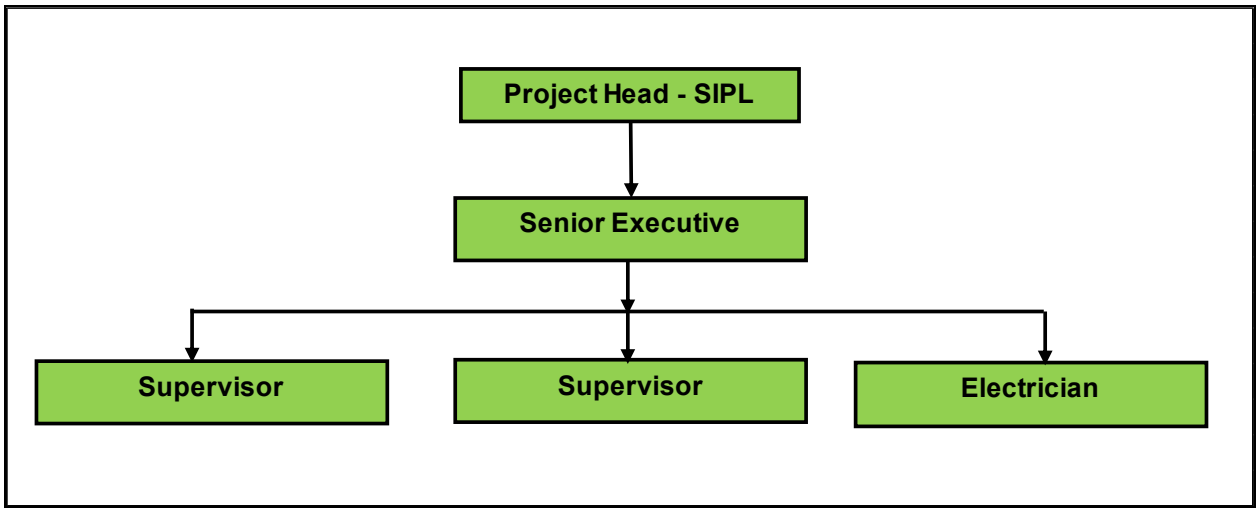
The Concessionaire has shared the Organization Chart at site for Operation and maintenance. Accordingly, there is 01 Project Head, 01 Senior Executive (HR), 01 Assistant Manager (TMS / IT), 01 Executive (TMS / IT), 01 Plaza Manager, 01 Assistant Plaza Manager, 03 Cashiers and 03 validators 01 traffic and road safety manager to carry out O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent subcontractors.

Organization Chart

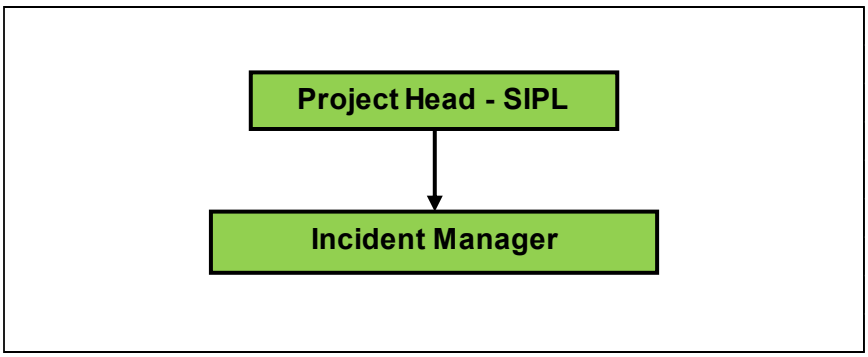




Maintenance



Operations



3.19.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.19.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs

of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

Currently, the entire length of the Project Road is maintained by Concessionaire.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Concessionaire as per scope of work. The Concessionaire received Completion Certificate on 15th June 2023.

The project is currently under Operation and Maintenance stage. The Concession Period of the project is 15 years from the Date of Commercial Operation i.e., 03.06.2022. Appointed Date of Project Road is 01st March 2019.

4.2 Axle Load and VDF

The Concessionaire has conducted the Axle Load Survey on Project Road at km. 36+960 (near Toll Plaza) on 24th July & 25th July 2021. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor

VDF Summary				
Sr. No.	**Vehicle Type**	**Direction**		**Adopted Value**
		Kallagam - Trichy	**Trichy - Kallagam**	
1	BUS	0.867	1.074	1.074
2	LCV	1.067	0.754	1.067
3	2-Axle	5.012	4.402	5.012
4	3-Axle	10.004	7.844	10.004
5	MAV	17.151	13.091	17.151

4.3 Design traffic

Traffic surveys are conducted in April 2026. The following is the summary of total traffic count and projected traffic data.

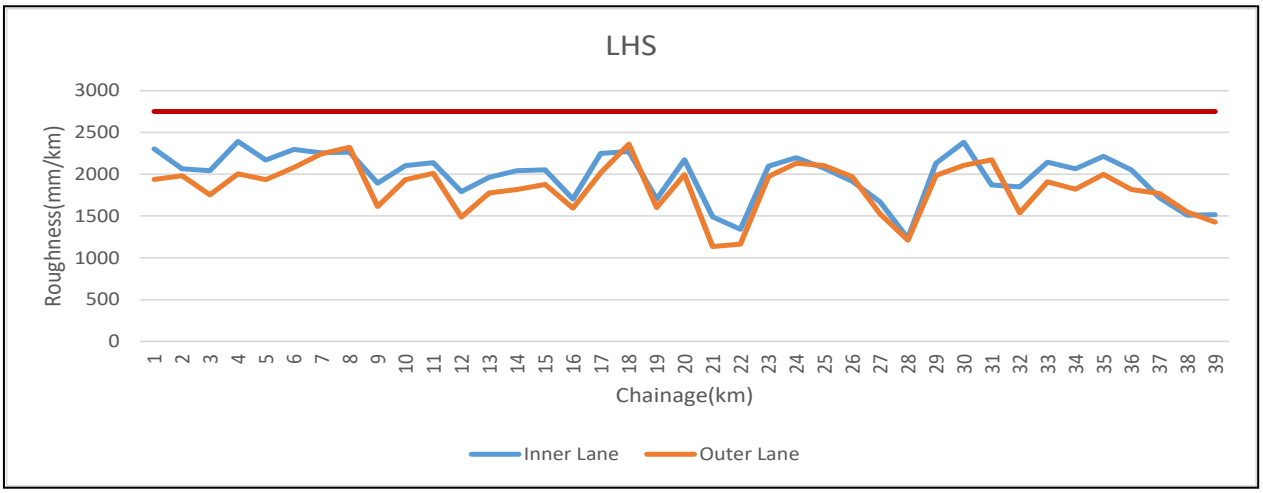
Table 4-2 MSA Calculation

MSA Calculations at Kappalur Toll Plaza					
Year	**MSA (LHS)**	**Cumulative MSA (LHS)**	**MSA (RHS)**	**Cumulative MSA (RHS)**	**Remarks**
FY2021	4.27	**4.27**	3.50	**3.50**	
FY2022	4.26	**8.53**	3.52	**7.02**	
FY2023	4.26	**8.53**	3.52	**7.02**	
FY2024	4.39	**12.92**	3.63	**10.65**	
FY2025	4.59	**17.51**	3.79	**14.44**	
FY2026	4.78	**22.29**	3.94	**18.38**	
FY2027	4.97	**27.26**	4.09	**22.47**	
FY2028	5.16	**32.42**	4.24	**26.71**	
FY2029	5.35	**37.77**	4.40	**31.11**	MM Cycle 1
FY2030	5.54	**43.31**	4.55	**35.66**	
FY2031	5.74	**49.05**	4.71	**40.37**	
FY2032	5.94	**54.99**	4.87	**45.24**	
FY2033	6.21	**61.20**	5.09	**50.33**	

MSA Calculations at Kappalur Toll Plaza					
Year	**MSA (LHS)**	**Cumulative MSA (LHS)**	**MSA (RHS)**	**Cumulative MSA (RHS)**	**Remarks**
FY2034	6.43	**67.63**	5.27	**55.60**	
FY2035	6.66	**74.29**	5.45	**61.05**	
FY2036	6.89	**81.18**	5.64	**66.69**	MM Cycle 2
FY2037	7.13	**88.31**	5.83	**72.52**	**End of Concession Period**

4.4 Network Survey Vehicles (NSV) Survey

The Concessionaire has conducted pavement condition survey on each lane of carriageway through NSV. The NSV survey was conducted on the Project Road in February 2025. The summary of the same is presented below.



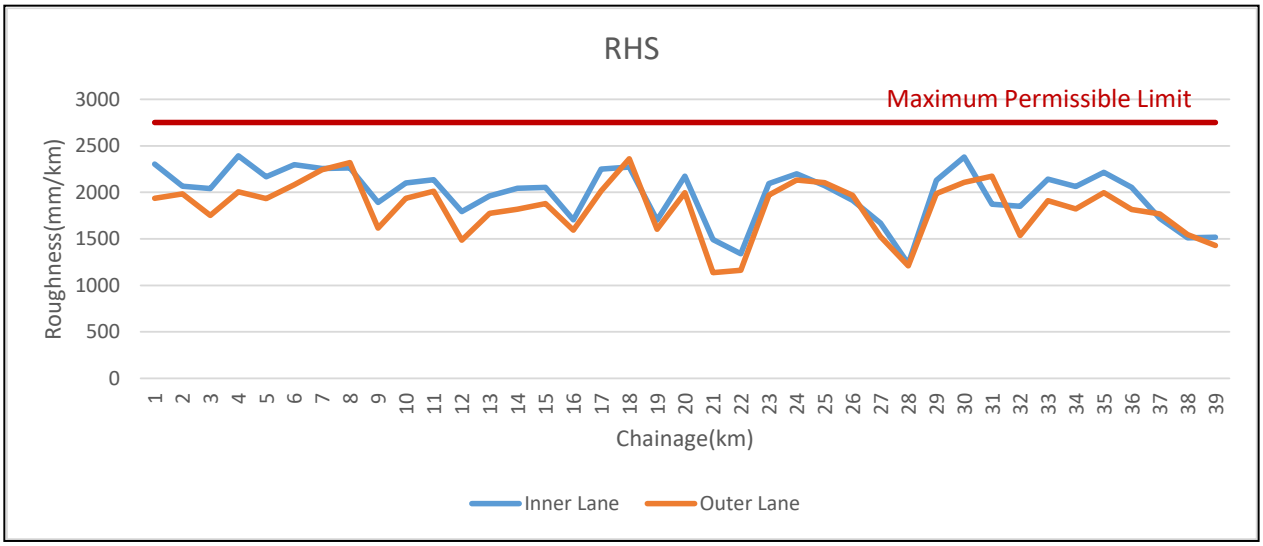
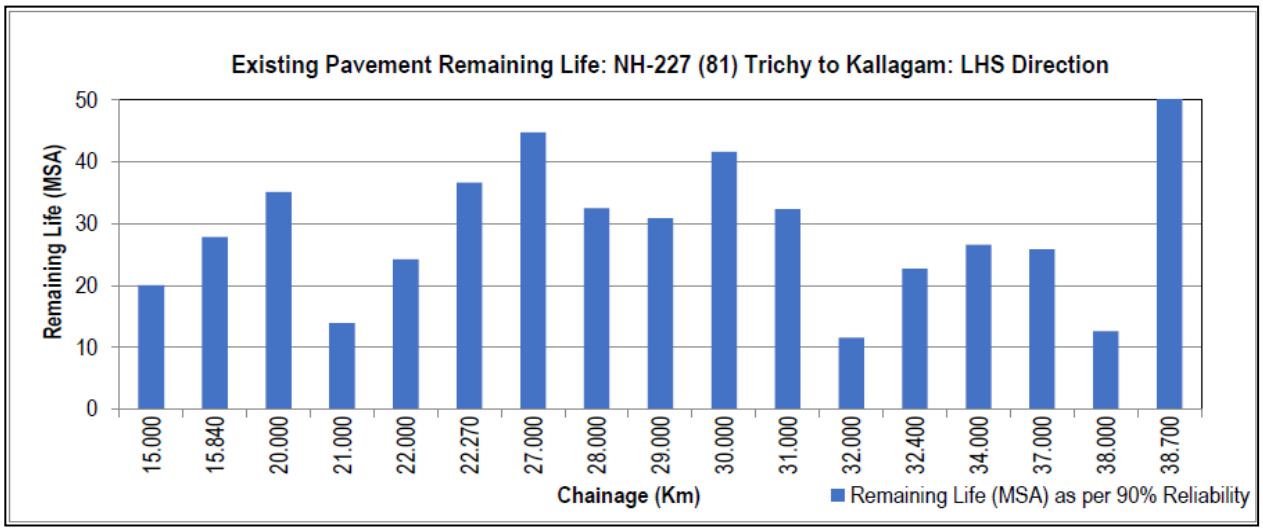


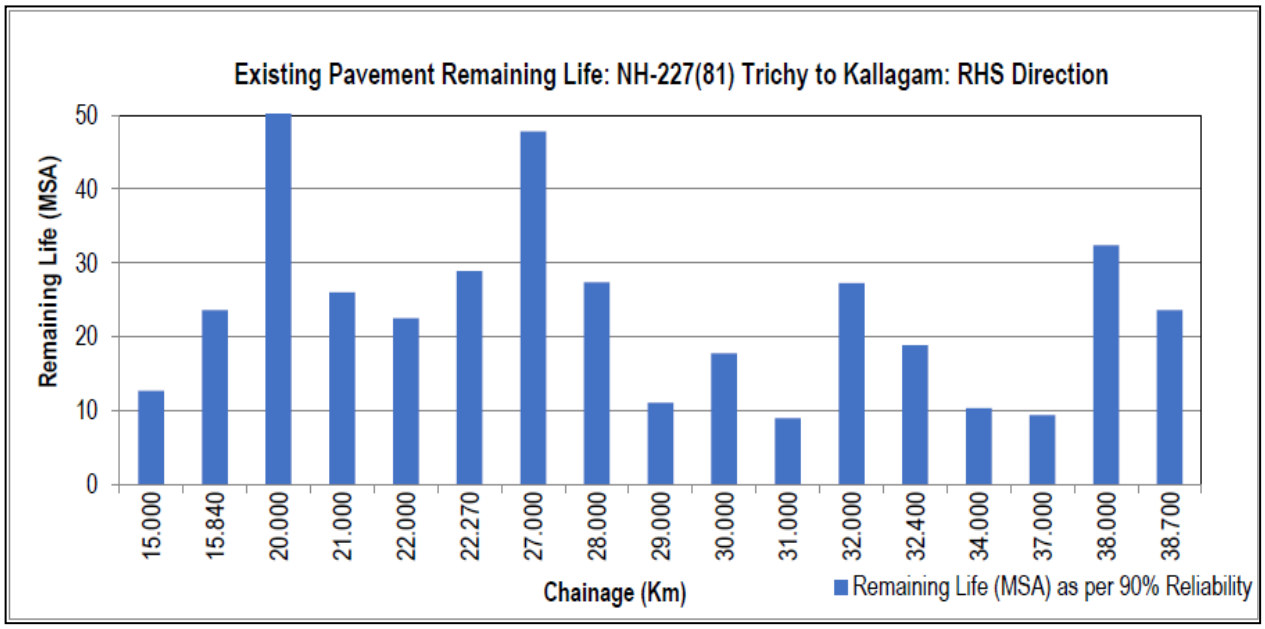
Table 4-3 Summary of Roughness

Roughness Summary as per Schedule-K of CA					
Condition	**Limit as per Schedule-K of CA (mm/km)**	**LHS**		**RHS**	
		Inner Lane	**Outer Lane**	**Inner Lane**	**Outer Lane**
Good	< 2750	100.00 %	100.00 %	100.00 %	100.00 %
Poor	> 2750	-	-	-	-

4.5 Falling Weight Deflectometer (FWD) Survey

Falling Weight Deflectometer survey was conducted for flexible pavement by the Concessionaire on 24th August 2024 and 25th August 2024. The summary of the FWD survey report is presented below.





4.6 Test pit and Subgrade Investigation

The Concessionaire has carried out the subgrade investigation for Project Road. The results of the same as provided by the Concessionaire are tabulated below.

Table 4-4 Summary Pavement Crust Details

Sr. No.	Existing Road	Location (km)		Side (LHS / RHS)	Pavement Composition (mm)		
		From	To		Bituminous Layer	Granular Layer	Total Thickness
1	NH-227	14.760	37.300	Both Directions	135	450	585

Subgrade CBR Results

The obtained existing subgrade 4-days soaked CBR results for the entire project road from Km.14.760 to Km.37.300 is listed below for back calculation of E values, the same were used.

Table 4-5 Summary of Subgrade CBR along the project corridor

Sr. No.	Location (km)	Side (LHS/RHS)	4-Days Soaked CBR (%)
1	15+250	RHS	18
2	20+222	LHS	20
3	21+020	RHS	19
4	21+940	LHS	20
5	27+540	RHS	21
6	31+940	RHS	17
7	33+800	LHS	19
8	37+090	RHS	19

4.7 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full length periodic maintenance. Schedule-K of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-K requirement to maintain the road in serviceable condition. Only improvement to Riding Quality is expected if the roughness value exceeds 2750 mm/km.

The Concessionaire received Completion Certificate on 15th June 2023. Hence, the major maintenance cycle is projected accordingly.

The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-6 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2029	**Flexible -** 35 mm BC overlay 60%, 50 mm DBM 2.5% and micro-surfacing for 40% length **Rigid -** Re-texturing and Grinding 40%, Replacement of PQC Slab 1%, Joint sealant (Silicon) 40%	Re-texturing and Grinding 25%, Replacement of PQC Slab 1%, Joint sealant (Silicon) 5%
2	FY 2036	**Flexible -** 35 mm BC overlay 40%, 50 mm DBM 2.5% and micro-surfacing for 60% length **Rigid -** Re-texturing and Grinding 40%, Replacement of PQC Slab 1%, Joint sealant (Silicon) 40%	Re-texturing and Grinding 25%, Replacement of PQC Slab 1%, Joint sealant (Silicon) 5%

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

   a. **Manpower and Labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

   b. **Bitumen:** The Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

      Therefore, bitumen prices are considered as per the forecast of Client. Current publish of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards. Following rates of bitumen are considered.

      Polymer and modification costs are provided by the client to work out BC Rate with PMB.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY2027 (Rs. / MT)	Rate for FY2028 onwards (Rs. / MT)
1	Mathura	All States	VG-10	45,102	35,125
2			VG-30	46,402	36,137
3			VG-40	48,962	38,131
4	Panipat	All States	VG-10	45,102	35,125
5			VG-30	46,402	36,137
6			VG-40	48,962	38,131
7	Koyali	All States	VG-10	47,102	37,125

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY2027 (Rs. / MT)	Rate for FY2028 onwards (Rs. / MT)
8			VG-30	48,402	38,137
9			VG-40	51,082	40,251
10	Haldia	All States	VG-10	46,602	35,683
11			VG-30	47,402	36,295
12			VG-40	49,962	38,256
13	Barauni	All States	VG-10	47,132	36,213
14			VG-30	48,432	37,325
15			VG-40	50,992	39,286
16	CPCL	Kerala	VG-10	47,402	35,519
17			VG-30	48,402	36,395
18			VG-40	50,762	38,120
19	CPCL	Tamil Nadu	VG-10	47,902	36,019
20			VG-30	48,402	36,395
21			VG-40	50,962	38,320
22	CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
23			VG-30	45,402	33,395
24			VG-40	47,962	35,320
25	CPCL	Karnataka	VG-10	44,602	32,719
26			VG-30	45,402	33,395
27			VG-40	47,962	35,320

c. **Sand and Aggregate:** Market rates are considered from the quarry located nearest to Project Road.

d. **Cement:** Market rates are considered from the nearest local market.

e. **Steel :** Rate of steel is taken from SAIL.

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable NHAI Standard data book.

g. **Actual Rates of items as per work order:** The rates of road marking, road stud, kerb raising, micro surfacing, milling rates etc. are considered as per the work order shared by the client.

Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam	Cum	8,635
2	Bituminous Concrete (VG-40)	Cum	10,060
3	Milling	Sqm	90
4	Micro-surfacing	Sqm	150
5	Kerb re-laying	m	316

Sr. No.	Item Description	Unit	Rates (Rs.)
6	Road Marking - BC Surface	Sqm	563
7	Road Marking - Micro surface	Sqm	713
8	Road Studs	Nos.	247

5.3 Balance Work Cost

The Concessionaire has completed all the works as per Concession Agreement. Hence, there is no balance work.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Toll Security Services Outsourced
3. Incident Management & Emergency Services
4. Electricity and Diesel Charges
5. TMS / HTMS / System Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Community Development
10. Communication Expenses
11. Conveyance Expenses
12. Insurance Expense
13. IE Fees
14. Routine Maintenance Cost (Project Highway)
15. Horticulture & ROW Maintenance
16. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation and Maintenance cost (Routine O&M) is presented below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027 to FY 2037)
1	Salary and Welfare Expenses	1,35,30,000
2	Tolling Operation Services	
3	Toll Security Services	15,82,744
4	Incident Management & Emergency Services	61,63,786
5	Electricity and Diesel Charges	1,82,00,072
6	TMS / HTMS / System Expenses	89,37,500
7	Office Operating Expenses	23,41,350
8	Vehicle Running Expenses	16,38,000
9	Professional Fees Expense	1,06,42,500
10	Community Development	1,21,00,000
11	Communication Expenses	2,59,677
12	Conveyance Expenses	2,76,705
13	Insurance Expense	10,64,250
14	IE Fees	46,20,000
15	Routine Maintenance Cost (Project Road)	2,51,00,428
16	Horticulture & ROW Maintenance	1,14,93,900
17	Miscellaneous including Contingency	32,54,263
	Total Cost (Rs.)	**12,12,05,174**
	Total Cost (Cr.)	**12.12**
	Per km Cost (Lakhs)	19.10

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Summary of Major Maintenance Cost

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2029	24.25	1st Major Maintenance cycle
2	FY 2036	25.35	2nd Major Maintenance cycle
	Total	**49.60**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2029	3.85	
2	FY 2036	3.85	
Total Cost (Cr.)		**7.70**	

5.7 Escalation Assumption

The following escalation is considered basis discussions with Client and our internal estimates.

Table 5-4 Escalation

Year	Escalation	Year	Escalation
2028	4.86%	**2042**	3.99%
2029	4.44%	**2043**	3.99%
2030	4.24%	**2044**	3.99%
2031	4.13%	**2045**	3.99%
2032	4.08%	**2046**	3.99%
2033	4.01%	**2047**	3.99%
2034	4.00%	**2048**	3.99%
2035	4.03%	**2049**	3.99%
2036	4.01%	**2050**	3.99%
2037	3.98%	**2051**	3.99%
2038	3.98%	**2052**	3.99%
2039	4.00%	**2053**	3.99%
2040	3.99%	**2054**	3.99%
2041	3.99%	**2055**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr.)

Sr. No.	Year of expense	FY 27	FY 28	FY 29	FY 30	FY 31	FY 32	FY 33	FY 34	FY 35	FY 36	FY 37
1	Routine O&M Cost											
1.01	Salary and Welfare Expense	1.35	1.42	1.48	1.54	1.61	1.67	1.74	1.81	1.88	1.96	2.04
1.02	Security Expenses	0.16	0.17	0.17	0.18	0.19	0.20	0.20	0.21	0.22	0.23	0.24
1.03	Incident Management Services	0.62	0.65	0.68	0.70	0.73	0.76	0.79	0.82	0.86	0.89	0.93
1.04	Electricity and Diesel Charges	1.82	1.91	1.99	2.08	2.16	2.25	2.34	2.44	2.53	2.64	2.74
1.05	TMS/HTMS/System Expenses	0.44	0.58	-	0.19	0.20	0.20	0.35	0.59	0.77	-	-
1.06	Office Operating Expenses	0.23	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.33	0.34	0.35
1.07	Vehicle Running Expenses	0.16	0.17	0.18	0.19	0.19	0.20	0.21	0.22	0.23	0.24	0.25
1.08	Professional Fees Expense	1.06	1.12	1.17	1.21	1.27	1.32	1.37	1.42	1.48	1.54	1.60
1.09	Community Development	1.21	1.27	1.33	1.38	1.44	1.50	1.56	1.62	1.68	1.75	1.82
1.10	Communication Expenses	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04
1.11	Conveyance Expenses	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04
1.12	Insurance Expense	0.11	0.11	0.12	0.12	0.13	0.13	0.14	0.14	0.15	0.15	0.16
1.13	IE Fees	0.46	0.48	0.51	0.53	0.55	0.57	0.59	0.62	0.64	0.67	0.70
1.14	Routine Maintenance Cost	2.51	2.63	2.75	2.87	2.98	3.11	3.23	3.36	3.49	3.63	3.78
1.15	Horticulture & ROW Maintenance	1.15	1.21	1.26	1.31	1.37	1.42	1.48	1.54	1.60	1.66	1.73
1.16	Miscellaneous and Contingency	0.31	0.33	0.32	0.34	0.35	0.37	0.39	0.41	0.43	0.42	0.44
1	Subtotal of O&M Cost	11.65	12.34	12.26	12.97	13.51	14.06	14.77	15.59	16.38	16.21	16.85
2	Major Maintenance Cost	-	-	26.56	-	-	-	-	-	-	36.71	-
3	Periodic Cost of TMS/HTMS Replacement	-	-	4.22	-	-	-	-	-	-	5.58	-
4	Balance Works Cost	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**11.65**	**12.34**	**43.04**	**12.97**	**13.51**	**14.06**	**14.77**	**15.59**	**16.38**	**58.49**	**16.85**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Project - Trichy to Kallagam (KSIPL)	
Ordinary Repair Cost (with GST)	**2,51,00,428**
(inclusive of GST)	**= 6.49 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD **3,51,000**	**Urban** More than 4500 CVD **3,83,869**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
						Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	537029.00	587319.00	-	-	-	-
		Paved shoulder	1.70	596699.00	652577.00	24.03	-	1,43,38,677	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	701999.00	767737.00	-	-	-	-
		Paved shoulder	2.20	772199.00	844511.00	-	-	-	-
3	Six lane with divided carriageway	without Paved shoulder	2.09	733589.00	802285.00	14.67	-	1,07,61,751	-
		with Paved shoulder	2.26	793259.00	867543.00	-	-	-	-
					TOTAL	**38.700**		**2,51,00,428**	

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	1.50%
	Volume (cum)			7.50
	Rs/m^3			10797
	Cost in Rupees			80,978
	ii) Patch repair	100 % Patch less	As & when required	1.50%
	Area (sqm)			150
	Rs/m^2			584
	Cost in Rupees			87,615
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	1.50%
1	Area (sqm)			113
	Rs/m^2			79
	Cost in Rupees			8,876
	b) Width less than 3 mm	75 % Crack Less	As & when required	1.50%
	Area (sqm)			112.5
	Rs/m^2			79
	Cost in Rupees			8,876
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			584
	Cost in Rupees			43,808
	v) Road marking	10%	Once in 7th year & @	16682

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
			Repaired location	
	vi) Joint Sealant Repair/Replacement	7%		21609
	SUB TOTAL			**2,68,444**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6954
	ii) Jungle Clearance	100%	Twice in a Year	2282
	iii) Kuccha Drain Maintenance	100%	Twice in a Year	1222
	SUB TOTAL			**10,458**
3	**Maintenance of Cross Drainage works:**			
	i) Cleaning of culvert bed	100%	Once in a Year	3080
	ii) Repair of floors	100%	Once in a Year	5574
	iii) Repair of parapets	100%	As & when required	2323
	SUB TOTAL			**10,977**
4	**Maintenance of Minor & Major Bridges:**			
	i) Cleaning and removal of dirt & vegetation from pier caps, Bearings, Expansion Joints, Superstructure, Substructure and Retaining wall etc.	100%	As & when required	40,747
	ii) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints			
	iii) Repair of minor washouts, erosion scour and animal holes			
	iv) Sealing Cracks with Cement/ Epoxy Mortar			
	v) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**40,747**
5	**Miscellaneous Items:**			
	i) Turfing and Arboriculture		Once in a Year	2716

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	ii) Maintenance of gang hut store, sheds, animal & debries removal		Once in a Year	4075
	iii) Lettering, Painting of Km stones & kerbs, sign boards, hectometer stone etc.		Once in a Year	4075
	iv) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	8149
	v) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1358
	vi) Traffic Census		Once in a Year	0
	vii) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**20,373**
	GRAND TOTAL (Normal)			**3,51,000**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	0
	ii)Repairs to footpath	100%	As & when required	5433
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	5433
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	8421
	vi) Repair of divider/ Railing in City portion	100%	As & when required	10866
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2716
	SUB TOTAL			**32,869**
	GRAND TOTAL (Urban)			**3,83,869**

ANNEXURE II - MAJOR MAINTENANCE COST

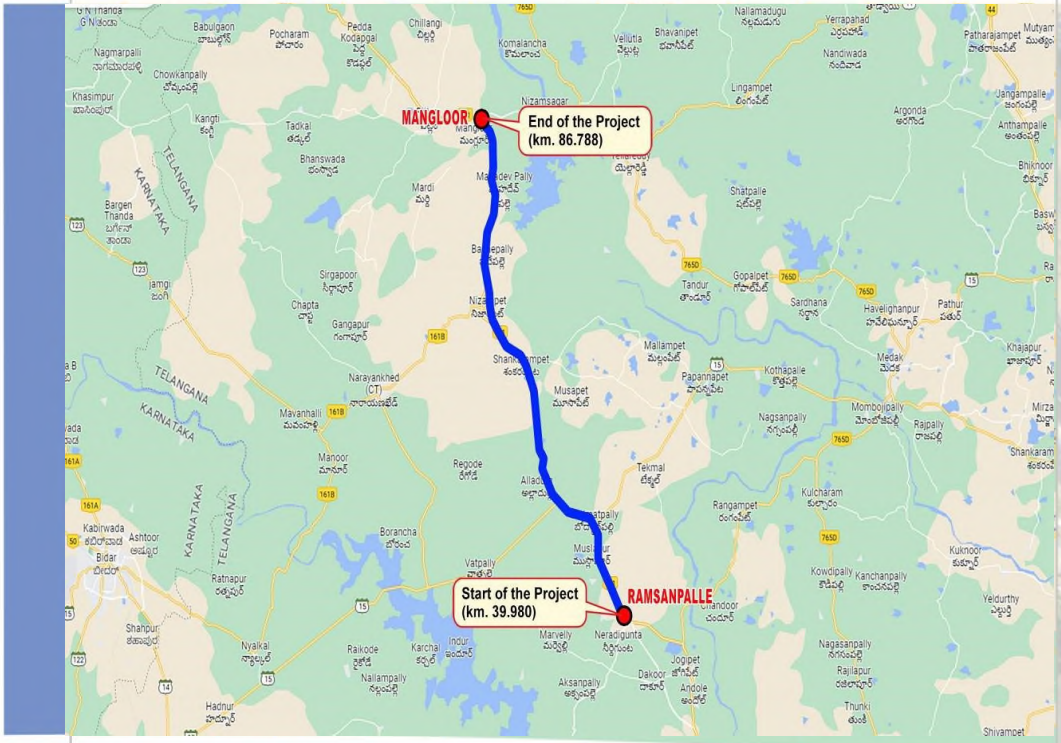
Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
A	**Main Carriageway - Flexible Pavement**									
1	Tack coat	Sqm						1,69,841	12	20,16,009
	For BC	Sqm	1	1	2,76,223.80		2,76,224	2,76,224		
	For DBM	Sqm	1	1	6,844.00		6,844	6,844		
2	BC with 35 mm	Cum	1	1	1,65,734.28	0.04	5,801	5,801	10,060	5,83,53,648
3	Micro surfacing				1,10,489.52			1,10,490	150	1,65,73,428
4	DBM with 50 mm	Cum	1	1	6,844.00	0.05	342	342	8,635	29,55,013
6	BC with 35 mm (for miscellaneous locations)				13,811.19	0.04	483	483	10,060	48,62,804
7	Milling	Sqm	1	1	6,844.00		6,844	6,844	90	6,15,960
B	**Main Carriageway - Rigid Pavement**									
1	Retexturing and Grinding	Sqm	40%	23,892	21.53		5,14,446	2,05,779	120	2,46,93,426
2	Replacement of PQC Slab	Cum	1%	23,892	22	0.30	1,543	1543	9,489	1,46,45,486
3	Joint sealant (Silicone)	RMT	40%	32,663	4.50	3.50	1,04,522	104522	120	1,25,42,693
4	Filling of Earthen shoulder	Cum	25%	38,700	2	0.25	3628	3628	438	15,88,756
C	**Service Road**									
1	Retexturing and Grinding	Sqm	25%	31,540	5.85		46,150	46,150	120	55,38,053
2	Replacement of PQC Slab	Sqm	1%	31,540	5.85	0.25	462	462	9,489	43,79,437
3	Joint sealant (Silicone)	Cum	5%	31,540	5.85	3.50	14,750	14750	120	17,69,951
D	**Miscellaneous**									
1	Kerb Replacement	Rmt	20%	1,35,615			27,123	27,123	316	85,77,623
2	Painting of Kerbs	Sqm	1	1,35,615		0.32	42,719	42,719	107	45,70,890
3	Painting of Crash Barrier	Sqm	2	12,800		1.115	28,544	28,544	107	30,54,208
4	Earthen Shoulder	cum	1	10,088				10,088	438	44,17,535
5	**Thermoplastic paint**							-		
	Road Marking on BC	Sqm					14,157	14,157	563	79,70,596
	Road Marking on Micro-surfacing	Sqm					21,263	21,263	713	1,51,66,754
	a) Median & Edge line						-			
	On BC Surface		4	8,660	0.15		5,196			
	On Microsurfacing		4	29,048	0.15		17,429			

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length**	**Width**	**Depth**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	Service Road		2	31,540	0.10		6,308			
	b) Lane line									
	On BC Surface		2	2,858	0.10		572			
	On Micro-surfacing		4	9,586	0.10		3,834			
	Service Road		2	10,408	0.10		2,082			
6	**Replacement of Road Stud**	No	50%				5,947	5,947	247	14,68,909
	Main Carriageway 4L		4	482			1,928			
	Main Carriageway 6L		4	1,615			6,460			
	Service Road		2	1,753			3,506			
	Miscellaneous	5%								97,88,059
Total Major Maintenance Cost (Rs)										**20,55,49,237**
Total Major Maintenance Cost with GST (Rs)										**24,25,48,100**
Total Major Maintenance Cost with GST (Cr)										**24.25**
Per km Cost (lakh)										**62.67**
Escalation Factor for (FY 2029)										**1.10**
Total Escalated Cost for (FY 2029) (Cr)										**26.56**

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
A	**Main Carriageway - Flexible Pavement**									
1	Tack coat	Sqm						1,13,227	12	13,44,006
	For BC	Sqm	1	1	2,76,223.80		2,76,224	2,76,224		
	For DBM	Sqm	1	1	6,844.00		6,844	6,844		
2	BC with 40 mm	Cum	1	1	1,10,489.52	0.04	4,420	4,420	10,060	4,44,59,922
3	Micro surfacing	Sqm			1,65,734.28			1,65,734	150	2,48,60,142
4	DBM with 50 mm	Cum	1	1	6,844.00	0.05	342	342	8,635	29,55,013
6	BC with 40 mm (for miscellaneous locations)	Cum	1		13,811.19	0.04	552	552	10,060	55,57,490
7	Milling	Sqm	1	1	6,844.00		6,844	6,844	90	6,15,960
B	**Main Carriageway - Rigid Pavement**									
1	Retexturing and Grinding	Sqm	60%	23,892	21.53		5,14,446	3,08,668	120	3,70,40,139
2	Replacement of PQC Slab	Cum	1%	23,892	22	0.30	1,543	1543	9,489	1,46,45,486
3	Joint sealant (Silicone)	RMT	60%	32,663	4.50	3.50	1,56,784	156784	120	1,88,14,039
4	Filling of Earthen shoulder	Cum	25%	12,830	2	0.25	1203	1203	438	5,26,711
C	**Service Road**									
1	Retexturing and Grinding	Sqm	25%	31,540	5.85		46,150	46,150	120	55,38,053
2	Replacement of PQC Slab	Sqm	1%	31,540	5.85	0.25	462	462	9,489	43,79,437
3	Joint sealant (Silicone)	Cum	5%	31,540	5.85	3.50	14,750	14750	120	17,69,951
D	**Miscellaneous**									
	Kerb Replacement	Rmt	20%	1,35,615			27,123	27,123	316	85,77,623
	Painting of Kerbs	Sqm	1	1,35,615		0.32	42,719	42,719	107	45,70,890
	Painting of Crash Barrier	Sqm	2	12,800		1.115	28,544	28,544	107	30,54,208
	Earthen Shoulder	cum	1	10,088				10,088	438	44,17,535
	Thermoplastic paint									
	a) Median & Edge line	Sqm	100%				35,472	35,472	563	1,99,70,567
	Main Carriageway 4L		4	24,030	0.15		14,418			
	Main Carriageway 6L		4	14,670	0.15		8,802			
	Service Road		2	31,540	0.10		6,308			
	b) Lane line									
	Main Carriageway 4L		2	8,411	0.10		1,682			
	Main Carriageway 6L		4	5,135	0.10		2,054			

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Service Road		2	11,039	0.10		2,208			
	Junction crossing									
	Replacement of Road Stud	No	50%				6,057	6,057	247	14,96,079
	Main Carriageway 4L		4	1,336			5,344			
	Main Carriageway 6L		4	816			3,264			
	Service Road		2	1,753			3,506			
	Miscellaneous	5%								1,02,29,663
Total Major Maintenance Cost (Rs)										**21,48,22,914**
Total Major Maintenance Cost with GST (Rs)										**25,34,91,039**
Total Major Maintenance Cost with GST (Cr)										**25.35**
Per km Cost (lakh)										**65.50**
Escalation Factor for Major Maintenance (FY 2036)										**1.45**
Total Escalated Cost for Major Maintenance (FY 2036) (Cr)										**36.71**

FP Project Management



Technical Due Diligence of Ramsanpalle to Mangloor section of NH-161 from km.39+980 to km.86+788 in the State of Telangana on Hybrid Annuity Mode (HAM)

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited

315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025
Tel: +91-22-6660 3901
e-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	SG / RB / VK	CSB	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 6
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Development as per Schedule-B 6
2.9 Bypass and Realignment 6
3 Condition Assessment of Project Road 8
3.1 Pavement 8
3.1.1 Pavement Condition Survey 8
3.2 Service Road 13
3.3 Major / Minor Junction 16
3.4 Condition Survey of Structure 18
3.5 Condition Survey of Culverts 27
3.6 Drainage 30
3.7 Slope Protection 31
3.8 Road Furniture 33
3.9 Pavement Marking 33
3.10 Road Studs 34
3.11 Highway Lighting / Solar Blinker / High Mast 38
3.12 Crash Barriers 39
3.13 Delineators 41
3.14 Pedestrian Guard Rail 41
3.15 Road Land Boundary / Chain Link Fencing 42

3.16 Avenue Plantation and Median Plantation 43
3.17 Noise Barrier 45
3.18 Toll Plaza 46
3.19 Advance Traffic Management System (ATMS) 46
3.19.1 Automatic Traffic Counter cum Classifier (ATCC) 47
3.19.2 Mobile Radio Communication System 47
3.19.3 Emergency Call Boxes (ECB) 47
3.19.4 MET System 48
3.19.5 Variable Message Signboards (VMS) 48
3.19.6 CCTV Surveillance Cameras 49
3.19.7 Vehicle Actuated speed Display (VASD-Speedometer) 50
3.20 Truck Lay bye 50
3.21 Traffic Aid Post and Medical Aid Post (Incident Management) 51
3.22 Toilet Block 52
3.23 Bus Bays and Passenger Shelters 52
3.24 Wayside Amenities 53
3.25 Balance Work 53
3.26 Organization Chart 53
3.26.1 Operation 55
3.26.2 Routine Maintenance 55
4 Pavement Investigation and Assessment 56
4.1 General 56
4.2 Axle Load and VDF 56
4.3 Design Traffic 56
4.4 Network Survey Vehicles (NSV) Survey 57
4.5 Structural Investigation 58
4.6 Periodic Maintenance Strategy 58
5 Cost Estimate 60
5.1 General 60
5.2 Rate Assumption 60
5.3 Balance Work Cost 62
5.4 Routine O&M Cost 62
5.5 Major Maintenance Cost 63
5.6 Periodic Replacement of TMS / ATMS System 63
5.7 Escalation Assumption 63
5.8 Summary of Cost 64

ANNEXURES **66**
ANNEXURE I - ROUTINE MAINTENANCE COST **67**
ANNEXURE II - MAJOR MAINTENANCE COST **71**

LIST OF TABLES

Table 2-1 Details of Bypass 7
Table 2-2 Details of Realignment 7
Table 4-1 Vehicle Damage Factor 56
Table 4-2 MSA Calculation 56
Table 4-3 Roughness Index Summary 57
Table 4-4 FWD Summary 58
Table 4-5 Major Maintenance Cycle 59
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 60
Table 5-2 Summary of Unit Rates 61
Table 5-3 Summary of Operation Cost 62
Table 5-4 Summary of Major Maintenance Cost 63
Table 5-5 Escalation 64

LIST OF FIGURES

Figure 2-1 Location Map 4
Figure 2-2 Start / End of Project Road (LHS) 5
Figure 2-3 Start / End of Project Road (RHS) 5
Figure 2-4 Photographs of Bypass 7
Figure 3-1 Photographs of Pavement Condition (LHS) 9
Figure 3-2 Photographs of Pavement Condition (RHS) 11
Figure 3-3 Photographs of Service Road (LHS) 14
Figure 3-4 Photographs of Service Road (RHS) 15
Figure 3-5 Photographs of Major Junctions 16
Figure 3-6 Photographs of Minor Junctions 17
Figure 3-7 Photographs of Major Structures 22
Figure 3-8 Photographs of Box Culvert / Pipe Culvert 28
Figure 3-9 Photographs of Existing Drains 30
Figure 3-10 Photographs of Slope Protection & Chute Drain 31
Figure 3-11 Photographs of Pavement Marking 33
Figure 3-12 Photographs of Road Studs 34
Figure 3-13 Photographs of Road Signages (LHS) 35
Figure 3-14 Photographs of Road Signages (RHS) 36
Figure 3-15 Photographs of Street Light / Solar Blinker / High Mast 38
Figure 3-16 Photographs of Guard Post / Crash Barrier 39
Figure 3-17 Photographs of Delineator 41
Figure 3-18 Photographs of Pedestrian Guard Rail 42
Figure 3-19 Photographs of Chain Link fencing 42
Figure 3-20 Photographs of Median Plantation 43
Figure 3-21 Photographs of Avenue Plantation 44
Figure 3-22 Photographs of Noise Barrier 45
Figure 3-23 Photograph of Truck Lay-bye 51
Figure 3-24 Photograph of Incident Management 51
Figure 3-25 Photographs of Toilet Blocks 52
Figure 3-26 Photographs of Bus Bay / Passenger Shelter 53

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Ramsanpalle - Mangloor section of NH-161 from km. 39+980 to km. 86+788 in the State of Telangana (hereinafter referred as "Project Road").

M/s. KNR Shankarampet Projects Pvt. Ltd. (hereafter known as Shankarampet Projects Private Limited**)** vide COI dated 08-Nov-2024 (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for operation, maintenance, and transfer of Ramsanpalle to Mangloor Section (Design Chainage from km. 39+980 to km. 86+788) of NH-161 or Project Road under Hybrid Annuity basis. The project was awarded to Concessionaire, **KNR Shankarampet Projects Pvt. Ltd**., a company promoted and incorporated by M/s. KNR Shankarampet Projects Pvt. Ltd. on 26-Mar-2018 (Including construction period) by National Highway Authority of India (NHAI). Cube Highway group is a shareholder in the Concessionaire company. The length of Project Road as per CA is 46.808 kms without toll plaza.

Accordingly, the Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets.
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.
- Formulation of future major maintenance strategy.
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence.
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period.
- Estimation of Annual Operation expenses along with Systems cost (TMS / ATMS) till the end of concession period.
- Review of balance work cost for Project Road including estimation of quantities and item rates.

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our proposed team consists of well-qualified Engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader will coordinate the activities between all the key staff who will work closely together. The key is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader will act as the point of contact for Client Technical Study.

The technical study include review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings.
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted.
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority.
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyze the same as per the best engineering / industry practices.

The site visit and inspection were carried out between the periods from **07th March 2026 to 08th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies**.**

Chapter 2 **Project Description:** The chapter describes existing project features, overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit**.**

Chapter 4 **Pavement Investigation and Assessment:** This chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates**: This chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **M/s. KNR Shankarampet Projects Pvt. Limited** (hereafter known as Shankarampet Projects Private Limited) is a company promoted by Cube Highway group. The Appointment Date of the project was on 02nd May 2019. The concession period of the project is 17 years including construction period. The project has received PCOD on 5th October 2021 for the length 43.138 kms out of 46.808 kms and COD on 21.06.2022 for the length 46.808 kms. The Cube Highway group is a shareholder in the Concessionaire Company.

2.2 Location

The Project Road is part of National Highway No. 161, of Ramsanpalle - Mangloor section in the state of Telangana. The total project length is 46.808 kms as per CA.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map

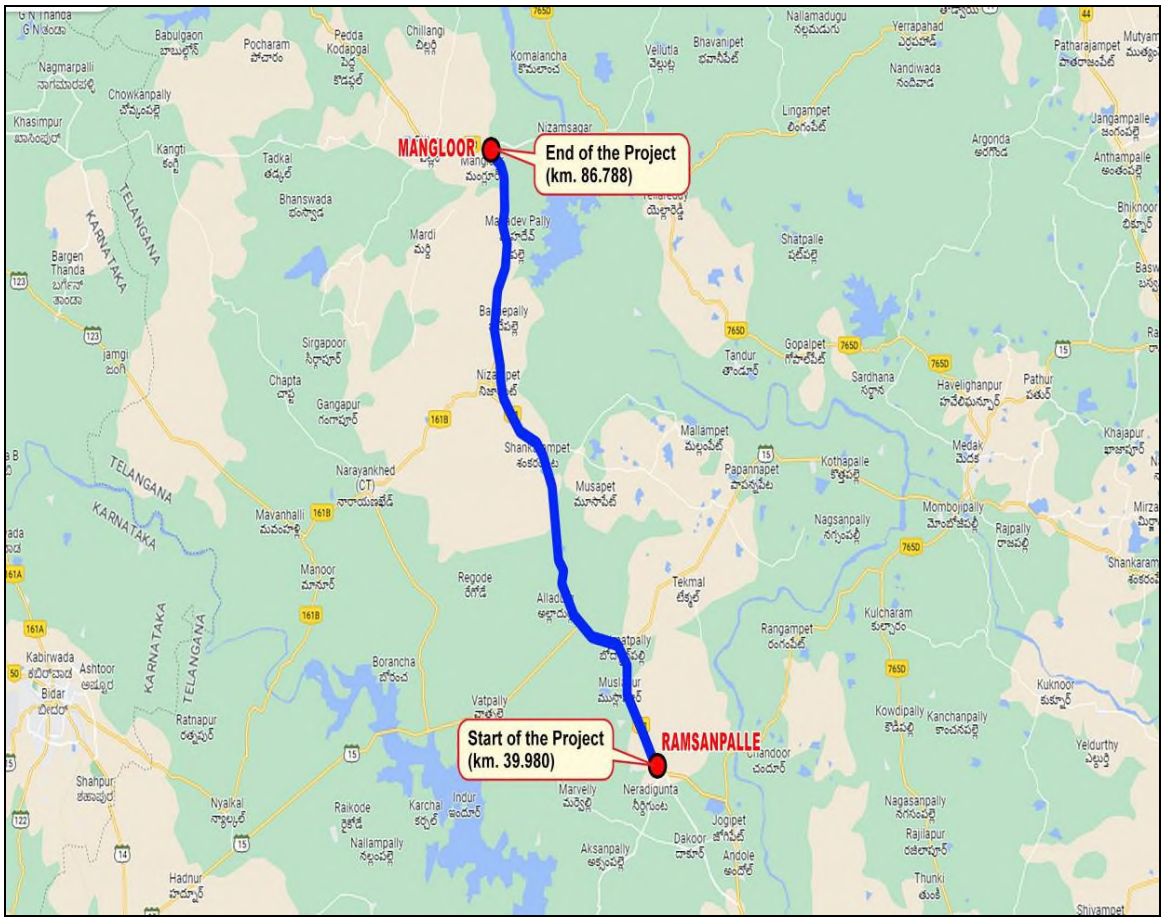


Figure 2-2 Start / End of Project Road (LHS)

Start of the Project Road End of the Project Road

Figure 2-3 Start / End of Project Road (RHS)

Start of the Project Road End of the Project Road

2.3 Climate

The climate of the region is marked by heavy rainfall with high humidity in the hot season. The Indian Meteorological Department (IMD) has identified the following four seasons in the region.

Sr. No.	Weather	Month
1	Summer	February to May
2	Monsoon	June to September
3	Post Monsoon	October
4	Winter	November to February
5	Maximum Temperature	38 ^{0}C
6	Minimum Temperature	18 ^{0}C
7	Average annual rainfall	910 mm

2.4 Terrain

The Project Road passes through plain to rolling terrain.

2.5 Abutting Land Use

The following are the various developments that are anticipated in the Four Lanning of Ramsanpalle Mangloor Section.

- Agriculture is the predominant land use along the Project Road.
- This Project Road reduces the travel time for getting access to Hyderabad, Nanded Sahib, Akola, Nagpur and Shegaon which results in better industrial growth and economy.
- The tourism industry gets a great booster as majority of people using this Project Road, for going to places like Nanded Sahib & Shegaon, a group of temples & Gurudwara etc.

A lot of commercial establishments along the Project Road in the form of hotels and Snack Parlors may be developed in the coming future.

2.6 Right of Way

The width of the existing Right of Way (ROW) for the Project Road varies from 30 m to 60 / 180 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW and presently no utility shifting is balance at site. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, etc.

2.8 Development as per Schedule-B

The Project Road from Ramsanpalle to Mangloor (km. 39+980 to Km. 86+788) has been developed as a four-lane divided carriageway with median width varies from 4.0 m to 12.0 m, service road and other arrangements. The Project Road passes through rural as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.
b) Operation and maintenance of the Project in accordance with the provisions of this Agreement.
c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Concessionaire under this Agreement.

2.9 Bypass and Realignment

There are two Bypass on Project Road. The total length of Bypass is 7.20 kms. Apart from it there are nine realignments in the Project Road. The Bypass constructed along the Project Road as well as realignment is as tabulated below.

Table 2-1 Details of Bypass

Sr. No.	Name of Bypass	Design Chainage (km)		Length (km)
		From	To	
1	Shankarampet	60+900	63+600	2.70
2	Nizam pet	66+400	70+900	4.50
Total Length (km)				**7.20**

Table 2-2 Details of Realignment

Sr. No.	Existing Chainage (km)		Design Chainage (km)		Length (km)
	From	To	From	To	
1	50+100	50+950	45+300	46+100	0.800
2	57+950	60+025	53+100	55+200	2.100
3	62+125	62+975	57+300	58+100	0.800
4	68+975	69+475	64+200	64+650	0.450
5	77+875	79+575	73+650	75+150	1.500
6	80+925	81+440	76+500	76+950	0.450
7	82+400	83+075	77+900	78+550	0.650
8	88+740	89+050	84+200	84+500	0.300
9	90+150	90+550	85+600	86+000	0.400
Total Length (km)					**7.450**

Figure 2-4 Photographs of Bypass

km. 60+900 km. 63+600

km. 70+900

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 8.5 m with earthen shoulder of 1.75 m to 2.00 m on either side. The Project Road has median width varies from 4.0 m to 12.0 m.

The entire stretch of Project Road including service road is constructed with flexible pavement.

3.1.1 Pavement Condition Survey

Pavement condition survey was carried out from **07th March 2026 to 08th March 2026** through visual inspection for the entire project length. From the visual inspection, it is found that the average pavement condition of the Project Road is Good. The summary of pavement condition survey is presented in below table:

Table 3-1 Summary of Pavement Condition survey

Rating	Main Carriageway	
	LHS	RHS
Good / Fair	100%	100%
Poor	-	-
Total	100%	100%

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (LHS)

km. 40+100

km. 40+800

km. 47+000

km. 50+200

km. 54+000

km. 60+000

km. 64+750

km. 71+000

Road Shoulder (LHS)

km. 40+100

km. 40+800

km. 60+000

km. 64+750

km. 65+200

km. 76+350

km. 81+400

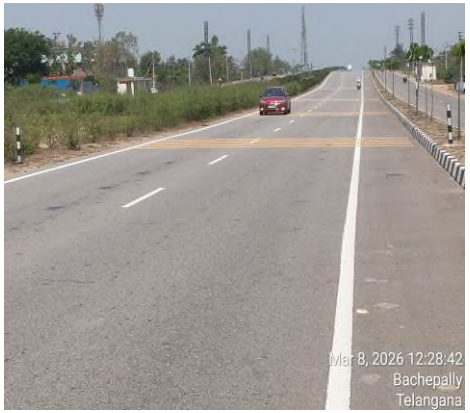
Figure 3-2 Photographs of Pavement Condition (RHS)

km. 86+550

km. 83+000

km. 80+000

km. 75+100



km. 73+600

km. 67+800

km. 65+600

km. 64+400

Road Shoulder (RHS)

km. 86+550

km. 83+00

km. 80+00

km. 75+100

km. 65+600

3.2 Service Road

a) Existing Service Road

The width of Service Road found 7 m and it is constructed in built-up areas, adjoining underpasses and flyover locations. The scope of service road as per CA is 3.840 kms and slip road is 49.100 kms. Details of service road are presented below in table.

Table 3-2 Details of Service Road

Sr. No.	Design Chainage (km)		Length (km)		Width (m)	Side	Remarks
	From	To	LHS	RHS			
1	53+700	54+840	1.100	1.100	7.0	Both	
2	70+050	70+460	0.410	0.410	7.0	Both	
3	73+650	74+020	0.370	0.370	7.0	Both	
	Sub Total		**1.920**	**1.920**			
	Total		**3.840**				

Table 3-3 Details of Slip Road

Sr. No.	Design Chainage (km)		Length (km)		Width (m)	Side	Remarks
	From	To	LHS	RHS			
1	40+900	42+100	1.200	1.200	7.0	Both	
2	43+450	44+400	0.950	0.950	7.0	Both	
3	46+150	47+650	1.500	1.500	7.0	Both	
4	48+300	48+650	0.350	0.350	7.0	Both	
5	48+650	49+100	0.450	0.450	7.0	Both	
6	49+100	51+500	2.400	2.400	7.0	Both	
7	51+500	52+200	0.700	0.700	7.0	Both	
8	52+200	53+700	1.500	1.500	7.0	Both	
9	54+840	57+050	2.210	2.210	7.0	Both	
10	58+440	59+020	0.580	0.580	7.0	Both	
11	59+020	59+350	0.330	0.330	7.0	Both	
12	60+400	64+200	3.800	3.800	7.0	Both	
13	65+650	70+050	4.400	4.400	7.0	Both	
14	70+460	71+600	1.140	1.140	7.0	Both	
15	74+020	74+950	0.930	0.930	7.0	Both	
16	77+540	79+350	1.810	1.810	7.0	Both	
17	79+350	79+650	0.300	0.300	7.0	Both	
	Sub Total		**24.550**	**24.550**			
	Total		**49.100**				

The photographs taken during the site visit are presented below.

Figure 3-3 Photographs of Service Road (LHS)

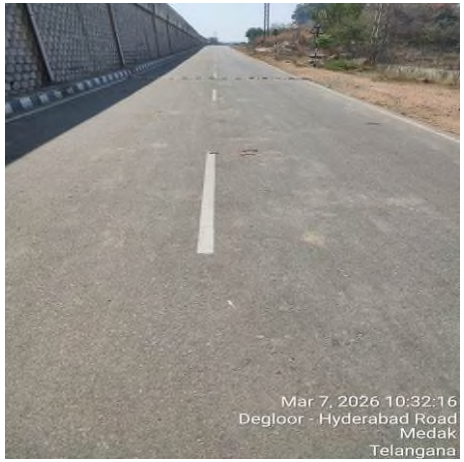
km. 41+000

km. 43+650

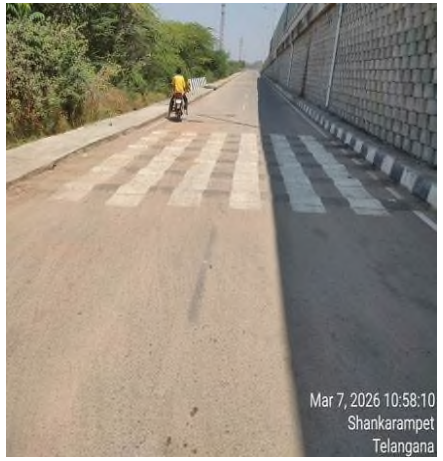
km. 46+900

km. 48+800

km. 50+211



km. 54+971



km. 58+710

km. 62+095

Figure 3-4 Photographs of Service Road (RHS)

km. 78+600

km. 74+400

km. 70+950

km. 68+800

km. 67+350

km. 63+032

km. 61+08

km. 58+710

3.3 Major / Minor Junction

As per the Concession Agreement, there are 15 nos. of existing major junctions and 15 nos. of minor junctions. The photographs taken during the site visit are presented below.

Figure 3-5 Photographs of Major Junctions

km. 50+211

km. 51+850

km. 56+025

km. 62+095

km. 63+032

km. 68+800

Figure 3-6 Photographs of Minor Junctions

km. 63+600

km. 64+250

km. 72+030

km. 76+520

km. 85+000

3.4 Condition Survey of Structure

The inventory of structures including Major Bridges, Minor Bridges, ROB's, Underpasses and Culverts are presented in table as below:

Table 3-4 Summary of Structures

Type of Structure	Total Number of Structures
Major Structures:	
Road Over Bridge (ROB)	-
Flyover	-
Major Bridges (MJB)	02
Minor Bridges (MNB)	07
Vehicular Underpass (VUP)	06
Pedestrian Underpass (PUP / LVUP)	11
Culverts:	
Re-construction of Box / Slab Culverts	14
Re-construction of Pipe to Box Culvert	33
New Construction of Box Culvert	49

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-5 Condition Survey of Major Structure

Major Bridge

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway Width (m)	Type of Sub-structure	Type of Super-structure	Type of foundation	Remarks
1	61+546	LHS	4 span - Total length 131.38 M	1 x 14.5 m	RCC	Precast Girder with RCC Slab	-	New Construction - Structure is in sound condition. Expansion Joint, crash barrier and slope protection are in good condition
		LHS service Road	4 span - Total length 131.38 M	1x11.0 m	RCC	Precast Girder with RCC Slab	-	New Construction - Structure is in sound condition. Expansion Joint, crash barrier and slope protection are in good condition
		RHS	4 span - Total length 131.38 M	1 x 14.5 m	RCC	Precast Girder with RCC Slab	-	New Construction - Structure is in sound condition. Expansion Joint, crash barrier and slope protection are in good condition
		RHS service Road	4 span - Total length 131.38 M	1x11.0 m	RCC	Precast Girder with RCC Slab	-	New Construction - Structure is in sound condition. Expansion Joint, crash barrier and slope protection are in good condition
2	83+505	LHS	10 span - Total length 106.68 M	1 x 16	RCC Wall	RCC Solid slab	-	New Construction - Structure is in sound condition. Expansion Joint, crash barrier and slope protection are in good condition
		RHS	Existing Bridge 7 span - Total length 106.68 M	1X8.6	RCC Wall	RCC Solid slab	-	Existing Bridge - Structure is in sound condition. Expansion Joint, crash barrier and slope protection are in good condition
		RHS	10 span - Total length 106.68 M	1 x 12.5	RCC Wall	RCC Solid slab	-	New Construction - Structure is in sound condition. Expansion Joint, crash barrier and slope protection are in good condition

Minor Bridge

Sr. No.	Design Chainage (km)	Structural Configuration	Structure Type	Span Arrangement (m) (No. x Length)	Total Structure Width (m)	Remarks
1	45+787	New 6-Lane bridge	Box type	One Span -Total Length-14.23m	LHS-14.5m RHS-14.5m	New Construction - RCC box type - Structure is in sound condition. Crash barrier and slope protection are in good condition.
2	45+972	New 6-Lane bridge	Box type	Two Span -Total Length-21.18m	LHS-16.0m RHS-16.0m	New Construction - RCC box type - Structure is in sound condition. Crash barrier and slope protection are in good condition.
3	53+742	New 6-Lane bridge	Box type	Two Span -Total Length-21.18 m	LHS-14.5 m RHS-14.5 m LHS Service Road-11 m RHS Service Road-11 m	New Construction - RCC box type - Structure is in sound condition. Crash barrier and slope protection are in good condition.
4	57+741	New 6-Lane bridge	Precast Girder with RCC Slab	Four Span - Total Length-34.04 m	LHS-16.0m RHS-16.0m	New Construction - Precast Girder with RCC Slab - Structure is in sound condition. Expansion Joint, crash barrier and slope protection are in good condition.
5	61+008	New 6-Lane bridge	Precast Girder with RCC Slab	Single Span - Total Length-32.58 m	LHS-14.5 m RHS-14.5 m LHS Service Road-11 m RHS Service Road-11 m	New Construction - Precast Girder with RCC Slab - Structure is in sound condition. Expansion Joint, crash barrier and slope protection are in good condition.
6	65+407	New 6-Lane bridge	Precast Girder with RCC Slab	Two Span -Total Length-34.04 m	LHS-16.0m RHS-16.0m	Re-Construction - Precast Girder with RCC Slab - Structure is in sound condition. Expansion Joint, crash barrier and slope protection are in good condition.
7	67+035	New 6-Lane bridge	Precast Girder with RCC Slab	Two Span -Total Length-61.59 m	LHS-14.5 m RHS-14.5 m LHS Service Road-11 m RHS Service Road-11 m	New Construction - Precast Girder with RCC Slab - Structure is in sound condition. Expansion Joint, crash barrier and slope protection are in good condition.

VUP and LVUP

Sr. No.	Chainage (km)	Side	Type	Span Arrangement (m)	Width (m)	Vertical Clearance (m)	Type of structure	Remarks
1	41+700	LHS	LVUP	1 x 12.0	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
		RHS		1 x 12.0	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
2	43+650	LHS	LVUP	1 x 12.0	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
		RHS		1 x 12.0	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
3	46+900	LHS	VUP	1x25.0	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		1x25.0	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
4	48+800	LHS	LVUP	1 x 12.0	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
		RHS		1 x 12.0	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
5	50+211	LHS	VUP	1x25.0	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		1x25.0	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
6	51+850	LHS	LVUP	1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
		RHS		1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
7	54+971	LHS	LVUP	1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
		RHS		1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
8	56+025	LHS	LVUP	1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
		RHS		1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
9	58+710	LHS	LVUP	1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
		RHS		1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
10	62+095	LHS	VUP	2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
11	63+032	LHS	VUP	2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
12	66+182	LHS	LVUP	1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
		RHS		1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
13	68+800	LHS	VUP	1x15+1X30+1x15	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		1x15+1X30+1x15	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
14	70+950	LHS	VUP	2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
15	74+400	LHS	LVUP	1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
		RHS		1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition

Sr. No.	Chainage (km)	Side	Type	Span Arrangement (m)	Width (m)	Vertical Clearance (m)	Type of structure	Remarks
16	78+000	LHS	LVUP	1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
		RHS		1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
17	79+200	LHS	LVUP	1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
		RHS		1x12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition

Figure 3-7 Photographs of Major Structures

Major Bridge

km. 61+546
Structure View

km. 61+546
Wearing Coat

km. 61+546
Expansion Joint

km. 61+546
Crash Barrier

km. 83+505
Structure View

km. 83+505
Crash Barrier

km. 83+505
Wearing Coat

Minor Bridge

km. 45+787
Structure View

km. 53+742
Structure View

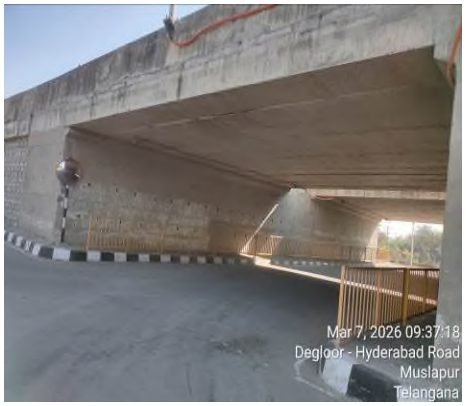
km. 57+741
Structure View

km. 65+407
Structure View

VUP / LVUP

LVUP at km. 41+700
Structure View

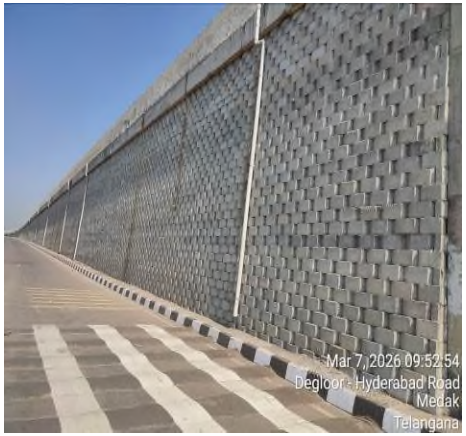
km. 41+700
RE Wall View



LVUP at km. 43+650
RE Wall View

km. 43+650
RE Wall View

VUP at km. 46+900
Structure view

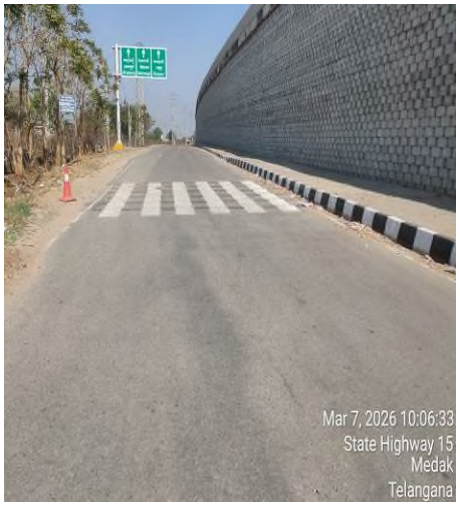


km. 46+900
RE Wall View

LVUP at km. 48+800
Structure View

km. 48+800
RE Wall View

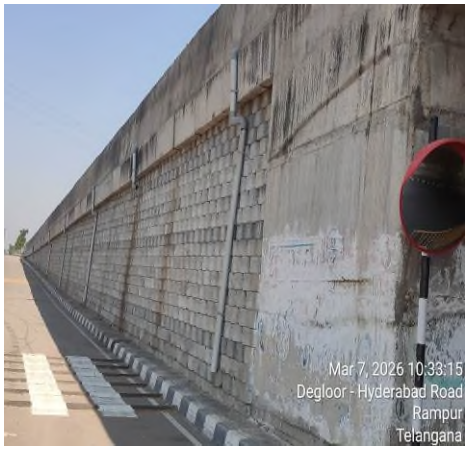
VUP at km. 50+211
Structure view



km. 50+211
RE Wall View

LVUP at km. 51+850
Structure View

LVUP at km. 54+971
Structure View



km. 54+971
RE Wall View

LVUP at km. 56+025
Structure View

LVUP at km. 58+710
Structure View

km. 58+710
RE Wall View

VUP at km. 62+095
Structure View

VUP at km. 62+095
Structure View

VUP at km. 63+032
Structure View

VUP at km. 68+800
Structure View

VUP at km. 70+950

km. 70+950
Structure View

LVUP at km. 78+00

3.5 Condition Survey of Culverts

The cross-drainage structures include reconstruction and new construction of box culverts at various locations. There is total 117 Nos. of culverts in which 14 Nos. of reconstruction of box culverts, 33 Nos. of reconstruction of pipe to box culverts, 49 Nos. of new construction of box culverts, and 21 Nos. is box culvert (constructed under Change of Scope) along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway with service road on both side and construction of new four lane carriageway at proposed bypass location. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts and slab culverts is found to be satisfactory. The RCC parapet, metal beam crash barrier or RCC railing has been provided at culvert locations, which is maintained properly.

Vegetation growth and accumulation of debris at waterway is being removed and cleaned by the Concessionaire on regular basis.

Figure 3-8 Photographs of Box Culvert / Pipe Culvert

BC at km. 41+175

BC at km. 42+215

BC at km. 43+200

BC at km. 43+650

BC at km. 46+900

BC at km. 50+965

BC at km. 52+525

BC at km. 54+325

BC at km. 55+750

BC at km. 56+025

BC at km. 56+975

3.6 Drainage

a) Existing Drains

There are Lined and Unlined Drains along the Project Road. Some of the photographs taken during the site visit are presented below.

Figure 3-9 Photographs of Existing Drains

km. 45+972 (LHS)

km. 46+900 (LHS)

km. 48+800 (LHS)

km. 51+850 (LHS)

km. 58+710 (LHS)

km. 62+600 (LHS)

km. 58+710 (RHS)

km. 51+850 (RHS)

km. 48+800 (RHS)

3.7 Slope Protection

The condition of slope protection and chute drains are found satisfactory. However, rectification / repair shall be done wherever required. Some of the photographs taken during the site visit are presented below.

Figure 3-10 Photographs of Slope Protection & Chute Drain

km. 41+175 (LHS)

km. 42+215 (LHS)

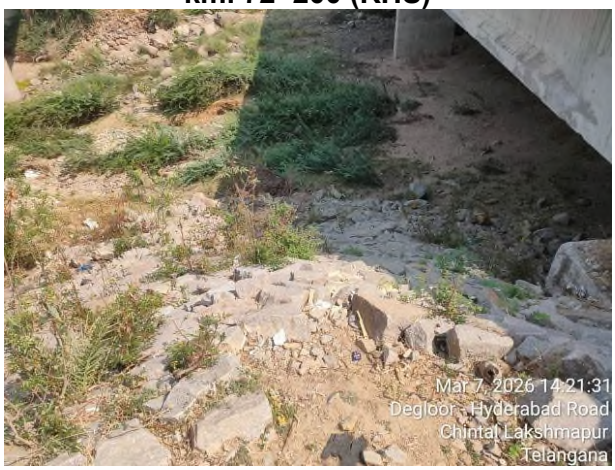
km. 45+787 (LHS)

km. 46+900 (LHS)

km. 52+525 (LHS)

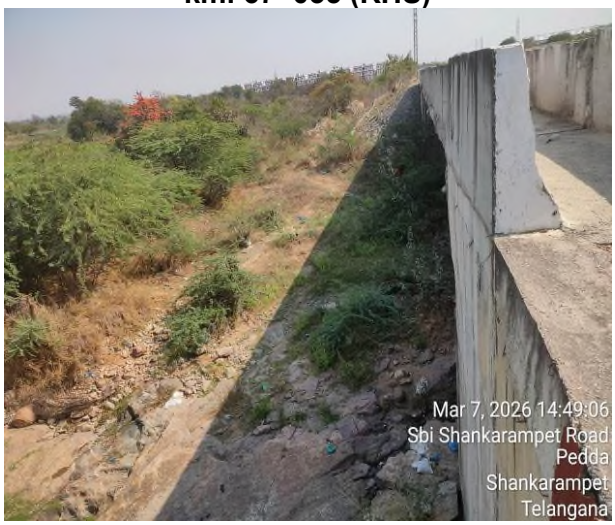
km. 72+200 (RHS)

km. 67+600 (RHS)



km. 67+035 (RHS)

km. 65+200 (RHS)



km. 61+600 (RHS)

km. 61+008 (RHS)

3.8 Road Furniture

The Concessionaire shall maintain the road furniture as per schedule-C.

a) Summary of Quantity for Road Furniture Items

The following details show the summary of quantity of items for road furniture.

Table 3-6 Summary for Road Furniture Items

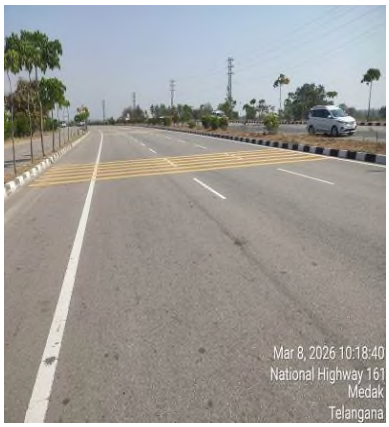
Sr. No.	Description	Unit	Quantity
1	Traffic Solar Blinkers	No.	06
2	W-beam Crash Barriers in both direction	kms	29.100
3	Delineator	Nos.	1861
4	Km Stone	Nos.	94
5	Informatory Signs	Nos.	172
6	Mandatory Signs	Nos.	53
7	Cautionary Signs	Nos.	1111
8	Pedestrian Guard Rail	m	1119.2
9	Highway Patrol Vehicles	Nos.	1
10	Ambulances	Nos.	1
11	Cranes	Nos.	1
12	Way side Amenities	Nos.	-
13	Lighting (Single & Double Arm)	Nos.	594
14	High mast	Nos.	11

3.9 Pavement Marking

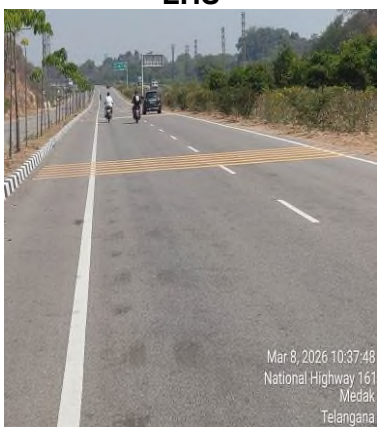
Pavement marking for the Project Road is done as per the design standards indicated in Schedule-D. Pavement marking is maintained by the Concessionaire. Some of the photographs of road marking are presented below:

Figure 3-11 Photographs of Pavement Marking

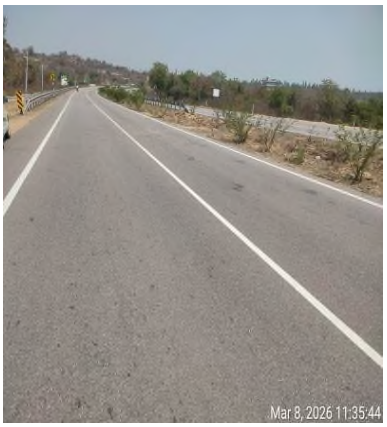
LHS



km. 44+350



km. 54+000



km. 76+350

RHS

km. 83+000

km. 79+800

km. 73+600

3.10 Road Studs

Road studs / cat's eyes for the Project Road are provided as per the design standards indicated in Schedule-D. Road studs / cat's eyes have been fixed at junction, edge of paved shoulder & zebra crossing. Some of the photographs of road studs are presented below.

Figure 3-12 Photographs of Road Studs

km. 40+800 (LHS)

km. 64+200 (LHS)

km. 83+000 (RHS)

km. 73+600 (RHS)

Traffic Signage / Median Kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road & Kilometre stone etc, the design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location, and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards & Median kerb paint are generally in good condition except few locations. Some of the photographs of sign boards are presented below.

Figure 3-13 Photographs of Road Signages (LHS)

km. 40+000

km. 41+175

km. 43+200

km. 43+200

km. 45+787

km. 45+972

km. 46+900

km. 47+000

km. 51+000

km. 57+550

km. 58+200

Figure 3-14 Photographs of Road Signages (RHS)

km. 86+500

km. 82+200

km. 80+600

km. 76+950

km. 73+400

km. 72+200

km. 70+000

km. 68+800

km. 65+000

km. 67+600

km. 67+800

km. 62+095

km. 60+050

km. 58+710

3.11 Highway Lighting / Solar Blinker / High Mast

Highway lighting / high mast is provided at underpasses, flyovers, toll plaza, truck lay byes, passenger shelters, major and minor junctions, and built-up locations.

At underpass and flyover locations, highway lighting is provided at the structure locations and at its approaches.

Solar amber blinker signals are provided at median opening and service Road, junctions and bus stop locations. These lights are properly maintained and are in good working condition.

Some of the photographs of highway lightings are presented below.

Figure 3-15 Photographs of Street Light / Solar Blinker / High Mast

km. 73+050

km. 74+400

km. 75+300

km. 40+550

km. 48+700

km. 51+600

km. 62+095

3.12 Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided are maintained by the Concessionaire. Some of the photographs of metal beam crash barriers are presented below:

Figure 3-16 Photographs of Guard Post / Crash Barrier

km. 43+200 (LHS)

km. 45+787 (LHS)

km. 50+965 (LHS)

km. 53+742 (LHS)

km. 72+200 (RHS)

km. 67+600 (RHS)

km. 67+600 (RHS)

km. 67+035 (RHS)

km. 65+200 (RHS)

3.13 Delineators

The Traffic Delineators are provided and maintained by the Concessionaire for road users in abnormal condition of weather in the Project Road. Some of the photographs of delineators are presented below.

Figure 3-17 Photographs of Delineator

km. 65+000

km. 44+350

km. 57+150

km. 64+750

km. 83+000

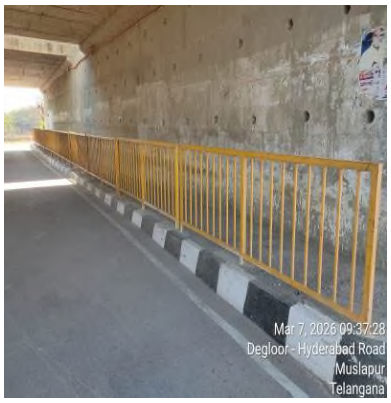
km. 86+550

3.14 Pedestrian Guard Rail

The pedestrian guard rails are provided in the median between service road and main carriageway, bus shelters and truck lay bye as well as under the underpass. It is maintained by the Concessionaire. However, at few locations, rectification is needed. Some of the photographs of pedestrian guard rails are presented below.

Figure 3-18 Photographs of Pedestrian Guard Rail

km. 41+700



km. 43+650

km. 46+900

km. 54+971

km. 56+025

km. 57+550

3.15 Road Land Boundary / Chain Link Fencing

For the Project Road, the Concessionaire has done the chain link fencing at ROW to avoid any kind of encroachments. The Concessionaire needs to rectify the damaged fencing wherever required. The photographs are presented below.

Figure 3-19 Photographs of Chain Link fencing

LHS

km. 40+000

km. 42+215

km. 46+900

RHS

km. 80+600

km. 78+600

km. 72+200

3.16 Avenue Plantation and Median Plantation

This Project Road passes through the plain and rolling terrain. The Project Road is provided with avenue plantation in three / two / single rows on either side. The Project Road is also provided with median plantation. All plantations are properly maintained by the Concessionaire. Some of the photographs of plantation are presented below.

Figure 3-20 Photographs of Median Plantation

km. 44+350

km. 48+700

km. 50+200

km. 54+000

km. 60+000

km. 81+400

Figure 3-21 Photographs of Avenue Plantation

LHS

km. 40+000

km. 41+000

km. 46+900

km. 50+211

km. 54+325

km. 55+750

RHS

km. 80+600

km. 70+000

km. 67+350

km. 66+800

km. 65+200

km. 60+550

3.17 Noise Barrier

Noise Barriers are provided in built-up sections and are properly maintained by the Concessionaire. Some of the photographs of noise barrier are presented below.

Figure 3-22 Photographs of Noise Barrier

km. 48+700 (LHS)

km. 51+600 (LHS)

km. 79+600 (RHS)

km. 58+800 (RHS)

3.18 Toll Plaza

There was one temporary Toll Plaza at km. 57+893 near Kolla Palle village along the Project Road. It was foreclosed from 02-Feb-2023 at 8.00 Hrs. However, the control room for ATMS is available at km. 66+700 (RHS). The same is in the scope of the Concessionaire.

km. 57+850

3.19 Advance Traffic Management System (ATMS)

Advance Traffic Management System (ATMS) installed for the project road is controlled by the ATMS center near the toll plaza location (km 66+700). As per Concession agreement ATMS shall conform to ATMS Policy guidelines (2016) which comprises of the following:

- Mobile Radio communication system
- Emergency Call Box
- Variable Message Signboards (VMS)
- CCTV system
- Video Incident Detection System (VIDS)

Status of these systems at site are described below:

3.19.1 Automatic Traffic Counter cum Classifier (ATCC)

Automatic Traffic Counter Cum Classifier (ATCC) is installed at km. 65+200 (LHS) and km. 40+000 (RHS).

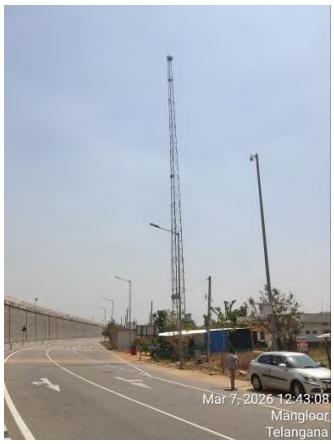
km. 65+200 (LHS)

3.19.2 Mobile Radio Communication System

The mobile radio communication system is installed along the project length, and all are functional. The same are maintained by the Concessionaire.

km. 41+700

km. 68+800



km. 85+00

3.19.3 Emergency Call Boxes (ECB)

The emergency call boxes are installed along the project length, and all are functional. The same is maintained by the Concessionaire.

km. 40+550 (LHS)

km. 64+400 (RHS)

3.19.4 MET System

Meteorological sensors comprise of sensors to measure the atmospheric temperature, humidity, pavement surface temperature, visibility and equipment for measuring wind speed and direction and installed at km. 66+700 (RHS) near O&M office in Nizam Peth village.

km. 66+700

3.19.5 Variable Message Signboards (VMS)

Variable message sign boards are installed in the Project Road. These display specific messages to the users based on the prevailing conditions on the highway. The message can be changed at any point of time from the ATMS centre. About 250 customised messages can be stored on the system.

km. 40+100 (LHS)

km. 86+400 (RHS)

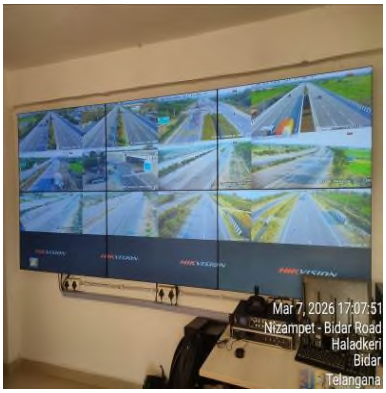
3.19.6 CCTV Surveillance Cameras

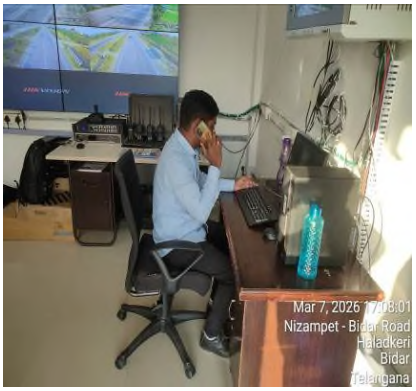
Surveillance Cameras are installed along the project corridor which are monitored through the ATMS control room.

km. 41+650

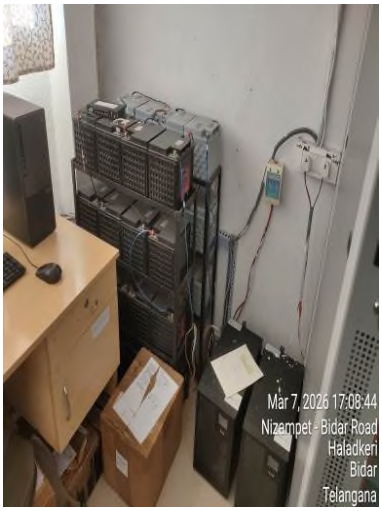
km. 50+200

km. 58+100





Control Monitor Control Room Office



Server UPS Room O&M Centre

3.19.7 Vehicle Actuated speed Display (VASD-Speedometer)

VASD / Speedometers are installed along the Project Road which are monitored through the ATMS control room. The Advance Traffic Management System (ATMS) installed is as per specifications required by the Authority and in working condition.

km. 65+200

3.20 Truck Lay bye

The following are the Truck Lay-Bye cum Rest Room locations.

Table 3-7 Details of Truck lay bye

Sr. No.	Chainage as per Site (km)	Side
1	40+400 (LHS) & 40+300 (RHS)	BHS
2	57+550	BHS
3	77+850	BHS
4	84+250	BHS

Figure 3-23 Photograph of Truck Lay-bye

km. 40+400 (LHS)

km. 57+550 (LHS)

km. 77+850 (LHS)

km. 84+250 (RHS)

km. 77+850 (RHS)

km. 57+850 (RHS)

3.21 Traffic Aid Post and Medical Aid Post (Incident Management)

Traffic and Medical Aid Post are available at O&M office and are in Concessionaire's scope. The Patrolling Vehicle, Ambulance & Crane are available at site. Some of the photographs are presented below.

Figure 3-24 Photograph of Incident Management

Medical Aid Room Cranes

RPV-1 RPV-2 Ambulance

3.22 Toilet Block

Apart from Toll Plaza, there are 40 nos. of Toilet Block along Project Road i.e., at Truck lay-bye and passenger shelter locations which are in Concessionaire's scope.

Figure 3-25 Photographs of Toilet Blocks

km. 66+700 (RHS)

3.23 Bus Bays and Passenger Shelters

There are 32 nos. bus bays / passenger shelters along Project Road. All are in operational condition. Some of the photographs are presented below.

Figure 3-26 Photographs of Bus Bay / Passenger Shelter

RHS

km. 80+000

km. 77+500

km. 73+900

LHS

km. 42+450

km. 44+550

km. 50+500

3.24 Wayside Amenities

There are no wayside amenities along the Project Road.

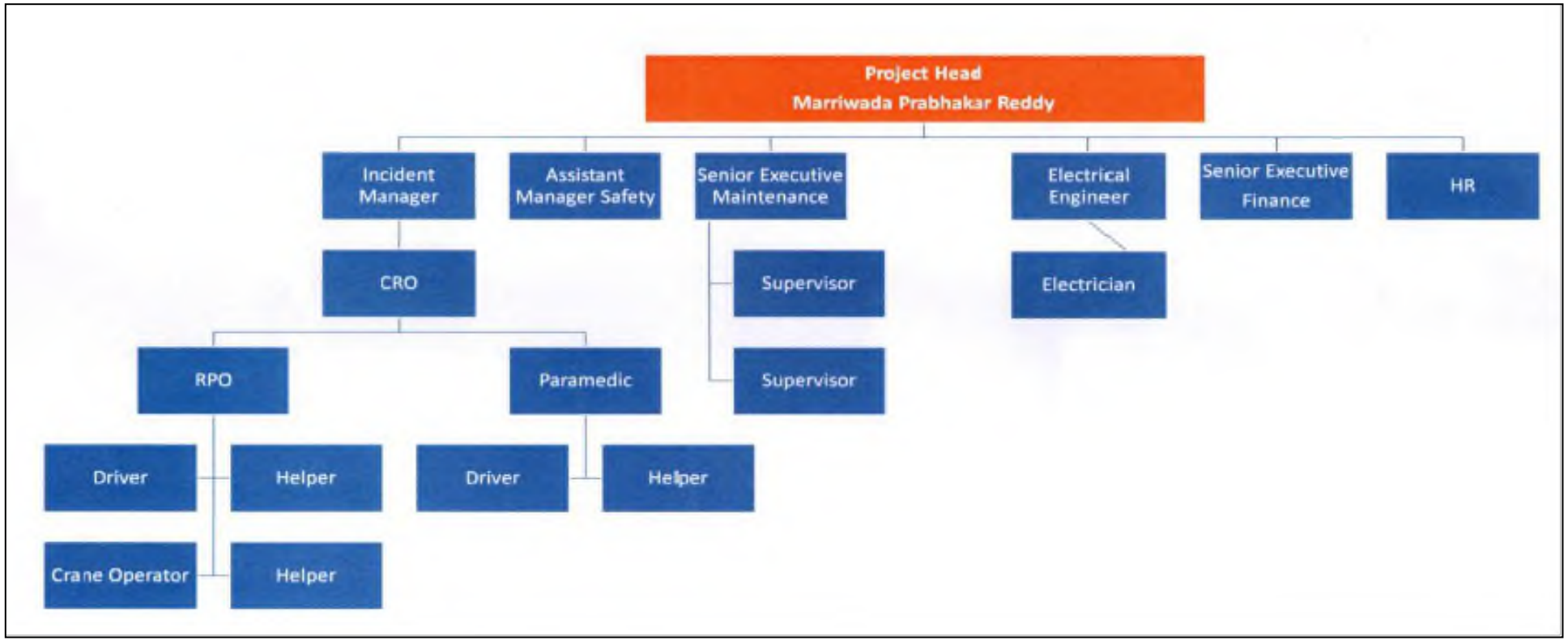
3.25 Balance Work

Presently, all work has been completed. IE has issued the Completion Certificate effecting from 27th October 2025 vide their letter no. MSV/IE(O&M)/Pkg-II&III/2025/MHPL/1005 Dated 10.12.2025.

3.26 Organization Chart

The Concessionaire has given the Organization Chart at site for Operation and maintenance.

Organization Chart



3.26.1 Operation

Operation cost is comprised of manpower cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, and other miscellaneous expenses. As the Project is in Annuity mode, the Toll Operation is not in the Scope of Concessionaire. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have been made from the expenses of similar types of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.26.2 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

The Project Road is currently in the Operation and Maintenance stage. The concession period of the project is 17 years from the Appointed / Commencement Date (i.e., 2nd May 2019) including construction period of 2 years (730 days).

The Project has received Completion Certificate on 27th October 2025.

4.2 Axle Load and VDF

The Concessionaire has conducted the Axle Load Survey on Project Road at km. 52+700 from 24th July 2021 to 25th July 2021. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor

Sr. No.	Vehicle Type	Direction	
		LHS (Ramsanpalle - Mangloor)	RHS (Mangloor - Ramsanpalle)
1	BUS	0.748	0.776
2	LCV	0.935	1.130
3	2-Axle	3.462	2.849
4	3-Axle	5.308	9.012
5	MAV	12.472	13.876

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data as provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

Year	4-Lane				6-Lane				Remarks
	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	
2025-26	-	**-**	-	**-**	-	**-**	-	**-**	
2026-27	1.73	**1.73**	2.07	**2.07**	1.38	**1.38**	1.65	**1.65**	
2027-28	1.81	**3.54**	2.17	**4.24**	1.45	**2.83**	1.74	**3.39**	
2028-29	1.90	**5.44**	2.28	**6.52**	1.52	**4.35**	1.82	**5.21**	1st MM Cycle
2029-30	2.00	**7.44**	2.40	**8.92**	1.60	**5.95**	1.92	**7.13**	
2030-31	2.10	**9.54**	2.52	**11.44**	1.68	**7.63**	2.01	**9.14**	
2031-32	2.21	**11.75**	2.64	**14.08**	1.76	**9.39**	2.11	**11.25**	
2032-33	2.32	**14.07**	2.77	**16.85**	1.85	**11.24**	2.22	**13.47**	
2033-34	2.43	**16.50**	2.91	**19.76**	1.95	**13.19**	2.33	**15.80**	

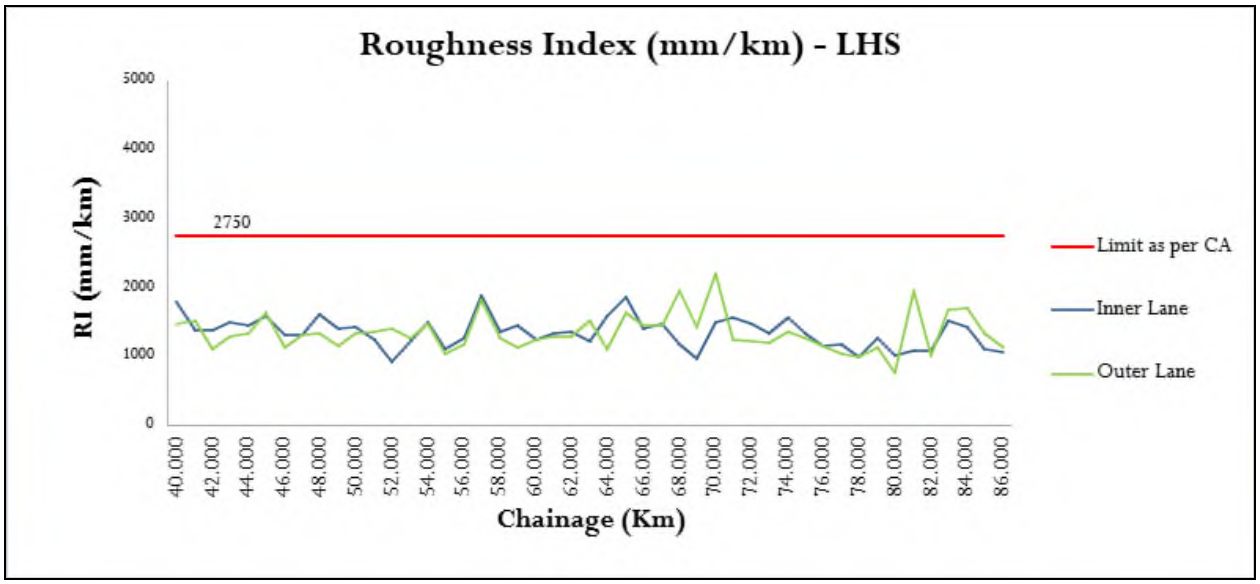
Year	4-Lane				6-Lane				Remarks
	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	
2034-35	2.55	**19.05**	3.06	**22.82**	2.04	**15.23**	2.45	**18.25**	
2035-36	2.68	**21.73**	3.21	**26.03**	2.14	**17.37**	2.57	**20.82**	2nd MM cycle
2036-37	2.81	**24.54**	3.37	**29.40**	2.25	**19.62**	2.70	**23.52**	

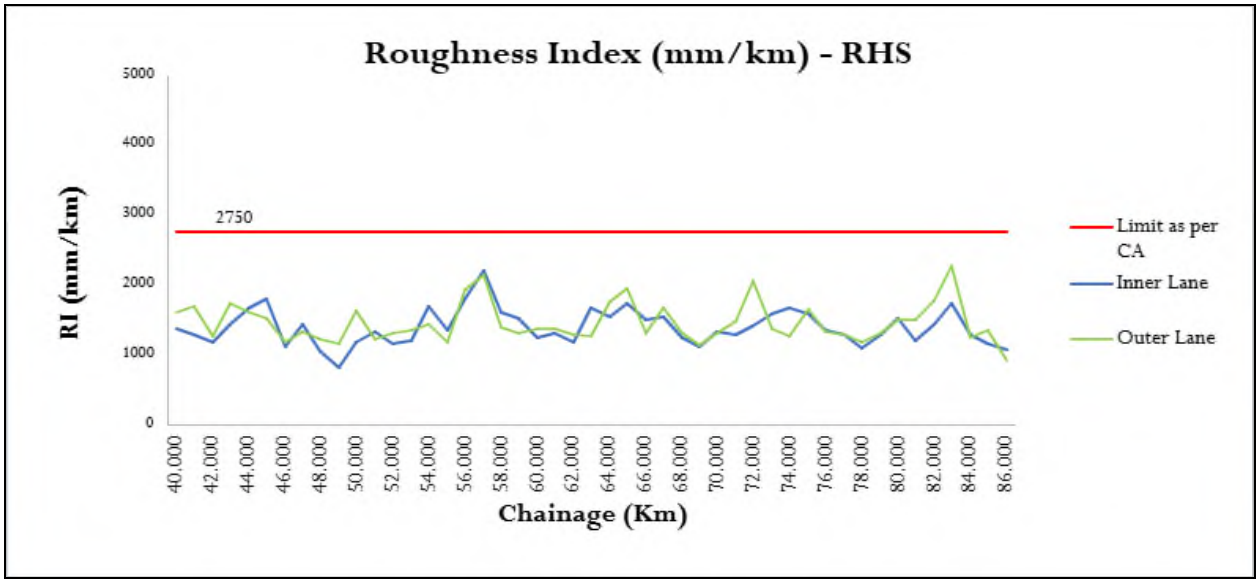
4.4 Network Survey Vehicles (NSV) Survey

The Concessionaire has provided NSV survey data conducted in November 2024. The NSV data is used to assess the riding quality and pavement condition of project road. The summary of Roughness Index is given in table below:

Table 4-3 Roughness Index Summary

Sr. No.	Rating	Roughness Value as per CA limit	Length (km)			
			LHS		RHS	
			Inner Lane	Outer Lane	Inner Lane	Outer Lane
1	Good - Fair	<2750	46.80	46.80	46.80	46.80
2	Poor	>2750	-	-	-	-





4.5 Structural Investigation

The Falling Weight Deflectometer survey was conducted for flexible pavement by the Concessionaire in October 2024. The summary of the FWD survey report is presented in the table below.

Table 4-4 FWD Summary

Remaining life (MSA)	Length (km)		Remark
	LHS	RHS	
<40	-	-	Strengthening not required
>40	46.808	46.808	
Total Length	**46.808**	**46.808**	

From the above table, it is observed that residual life of the pavement is more than the cumulative design MSA up to FY 2037 i.e., up to end of concession period. Hence, strengthening of the pavement is not required. The periodic maintenance of Project Road is proposed considering the above results.

4.6 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full-length periodic maintenance. Schedule-K of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. Only improvement in Riding Quality is expected if the roughness value exceeds 2750 mm/km.

The Provisional COD for the project was achieved in the financial year of 2021 (5th August 2021). Hence, the major maintenance cycle is adjusted accordingly.

The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-5 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2026 to FY 2028	-	-
2	FY 2029	Major maintenance with 35 mm BC (VG-40) (60%) +Micro surfacing (40%) + Milling & 50 mm DBM (2.5%)	Major Maintenance with Micro-surfacing (100%)
3	FY 2030 to FY 2035	-	-
4	FY 2036	Major maintenance with 35 mm BC (VG-40) (40%) +Micro surfacing (60%) + Milling & 50 mm DBM (2.5%)	Major Maintenance with Micro-surfacing (100%)

**End of concession period as per Concession Agreement is FY 2037.*

The projected cost for periodic/ major maintenance is presented in the subsequent chapter.

5 COST ESTIMATE

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per Government of Telangana Common SoR (Road & Bridge Works) 2024-25. The input rates for SoR were adopted as below:

   a. **Manpower and labour:** As per applicable minimum wages published by Sschedule of Rates, Government of Telangana.

   b. **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

   Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards, since bitumen prices have been range bound over the last five-six years. Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg last 10 years)
Mathura	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Panipat	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Koyali	All States	VG-10	47,102	37,125
		VG-30	48,402	38,137
		VG-40	51,082	40,251
Haldia	All States	VG-10	46,602	35,683

Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg last 10 years)
		VG-30	47,402	36,295
		VG-40	49,962	38,256
Barauni	All States	VG-10	47,132	36,213
		VG-30	48,432	37,325
		VG-40	50,992	39,286
CPCL	Kerala	VG-10	47,402	35,519
		VG-30	48,402	36,395
		VG-40	50,762	38,120
CPCL	Tamil Nadu	VG-10	47,902	36,019
		VG-30	48,402	36,395
		VG-40	50,962	38,320
CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320
CPCL	Karnataka	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320

c. **Sand and Aggregate:** Market rates are considered from the quarry located nearest to Project Road.

d. **Cement:** Market rates are considered from the nearest local market.

e. **Steel :** Rate of steel is taken from market rate.

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable PWD SOR.

g. **Actual Rates of items as per work order:** The rates of road marking, road stud, kerb raising, micro surfacing, milling, aggregate rates etc. are considered as per the work order shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book / rate as per work order adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1.	Dense Bituminous Macadam (VG-40)	Cum	8,610
2.	Bituminous Concrete (VG-40)	Cum	9,782
3.	Bituminous Concrete (VG-30)	Cum	9,294
4.	Milling	Sqm	92
5.	Micro-surfacing	Sqm	162
6.	Kerb Re-laying	Rmt	316
7.	Road Marking	Sqm	549
8.	Road Studs	Nos.	179

5.3 Balance Work Cost

As discussed in the previous chapter, there is no balance work on the Project Road.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance, and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Tolling Operations Services (Not in Scope)
3. Incident Management Services
4. Electricity and Diesel Charges
5. HTMS Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Insurance Expense
10. IE Fees
11. Horticulture & ROW Maintenance
12. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation and Maintenance cost (Routine O&M) is presented below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027-37)	Remark
1	Salary and Welfare Expenses	80,73,000	
2	Tolling Operations Services	-	
3	Toll Security Services	27,12,518	
4	Incident Management & Emergency Services	1,97,85,427	
5	Electricity and Diesel Charges	79,20,593	
6	TMS / HTMS / System Expenses	54,79,521	
7	Office Operating Expenses	22,60,826	

Sr. No.	Particulars	Amount (FY 2027-37)	Remark
8	Vehicle Running Expenses	48,75,000	
9	Professional Fees Expense	91,50,964	
10	Community Development	15,07,218	
11	Communication Expenses	1,34,573	
12	Conveyance Expenses	2,69,146	
13	Insurance Expense	1,26,50,000	
14	IE Fees	22,33,912	
15	Routine Maintenance Cost (Project Road)	2,13,81,060	
16	Horticulture & ROW Maintenance	1,74,54,872	
17	Miscellaneous including Contingency	30,82,108	
	Total Cost (Rs.)	**11,89,70,738**	
	Total Cost (Cr.)	**11.90**	
	Per km Cost (Lakhs)	14.87	

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Table 5-4 Summary of Major Maintenance Cost

Sr. No.	Year	Major Maintenance Cost (Cr)	Remarks
1	FY 2024 to FY 2028	-	
2	FY 2029	59.29	
3	FY 2030 to FY 2035	-	
4	FY 2036	52.49	
5	FY 2037	-	
Total Cost (Cr.)		**111.78**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr)	Remarks
1	FY 2026 - FY 2028	-	
2	FY 2029	2.62	
3	FY 2030 - FY 2035	-	
4	FY 2036	2.62	
5	FY 2037	-	
Total Cost (Cr.)		**5.24**	

5.7 Escalation Assumption

The following escalation is considered basis discussions with Client and our internal estimates.

Table 5-5 Escalation

Year	Escalation	Year	Escalation
2027	-	**2043**	3.99%
2028	4.86%	**2044**	3.99%
2029	4.44%	**2045**	3.99%
2030	4.24%	**2046**	3.99%
2031	4.13%	**2047**	3.99%
2032	4.08%	**2048**	3.99%
2033	4.01%	**2049**	3.99%
2034	4.00%	**2050**	3.99%
2035	4.03%	**2051**	3.99%
2036	4.01%	**2052**	3.99%
2037	3.98%	**2053**	3.99%
2038	3.98%	**2054**	3.99%
2039	4.00%	**2055**	3.99%
2040	3.99%	**2056**	3.99%
2041	3.99%	**2057**	3.99%
2042	3.99%	**2058**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period along with escalation as mentioned in above clause.

Escalated O&M Cost (in INR Cr.)

Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37
Routine O&M Cost											
Salary and Welfare Expense	0.81	0.85	0.88	0.92	0.96	1.00	1.04	1.08	1.12	1.17	1.22
Tolling Operations Services	-	-	-	-	-	-	-	-	-	-	-
Toll Security Services	0.27	0.28	0.30	0.31	0.32	0.34	0.35	0.36	0.38	0.39	0.41
Incident Management Services	1.98	2.07	2.17	2.26	2.35	2.45	2.55	2.65	2.75	2.87	2.98
Electricity and Diesel Charges	0.79	0.83	0.87	0.90	0.94	0.98	1.02	1.06	1.10	1.15	1.19
TMS/HTMS/System Expenses	0.19	0.31	-	0.04	0.09	0.14	0.14	0.25	0.42	-	0.06
Office Operating Expenses	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.33	0.34
Vehicle Running Expenses	0.49	0.51	0.53	0.56	0.58	0.60	0.63	0.65	0.68	0.71	0.73
Professional Fees Expense	0.92	0.96	1.00	1.04	1.09	1.13	1.18	1.22	1.27	1.33	1.38
Community Development	0.15	0.16	0.17	0.17	0.18	0.19	0.19	0.20	0.21	0.22	0.23
Communication Expenses	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Conveyance Expenses	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04
Insurance Expense	1.27	1.33	1.39	1.44	1.50	1.57	1.63	1.69	1.76	1.83	1.90
IE Fees	0.22	0.23	0.24	0.26	0.27	0.28	0.29	0.30	0.31	0.32	0.34
Routine Maintenance Cost	2.14	2.24	2.34	2.44	2.54	2.65	2.75	2.86	2.98	3.10	3.22
Horticulture & ROW Maintenance	1.75	1.83	1.91	1.99	2.07	2.16	2.25	2.34	2.43	2.53	2.63
Miscellaneous and Contingency	0.31	0.32	0.34	0.35	0.37	0.38	0.40	0.41	0.43	0.45	0.46
Subtotal of O&M Cost	**11.54**	**12.21**	**12.43**	**13.00**	**13.58**	**14.18**	**14.75**	**15.44**	**16.22**	**16.43**	**17.14**
Major Maintenance Cost	-	-	64.93	-	-	-	-	-	-	76.01	-
Periodic Cost of TMS / HTMS Replacement	-	-	2.86	-	-	-	-	-	-	3.79	-
Balance Works Cost	-	-	-	-	-	-	-	-	-	-	-
Total Cost	**11.54**	**12.21**	**80.23**	**13.00**	**13.58**	**14.18**	**14.75**	**15.44**	**16.22**	**96.23**	**17.14**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Ordinary Repair Cost for Flexible (with GST)	**21,381,060**
(Inclusive of GST)	**= 4.57 lakhs per km**

National Highways / State Highways (Flexible Pavement)									
Reference cost taken for Four/Six lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal**	**Urban**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				More than 4500 CVD	**More than 4500 CVD**				
				198,575	**230,591**	**Normal**	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	303820	352804	-	-	-	-
		Paved shoulder	1.70	337578	392005	18.74		6,326,212	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	397150	461182	2.36	-	937,274	-
		Paved shoulder	2.20	436865	507300	-	-	-	-
3	Six lane with divided carriageway	without Paved shoulder	2.09	415022	481935	-	-		-
		with Paved shoulder	2.26	448780	521136	0.99	-	445,190	-
4	Six lane with divided carriageway and service lane on either side	without Paved shoulder	2.56	508352	590313	-	-	-	-
		with Paved shoulder	2.76	548067	636431	23.29	1.43	12,762,288	910,096
TOTAL						**46.808**		**21,381,060**	

Details of Ordinary Repair in Rs. For one km. of Four lane and Six lane (7.0 or 14.0 or 21.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	0.50%
	Volume (cum)			2.50
	Rs/m^3			10414
	Cost in Rupees			26,034
	ii) Patch repair	100 % Patch less	As & when required	0.50%
	Area (sqm)			50
	Rs/m^2			417
	Cost in Rupees			20,827
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			76
	Cost in Rupees			18,992
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.00%
	Area (sqm)			150
	Rs/m^2			51
	Cost in Rupees			7,583
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			417
	Cost in Rupees			31,241
	v) Road marking	14%	Once in 7th year & @ Repaired location	30056
	SUB TOTAL			**1,34,733**

Details of Ordinary Repair in Rs. For one km. of Four lane and Six lane (7.0 or 14.0 or 21.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**7,414**
3	**Maintenance of Cross Drainage works:**			
	i) Repair of floors	100%	Once in a Year	5055
	ii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			**7,161**
4	**Maintenance of Minor & Major Bridges:**			
	i) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints	100%	As & when required	36,950
	ii) Repair of minor washouts, erosion scour and animal holes			
	iii) Sealing Cracks with Cement/ Epoxy Mortar			
	iv) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometre stone etc.		Once in a Year	3695
	ii) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7390
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232
	iv) Traffic Census		Once in a Year	0
	v) Provision for roughness measurement		Twice in a Year	0

Details of Ordinary Repair in Rs. For one km. of Four lane and Six lane (7.0 or 14.0 or 21.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	SUB TOTAL			**12,317**
	GRAND TOTAL (Normal)			**1,98,575**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Centre Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	2210
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**32,016**
	GRAND TOTAL (Urban)			**2,30,591**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						7,18,424	12	85,20,510
	4 lane section									
	For BC	Sqm	2	12,660	9.15		2,31,558	2,31,558		
	For DBM	Sqm	2	528	7.00		7,385	7,385		
	For Misc. Location	Sqm	2	1,266	9.15		23,156	23,156		
	6 lane section									
	For BC	Sqm	2	14,920	13.50		4,02,829	4,02,829		
	For DBM	Sqm	2	601	11.00		13,213	13,213		
	For Misc. Location	Sqm	2	1,492	13.50		40,283	40,283		
2	BC with 35 mm						24,424	24,424	9,782	23,89,14,416
	4 lane section	Cum	2	13,926	9.15	0.04	8,915			
	6 lane section	Cum	2	16,412	13.50	0.04	15,509			
3	DBM with 50 mm						1,030	1,030	8,610	88,67,762
	4 lane section	Cum	2	528	7.00	0.05	369			
	6 lane section	Cum	2	601	11.00	0.05	661			
4	Milling for DBM						20,598	20,598	92	18,95,034
	4 lane section	Sqm	2	528	7.00		7,385			
	6 lane section	Sqm	2	601	11.00		13,213			
5	Micro surfacing									
	4 lane section	Sqm	2	8,440	9.15		1,54,372	1,54,372	162	2,50,08,264
	6 lane section	Sqm	2	9,946	13.50		2,68,553	2,68,553	162	4,35,05,554
	Main Carriageway - Rigid Pavement									
6	Joint Sealant Replacement @ 10% length	Rmt	10%	-	3.50	4.50	-	-	59	-
7	Dismantling of CC Panels @ 5% area	Cum	5%		-	0.30	0	0	1,031	-
8	Replacement of Panels - PQC @ 5% area	Cum	5%		-	0.30	0	0	7,615	-
	Service Road									
9	Tack coat	Sqm	1	-	7.5		-	-	12	-
10	BC with 30 mm	Cum	1	-	7.5	0.03	-	-	9,294	-

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
11	Micro Surfacing	Sqm	1	60,874	7.5		4,56,555	4,56,555	162	7,39,61,910
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
12	Tack coat	Sqm	2	421	13.5		11,359	11,359	12	1,34,718
13	Wearing Coat BC with 35 mm	Cum	2	421	13.5	0.04	398	398	9,782	38,88,977
14	Milling of Ex. Wearing Coat	Sqm	2	421	13.5		11,359	11,359	92	10,45,028
15	Micro surfacing	Sqm	2	421	13.5		11,359	11,359	162	18,40,158
16	Painting of Crash Barrier	Sqm	2	54,556		1.12	1,21,660	1,21,660	116	1,41,12,546
	Other Works									
17	Raising of Road Kerb	Rmt	1	64,262			64,262	64,262	316	2,03,22,984
18	Replacement of Road Stud									
	Normal Road Stud	Nos	2	5,722			11,444	11,444	179	20,48,476
	Solar Road Stud	Nos	1	-			-	-	1,922	-
19	Painting of Kerb	Sqm	1	1,07,104		0.315	33,738	33,738	134	45,20,860
20	Road Marking	Sqm					50,686	50,686	549	2,78,26,697
	4 Lane MCW Section									
	a) Median & Edge line	Sqm	4	22,155	0.15		13,293			
	b) Lane line	Sqm	2	7,311	0.10		1,462			
	6 Lane MCW Section									
	a) Median & Edge line	Sqm	4	28,174	0.15		16,904			
	b) Lane line	Sqm	4	9,297	0.10		3,719			
	Service Road									
	a) Edge line	Sqm	2	55,340	0.10		11,068			
	b) Lane line	Sqm	1	18,262	0.10		1,826			
	Junction crossing	Sqm					2,414			
21	Filling of Earthen shoulder	Cum					3,907	3,907	544	21,23,501
	MCW		2		55,816	0.04	3,907			
22	Miscellaneous	5%								2,39,26,870
Total Major Maintenance Cost (Rs.)										**50,24,64,264**
Total Major Maintenance Cost with GST (Rs.)										**59,29,07,832**
Total Major Maintenance Cost with GST (Cr.)										**59.29**

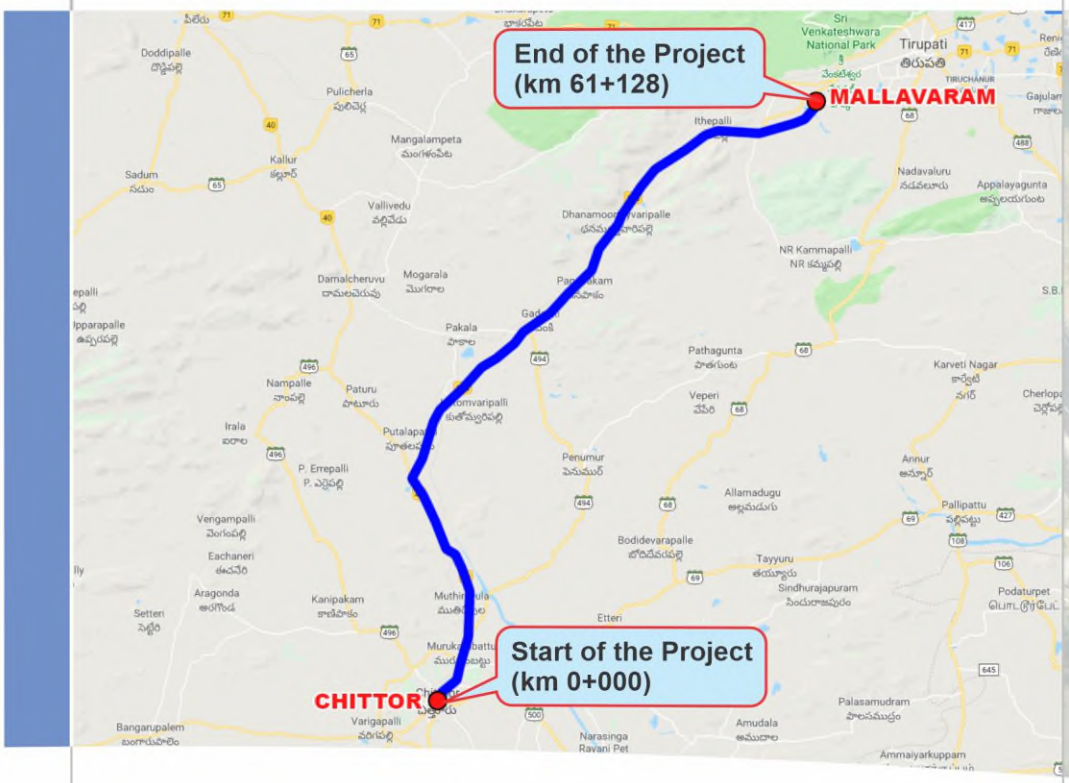
Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
									Per km Cost (lakhs)	**126.67**
									Escalation Factor for Major Maintenance (FY 2029)	**1.10**
									Total Escalated Cost for Major Maintenance (FY 2029) (Cr.)	**63.76**

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						4,85,815	12	57,61,772
	4 lane section									
	For BC	Sqm	2	8,440	9.15		1,54,372	1,54,372		
	For DBM	Sqm	2	528	7.00		7,385	7,385		
	For Misc. Location	Sqm	2	844	9.15		15,437	15,437		
	6 lane section									
	For BC	Sqm	2	9,946	13.50		2,68,553	2,68,553		
	For DBM	Sqm	2	601	11.00		13,213	13,213		
	For Misc. Location	Sqm	2	995	13.50		26,855	26,855		
2	BC with 35 mm						16,283	16,283	9,782	15,92,76,277
	4 lane section	Cum	2	9,284	9.15	0.04	5,943			
	6 lane section	Cum	2	10,941	13.50	0.04	10,339			
3	DBM with 50 mm						1,030	1,030	8,610	88,67,762
	4 lane section	Cum	2	528	7.00	0.05	369			
	6 lane section	Cum	2	601	11.00	0.05	661			
4	Milling for DBM						20,598	20,598	92	18,95,034
	4 lane section	Sqm	2	528	7.00		7,385			
	6 lane section	Sqm	2	601	11.00		13,213			
5	Micro surfacing									
	4 lane section	Sqm	2	12,660	9.15		2,31,558	2,31,558	162	3,75,12,396
	6 lane section	Sqm	2	14,920	13.50		4,02,829	4,02,829	162	6,52,58,330
	Main Carriageway - Rigid Pavement									
6	Joint Sealant Replacement @ 10% length	Rmt	10%	-	3.50	4.50	-	-	59	-

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
7	Dismantling of CC Panels @ 5% area	Cum	5%		-	0.30	0	0	1,031	-
8	Replacement of Panels - PQC @ 5% area	Cum	5%		-	0.30	0	0	7,615	-
	Service Road									
9	Tack coat	Sqm	1	-	7.5		-	-	12	-
10	BC with 30 mm	Cum	1	-	7.5	0.03	-	-	9,294	-
11	Micro Surfacing	Sqm	1	60,874	7.5		4,56,555	4,56,555	162	7,39,61,910
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
12	Tack coat	Sqm	2	421	13.5		11,367	11,367	12	1,34,813
13	Wearing Coat BC with 35 mm	Cum	2	421	13.5	0.04	398	398	9,782	38,91,716
14	Milling of Ex. Wearing Coat	Sqm	2	421	13.5		11,367	11,367	92	10,45,764
15	Micro surfacing	Sqm	2	421	13.5		11,367	11,367	162	18,41,454
16	Painting of Crash Barrier	Sqm	2	54,556		1.12	1,21,660	1,21,660	116	1,41,12,546
	Other Works									
17	Raising of Road Kerb	Rmt	1	42,842			42,842	42,842	316	1,35,48,656
18	Replacement of Road Stud									
	Normal Road Stud	Nos	2	5,722			11,444	11,444	179	20,48,476
	Solar Road Stud	Nos	1	-			-	-	1,922	-
19	Painting of Kerb	Sqm	1	1,07,104		0.315	33,738	33,738	134	45,20,860
20	Road Marking	Sqm					50,686	50,686	549	2,78,26,697
	4 Lane MCW Section									
	a) Median & Edge line	Sqm	4	22,155	0.15		13,293			
	b) Lane line	Sqm	2	7,311	0.10		1,462			
	6 Lane MCW Section									
	a) Median & Edge line	Sqm	4	28,174	0.15		16,904			
	b) Lane line	Sqm	4	9,297	0.10		3,719			
	Service Road									
	a) Edge line	Sqm	2	55,340	0.10		11,068			
	b) Lane line	Sqm	1	18,262	0.10		1,826			
	Junction crossing	Sqm					2,414			
21	Filling of Earthen shoulder	Cum					3,907	3,907	544	21,23,501

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	MCW		2		55,816	0.04	3,907			
22	Miscellaneous	5%								2,11,81,398
Total Major Maintenance Cost (Rs.)										**44,48,09,362**
Total Major Maintenance Cost with GST (Rs.)										**52,48,75,047**
Total Major Maintenance Cost with GST (Cr.)										**52.49**
Per km Cost (lakhs)										**112.13**
Escalation Factor for Major Maintenance (FY 2036)										**1.45**
Total Escalated Cost for Major Maintenance (FY 2036) (Cr.)										**72.23**

FP Project Management



Technical Due Diligence of Chittoor to Mallavaram of NH-140 (Design km. 0+000 to km. 61+128) in the State of Andhra Pradesh on Hybrid Annuity Mode under Bharatmala Pariyojana

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	13-May-2026	NHA	CSB	SMA

This report is to be regarded as confidential to our client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 General 7
3.2 Pavement Condition Survey 7
3.3 Bypass / Realignment 11
3.4 Service Road / Slip Road 11
3.5 At-Grade Intersection 12
3.6 Condition Survey of Structures 14
3.7 Condition Survey of Culverts 39
3.8 Drainage 44
3.9 Slope Protection 45
3.10 Road Furniture 45
3.11 Avenue Plantation and Median Plantation 50
3.12 Toll Plaza 51
3.13 Lane Equipment 51
3.13.1 RFID ETC Transceiver 52
3.13.2 Lane Controller with Industrial PC 52
3.13.3 Automatic Vehicle Classification (AVC) Sensors 52
3.13.4 Automatic Lane Barrier 53
3.13.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 53

3.13.6 Incident Capture Camera (AVC Camera) 54
3.13.7 License Plate Image Capture Camera (LPIC) 54
3.13.8 Over Head Lane Signal (OHLS) 54
3.13.9 Toll Booth Equipment 55
3.14 Plaza Equipment 56
3.14.1 TMS Server 56
3.14.2 55" LED screen for CCTV monitoring 56
3.14.3 Workstations in Control Room, POS room 57
3.15 Truck Lay-bye 57
3.16 Administrative, Operation and Maintenance Base Camp 58
3.17 Toilet Block 59
3.18 Bus Bays and Passenger Shelters 60
3.19 Balance Work Status 61
3.20 Operation and Maintenance 61
3.20.1 O&M Contract 61
3.20.2 Organization Chart 61
3.20.3 Operation 62
3.20.4 Routine Maintenance 62
4 Pavement Investigation and Assessment 63
4.1 General 63
4.2 Axle Load and VDF 63
4.3 Design traffic 63
4.4 Network Survey Vehicles (NSV) Survey 64
4.5 Structural Investigations 65
4.6 Periodic Maintenance Strategy 65
5 Cost Estimates 67
5.1 General 67
5.2 Rate Assumption 67
5.3 Balance Work Cost 68
5.4 Routine O&M Cost 69
5.5 Major Maintenance Cost 70
5.6 Periodic Replacement of TMS / ATMS System 70
5.7 Escalation Assumption 70
5.8 Summary of Cost 71
Annexures 73
Annexure I - Routine Maintenance Cost 74
Annexure II - Major Maintenance Cost 78

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Details of Summary for Structures 14
Table 3-2 Condition Survey of Major Structure 15
Table 3-3 Details of Truck Lay-bye 57
Table 3-4 Details of Toilet Block 59
Table 4-1 Vehicle Damage Factor 63
Table 4-2 MSA Calculation 63
Table 4-3 Major Maintenance Cycle 66
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 67
Table 5-2 Summary of Unit Rates 68
Table 5-3 Summary of Operation Cost 69
Table 5-4 Escalation Factor 70

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start of the Project Road 5
Figure 2-3 End of the Project Road 5
Figure 3-1 Photographs of Pavement Condition (MCW) 8
Figure 3-2 Photographs of Bypass 11
Figure 3-3 Photographs of Service Road 11
Figure 3-4 Photographs of At-Grade Intersections 12
Figure 3-5 Photographs of Minor Junctions 13
Figure 3-6 Photographs of Road Under Bridge (RUB) 30
Figure 3-7 Photographs of Major Bridges 30
Figure 3-8 Photographs of Minor Bridges 32
Figure 3-9 Photographs of Underpasses 35
Figure 3-10 Photographs of Box Culverts 40
Figure 3-11 Photographs of Pipe Culverts 43
Figure 3-12 Photographs of Drain 44
Figure 3-13 Photographs of Slope Protection 45
Figure 3-14 Photographs of Pavement Marking 46
Figure 3-15 Photographs of Road Studs 46
Figure 3-16 Photographs of Traffic Signages 47
Figure 3-17 Photographs of Street Light 48
Figure 3-18 Photographs of MBCB / Crash Barrier 49
Figure 3-19 Photographs of Traffic Delineators 49
Figure 3-20 Photographs of Median Plantation 50
Figure 3-21 Photographs of Toll Plaza 51
Figure 3-22 Photographs of Truck Lay-bye 57
Figure 3-23 Photographs of Toilet Block 60
Figure 3-24 Photographs of Bus Bays / Passenger Shelters 60

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InVIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence study of Chittor to Mallavaram Section of National Highway No. 140 (NH-140) from km. 0+000 to km. 61+128 in the State of Andhra Pradesh (hereinafter referred as "Project Road")

M/s. KNR Tirumala Infra Private Limited (KTIPL) (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for construction, operation, maintenance, and transfer of Chittor to Mallavaram Section (from km. 0+000 to km. 61+128) of National Highway No. 140 (NH-140) on design, built, operate and transfer (the "DBOT Annuity" or "Hybrid Annuity") basis. The project was awarded to Concessionaire on 09th May 2018 with a concession period of 15 years excluding construction period of 2.5 years by National Highway Authority of India (NHAI). The length of Project Road is 61.128 kms with one toll plaza at km. 37+350 (Gadanki).

Accordingly, the Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

a) A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
b) Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
c) Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.
d) Formulation of future major maintenance strategy
e) Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
f) Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
g) Estimation of Annual Operation expenses along with Systems cost (TMS) till the end of concession period
h) Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified Engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design, and drawings.
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted.
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority.
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection.
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyzing the same as per the best engineering / industry practices.

The site visit and inspection were carried out between the periods from **3rd March 2026** to **5th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies**.**

Chapter 2 **Project Description:** The chapter describes existing project features, and overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit**.**

Chapter 4 **Pavement Investigation and Assessment:** This chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance

Chapter 5 **Cost Estimates**: This chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement **M/s. KNR Tirumala Infra Private Limited (KTIPL)**, is a company promoted by Cube Highways or company a Special Purpose Vehicle (SPV) formed for implementing this project on 09th May 2018. The Appointed Date for the Project Road is 4th January 2019.

The project has been developed through DBOT Annuity basis with concession period of 17.5 years from the Appointed Date including construction period of 2.5 years. The Concessionaire received Provisional COD on 10th May 2021. The Concessionaire received the Completion Certificate on 8thJune 2023. The project is currently under operation and maintenance phase.

2.2 Location

The Project Road is a section of National Highway No. 140 from Chittoor to Mallavaram in the state of Andhra Pradesh. The total project length is 61.128 kms.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map

The photographs taken during the site visit are presented below.

Figure 2-2 Start of the Project Road

Figure 2-3 End of the Project Road

2.3 Climate

The project road has a tropical wet and dry climate, designated under the Koppen climate classification. In winter the minimum temperatures are between 18^0 C and 20^0 C. Usually, summer lasts from March to June, with the advent of the rainy season in July, followed by winter which lasts until the end of February. The project road experiences heavy rainfall in November during the northeast monsoon season. The highest rainfall in 24 hours was on 16 November 2015, during the 2015 South India floods, with 219 millimeters or 8.62 inches. Cyclones commonly hit the Coast of Nellore and bring heavy rain.

2.4 Terrain

This section of National Highway traverses through plain / rolling terrain.

2.5 Abutting Land Use

The land use along the Project Road is predominantly agriculture or barren with intermittent built-up area.

2.6 Right of Way

The width of the existing Right of Way (RoW) throughout the project stretch is 60.0 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services located along the project road were shifted to the PROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, etc.

2.8 Development as per Schedule-B

The Project Road from Chittoor (km. 0+000) to Mallavaram (km. 61+128) has been developed as a six-lane divided carriageway with median width of 4.0 m and 1.5 m, service road and other arrangements. The Project Road passes through rural as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D;
b) operation and maintenance of the Project in accordance with the provisions of the agreement; and
c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all the obligations of the Concessionaire under this Agreement.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km.	61.128	
2	Construction of Service Road	km.	118.916	Both Side (LHS + RHS)
3	Major Bridge	Nos.	06	
4	Minor Bridge	Nos.	23	
5	Vehicular Underpass (VUP)	Nos.	11	
6	Light Vehicular Underpass (LVUP)	Nos.	04	
7	RUB	Nos.	01	
8	Pipe Culvert	Nos.	11	
9	Box Culvert	Nos.	104	

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 General

The Project Road is six lane divided carriageway and generally has paved carriageway of 12.5 m with earthen shoulder of 2.00 m on either side. The Project Road has a median width of 4.0 m in rural section and 1.5 m in urban section.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza is rigid pavement.

3.2 Pavement Condition Survey

Pavement condition survey was carried out from **3rd March 2026 to 5th March 2026**. through visual inspection for the entire project length. From the visual inspection, the pavement condition of the Project Road for the entire length is generally found to be Good.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (MCW)

km. 0+100 (LHS)

km. 2+700 (LHS)

km. 10+700 (LHS)

km. 20+100 (LHS)

km. 34+300 (LHS)

km. 60+700 (LHS)

km. 56+000 (LHS)

km. 30+000 (LHS)

km. 44+300 (LHS)

km. 5+500 (LHS)

Toll Plaza - Rigid pavement

km. 26+800 (LHS)

km. 1+200 (RHS)

km. 6+600 (RHS)

km. 20+000 (RHS)

km. 15+700 (RHS)

km. 28+900 (RHS)

km. 32+000 (RHS)

km. 36+700 (RHS)

km. 42+000 (RHS)

km. 48+600 (RHS)

km. 55+500 (RHS)

km. 60+500 (RHS)

km. 600+750 (RHS)

3.3 Bypass / Realignment

There are two bypasses on Project Road. The detail of the bypass is tabulated below:

Bypass:

Sr. No.	Name of Bypass	Design Chainage (km)		Length (km)	Lane Configuration
		From	To		
1	Kanipakam	3+565	20+800	17.235	6-Lane
2	Kashipentla	40+700	47+700	7.000	6-Lane

Figure 3-2 Photographs of Bypass

Kanipakam Bypass at km. 20+000

Kashipentla Bypass at km. 42+000

3.4 Service Road / Slip Road

The service road with a width of 7.0 is constructed in built-up areas and adjoining underpass locations. The Project Road has total service road length of 118.916 kms on both sides. The photographs taken during the site visit are presented below.

Figure 3-3 Photographs of Service Road

Service Road at km. 9+350 (LHS)

Service Road at km. 13+800 (LHS)

Service Road at km. 42+000 (LHS)

Service Road at km. 60+730 (RHS)

Service Road at km. 46+000 (RHS)

Service Road at km. 4+000 (RHS)

3.5 At-Grade Intersection

There are 44 nos. of At-Grade Intersections along Project Road. The photographs taken during site visit is presented as below:

Figure 3-4 Photographs of At-Grade Intersections

Major Junction at km. 19+140 (LHS)

Major Junction at km. 19+140 (RHS)

Major Junction at km. 0+000

Major Junction at km. 56+128 (LHS)

Figure 3-5 Photographs of Minor Junctions

Minor Junction at km. 32+815 (RHS)

Minor Junction at km. 9+600 (RHS)

Minor Junction at km. 27+630 (LHS)

Minor Junction at km. 30+409 (LHS)

Minor Junction at km. 46+350 (RHS)

Minor Junction at km. 4+680 (RHS)

3.6 Condition Survey of Structures

The inventory of structures including major bridges, minor bridges, RUB, underpasses and culverts is presented in table as below:

Table 3-1 Details of Summary for Structures

Type of Structure	Total Number of Structures
Major Structures:	
Road Under Bridge (RUB)	01
Grade Separator	-
Major Bridges (MJB)	06
Minor Bridges (MNB)	23
Vehicular Underpass (VUP)	11
Light Vehicular Underpass (LVUP)	04
Culverts:	
Pipe Culverts	11
Slab Culverts	-
Box Culverts	104
Total	**160**

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below.

Table 3-2 Condition Survey of Major Structure

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
1	04+215	Minor Bridge	LHS-MCW	3 x 5	1 x 14.5	RCC	RCC	Raft	NA	New Construction - Box type - Structure is in sound condition. On LHS and RHS some vegetation observed in water way. RCC return wall on both sides.
			LHS - SR	3 x 5	1 x 11	RCC	RCC	Raft		
			RHS-MCW	3 x 5	1 x 14.5	RCC	RCC	Raft		
			RHS - SR	3 x 5	1 x 11	RCC	RCC	Raft		
2	04+683	LVUP	Both	1 x 12	2 x 14.5	RCC	RCC	Open	NA	Box Type Structure is in sound condition. Electrification completed.
3	06+600	Minor Bridge	LHS- MCW	2 x 3.5	1 x 14.5	RCC	RCC	Raft	NA	New Construction - Skew Box type - Structure is in sound condition. On RHS A1 side slope protection is damaged and on LHS slope protection is not done.
			LHS - SR	2 x 3.5	1 x 11	RCC	RCC	Raft		
			RHS- MCW	2 x 3.5	1 x 14.5	RCC	RCC	Raft		
			RHS - SR	2 x 3.5	1 x 11	RCC	RCC	Raft		
4	07+514	VUP	Both	1 x 25	2 x 14.5	RCC	RCC	Open	POT/PTFE	PSC Girder 5 no. of each span. The structure is in sound condition. Electrification completed.
5	08+300	Major Bridge (Stilt)	LHS	12 x 25	1 x 16	RCC	RCC	Open	POT/PTFE	New Construction - PSC Girder 5 no. for each span. The structure is in sound condition. Expansion joints, crash barrier and slope protection is in good condition. Drainage spouts are cleaned. Footpath side RCC Pipe Railing and all other side RCC Crash Barrier.
			RHS	12 x 25	1 x 16	RCC	RCC	Open		

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
6	08+800	Major Bridge	LHS-MCW	8 x 25	1 x 14	RCC	RCC	Open	POT/PTFE	New Construction - PSC Girder 5 no. for each span for Main Carriageway and PSC Girder 4 no. for each span for Service Road. The structure is in sound condition. Expansion joints, crash barrier and slope protection are in good condition. Drainage spouts are cleaned. Footpath side RCC Pipe Railing and all other side RCC Crash Barrier.
			LHS - SR	8 x 25	1 x 11	RCC	RCC	Open		
			RHS-MCW	8 x 25	1 x 14	RCC	RCC	Open		
			RHS - SR	8 x 25	1 x 11	RCC	RCC	Open		
7	09+600	LVUP	Both	1x12	2x14.5	RCC	RCC	Open	NA	Box Type - Structure is in sound condition. Electrification completed.
8	10+250	Major Bridge (Stilt)	LHS	20 x 25	1 x 16	RCC	RCC	Open	POT/PTFE	New Construction - PSC Girder 5 no. for each span. The structure is in sound condition. Expansion joints, crash barrier and slope protection are in good condition. Drainage spouts are cleaned. Footpath side RCC Pipe Railing and all other side RCC Crash Barrier.
			RHS	20 x 25	1 x 16	RCC	RCC	Open		
9	11+580	VUP	Both	1x12	2x14.5	RCC	RCC	Open	NA	Box Type - Structure is in sound condition. Electrification completed.
10	13+263	VUP	Both	1x12	2x14.5	RCC	RCC	Open	NA	Box Type - Structure is in sound condition. Electrification completed.

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
11	14+578	Minor Bridge	LHS - MCW	2 x 6	1 x 14.5	RCC	RCC	Raft	NA	New Construction - Box type - Structure is in sound condition. Slope protection is not done. Drainage spouts Cleaning required. Footpath side RCC Pipe Railing and all other side RCC Crash Barrier. A2 side shoulder and slope protection erosion take place on RHS.
			LHS - SR	2 x 6	1 x 11	RCC	RCC	Raft		
			RHS - MCW	2 x 6	1 x 14.5	RCC	RCC	Raft		
			RHS - SR	2 x 6	1 x 11	RCC	RCC	Raft		
12	17+100	LVUP	Both	1x12	2x14.5	RCC	RCC	Open	NA	Box Type - Structure is in sound condition. Electrification completed.
13	17+955	Minor Bridge	LHS - MCW	2 x 24.475	1 x 14.5	RCC	RCC	Open	POT/PTFE	New Construction (Staggered) - PSC Girder 4 no. for each span. The structure is in sound condition. Expansion joints, crash barrier and slope protection is in good condition. Drainage spouts are cleaned. Footpath side RCC Pipe Railing and all other side RCC Crash Barrier. On RHS A1 side slope protection is not done.
			LHS - SR	2 x 24.475	1 x 11	RCC	RCC	Open		
			RHS - MCW	2 x 24.475	1 x 14.5	RCC	RCC	Open		
			RHS - SR	2 x 24.475	1 x 11	RCC	RCC	Open		
14	18+855	Minor Bridge	LHS - MCW	2 x 3.75	1 x 14.5	RCC	RCC	Raft	NA	New Construction - Box type - Structure is in sound condition. Slope protection is in good condition. Vegetation observed in water way. A2 side RCC
			LHS - SR	2 x 3.75	1 x 11	RCC	RCC	Raft		
			RHS - MCW	2 x 3.75	1 x 14.5	RCC	RCC	Raft		
			RHS - SR	2 x 3.75	1 x 11	RCC	RCC	Raft		

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
										drain Provided on both sides. On LHS and RHS A1 side slope protection is not done.
15	19+140	VUP (Skew)	Both	2x30	2x14.5	RCC	RCC	Open	POT/PTFE	PSC Girder 7no. for each span. The structure is in sound condition. Electrification completed. Expansion joint, crash barrier is in good condition. Drainage spouts are cleaned.
16	20+200	Major Bridge	LHS-MCW	3 x 26	1 x 14	RCC	RCC	Open	POT/PTFE	New Construction - PSC Girder 5 no. for each span for Main Carriageway and PSC Girder 4 no. for each span for Service Road. The structure is in sound condition. Expansion joints, crash barriers and slope protection are in good condition. On RHS Drainage spouts are cleaned. Footpath side RCC Pipe Railing and all other side RCC Crash Barrier.
			LHS - SR	3 x 26	1 x 11	RCC	RCC	Open		
			RHS-MCW	3 x 26	1 x 14	RCC	RCC	Open		
			RHS - SR	3 x 26	1 x 11	RCC	RCC	Open		
17	24+600	RUB	LHS - SR	RUB	1 x 9.8	12.5	9.8	RCC	NA	Box Type - New Structure is in sound condition. Electrification completed
			LHS-MCW	RUB	1 x 9.8	12.5	9.8	RCC		Box Type - New Structure is in sound condition. Electrification completed
			LHS-MCW	RUB	1 x 7.5	12	7.5	RCC		Retained - Girder 4 no. for

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
			RHS - MCW	RUB	1 x 7.5	12	7.5	RCC		each span. Structure is in sound condition. Both side slope protection is in good condition on both ends.
			RHS - MCW	RUB	1 x 9.8	12.5	9.8	RCC		Box Type - New Structure is in sound condition. Electrification completed
			RHS - SR	RUB	1 x 9.8	12.5	9.8	RCC		Box Type - New Structure is in sound condition. Electrification completed
18	25+460	Minor Bridge	LHS-MCW	2 x 4.5	1 x 14.5	RCC	RCC	Raft	NA	New Construction - Box type - Structure is in sound condition. Footpath, all side RCC Crash Barrier. Vegetation is observed in water way. Slope protection is not done.
			LHS - SR	2 x 4.5	1 x 11	RCC	RCC	Raft		
			RHS - MCW	2 x 4.5	1 x 14.5	RCC	RCC	Raft		
			RHS - SR	2 x 4.5	1 x 11	RCC	RCC	Raft		
19	25+706	VUP	Both	1x25	2x14.5	RCC	RCC	Open	NA	PSC Girder 5 no. for each span. The structure is in sound condition. Electrification completed. Expansion joint, RCC Crash barrier is in good condition. Drainage spouts cleaning required.
20	27+560	Minor Bridge	LHS-MCW	2 x 4.5	1 x 14.5	RCC	RCC	Raft	NA	New Construction Box type - Structure is in sound condition. Slope protection is not done. RCC Crash barrier is in good condition. On RHS vegetation observed in waterway.
			LHS - SR	2 x 4.5	1 x 11	RCC	RCC	Raft		
			RHS - MCW	2 x 4.5	1 x 14.5	RCC	RCC	Raft		
			RHS - SR	2 x 4.5	1 x 11	RCC	RCC	Raft		
21	27+630	VUP	Both	1x12	2x14.5	RCC	RCC	Open	NA	Box Type - Structure is in sound condition.

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
										Electrification completed
22	28+090	Minor Bridge	RHS - MCW	2 x 12.7	1 x 14	RCC	RCC	Open	NA	New Construction- RCC Deck Slab. The structure is in sound condition. RCC Crash barrier is in good condition. Drainage spouts are cleaned. Soil Material is dumped on Service Road footpath.
			RHS - SR	2 x 12.7	1 x 11	RCC	RCC	Open		
			LHS-MCW	2 x 12.7	1 x 11.5	RCC	RCC	Open		Retained Bridge - RCC Deck Slab. The structure is in sound condition. RCC Crash barrier is in good. Drainage spouts are cleaned.
			LHS - SR	2 x 12.7	1 x 11	RCC	RCC	Open		New Construction- RCC Deck Slab. The structure is in sound condition. RCC Crash barrier is in good. Drainage spouts are cleaned.
23	30+409	VUP	Both	1x12	2x14.5	RCC	RCC	Open	NA	Box Type - Structure is in sound condition. Electrification completed
24	30+900	Minor Bridge	LHS-MCW	4 x 2	1 x 14	RCC	RCC	Raft	NA	New Construction - Box type - Structure is in sound condition.
			LHS - SR	4 x 2	1 x 11	RCC	RCC	Raft		New Construction - Box type - Structure is in sound condition. RCC Crash barrier is in good.
			RHS - MCW	4 x 2	1 x 12	RCC	RCC	Raft		Retained - Box type - Structure is in sound

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
										condition.
			RHS - SR	4 x 2	1 x 11	RCC	RCC	Raft		New Construction - Box type - Structure is in sound condition. RCC Crash barrier is in good.
25	32+815	Minor Bridge	LHS-MCW	2 x 11.591	1 x 14.5	RCC	RCC	Open	NA	New Construction - RCC Deck Slab - Structure is in sound condition. Footpath, all side RCC Crash Barrier. Vegetation is observed in water way. Slope protection damaged RHS. Soil debris is observed in span P1-A2.
			LHS - SR	2 x 11.591	1 x 11	RCC	RCC	Open		
			RHS- MCW	2 x 11.591	1 x 14.5	RCC	RCC	Open		
			RHS - SR	2 x 11.591	1 x 11	RCC	RCC	Open		
26	33+208	VUP	Both	2x15	2x14.5	RCC	RCC	Open	NA	Box Type - Structure is in sound condition. Electrification completed
27	36+200	Minor Bridge	LHS-MCW	3 x 19	1 x 14.5	RCC	RCC	Open	POT/PTFE	New Construction (Staggered)- PSC Girder 5 no. for each span for Main Carriageway and PSC Girder 4 no. for each span for Service Road. The structure is in sound condition. Expansion joints, crash barrier and slope protection is in good condition. Drainage spouts are cleaned. Footpath side RCC Pipe Railing and all other side RCC Crash Barrier.
			LHS - SR	3 x 19	1 x 11	RCC	RCC	Open		
			RHS - MCW	3 x 19	1 x 14.5	RCC	RCC	Open		
			RHS - SR	3 x 19	1 x 11	RCC	RCC	Open		
28	39+645	Minor Bridge	RHS - MCW	2 x 3	1 x 14	RCC	RCC	Raft	NA	New Construction - Box type - Structure is in sound condition. A2 side
			RHS - SR	2 x 3	1 x 11	RCC	RCC	Raft		

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
										approaches work balance due to LA issue. Slope protection not done
			LHS - MCW	2 x 3	1 x 12	RCC	RCC	Raft		Retained-Box type - Structure is in sound condition.
			LHS - SR	2 x 3	1 x 11	RCC	RCC	Raft		New Construction - Box type - Structure is in sound condition. The footpath and RCC Crash Barrier are in good condition. Both end approach work balance due to LA.
29	40+108	VUP	Both	1x12	2x14.5	RCC	RCC	Open	NA	Slab Completed on LHS side. On RHS A2 Wall is completed. A1 side balance due to LA issue.
30	41+725	Minor Bridge	LHS - MCW	2 x 21.95	1 x 14	RCC	RCC	Open	POT/PTFE	New Construction - PSC Girder 4 no. for each span. The structure is in sound condition. Expansion joints, crash barrier and slope protection are in good condition. Drainage spouts are cleaned. Footpath side RCC Pipe Railing and all other side RCC Crash Barrier.
			LHS - SR	2 x 21.95	1 x 11	RCC	RCC	Open		
			RHS - MCW	2 x 21.95	1 x 14	RCC	RCC	Open		
			RHS - SR	2 x 21.95	1 x 11	RCC	RCC	Open		
31	43+650	Minor Bridge	LHS-MCW	2 x 12.7	1 x 14	RCC	RCC	Open	NA	New Construction RCC Deck Slab- Structure is in sound condition. The crash barrier and slope protection is in good condition. At Slab joint cracks are observed.
			LHS - SR	2 x 12.7	1 x 11	RCC	RCC	Open		
			RHS - MCW	2 x 12.7	1 x 14	RCC	RCC	Open		
			RHS - SR	2 x 12.7	1 x 11	RCC	RCC	Open		

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
										Footpath, all side RCC Crash Barrier. Drainage spouts are choked. On RHS Service Road A2 side slope protection damaged.
32	44+327	Minor Bridge	LHS-MCW	1 x 9.816	1 x 14	RCC	RCC	Open	NA	New Construction - Box Type Structure is in sound condition. On LHS Service Road A1 side Slope protection is not done and Approach DBM and BC balance due to Landowner. Drainage spout cleaning required. Footpath, all side RCC Crash Barrier. At slab joint cracks are observed on RHS of Service Road. On LHS vegetation observed in waterway.
			LHS - SR	1 x 9.816	1 x 11	RCC	RCC	Open		
			RHS-MCW	1 x 9.816	1 x 14	RCC	RCC	Open		
			RHS - SR	1 x 9.816	1 x 11	RCC	RCC	Open		
33	44+736	VUP	Both	1x12	2x14.5	RCC	RCC	Open	NA	Box Type - Structure is in sound condition. Electrification completed
34	45+675	Minor Bridge	LHS-MCW	2 x 3.5	1 x 14	RCC	RCC	Raft	NA	New Construction - Box Type. The structure is in sound condition. RCC Crash barrier and slope protection is in good condition. portions. On LHS and RHS vegetation observed in waterway and median portion also.
			LHS - SR	2 x 3.5	1 x 11	RCC	RCC	Raft		
			RHS - MCW	2 x 3.5	1 x 14	RCC	RCC	Raft		
			RHS - SR	2 x 3.5	1 x 11	RCC	RCC	Raft		
35	46+375	Minor Bridge	LHS-MCW	1 x 26.95	1 x 14	RCC	RCC	Open	POT/PTFE	New Construction (Staggered) - PSC Girder 5 no. for each span. The
			LHS - SR	1 x 26.95	1 x 11	RCC	RCC	Open		
			RHS -	1 x 26.95	1 x 14	RCC	RCC	Open		

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
			MCW							structure is in sound condition. Expansion joints, crash barrier and slope protection are in good condition. Drainage spouts are choked. Footpath side RCC Pipe Railing and all other side RCC Crash Barrier. On RHS A1 side slope protection not done.
			RHS - SR	1 x 26.95	1 x 11	RCC	RCC	Open		
36	46+535	Minor Bridge	LHS-MCW	2 x 26.475	1 x 14	RCC	RCC	Open	POT/PTFE	New Construction staggered type (COS) - PSC Girder 4 no. for each span. The structure is in sound condition. Expansion joints, crash barrier and slope protection are in good condition. Drainage spouts are cleaned. Footpath side RCC Pipe Railing and all other side RCC Crash Barrier. On RHS A1 side slope protection not done.
			LHS - SR	2 x 26.475	1 x 11	RCC	RCC	Open		
			RHS - MCW	2 x 26.475	1 x 14	RCC	RCC	Open		
			RHS - SR	2 x 26.475	1 x 11	RCC	RCC	Open		
37	47+495 (Skew)	Minor Bridge	LHS-MCW	2 x 5	1 x 14	RCC	RCC	Raft	NA	New Construction - Box Type Skew Structure is in sound condition. All side RCC Crash Barrier. RHS A1 side Slop protection damage.
			LHS - SR	2 x 5	1 x 11	RCC	RCC	Raft		
			RHS-MCW	2 x 5	1 x 14	RCC	RCC	Raft		
			RHS - SR	2 x 5	1 x 11	RCC	RCC	Raft		
38	48+555 (Skew)	Minor Bridge	LHS-MCW	2 x 5.5	1 x 14	RCC	RCC	Raft	NA	New Construction - Box Type Skew Structure is in sound condition. Slope protection. Required on LHS. Drainage spouts are
			LHS - SR	2 x 5.5	1 x 11	RCC	RCC	Raft		
			RHS - MCW	2 x 5.5	1 x 14	RCC	RCC	Raft		
			RHS - SR	2 x 5.5	1 x 11	RCC	RCC	Raft		

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
										cleaned. All sides RCC Crash Barrier. On LHS slope protection not done. Footpath cleaning is required.
39	49+145	Major Bridge	RHS - MCW	3 x 21.6	1 x 14	RCC	RCC	Pile	POT/PTFE	New Construction - RCC 4 no. of Girder for each span. The structure is in sound condition. Expansion joint, crash barrier and slope protection are good. Drainage spouts are cleaned. Both sides of the RCC Crash Barrier.
			RHS - SR	3 x 21.6	1 x 11	RCC	RCC	Pile		New Construction - RCC 4 no. of Girder for each span. Structure is in sound condition. Expansion joint, crash barrier is good. Footpath side RCC Pipe Railing and Inner side RCC Crash Barrier.
			LHS - MCW	3 x 21.6	1 x 10.9	RCC	RCC	Pile		Retained Bridge-RCC 4 no. of Girder for each span. Structure is in sound condition. Expansion joints, crash barrier and slope protection are good. Drainage spout cleaning required. On both sides, RCC Crash Barrier.
			LHS - MCW	3 x 21.6	1 x 10.5	RCC	RCC	Pile		New Construction - RCC 4 no. of Girder for each span. Structure is in sound

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
										condition. Expansion joints, crash barrier and slope protection are good. Drainage spouts are cleaned. Both sides of the RCC Crash Barrier.
			LHS - SR	3 x 21.6	1 x 11	RCC	RCC	Pile		New Construction - RCC 4 no. of Girder for each span. Structure is in sound condition. Expansion joints, crash barrier and slope protection are good. Footpath side RCC Pipe Railing and Inner side RCC Crash Barrier. Drainage spouts are cleaned.
40	50+520	Minor Bridge	LHS-MCW	1 x 11	1 x 14	RCC	RCC	Open	NA	Re-construction - Skew-RCC deck slab. The structure is in sound condition. Crash barriers and slope protection are good. All sides of the RCC Crash Barrier. At slab joint cracks are observed on RHS of Service Road.
			LHS - SR	1 x 11	1 x 11	RCC	RCC	Open		
			RHS - MCW	1 x 11	1 x 14	RCC	RCC	Open		
			RHS - SR	1 x 11	1 x 11	RCC	RCC	Open		
41	51+155	Minor Bridge	LHS-MCW	3 x 2.5	1 x 14	RCC	RCC	Raft	NA	New Construction - Box type - Structure is in sound condition. Both side RCC Crash Barrier
			LHS - SR	3 x 2.5	1 x 11	RCC	RCC	Raft		New Construction - Box type - Structure is in sound condition. Footpath side RCC Crash Barrier and Metal Beam Crash Barrier

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
										balance. Slope protection not done.
			RHS - MCW	3 x 2.5	1 x 11	RCC	RCC	Raft		Retained - Box type - Structure is in sound condition. Vegetation needs to be cleaned. Both side RCC Crash Barrier
			RHS - SR	3 x 2.5	1 x 11	RCC	RCC	Raft		New Construction - Box type - Structure is in sound condition. Vegetation needs to be cleaned. On both side RCC Crash Barrier. Slope protection is not done.
42	52+185	Minor Bridge	LHS-MCW	4 x 2.5	1 x 14	RCC	RCC	Raft	NA	New Construction - Box type - Structure is in sound condition. Vegetation needs to be cleaned. Slope protection is not done. Footpath is filled with debris, cleaning required.
			LHS - SR	4 x 2.5	1 x 11	RCC	RCC	Raft		
			RHS - MCW	4 x 2.5	1 x 11	RCC	RCC	Raft		Retained - Box type - Structure is in sound condition. Vegetation needs to be cleaned.
			RHS - SR	4 x 2.5	1 x 11	RCC	RCC	Raft		New Construction - Box type - Structure is in sound condition. Vegetation needs to be cleaned. Slope protection is not done.
43	56+128	VUP	Both	1x25	2x14.5	RCC	RCC	Open	POT/PTFE	PSC Girder 5 no. for each span. The structure is in sound condition. Expansion Joints are in good condition. Both sides RCC

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
										Crash Barrier. Electrification completed. Drainage spouts are cleaned.
44	59+542	LVUP	Both	1x12	2x14.5	RCC	RCC	Open	NA	Box Type - Structure is in sound condition. Both sides of the RCC Crash Barrier. Electrification completed.
45	60+400	Major Bridge	LHS - MCW	8 x 25	1 x 14	RCC	RCC	Open	POT/PTFE	New Construction PSC Girder 5 no. for each span. - Structure is in sound condition. Expansion joint, crash barrier and slope protection are good. Drainage spouts are cleaned. Both side RCC Crash Barrier.
			LHS - SR	8 x 25	1 x 11	RCC	RCC	Open		New Construction PSC Girder 4 no. for each span. - Structure is in sound condition. Expansion joint, crash barrier and slope protection are good. Drainage spouts are cleaned. Footpath side RCC Pipe Railing and Inner side RCC Crash Barrier.
			RHS - MCW	8 x 25	1 x 11	RCC	RCC	Open		Retained Bridge - PSC Girder 4 no. for each span. Structure is in sound condition. Expansion joint and Crash Barrier are good. Drainage spouts are cleaned. Both side RCC

Sr. No.	Chainage (km)	Type of Structure	Side	Span Arrangement (m)	Width (m)	Type of Sub-structure	Type of Super-structure	Type of Foundation	Type of Bearings	Remarks
										Crash Barrier.
			RHS - MCW	8 x 25	1 x 10.5	RCC	RCC	Open		New Construction PSC Girder 4 no. for each span. - Structure is in sound condition. Expansion joint, crash barrier and slope protection are good. Drainage spouts are cleaned. Both side RCC Crash Barrier.
			RHS - SR	8 x 25	1 x 11	RCC	RCC	Open		New Construction PSC Girder 4 no. for each span. - Structure is in sound condition. Expansion joint, crash barrier and slope protection are good. Drainage spouts are cleaned. Footpath side RCC Pipe Railing and Inner side RCC Crash Barrier.

Figure 3-6 Photographs of Road Under Bridge (RUB)

View of Existing RUB at km. 24+600

View of New RUB at km. 24+600 (LHS)

View of New RUB at km. 24+600 (RHS)

View of underside of the Slab of New RUB at km. 24+600

Figure 3-7 Photographs of Major Bridges

View of Major Bridge at km. 8+300 (LHS)

Major Bridge Girder Arrangement at km. 8+300

View Major Bridge at km. 8+800 (LHS)

Major Bridge Girder and Abutment at km. 8+800

View of Major Bridge at km. 10+250 (LHS)

View of Major Bridge at km. 10+250 (RHS)

Major Bridge Expansion Joint at km. 10+250

View of Major Bridge at km. 20+200 (LHS)

View of Major Bridge at km. 20+200 (RHS)

View of Pier and Girder of Major Bridge at km. 20+200

View of Major Bridge at km. 49+145 (LHS)

View of Pier and Girder of Major Bridge at km. 49+145

Major Bridge Expansion Joint at km. 49+145 (LHS Deck MCW)

View of Major Bridge at km. 60+400 (RHS)

View of Major Bridge at km. 60+400 (LHS)

View of Pier and Girder of Major Bridge at km. 60+400

Figure 3-8 Photographs of Minor Bridges

Minor Bridge at km. 4+215

Minor Bridge at km. 6+600

Minor Bridge at km. 14+578

Minor Bridge at km. 17+955

Minor Bridge at km. 18+855

Minor Bridge at km. 25+460

Minor Bridge at km. 27+560

Minor Bridge at km. 28+090

Minor Bridge at km. 30+900

Minor Bridge at km. 32+815

Minor Bridge at km. 36+200

Minor Bridge at km. 39+645

Minor Bridge at km. 41+725

Minor Bridge at km. 43+650

Minor Bridge at km. 44+327

Minor Bridge at km. 45+675

Minor Bridge at km. 46+375

Minor Bridge at km. 46+535

Minor Bridge at km. 47+495

Minor Bridge at km. 48+555

Minor Bridge at km. 50+520

Minor Bridge at km. 51+155

Minor Bridge at km. 52+185

Figure 3-9 Photographs of Underpasses

LVUP at km. 4+683 (LHS)

Slab of LVUP at km. 4+683 (RHS)

VUP at km. 7+514 (LHS)

LUVP at km. 9+600 (LHS)

RE Wall of VUP at Km. 9+600 RHS

VUP at km. 11+580 (LHS)

View of Slab and Walls of VUP at Km. 11+580

VUP at km. 13+263 (LHS)

View of Slab and Walls of VUP at Km. 13+263

VUP at km. 13+263 (LHS)

Girder arrangement of VUP at km. 19+140

LVUP at km. 17+100 (LHS)

RE Wall of LVUP at km. 17+100

VUP at km. 25+706 (LHS)

VUP at km. 25+706 (RHS)

VUP at km. 27+630 (LHS)

VUP at km. 27+630 (View of Slab)

VUP at km. 30+409 (LHS)

RE Wall of VUP at km. 30+409

VUP at km. 33+208 (LHS)

VUP at km. 33+208 (RHS)

VUP at km. 40+108 (Partially Completed)

VUP at km. 44+736 (RHS)

VUP at km. 44+736 (Slab)

VUP at km. 44+736 (RE Wall)

VUP at km. 56+128 (LHS)

RE wall of VUP at Km. 56+128

VUP at km. 56+128 (View of Girder and Abutment)

LVUP at km. 59+542 (RHS)

LVUP at km. 59+542 (LHS)

3.7 Condition Survey of Culverts

The cross-drainage structure includes hume pipe culverts and box culverts at various locations. There are 11 No. of pipe culverts, 104 No. of box culverts along the Project Road. The height of culvert varies from 1.0 m to 4.0 m from bed level. During the condition survey of structures, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to six lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts is satisfactory. The RCC parapet, crash barrier or RCC railing has been provided at culvert locations which is maintained properly.

In most of culverts, the waterway is clear. However, near to urban area and some location is found blocked due to debris, drainage water or bushes, tree growth, which will be removed by the Concessionaire. The cement concrete pitching or stone pitching has been provided for slope protection.

The culverts are maintained by the Concessionaire during O&M period. However, in case of some culverts, cement concrete pitching has damaged which requires to be addressed under routine repair work by the Concessionaire.

Figure 3-10 Photographs of Box Culverts

Box Culvert at km. 0+265

Box Culvert at km. 2+711

Box Culvert at km. 3+070

Box Culvert at km. 3+220

Box Culvert at km. 9+348

Box Culvert at km. 10+700

Box Culvert at km. 13+820

Box Culvert at km. 15+300

Box Culvert at km. 15+650

Box Culvert at km. 17+050

Box Culvert at km. 19+854

Box Culvert at km. 22+465

Box Culvert at km. 30+420

Box Culvert at km. 33+918

Box Culvert at km. 35+760

Box Culvert at km. 40+887

Box Culvert at km. 45+197

Box Culvert at km. 50+074

Box Culvert at km. 54+177

Box Culvert at km. 57+030

Box Culvert at km. 60+128

Box Culvert at km. 60+730

Box Culvert at km. 26+311

Box Culvert at km. 18+387

Figure 3-11 Photographs of Pipe Culverts

Pipe Culvert at km. 23+952

Pipe Culvert at km. 26+120

Pipe Culvert at km. 26+195

Pipe Culvert at km. 30+258

Pipe Culvert at km. 36+720

Pipe Culvert at km. 52+265

Pipe Culvert at km. 60+020

3.8 Drainage

RCC cover drains are constructed at built-up areas and at locations where service roads are provided. RCC drain and PCC V/U type lined drain is constructed in between main carriageway and service road. Longitudinal and transverse drain is provided at the median. Site inspections revealed several locations where drains are clogged with debris and require cleaning. The photographs taken during site visit is presented as below.

Figure 3-12 Photographs of Drain

RCC Covered Drain at km. 51+500

Open Lined Drain at km. 6+600

RCC Covered Drain at km. 4+200

U-Shape Drain at km. 2+700

Median Chute Drain at km. 32+000

U-Shape Drain at km. 60+500

3.9 Slope Protection

Slope protection is found on Project Road at required locations. A few of the slope protection is damaged which will be rectified by the Concessionaire. The photographs taken during site visit is presented as below.

Figure 3-13 Photographs of Slope Protection

km. 48+750

km. 10+250

km. 49+145

km. 48+555

3.10 Road Furniture

The Concessionaire has provided road furniture along Project Road as per the standards and specifications mentioned in Schedule-C.

Pavement Marking

Pavement marking for the Project Road is done as per the design standards. Some of the photographs of road marking are presented below.

Figure 3-14 Photographs of Pavement Marking

Road Marking at km. 32+600

Lane Marking at km. 48+200 (RHS)

Rumble Strip Marking at 48+600 RHS

Pedestrian crossing marking at km. 9+600 (RHS - Slip Lane)

Road Studs

Cat's eye / road studs for the Project Road are done as per the design standards. Cat's eye has been fixed at junction and zebra crossings. The road studs are found in good condition. Some of the photographs of cat's eye / road studs are presented below.

Figure 3-15 Photographs of Road Studs

km. 54+627

km. 52+300

Traffic Signage / Median Kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, and kerb mounted signs etc. along the entire Project Road. Kilometre stones, vertical post of sign boards, chevron boards are properly placed. Some of the photographs of sign boards are presented below.

Figure 3-16 Photographs of Traffic Signages

Cantilever Sign Board at km. 57+700

Overhead Gantry Sign Board at km. 8+300

Chevron Sign Board at km. 56+100

Kilometer Stone at km. 35+000

Speed Limit Sign Board at km. 56+100

Pedestrian Crossing Sign Board at Km. 26+800

Highway Lighting

Highway lighting is provided at underpasses, toll plaza, RUB, and built-up locations. High mast lighting is provided at toll plaza and underpass locations. Highway lighting is also provided at approaches of underpasses. Some of the photographs of highway lighting are presented below.

Figure 3-17 Photographs of Street Light

Street Lighting at km. 53+000

High Mast light at Toll Plaza

High Mast light at VUP

Street Lighting at built-up location

Crash Barriers

Metal beam crash barriers are provided at bridge approaches, built-up locations, locations of high embankment and sharp curves. RCC crash barrier is provided on the approaches of underpasses and at structure locations. Some of the photographs of crash barriers are presented in below table.

Figure 3-18 Photographs of MBCB / Crash Barrier

RCC Crash Barrier at km. 8+300 (MJB)

MBCB at km. 53+300

Delineators

The traffic delineators are provided on the Project Road. Few of the photographs captured during site visit are provided below.

Figure 3-19 Photographs of Traffic Delineators

Traffic Delineator at km. 30+000

Traffic Delineator at km. 56+000

Traffic Delineator at km. 46+800

LED Traffic Blinkers

LED traffic blinkers are provided on the entire Project Road near pedestrian crossings, crossroads and median openings. Few photographs of LED traffic blinker captured during site visit are presented below.

Solar Blinker at km. 60+100

Solar Blinker at km.53+600

Solar Blinker at km.40+700

Road Land Boundary

Road land boundary pillars are not found / available on Project Road.

Emergency Call Box (ECB)

Emergency call boxes are provided on the Project Road as per the schedules of CA. Few photographs are provided below:

ECB at km. 20+000

ECB at km. 56+000

ECB at km. 46+000

3.11 Avenue Plantation and Median Plantation

Avenue plantation is not provided due to ROW constraint. However, median plantation are provided along the project length as per IRC specification except at built-up locations. The photographs taken during site visit is presented as below.

Figure 3-20 Photographs of Median Plantation

Median Plantation at km. 55+000

Median Plantation at km. 44+300

3.12 Toll Plaza

As per the Concession Agreement, there is one no. of toll plaza at km. 37+350 (Gadanki) with the following infrastructure.

Figure 3-21 Photographs of Toll Plaza

Toll Plaza Near Gadanki at km. 37+350

Toll Plaza Near Gadanki at km. 37+350

Toll Booth at Toll Plaza

WIM Bridge at Toll Lane

3.13 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.13.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

3.13.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data at km. 37+350 is in tunnel.

Lane Controller in Booth at TP

3.13.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVC Height Sensor

3.13.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition. The Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. Torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at TP

3.13.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

User Fare Display (UFD)

3.13.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on the island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

AVC Camera

3.13.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

3.13.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane “Open” and “Close” sign consists of a pair of “GREEN” (arrow) and “RED” (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at TP

3.13.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and types of ticket.

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras is provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.14 Plaza Equipment

3.14.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio Wi-Fi module. Firewall with Sophos antivirus is provided.

Server Room

3.14.2 55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.14.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.

3.15 Truck Lay-bye

The Concessionaire has provided truck lay-bye at the following locations.

Table 3-3 Details of Truck Lay-bye

Sr. No.	Location (km)	Side
1	5+550	LHS
2	49+830	LHS
3	5+550	RHS
4	51+375	RHS

Figure 3-22 Photographs of Truck Lay-bye

Truck Lay-Bye at km. 49+830

Truck Lay-Bye at km. 5+550

3.16 Administrative, Operation and Maintenance Base Camp

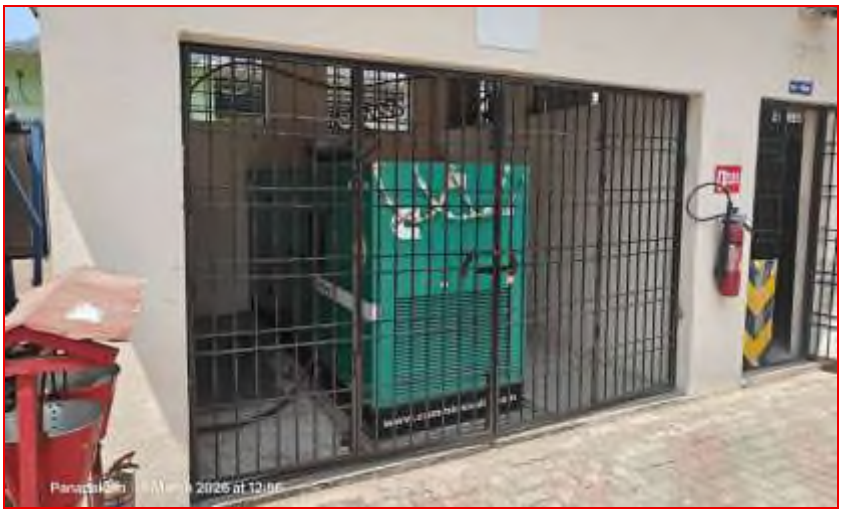
Traffic Aid Post and Medical Aid Post are in the scope of the Concessionaire.

Toll Plaza Administrative Building at km. 37+350

Toll Plaza Administrative Building at km. 37+750

Traffic and Medical Aid Post

Meteorological System



DG set at Toll Plaza Building

3.17 Toilet Block

There are 04 Nos. toilet blocks at truck lay bye locations and the same are being maintained by the Concessionaire.

Table 3-4 Details of Toilet Block

Sr. No.	Design Chainage (km)	Side
1	05+250	LHS
2	51+350	LHS
3	05+515	RHS
4	51+493	RHS

Figure 3-23 Photographs of Toilet Block

3.18 Bus Bays and Passenger Shelters

There are 26 Nos. of bus bays / passenger shelters along Project Road. Some of the photographs of the bus bays are presented below.

Figure 3-24 Photographs of Bus Bays / Passenger Shelters

Passenger Shelter at km. 53+020

Bus Bay and Shelter at km. 7+500

Passenger Shelter at km. 35+400

Passenger Shelter at km. 26+900

3.19 Balance Work Status

The project has received Provisional Completion Certificate on 10th May 2021 by completing the project length of 56.304 kms. All the works completed in available land and the balance work in encumbered land is de-scoped by the Authority as mentioned in the Technical Schedules of Concession Agreement. There is no balance work to be executed as per CA. The Project Director, PIU Tirupati has recommended the proposal for issuance of Completion Certificate to the Concessionaire for a completed length of 60.538 kms with effect from 08.06.2023 to the RO NHAI, Vijayawada vide their letter no. 484 dated 19th June 2023.

3.20 Operation and Maintenance

3.20.1 O&M Contract

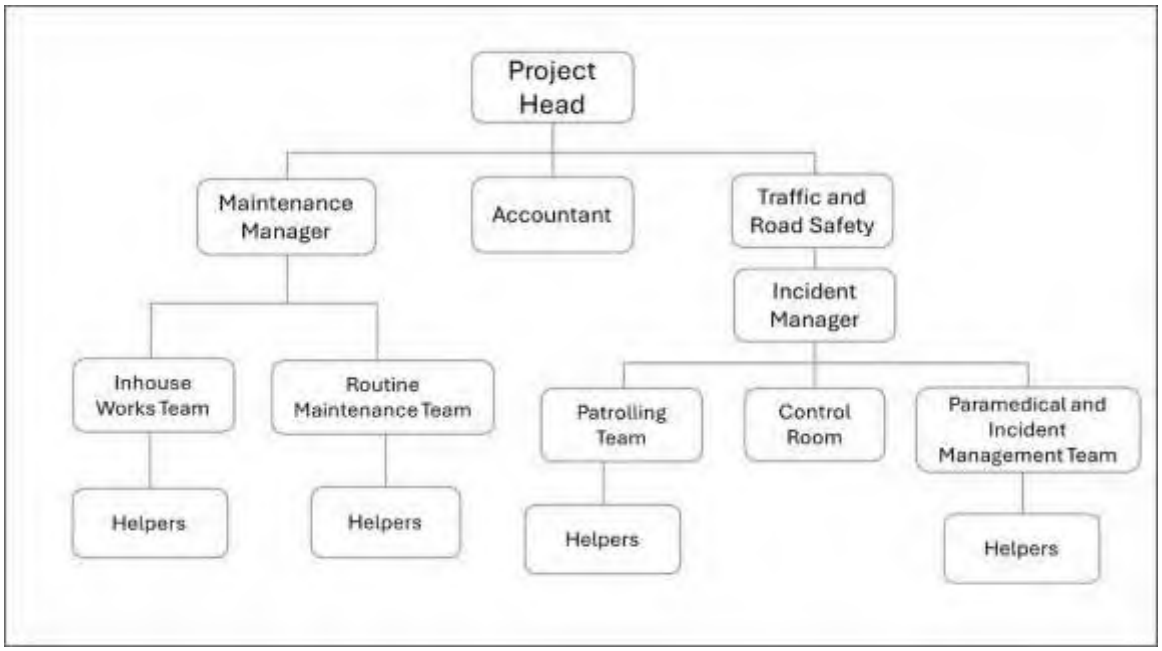
As per Clause 17.1.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, or otherwise make improvements to the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement, Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems, more specifically.

Toll Gazette Notification completed, and e-tenders were conducted by NHAI. The NHAI has selected M/s Sahakar Global Pvt. Ltd. for operating the toll collection The toll collection has started at 8.00 am of 26th June 2021. The Concessionaire has been carrying out the activities related to the operation and maintenance of the Project Road. The Operation Cost is presented in the subsequent chapter.

3.20.2 Organization Chart

The Concessionaire has provided the Organization Chart at site for Operation and maintenance. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent sub-contractors.

Organization Chart



3.20.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, and other miscellaneous expenses. The Concessionaire has provided the expenses incurred towards operation expenses for past years. Necessary assumptions have been made from the expense of similar types of projects to arrive at the operation cost. The estimates are projected based on the best industry practices and are compared with the operating cost in the vicinity of the project area.

3.20.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways-Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

Currently, the entire length of the Project Road is maintained by the Concessionaire.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Concessionaire as per Scope of Work. The Concessionaire received the Completion Certificate on 8th June 2023.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 17.5 years from the Appointed Date including construction period of 30 months.

4.2 Axle Load and VDF

The Concessionaire conducted the axle load survey on Project Road at Toll Plaza location in July 2021. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor

Sr. No.	Vehicle Type	Direction	
		Chittoor - Mallavaram	Mallavaram - Chittoor
1	BUS	0.975	0.802
2	LCV	1.087	0.592
3	2-Axle	3.066	3.151
4	3-Axle	5.078	5.772
5	MAV	8.799	11.614

4.3 Design traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the traffic data provided by the Concessionaire has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

MSA Calculation (LHS)			
Year	MSA	Cumulative MSA	Remarks
FY 26	2.93	2.93	
FY 27	3.08	6.01	
FY 28	3.23	9.23	
FY 29	3.39	12.63	1st Major Maintenance
FY 30	3.56	16.19	
FY 31	3.74	19.92	
FY 32	3.93	23.85	
FY 33	4.12	27.97	
FY 34	4.33	32.30	
FY 35	4.54	36.84	
FY 36	4.77	41.62	2nd Major Maintenance
FY 37	5.01	46.63	End of concession period

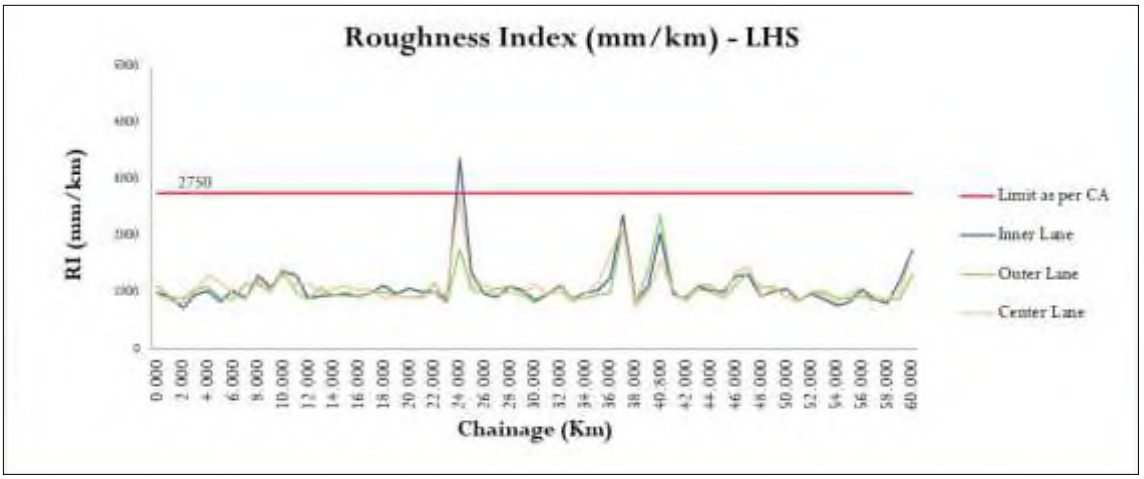
MSA Calculation (RHS)			
Year	**MSA**	**Cumulative MSA**	**Remarks**
FY 26	3.56	3.56	
FY 27	3.73	7.29	
FY 28	3.92	11.21	
FY 29	4.12	15.33	1st Major Maintenance
FY 30	4.32	19.65	
FY 31	4.54	24.19	
FY 32	4.77	28.96	
FY 33	5.00	33.96	
FY 34	5.25	39.21	
FY 35	5.52	44.73	
FY 36	5.79	50.52	2nd Major Maintenance
FY 37	6.08	56.61	End of concession period

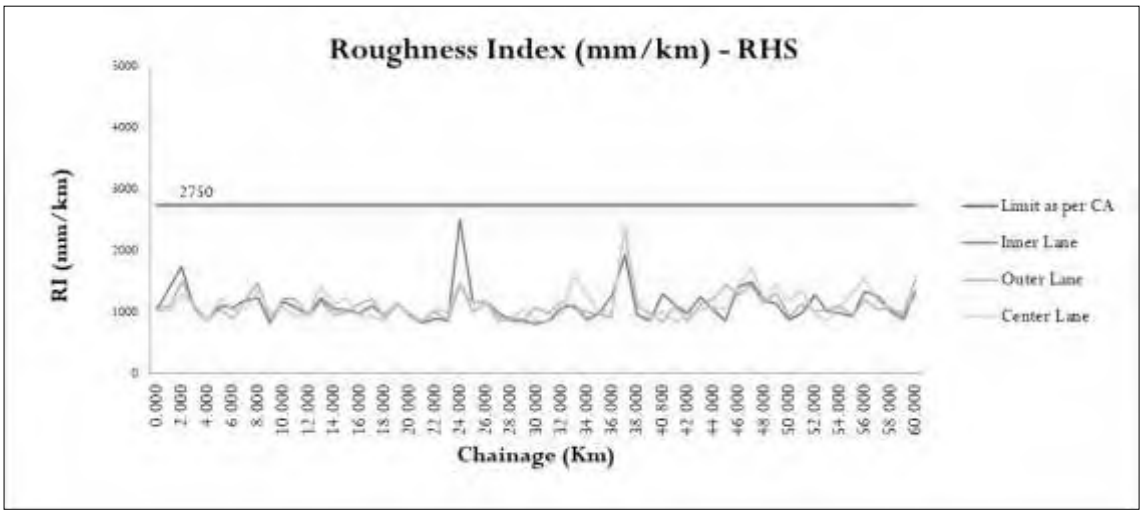
4.4 Network Survey Vehicles (NSV) Survey

The Concessionaire has provided NSV survey data conducted in November 2024. The NSV data is used to assess the riding quality and pavement condition of Project Road. The summary of classification of pavement as per CA is given in the table below:

Roughness Summary as per Schedule-K of CA							
Condition	**Limit as per Schedule K of CA (mm/km)**	**Length (km) - LHS**			**Length (km) - RHS**		
		Outer Lane	**Middle Lane**	**Inner Lane**	**Outer Lane**	**Middle Lane**	**Inner Lane**
Good	<2750	100%	100%	98.32%	100%	100%	100%
Poor	>2750	-	-	1.68%	-	-	-

From the above table, it is observed that the overall condition of pavement is good. At a few stretches the condition is found to be fair. Graphical representation of the results is presented below:





4.5 Structural Investigations

An evaluation of existing pavements using Falling Weight Deflectometer (FWD) survey was carried out by the Concessionaire in August 2024. Summary of FWD Survey report is presented in the table below:

Residual life (MSA)	Length (km)	
	LHS	RHS
<20	9.00	8.02
20-50	32.708	39.838
>50	16.79	10.64

The strengthening / overlay of pavement for project stretch are derived from 15th percentile of corrected E moduli of existing pavement, existing crust thickness etc. The combination of existing pavement and overlay will be analyzed as a four-layer system to ensure that fatigue and rutting criteria are satisfied for the calculated design traffic in terms of MSA. IITPAVE program is used to compute strain value at bottom of bituminous layer and top of subgrade in order to calculate design life of the proposed overlay. Poisson's ratio values used in overlay analysis from top to bottom of existing pavement layers are 0.5, 0.4 and 0.4 for existing bituminous, existing granular and existing subgrade layers respectively. Elastic modulus of 3000 MPa (VG-40) is used for the new bituminous layer.

4.6 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full-length periodic maintenance. Schedule-K of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-K requirement to keep the road in serviceable condition. Only improvement in riding quality is expected if the roughness value exceeds 2750 mm/km.

The Provisional COD for the project was achieved on 10th May 2021. Hence, the major maintenance cycle is projected accordingly.

The table below shows the major/ periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-3 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2029	35 mm BC overlay for 60%, 50 mm DBM in 2.5% and Micro-surfacing in 40% length	Micro-surfacing on 100% length
2	FY 2036	35 mm BC overlay for 40%, 50 mm DBM in 2.5% and Micro-surfacing in 60% length	Micro-surfacing on 100% length

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS system

Costs for different categories are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1 Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

a) Manpower and labour: As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

b) Bitumen: The Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 27. Average 10 years of price of bitumen are considered for unit rates calculation for FY 28 and onwards, since bitumen prices have been range bound over the last five-six years. Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY 2027 (Rs. / MT)	Rate for FY 2028 onwards (Rs. / MT)
1	Mathura	All States	VG-10	45,102	35,125
2			VG-30	46,402	36,137
3			VG-40	48,962	38,131
4	Panipat	All States	VG-10	45,102	35,125
5			VG-30	46,402	36,137
6			VG-40	48,962	38,131
7	Koyali	All States	VG-10	47,102	37,125
8			VG-30	48,402	38,137
9			VG-40	51,082	40,251
10	Haldia	All States	VG-10	46,602	35,683
11			VG-30	47,402	36,295

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY 2027 (Rs. / MT)	Rate for FY 2028 onwards (Rs. / MT)
12			VG-40	49,962	38,256
13	Barauni	All States	VG-10	47,132	36,213
14			VG-30	48,432	37,325
15			VG-40	50,992	39,286
16	CPCL	Kerala	VG-10	47,402	35,519
17			VG-30	48,402	36,395
18			VG-40	50,762	38,120
19	CPCL	Tamil Nadu	VG-10	47,902	36,019
20			VG-30	48,402	36,395
21			VG-40	50,962	38,320
22	CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
23			VG-30	45,402	33,395
24			VG-40	47,962	35,320
25	CPCL	Karnataka	VG-10	44,602	32,719
26			VG-30	45,402	33,395
27			VG-40	47,962	35,320

c) Sand and Aggregate: Market rates are considered from the quarry located nearest to Project Road.

d) Cement: Market rates are considered from the nearest local market.

e) Steel : Rate of steel is taken from SAIL.

f) Machinery Hire charges: Hire charges for the machinery are considered in accordance with applicable PWD SOR.

2 Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (FY 27 onwards)
1	Dense Bituminous Macadam	Cum	8,156
2	Bituminous Concrete	Cum	9,177
3	Milling	Sqm	75
4	Micro-surfacing	Sqm	165
5	Kerb re-laying	Rmt	270
6	Road Marking	Sqm	515
7	Road Studs	Nos.	200

5.3 Balance Work Cost

As discussed in the previous chapter, there are no balance works to be executed as per CA. Hence, the balance work is **NIL**.

5.4 Routine O&M Cost

Routine O&M cost is comprised of labour cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance, and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The O&M estimate has been divided into following major heads:

1 Salary and Welfare Expenses
2 Toll Security Services Outsourced
3 Incident Management & Emergency Services Outsourced
4 Electricity and Diesel Charges
5 ATMS / HTMS / System Expenses
6 Office Operating Expenses
7 Vehicle Running Expenses
8 Professional Fees / Expense
9 Community Development
10 Communication Expenses
11 Conveyance Expenses
12 Insurance Expense
13 IE Fees
14 Routine Maintenance Cost (Project)
15 Horticulture & ROW Maintenance
16 Contingency

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation Cost is presented as below. The detailed working of routine maintenance (Sr. No. 14 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (Rs.)
1	Salary and Welfare Expenses	1,19,08,856
2	Toll Security Services	11,40,034
3	Incident Management & Emergency Services	2,05,26,519
4	Electricity and Diesel Charges	72,35,271
5	ATMS / HTMS / System Expenses	79,98,000
6	Office Operating Expenses	5,75,190
7	Vehicle Running Expenses	53,27,842
8	Professional Fees /Expense	35,57,400

Sr. No.	Particulars	Amount (Rs.)
9	Community Development	5,77,500
10	Communication Expenses	1,38,600
11	Conveyance Expenses	4,15,800
12	Insurance Expense	1,56,75,660
13	IE Fees	66,00,000
14	Routine Maintenance Cost (Project Road)	4,44,98,609
15	Horticulture & ROW Maintenance	1,91,01,277
16	Contingency (3%)	24,50,300
	Total Cost (Rs.)	**14,77,26,858**
	Total Cost (Cr.)	**14.77**
	Per km Cost (Lakhs)	24.17

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2029	87.71	
2	FY 2036	78.51	
Total Cost (Cr.)		**166.22**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of major TMS system is considered. The cost for the same is provided as below.

Sr. No.	Year	ATMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2027	3.96	
2	FY 2034	3.96	
Total Cost (Cr.)		**7.92**	

5.7 Escalation Assumption

The following escalation is considered basis discussions with Client and our internal estimates.

Table 5-4 Escalation Factor

Year	Escalation	Year	Escalation
2027	-	**2042**	3.99%
2028	4.86%	**2043**	3.99%
2029	4.44%	**2044**	3.99%
2030	4.24%	**2045**	3.99%
2031	4.13%	**2046**	3.99%
2032	4.08%	**2047**	3.99%
2033	4.01%	**2048**	3.99%
2034	4.00%	**2049**	3.99%
2035	4.03%	**2050**	3.99%
2036	4.01%	**2051**	3.99%

Year	Escalation	Year	Escalation
2037	3.98%	**2052**	3.99%
2038	3.98%	**2053**	3.99%
2039	4.00%	**2054**	3.99%
2040	3.99%	**2055**	3.99%
2041	3.99%	**2056**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period along with escalation as mentioned in Clause 5.7.

Escalated O&M Cost (in INR Cr.)

	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36
1	Routine O&M Cost										
1.01	Salary and Welfare Expense	1.19	1.25	1.30	1.36	1.42	1.47	1.53	1.59	1.66	1.72
1.02	Tolling Operations Services	-	-	-	-	-	-	-	-	-	-
1.03	Toll Security Services	0.11	0.12	0.12	0.13	0.14	0.14	0.15	0.15	0.16	0.17
1.04	Incident Management Services	2.05	2.15	2.25	2.34	2.44	2.54	2.64	2.75	2.86	2.97
1.05	Electricity and Diesel Charges	0.72	0.76	0.79	0.83	0.86	0.90	0.93	0.97	1.01	1.05
1.06	TMS/HTMS/System Expenses	0.80	0.84	0.88	0.91	0.95	0.99	1.03	1.07	1.11	1.16
1.07	Office Operating Expenses	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08
1.08	Vehicle Running Expenses	0.53	0.56	0.58	0.61	0.63	0.66	0.69	0.71	0.74	0.77
1.09	Professional Fees Expense	0.36	0.37	0.39	0.41	0.42	0.44	0.46	0.48	0.50	0.52
1.10	Community Development	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08
1.11	Communication Expenses	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
1.12	Conveyance Expenses	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06
1.13	Insurance Expense	1.57	1.64	1.72	1.79	1.86	1.94	2.02	2.10	2.18	2.27
1.14	IE Fees	0.66	0.69	0.72	0.75	0.78	0.82	0.85	0.88	0.92	0.96
1.15	Routine Maintenance Cost	4.45	4.67	4.87	5.08	5.29	5.51	5.73	5.96	6.20	6.44
1.16	Horticulture & ROW Maintenance	1.91	2.00	2.09	2.18	2.27	2.36	2.46	2.56	2.66	2.77
1.17	Miscellaneous and Contingency	0.25	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.34	0.35
	Subtotal of O&M Cost	14.77	15.49	16.18	16.86	17.56	18.28	19.01	19.77	20.57	21.39
2	Major Maintenance Cost	-	-	94.46	-	-	-	-	-	-	108.44
3	Periodic Cost of TMS Replacement	3.96	-	-	-	-	-	-	5.33	-	-
	Total Cost	**18.74**	**15.49**	**110.61**	**16.86**	**17.56**	**18.28**	**19.01**	**25.10**	**20.57**	**129.83**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Ordinary Repair Cost for Flexible (with GST)	**4,44,98,609**
(Inclusive of GST)	**= 7.28 lakhs per km**

CONVERSION FACTORS										
National Highways / State Highways										
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders										
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)										
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal**	**Urban**	**Hilly**	**Project Length (km)**		**Per Year Project Maintenance Cost (Cr.)**	
				More than 4500 CVD	**More than 4500 CVD**	**More than 4500 CVD**				
				2,61,768	**2,92,715**	**3,05,687**				
							Normal	**Urban**	**Normal**	**Urban**
1	Six lanes with divided carriageway	Without Paved shoulder	2.09	5,47,095	6,11,775	6,38,885	-	-	-	-
		With Paved shoulder	2.26	5,91,595	6,61,537	6,90,852	-	-	-	-
2	Six lanes with divided carriageway and service lane on either side	Without Paved shoulder	2.56	6,70,126	7,49,351	7,82,558	-	-	-	-
		With Paved shoulder	2.76	7,22,479	8,07,894	8,43,696	57.21	3.92	4,13,30,856	31,67,752
						TOTAL	**61.128**		**4,44,98,609**	

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Potholes repair (50 mm deep)	100 % Pothole free	As & when required	1.00%
	Volume (cum)			5.00
	Rs/m^3			9044
	Cost in Rupees			45,220
	ii) Patch repair	100 % Patch less	As & when required	1.00%
	Area (sqm)			100
	Rs/m^2			362
	Cost in Rupees			36,176
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			165
	Cost in Rupees			41,233
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.50%
	Area (sqm)			187.5
	Rs/m^2			158
	Cost in Rupees			29,564
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			362
	Cost in Rupees			27,132

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	v) Road marking	14%	Once in 7th year & @ Repaired location	7875
	SUB TOTAL			**1,87,200**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6282
	ii) Jungle Clearance	100%	Twice in a Year	2061
	iii) Kuccha Drain Maintenance	100%	Twice in a Year	1104
	SUB TOTAL			**9,447**
3	**Maintenance of Cross Drainage works:**			
	i) Cleaning of culvert bed	100%	Once in a Year	2782
	ii) Repair of floors	100%	Once in a Year	5035
	iii) Repair of parapets	100%	As & when required	2098
	SUB TOTAL			**9,915**
4	**Maintenance of Minor & Major Bridges:**			
	i) Cleaning and removal of dirt & vegetation from pier caps, Bearings, Expansion Joints, Superstructure, Substructure and Retaining wall etc.	100%	As & when required	36,804
	ii) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints			
	iii) Repair of minor washouts, erosion scour and animal holes			
	iv) Sealing Cracks with Cement/ Epoxy Mortar			
	v) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,804**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
5	**Miscellaneous Items:**			
	i) Turfing and Arboriculture		Once in a Year	2454
	ii) Maintenance of gang hut store, sheds, animal & debris removal		Once in a Year	3680
	iii) Lettering, Painting of Km stones & kerbs, sign boards, hectometre stone etc.		Once in a Year	3680
	iv) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7361
	v) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1227
	vi) Traffic Census		Once in a Year	0
	vii) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**18,402**
	GRAND TOTAL (Normal)			**2,61,768**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Centre Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	1259
	ii)Repairs to footpath	100%	As & when required	4907
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4907
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7606
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9814
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2454
	SUB TOTAL			**30,947**
	GRAND TOTAL (Urban)			**2,92,715**

ANNEXURE II - MAJOR MAINTENANCE COST

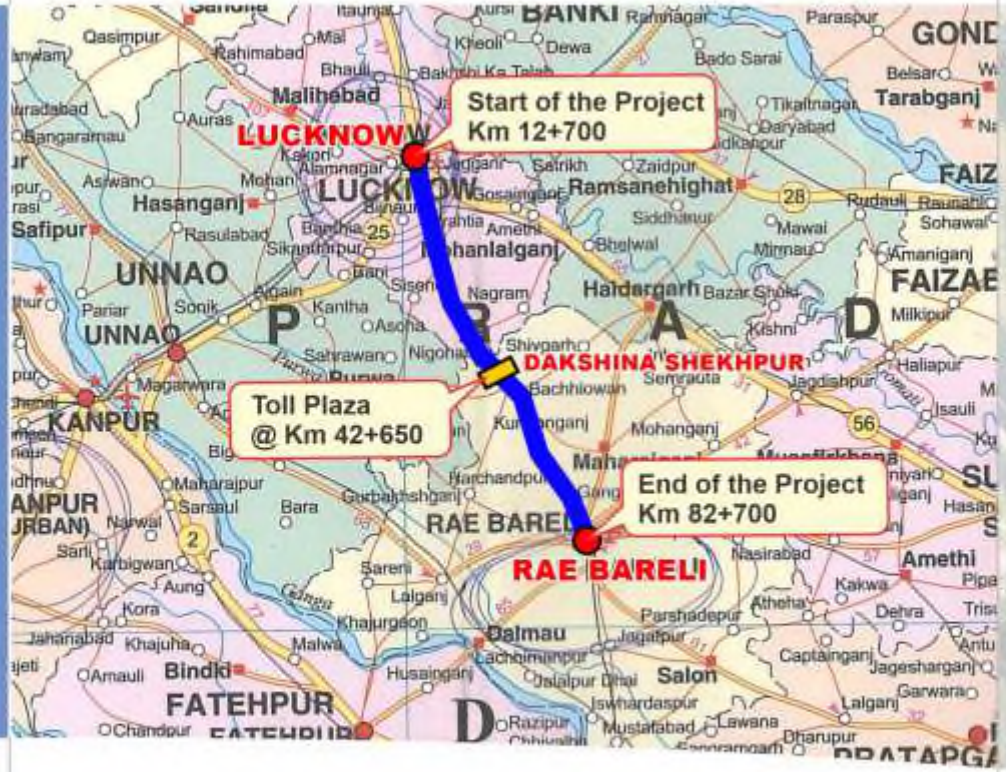
Major Maintenance Cost (FY 29)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	NCW - Flexible Pavement									
1	Tack coat	Sqm						9,82,545	12	1,15,54,733
	For BC	Sqm	2	35,248	12.50		8,81,207	8,81,207		
	For DBM	Sqm	2	1,469	10.50		30,842	30,842		
	For Misc. Location	Sqm	2	2,820	12.50		70,497	70,497		
2	BC with 35 mm	Cum	2	38,068	12.50	0.035	33,310	33,310	9,177	30,56,83,594
3	DBM with 50 mm	Cum	2	1,469	10.50	0.05	1,542	1,542	8,156	1,25,76,936
4	Micro Surfacing	Sqm	2	23,499	12.50		5,87,471	5,87,471	165	9,69,32,718
5	Milling	Sqm	2	1,469	10.50		30,842	30,842	75	23,13,167
	MCW- Rigid Pavement									
6	Joint Sealant Replacement @ 10% length	Rmt	10%	1,402	3.50	4.50	1,121	1,121	92	1,03,160
7	Dismantling of CC Panels @ 5% area	Cum	5%	22,076		0.30	331	331	850	2,81,464
8	Replacement of Panels - PQC @ 5% area	Cum	5%	22,076		0.30	331	331	9,268	30,69,099
	Service Road									
9	Tack coat	Sqm	1	-	7.00		-	-	12	-
10	BC with 30 mm	Cum	1	-	7.00	0.03	-	-	9,056	-
11	Micro Surfacing	Sqm	1	1,18,916	7.00		8,32,412	8,32,412	165	13,73,47,980
	Structures									
12	Tack coat	Sqm	1	1,017	27		27,058	27,058	12	3,18,198
13	Wearing Coat BC with 35 mm	Cum	1	1,017	27	0.035	947	947	9,177	86,90,811
14	Milling of Ex. Wearing Coat	Sqm	1	1,017	27		27,058	27,058	75	20,29,322
15	Micro Surfacing	Sqm	1	1,017	27		27,058	27,058	165	44,64,508
16	Painting of Crash Barrier	Sqm	4	2,034		1.12	9,071	9,071	101	9,16,190
	Other Works									
17	Raising of Road Kerb	Rmt	2	1,06,598			2,13,196	2,13,196	270	5,75,62,845
18	Replacement of Road Stud									
	Normal Road Stud	Nos	2	14,943			29,886	29,886	200	59,77,200
19	Painting of Kerb	Sqm	2	1,77,663	0.315		1,11,928	1,11,928	101	1,13,04,703
20	Road Marking	Sqm					78,424	78,424	516	4,04,66,847

Major Maintenance Cost (FY 29)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	MCW									
	a) Median & Edge line	Sqm	4	64,183	0.15		38,510			
	b) Lane line	Sqm	4	21,181	0.10		8,472			
	Service Road									
	a) Edge line	Sqm	2	1,18,916	0.10		23,783			
	b) Lane line	Sqm	1	39,242	0.10		3,924			
	Junction crossing	Sqm					3,734			
21	Filling of Earthen shoulder	Cum					11,003	11,003	575	63,27,745
	MCW		2	61,127	1.00	0.090	11,003			
22	Miscellaneous	5%								3,53,96,061
Total Major Maintenance Cost (Rs.)										**74,33,17,280**
Total Major Maintenance Cost with 18% GST (Rs.)										**87,71,14,391**
Total Major Maintenance Cost with GST (Cr.)										**87.71**
Per km Cost (lakhs)										**143.49**
Escalation Factor										**1.10**
Total Escalated Cost for (Cr.)										**94.44**

Major Maintenance Cost (FY 36)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	NCW - Flexible Pavement									
1	Tack coat	Sqm						6,65,311	12	78,24,057
	For BC	Sqm	2	23,499	12.50		5,87,471	5,87,471		
	For DBM	Sqm	2	1,469	10.50		30,842	30,842		
	For Misc. Location	Sqm	2	1,880	12.50		46,998	46,998		
2	BC with 35 mm	Cum	2	25,379	12.50	0.04	22,206	22,206	9,177	20,37,89,063
3	DBM with 50 mm	Cum	2	1,469	10.50	0.05	1,542	1,542	8,156	1,25,76,936
4	Micro-Surfacing	Sqm	2	35,248	12.50		8,81,207	8,81,207	165	14,53,99,077
5	Milling	Sqm	2	1,469	10.50		30,842	30,842	75	23,13,167
	MCW- Rigid Pavement									
6	Joint Sealant Replacement @ 10% length	Rmt	10%	1,402	3.50	4.50	1,121	1,121	92	1,03,160
7	Dismantling of CC Panels @ 5% area	Cum	5%		22,076	0.30	331	331	850	2,81,464
8	Replacement of Panels - PQC @ 5% area	Cum	5%		22,076	0.30	331	331	9,268	30,69,099
	Service Road									
9	Tack coat	Sqm	1	-	7.00		-	-	12	-
10	BC with 30 mm	Cum	1	-	7.00	0.03	-	-	9,056	-
11	Micro Surfacing	Sqm	1	1,18,916	7.00		8,32,412	8,32,412	165	13,73,47,980
	Structures (incl. VUP, PUP and bridges)									
12	Tack coat	Sqm	1	1,017	27		27,058	27,058	12	3,18,198
13	Wearing Coat BC with 35 mm	Cum	1	1,017	27	0.035	947	947	9,177	86,90,811
14	Milling of Ex. Wearing Coat	Sqm	1	1,017	27		27,058	27,058	75	20,29,322
15	Micro Surfacing	Sqm	1	1,017	27		27,058	27,058	165	44,64,508
15	Painting of Crash Barrier	Sqm	4	2,034		1.12	9,071	9,071	101	9,16,190
	Other Works									
16	Raising of Road Kerb	Rmt	2	94,848			1,89,697	1,89,697	270	5,12,18,158
17	Replacement of Road Stud									
	Normal Road Stud	Nos	2	14,943			29,886	29,886	200	59,77,200
18	Painting of Kerb	Sqm	2	1,06,314		0.315	66,978	66,978	101	67,64,728
19	Road Marking	Sqm					78,424	78,424	516	4,04,66,847
	MCW									
	a) Median & Edge line	Sqm	4	64,183	0.15		38,510			

Major Maintenance Cost (FY 36)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	b) Lane line	Sqm	4	21,181	0.10		8,472			
	Service Road									
	a) Edge line	Sqm	2	1,18,916	0.10		23,783			
	b) Lane line	Sqm	1	39,242	0.10		3,924			
	Junction crossing	Sqm					3,734			
20	Filling of Earthen shoulder	Cum					217	217	575	1,24,779
	MCW		2	1,669	1.00	0.065	217			
	Service Road		1	-	1.00	0.06	-			
22	Miscellaneous	5%								3,16,83,737
Total Major Maintenance Cost (Rs)										**66,53,58,481**
Total Major Maintenance Cost with 18% GST (Rs)										**78,51,23,007**
Total Major Maintenance Cost with GST (Cr)										**78.51**
Per km Cost (lakh)										**128.44**
Escalation Factor										**1.45**
Total Escalated Cost for (Cr)										**108.44**

FP Project Management



Technical Due Diligence of Lucknow - Raebareli Section of NH-30 From km. 12+700 to km. 82+700 in the State of Uttar Pradesh on TOT Mode

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	SG / VK	RMW	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 6
2.4 Terrain 6
2.5 Abutting Land Use 6
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 8
3.1 Pavement 8
3.1.1 Pavement Condition Survey 8
3.2 Service Road / Slip Road 13
3.3 Major / Minor Junctions 13
3.4 Condition Survey of Bridge 16
3.5 Condition Survey of Culverts 28
3.6 Drainage 31
3.7 Slope Protection 31
3.8 Road Furniture 33
3.9 Avenue Plantation and Median Plantation 41
3.10 Toll Plaza 43
3.11 Lane Equipment 44
3.11.1 RFID ETC Transceiver 45
3.11.2 Lane Controller with Industrial PC 45
3.11.3 Automatic Vehicle Classification (AVC) Sensors 46
3.11.4 Automatic Lane Barrier 46
3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 47

3.11.6 Incident Capture Camera (AVC Camera) 47
3.11.7 License Plate Image Capture Camera (LPIC) 47
3.11.8 Over Head Lane Signal (OHLS) 48
3.11.9 Toll Booth Equipment 48
3.11.10 Medium Speed Weigh in Motion (MSWIM) 49
3.12 Plaza Equipment 49
3.12.1 TMS Server 49
3.12.2 55" LED screen for CCTV monitoring 50
3.12.3 Workstations in Control Room, POS room 50
3.13 Advanced Traffic Management System (ATMS) 51
3.13.1 Automatic Traffic Counter cum classifier (ATCC) 51
3.13.2 Mobile Radio communication System (MRCS) 52
3.13.3 Emergency Call Boxes (ECB) 52
3.13.4 Portable Weigh in Motion (PWIM) 52
3.13.5 MET System 52
3.13.6 Variable Message Signboards (VMS) 52
3.13.7 CCTV Surveillance Cameras 53
3.13.8 Video Incident Detection System 53
3.13.9 Vehicle Actuated Speed Display (VASD) 53
3.13.10 Adequacy of Toll Collection System and ATMS 53
3.13.11 Truck Lay-bye 54
3.14 Traffic Aid Post and Medical Aid Post 54
3.15 Toilet Block 55
3.16 Bus Bays and Passenger Shelters 55
3.17 Balance Work Status 56
3.18 Operation and Maintenance 56
3.18.1 O&M Contract 56
3.18.2 Organization Chart 56
3.18.3 Operation 60
3.18.4 Routine Maintenance 61
4 Pavement Investigation and Assessment 62
4.1 General 62
4.2 Axle Load and VDF 62
4.3 Design Traffic 62
4.4 Network Survey Vehicles (NSV) Survey 63
4.5 Structural Investigations 63
4.6 Test pit and Subgrade Investigation 63

4.7 Periodic Maintenance Strategy 65
5 Cost Estimates 67
5.1 General 67
5.2 Rate Assumption 67
5.3 Balance Work Cost 69
5.4 Routine O&M Cost 69
5.5 Major Maintenance Cost 70
5.6 Periodic Replacement of TMS / ATMS System 71
5.7 Escalation Assumption 71
5.8 Summary of Cost 71
Annexures 73
Annexure I - Routine Maintenance Cost 74
Annexure II - Major Maintenance Cost 79

List of Tables

Table 2-1 Details of Scope of Work 7
Table 3-1 Details of Major Junctions 13
Table 3-2 Details of Summary for Structures 16
Table 3-3 Condition Survey of Major Structure 17
Table 3-4 Details of Lighting on Project Road 33
Table 3-5 Details of New Installation of Safety Barriers 34
Table 3-6 Details of Additional Gantry / Cantilever Sign 34
Table 3-7 Details of Summary for Road Furniture Items 35
Table 3-8 Details of Summary for Toll Plaza Items 43
Table 3-9 Details of Truck Lay-bye 54
Table 3-10 Details of Toilet Block 55
Table 4-1 Vehicle Damage Factor 62
Table 4-2 MSA Calculation 62
Table 4-3 Test Results Summary of Natural Ground Soil Samples 64
Table 4-4 Major Maintenance Cycle 65
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 67
Table 5-2 Summary of Unit Rates 68
Table 5-3 Summary of Balance Works 69
Table 5-4 Summary of Operation Cost 70
Table 5-5 Summary of Major Maintenance Cost 70
Table 5-6 Escalation 71

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start/End of Project Road (LHS) 5
Figure 2-3 Start/End of Project Road (RHS) 5
Figure 3-1 Photographs of Pavement Condition 9
Figure 3-2 Photographs of Pavement Condition 11
Figure 3-3 Photographs of Service Road 13
Figure 3-4 Photographs of Major Junctions 14
Figure 3-5 Photographs of Minor Junctions 14
Figure 3-6 Photographs of Major Structures 23
Figure 3-7 Photographs of Foot Over Bridge 27
Figure 3-8 Photographs of Box Culverts 29
Figure 3-9 Photographs of Pipe Culverts 30
Figure 3-10 Photographs of Drainage 31
Figure 3-11 Photographs of Slope Protection and Chute Drain 32
Figure 3-12 Photographs of Pavement Marking 35
Figure 3-13 Photographs of Road Studs 36
Figure 3-14 Photographs of Road Signages 37
Figure 3-15 Photographs of Street Light 39
Figure 3-16 Photographs of MBCB / Crash Barrier 39
Figure 3-17 Photographs of Pedestrian Guard Rail 41
Figure 3-18 Photographs of Avenue Plantation 42
Figure 3-19 Photographs of Median Plantation 42
Figure 3-20 Photographs of Toll Plaza 44
Figure 3-21 Photographs of Truck Lay Bye 54
Figure 3-22 Photographs of Toilet block 55
Figure 3-23 Photographs of Bus Bay / Passenger Shelter 55

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Lucknow - Raibareli section of NH-30 (Old NH-24B) from km. 12+700 to km. 82+700 in the State of Uttar Pradesh (hereinafter referred as "Project Road").

Lucknow Raebareli Tollway Limited (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance and transfer of Lucknow to Raebareli Section (from km. 12+700 to km. 82+700) of NH-30 or Project Road under TOT Bundle-3. The project was awarded to Concessionaire on 27th December 2019 with a concession period of 30 years by National Highway Authority of India (NHAI). The length of Project Road is 70.0 kms with one toll plaza at Dakshina Shekhpur at km. 42+650.

Accordingly, Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and filed investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented below.

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.
- Formulation of future major maintenance strategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period
- Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection.
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the Consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyze the same as per the best engineering / industry practices.

The site visit and inspection were carried out between the periods from **21st March 2026 to 23rd March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features, overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates:** The chapter summarizes the forecast for O&M and major maintenance cost over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **Lucknow Raebareli Tollway Limited**, is a company promoted by Cube Highways or Special Purpose Vehicle (SPV) formed for implementing this project on 27th December 2019. The Appointed Date for the Project Road is on 14th October 2020.

Presently, there are two Concessionaires for Project Road. One is Cube Highways who maintains Toll Operation activities (TOT Concessionaire) and the other Concessionaire is Path Enterprises (Annuity Concessionaire) who maintains the project length as per their original scope of work.

The project is being developed through Annuity BOT mode under TOT (Toll Operate Transfer) Bundle-3 with concession period of 30 years from the Appointed Date while O&M will start from March 2029 as per Clause 10.2.2 of Concession Agreement.

2.2 Location

The Project Road is a part of National Highway No. 30 (old NH-24) of Lucknow - Raebareli section in the state of Uttar Pradesh. The total project length is 70.00 kms.

The Location Map of the Project Road is presented below:

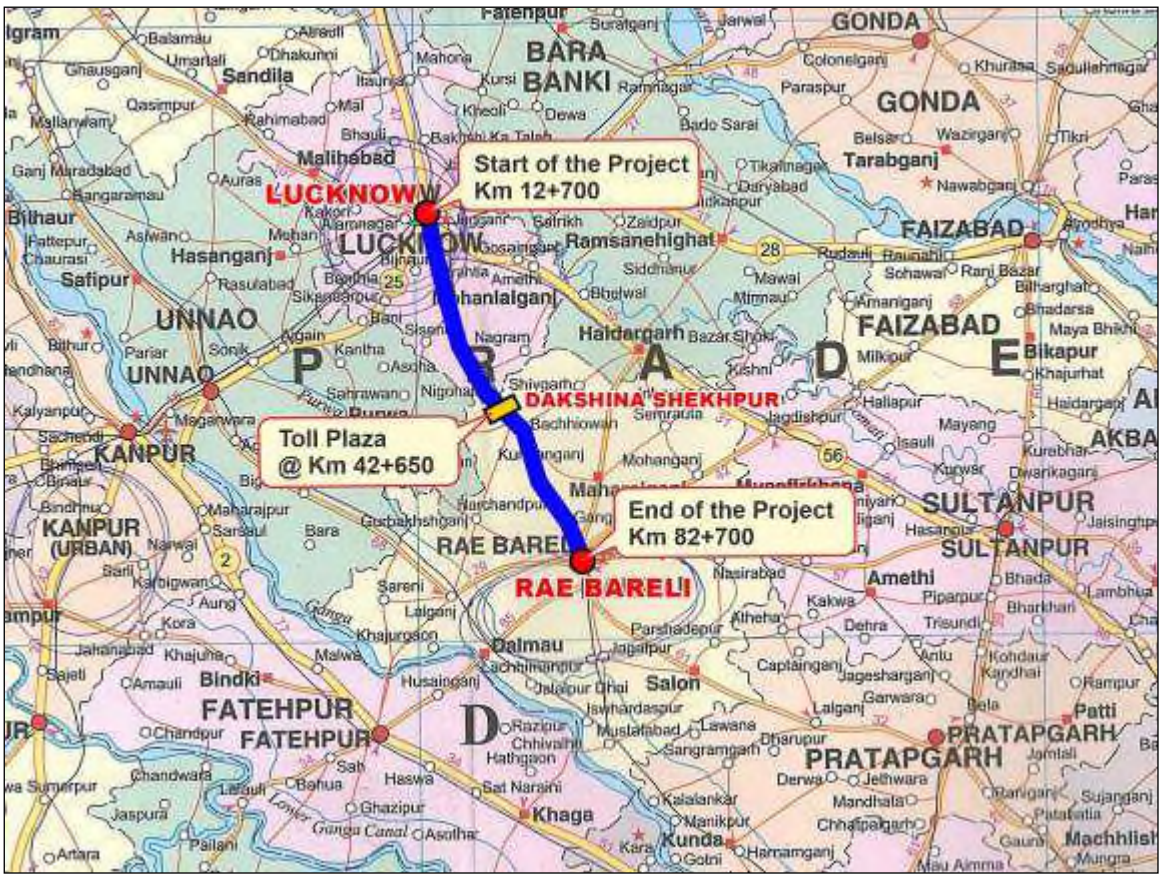


Figure 2-1 Location Map

The photographs taken during the site visit are presented below.

Figure 2-2 Start/End of Project Road (LHS)

Figure 2-3 Start/End of Project Road (RHS)

2.3 Climate

The climate of the project area is characterized by general dryness (except in the southwest monsoon season), a hot summer and a cold winter. The year may be divided into four seasons. The period from about middle of November to February is the cold season. This is followed by the summer season from March to about the end of June. The south-west monsoon season commences late in June and continues up to about the middle of September. The period from mid-September to the middle of November constitutes the post-monsoon or transition season. The temperature ranges from a minimum of 4°C in winter to 47°C in summer. May and June are generally the hottest months and December and January are the coldest months. Relative humidity is high, averaging about 80% to 90% in February month and decrease it gradually up to 85% at the end of season due to gradual warming. The average annual rainfall in the district is 900 millimeters.

2.4 Terrain

The Project Road traverses through plain / rolling terrain.

2.5 Abutting Land Use

The following are the various developments that are anticipated in the Four Lanning of Lucknow Raibareli section.

- This Project Road reduces the travel time for getting access to Raibareli, Sultanpur, Prayagraj and Fatehpur which results in better industrial growth and economy.

- A lot of development is anticipated in Lucknow Raibareli Section, which transits through NH-24B / NH-30 and hence the development / maintenance of this Project Road would accelerate the development as majority of traffic would use the highway for getting access to Prayagraj Mirzapur.

- The tourism industry get a great booster as majority of people using this highway for going to places like Prayagraj etc.,

- A lot of commercial establishment along the project highway in the form of hotels, snack parlours as well as railway coach parts factory are developed.

2.6 Right of Way

The width of existing Right of Way (ROW) for the Project Road varies from 26.0 m to 45.0 m / 100 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, etc.

2.8 Development as per Schedule-B

The Project Road from Lucknow (km. 12+700) to Raebareli (km. 82+700) has been developed as a four-lane divided carriageway with median width of 2 m, service road and other arrangements. The Project Road passes through rural as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.
b) Tolling, operation, management, maintenance, and transfer of the Project Highway subject to and in accordance with the provisions of this Agreement.
c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Concessionaire under this Agreement.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km.	70.00	From March 2029
2	Construction of Service Road	km.	1.60	Both Side
3	Reconstruction of Pipe Culvert	Nos.	02	
4	Reconstruction of Box Culvert	Nos.	02	
5	New Construction of Box Culvert	Nos.	01	
6	Vehicular Underpasses	Nos.	02	
7	Reinforce Cement concrete cover Drain with footpath	km.	1.60	Both Side
8	Road marking by Thermoplastic Paint	km.	3.2	
9	Rigid Concrete Barrier	km.	3.2	
10	Additional cantilever Sign Boards	Nos.	04	

Note:

1. *Above Quantities are the minimum to be provided and any addition in the above shall not be treated under change of scope.*

2. *The Concessionaire informed that earlier IE had suggested a change of scope as IE had proposed an elevated road instead of two nos. new VUP. However, later NHAI rejected the same vide their letter no. NHAI/PIU/LKO/NH-24B/TOT/2022/3287 Dated 04-10-2022 and the same has been conveyed to Concessionaire as well as to start the original scope of work vide their letter no. IE/LKO-RBL/24B/O&M/2022/470 Dated 08-10-2022.*

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 9.0 m with earthen shoulder of 1.5 m on either side. The Project Road has a median width of 2.0 m throughout its length.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

Pavement condition survey was carried out from **21st March 2026 to 23rd March 2026** through visual inspection for the entire project length. From the visual inspection, it is found that the average pavement condition of the Project Road is found to be **fair to poor except few locations**.

Sr. No.	Side	Condition	% Age
1.	LHS	Fair to Poor	56%
2.	RHS	Fair to Poor	55%
3.	LHS	Good	14%
4.	RHS	Good	15%

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition

LHS

km. 14+000

km. 16+400

km. 16+900

km. 25+350

km. 25+600

km. 29+000

km. 31+400

km. 43+350

km. 46+000

km. 51+00

km. 65+650

km. 70+400

Shoulder

km. 18+350

km. 20+000

km. 25+350

km. 29+000

km. 34+400

km. 43+350

km. 44+000

km. 46+000

km. 67+000

km. 70+400

km. 77+600

Figure 3-2 Photographs of Pavement Condition

RHS

km. 79+200

km. 75+200

km. 71+400

km. 65+000

km. 59+600

km. 55+800

km. 52+600

km. 42+000

km. 40+000

km. 38+200

km. 35+800

km. 28+600

Shoulder

km. 75+200

km. 74+600

km. 71+400

km. 62+400

km. 59+600

km. 55+800

km. 52+600

km. 46+00

km. 42+000

km. 40+000

km. 35+800

km. 28+600

3.2 Service Road / Slip Road

The service road with width 5.5 is constructed in built-up area and adjoining underpass locations. The Project Road has total service road length of 7.66 kms. The photographs taken during the site visit are presented below.

Figure 3-3 Photographs of Service Road

Between km. 48+200 to km. 49+130

Between 80+700 to km. 82+000

3.3 Major / Minor Junctions

There are 05 nos. of major junctions and 29 nos. of minor junctions along Project Road. The junction details are presented in the table below.

Table 3-1 Details of Major Junctions

Sr. No.	Chainage (km)	Type of Junction	Name of Access Road		Surface Type of Access Road	
			LHS	RHS	LHS	RHS
1	22+970	T	Sultanpur	-	BT	-
2	39+120	X	Lalpur	-	BT	BT
3	77+300	X	Maharaj Ganj	Raebareli	BT	BT
4	81+640	X	Dih	Salon	BT	BT
5	82+400	X	Jagdishpur	Dedaur	BT	BT

The photographs taken during site visit is presented as below:

Figure 3-4 Photographs of Major Junctions

km. 22+900

km. 81+640

km. 82+400

Figure 3-5 Photographs of Minor Junctions

km. 13+800

km. 20+150

km. 25+820

At km. 27+620

km. 29+800

km. 32+175

km. 33+010

km. 43+550

3.4 Condition Survey of Bridge

The inventory of structures including major bridges, minor bridges, ROB's, underpasses and culverts is presented in table as below:

Table 3-2 Details of Summary for Structures

Type of Structure	Total Number of Structures
Major Structures:	
Road Over Bridge (ROB)	2
Flyover	-
Major Bridges (MJB)	-
Minor Bridges (MNB)	7
Vehicular Underpass (VUP)	-
Light Vehicular Underpass (LVUP)	-
Pedestrian Underpass (PUP)	1
Cattle Underpass (CUP)	-
Foot over Bridge	2
Culverts:	
Pipe Culverts	23
Box Culverts	66
Slab Culverts	-
Total	**101**

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-3 Condition Survey of Major Structure

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
1	41+845	Minor Bridge 3 x 3.0 m	Age	New - 2 Lane	New – 2 Lane	The structure is in sound condition. However, weep holes and vent cleaning is required.
			Foundation	Open Foundation	Open Foundation	
			Sub structure Abutment / Pier	Abutment - RCC Wall type Piers - RCC Walls Condition - Satisfactory	Abutment - RCC Wall type Piers - RCC Walls Condition - Satisfactory	
			Super Structure	RCC Box (Triple Cell) Footpath - Available Condition - Satisfactory	RCC Box (Triple Cell) Footpath - Available Condition - Satisfactory	
			Bearing	–	–	
			Slope Protection	–	–	
			Nalla Bed	–	–	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Not Required	Not Required	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating clear	Water grating clear	
2	44+737	Minor Bridge 2 x 6.0 m	Age	New - 2 Lane	New – 2 Lane	The structure is in sound condition. However, weep holes and vent cleaning is required.
			Foundation	Open Foundation	Open Foundation	
			Sub structure Abutment / Pier	Abutment - RCC Wall type Piers - RCC Walls Condition - Satisfactory	Abutment - RCC Wall type Piers - RCC Walls Condition - Satisfactory	
			Super Structure	RCC Box (Double Cell) Footpath - Available Condition - Satisfactory	RCC Box (Double Cell) Footpath - Available Condition - Satisfactory	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
			Bearing	–	–	
			Slope Protection	–	–	
			Nalla Bed	Flowing water	Flowing water	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Not Required	Not Required	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating clear	Water grating clear	
3	48+625	ROB LHS- 2 X 11.0 + 12 X 24.0 + 6 X 12.0 + 1 X 32.0 m RHS- 1 x 4.0 + 1 x 3.0 + 1 x 8.0 + 15 x 24.0 + 1 x 18 + 1 x 16.0 + 1 x 43.0 m	Age	New - 2 Lane	New – 2 Lane	The structure is in sound condition. Drainage arrangement and Down take pipe not provided at approaches as well as cleaning is required in weep holes, vent & expansion joint.
			Foundation	Pile Foundation	Pile Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC Wall type Piers - RCC piers Condition - Satisfactory	Abutment - RCC Wall type Piers - RCC piers Condition - Satisfactory	
			Super Structure	21 Span PSC Girders, Steel Girders and RCC Slab Footpath- Not Available Condition – Satisfactory	21 Span PSC Girders, Steel Girders and RCC Slab Footpath – Available Condition – Satisfactory	
			Bearing	Bearing – POT/PTFE & Elastomeric	Bearing – POT/PTFE & Elastomeric	
			Slope Protection	RCC Return	RCC Return	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available	Available	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	-	-	
			Drainage	Water grating not clear	Water grating not clear	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
4	50+665	Minor Bridge 3 x 3.0 m	Age	New - 2 Lane	New – 2 Lane	The structure is in sound condition. Cleaning is required in weep holes and vent.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC Wall type Piers - RCC Walls Condition - Satisfactory	Abutment - RCC Wall type Piers - RCC Walls Condition - Satisfactory	
			Super Structure	RCC Box (Triple Cell) Footpath - Available Condition - Satisfactory	RCC Box (Triple Cell) Footpath - Available Condition - Satisfactory	
			Bearing	–	–	
			Slope Protection	–	–	
			Nalla Bed	Flowing water	Flowing water	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Not Required	Not Required	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating clear	Water grating clear	
5	54+030	PUP 1 x 5.0 m	Age	New – 3 lane	New – 3 lane	The structure is in sound condition. However, weep holes and vent cleaning is required.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC box type	Abutment - RCC box type	
			Super Structure	RCC slab	RCC slab	
			Bearing	-	-	
			Slope Protection	Earthen filled with chute drain	Earthen filled with chute drain	
			Nalla Bed	-	-	
			Parapet / Railing	Crash Barrier with MBCB	Crash Barrier with MBCB	
			Expansion Joint	Nil	Nil	
			Wearing Coat/ Surface	BC is in good condition	BC is in good condition	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drain spout provided- Not cleared	Drain spout provided- Not cleared	
6	60+961	Minor Bridge 2 x 10.0 m	Age	New - 2 Lane	New – 2 Lane	The structure is in sound condition. Weep holes and vent cleaning is required.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC Wall type Piers - RCC Walls Condition - Satisfactory	Abutment - RCC Wall type Piers - RCC Walls Condition - Satisfactory	
			Super Structure	RCC Box Girder (Double Cell) Footpath - Available Condition - Satisfactory	RCC Box Girder (Double Cell) Footpath - Available Condition - Satisfactory	
			Bearing	–	–	
			Slope Protection	–	–	
			Nalla Bed	Standing water	Standing water	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Not Required	Not Required	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating clear	Water grating clear	
7	61+726	Minor Bridge 3 x 3.0 m	Age	New - 2 Lane	New – 2 Lane	The structure is in sound condition. Weep holes and vent cleaning is required.
			Foundation	Open Foundation	Open Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC Wall type Piers - RCC Walls Condition - Satisfactory	Abutment - RCC Wall type Piers - RCC Walls Condition - Satisfactory	
			Super Structure	RCC Box (Triple Cell) Footpath - Available Condition - Satisfactory	RCC Box (Triple Cell) Footpath - Available Condition - Satisfactory	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
			Bearing	–	–	
			Slope Protection	–	–	
			Nalla Bed	–	–	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Not Required	Not Required	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating clear	Water grating clear	
8	67+795	Minor Bridge LHS- 2 x 10.0+ 1x 20.0 m RHS- 1 x43.50 m	Age	Old - 2 Lane	New – 3 Lane	The structure is in sound condition. However, weep holes, vent & expansion joint cleaning is required.
			Foundation	Open Foundation	Pile Foundation	
			Sub structure Abutment / Pier	Abutment - RCC Wall type Piers - RCC Piers Condition - Satisfactory	Abutment - RCC Pile Cap Piers - RCC Piers Condition - Satisfactory	
			Super Structure	3 Span RCC Arch Girder + RCC Slab Footpath-Not Available Condition - Satisfactory	1 Span PSC Girder + RCC Slab Footpath - Available Condition - Satisfactory	
			Bearing	Elastomeric & POT/ PTFE	Elastomeric & POT/PTFE	
			Slope Protection	Earthen Embankment	Earthen Embankment	
			Nalla Bed	Flowing water	Flowing water	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available	Available	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating not clear	Water grating not clear	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
9	75+675	Minor Bridge LHS- 2 x 10.0+ 1x 20.0 m RHS- 1 x43.50 m	Age	Old - 2 Lane	New – 3 Lane	The Structure is in sound condition, Cleaning is required in weep holes, vent & expansion joint etc.
			Foundation	Open Foundation	Pile Foundation	
			Sub Structure Abutment / Pier	Abutment - RCC Wall type Piers - RCC Piers Condition - Satisfactory	Abutment - RCC Pile Cap Piers - RCC Piers Condition - Satisfactory	
			Super Structure	3 Span RCC Arch Girder + RCC Slab Footpath-Not Available Condition - Satisfactory	1 Span PSC Girder + RCC Slab Footpath - Available Condition - Satisfactory	
			Bearing	Elastomeric & POT/PTFE	Elastomeric & POT/PTFE	
			Slope Protection	Earthen Embankment	Earthen Embankment	
			Nalla Bed	Flowing water	Flowing water	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available	Available	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating not clear	Water grating not clear	
10	81+230	ROB LHS- 15 X 24.0 + 1 X 18.0 + 1 X 46.0 m RHS- 15 X 24.0 + 1 X 18.0 + 1 X 46.0 m	Age	New - 2 Lane	New - 2 Lane	The Structure is in sound condition, Drainage arrangement and down take pipe is not provided at approaches. As well as cleaning is required in weep holes, vent & expansion joint.
			Foundation	Pile Foundation	Pile Foundation	
			Sub Structure Abutment / Pier	Abutment-RE Panel Wall type Piers - RCC piers Condition - Satisfactory	Abutment – RE Panel Wall type Piers - RCC piers Condition - Satisfactory	
			Super Structure	17 Span PSC Girders, Steel Girders and RCC Slab Footpath – Available	17 Span PSC Girders, Steel Girders and RCC Slab Footpath – Available	

Sr. No.	Design Chainage (km)	Type of Bridge / Spans	Features and Observation			General Comments
			Component	LHS	RHS	
				Condition - Satisfactory	Condition - Satisfactory	
			Bearing	Bearing – POT/PTFE	Bearing – POT/PTFE	
			Slope Protection	RE Panel Wall	RE Panel Wall	
			Nalla Bed	Service Road	Service Road	
			Parapet / Railing	Crash Barrier - Satisfactory	Crash Barrier - Satisfactory	
			Expansion Joint	Available	Available	
			Wearing Coat/ Surface	BC - Satisfactory	BC - Satisfactory	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Water grating not clear	Water grating not clear	

Figure 3-6 Photographs of Major Structures

MNB at km. 41+845

MNB at km. 44+737

WC-MNB at km. 44+737

Mid portion of ROB at km. 48+625 at A1 side

Mid portion of ROB at km. 48+625

Bottom View of ROB at A2 side km. 48+625

Drainage system of ROB at km. 48+625

WC of ROB at km. 48+625

Expansion Joint of ROB at km. 48+625

PUP at km. 54+030

MNB at km. 60+961

WC of MNB at km. 60+961 at km. 48+625

MNB at km. 61+726

WC of MNB at km. 61+726

MNB at km. 67+795

WC of MNB at km. 67+795

Expansion Joint of MNB at km. 67+795

MNB at km. 75+675

Expansion Joint of MNB at km. 75+675

WC of MNB at km. 75+675

Damage Crash Barrier & Mid portion at MNB at km. 75+675

Side and Bottom view of ROB at km. 81+230

RUB at ROB at km. 81+230

Drainage system & Expansion Joint & WC of ROB at km. 81+230

Figure 3-7 Photographs of Foot Over Bridge

At km. 15+050

At km. 78+200

3.5 Condition Survey of Culverts

The cross-drainage structure includes Hume pipe culverts and box culverts at various locations. There are 23 Nos. of pipe culverts, 66 Nos. of box culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts is satisfactory. The RCC parapet or crash barrier has been provided at culvert locations which is maintained properly.

In most of culverts, the waterway is clear. However, near to urban area and some location is found blocked due to debris, drainage water or bushes, tree growth, which will be removed by the Annuity Concessionaire. The Cement Concrete pitching or stone pitching has been provided for slope protection.

The culverts are maintained by the Annuity Concessionaire during O&M period. However, in case of some culverts, cement concrete pitching has been damaged which required to be addressed under routine repair by the Annuity Concessionaire.

Figure 3-8 Photographs of Box Culverts

BC at km. 20+570

BC at km. 25+000

BC at km. 30+800

BC at km. 35+800

BC at km. 37+000

BC at km. 38+850

BC at km. 43+350

BC at km. 47+600

Figure 3-9 Photographs of Pipe Culverts

km. 42+270-RHS

km. 42+370-RHS

km. 42+270-LHS

km. 73+350-LHS

km. 73+350-RHS

3.6 Drainage

There are 31.48 kms of existing drain on both side of the Project Road as per Concession Agreement. However, 3.2 kms of RCC drain is additionally constructed in built-up area and locations where service roads are provided. The photographs taken during site visit is presented as below:

Figure 3-10 Photographs of Drainage

At km. 13+00-LHS

At km. 23+800-LHS

At km. 31+400-LHS

At km. 82+200-RHS

At km. 76+00-RHS

At km. 65+800-RHS

3.7 Slope Protection

Slope protection and chute drains are found on Project Road at required locations. Few of the slope protection and chute drains are damaged which will be rectified by the Annuity Concessionaire.

Figure 3-11 Photographs of Slope Protection and Chute Drain

At km. 54+030-LHS

At km. 54+030-RHS

At km. 60+961-LHS

At km. 60+961-RHS

At km. 61+726-LHS

At km. 61+726-RHS

At km. 67+795-LHS

At km. 67+795-LHS

At km. 67+795-RHS

3.8 Road Furniture

The Concessionaire has to provided additional road furniture along the Project Road as per the standards and specifications mentioned in Schedule-C / Schedule-B. The details of the items are provided below.

a) Lighting Along the Project Road

Lighting including fixing of poles and LED lights are to be provided at following locations on Project Road in accordance with Clause 12.3 of IRC:SP:84-2014.

Table 3-4 Details of Lighting on Project Road

Sr. No.	Chainage (km)		Side	Remarks	Length (m)
	From	To			
1	76+850	77+650	Both Side	For each number of light, the minimum specification shall be: street lighting with single pole and double arm fitting 45W (5050 LUMENS) - Blue tooth enabled MPPT Based Charge Controller, 9 Mts octagonal pole with all accessories, Automatic switch on / off, Duty Cycle 12 hrs. working each night	800.00

Sr. No.	Chainage (km)		Side	Remarks	Length (m)
	From	To			
2	78+400	79+200	Both Side	For each number of light, the minimum specification shall be street lighting with single pole and double arm fitting 45W (5050 LUMENS) - Blue tooth enabled MPPT Based Charge Controller, 9 Mts octagonal pole with all accessories, Automatic switch on / off, Duty Cycle 12 hrs. working each night	800.00
Total Length (m)					**1600.00**

In addition to above, suitable lighting arrangements are to be provided and maintained at underside of PUP, VUP and other structures mentioned in schedule-B.

b) Transverse / Thermoplastic Bar Marking Locations

Transverse / thermoplastic bar markings on either side of carriageway on proposed service road / VUP / VUP approach locations are provided as per Section 11.2 of IRC:35-2015.

c) New Installation of Safety Barriers

Following are the details of new installation of safety barriers along the Project Road which is yet to installed.

Table 3-5 Details of New Installation of Safety Barriers

Sr. No.	Chainage (km)		Length (m)	Location	Type of Barrier
	From	To			
1	76+850	77+650	800.00	BHS	Rigid barrier
2	78+400	79+200	800.00	BHS	Rigid barrier
		Total Length	**1600.00**		

d) Additional Gantry / Cantilever Sign Board

As per schedule-B, an additional gantry / cantilever sign has to provide at the following locations:

Table 3-6 Details of Additional Gantry / Cantilever Sign

Sr. No.	Chainage (km)	Location	Type
1	76+675	VUP	Cantilever Sign Boards
2	77+925	VUP	Cantilever Sign Boards
3	78+200	VUP	Cantilever Sign Boards
4	79+300	VUP	Cantilever Sign Boards

e) Summary of Quantity for Road Furniture Items

The following details show the summary of the quantity for road furniture items to be provided on Project Road.

Table 3-7 Details of Summary for Road Furniture Items

Sr. No.	Description	Unit	Quantity
1	Solar Blinkers	Nos.	Nil
2	Streetlights	Nos.	1152
3	High Mast Lights	Nos.	Nil
4	Transverse Bar Makings / Thermoplastic Bar Markings	km.	3.2
5	New installation of Safety Barriers		
	W-Beam Safety Barriers	m	Nil
	Concrete Median Barrier	m	Nil
	Rigid Concrete Barrier	m	3200
6	Guard Posts	m	Nil
7	Pedestrian Guard Rails	m	Nil
8	Road Studs / Raised Pavement Markers		
9	Road Markings		
10	Traffic Delineators	As per Section-9 of IRC:SP:84-2014	
11	Kilometer / Hectometer / Boundary Stones		
12	Additional Sign Boards		
	Gantry Sign Boards	Nos.	Nil
	Cantilever Sign Boards	Nos.	4
	Shoulder Mounted Dual Post Sign Boards	As per Section 9 of IRC:SP:84-2014	
	Shoulder / Median Mounted Single Post Sign Boards		

Pavement Marking

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Pavement marking is faded at some locations which will be rectified by the Annuity Concessionaire. Some of the photographs of road marking are presented below.

Figure 3-12 Photographs of Pavement Marking

km. 14+00-LHS

km. 44+00-LHS

km. 49+200-LHS

Km. 61+400-RHS

km. 55+800-RHS

km. 52+600-RHS

Road Studs

Road studs / cat's eye for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Cat's eye has been fixed at junction and zebra crossings. However, at few locations some cat eye has damaged which will be rectified by the Annuity Concessionaire. Some of the photographs of road studs are presented below.

Figure 3-13 Photographs of Road Studs

km. 13+800-LHS

km. 22+700-LHS

km. 25+820-LHS

km. 72+650-RHS

km. 63+00-RHS

km. 61+400-RHS

Traffic Signage / Median Kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of project highway and urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards and median kerb paint are faded at few locations which will be rectified by the Annuity Concessionaire. Some of the photographs of sign boards are presented below.

Figure 3-14 Photographs of Road Signages

LHS

km. 17+600

km. 20+200

km. 20+570

km. 22+700

km. 24+650

km. 27+620

Km. 29+000

km. 33+010

km. 35+200

RHS

km. 82+000

km. 77+000

km. 72+650

km. 72+650

km. 69+250

km. 65+800

km. 63+000

km. 61+400

km. 59+400

Highway Lighting

Highway lighting is provided at underpasses, flyovers, toll plaza, ROBs and built-up locations. High mast lighting is provided at toll plaza location. Highway lighting is also provided at approaches of underpass and flyovers. Some of the photographs of highway lighting are presented below.

Figure 3-15 Photographs of Street Light

km. 13+000

km. 23+800

km. 35+200

km. 37+000

km. 38+800

km. 42+650

Crash Barriers

Metal beam and concrete crash barriers are provided at bridges, approaches of structures, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site however proper nailing required between MBCB and concrete crash barrier joint wherever required. Some of the photographs of metal beam crash barriers are presented below.

Figure 3-16 Photographs of MBCB / Crash Barrier

km. 41+845-LHS

km. 44+735-RHS km. 48+625-RHS/LHS

km. 54+030-LHS

km. 60+961-RHS

Delineators

The traffic delineators are provided by Concessionaire for road users in abnormal condition of weather for the Project Road. However, at few locations some delineators have damaged which will be rectified by the Annuity Concessionaire.

km. 75+675-LHS km. 61+400-RHS

Pedestrian Guard Rail

The pedestrian guard rails are provided in the median. It is maintained by the Annuity Concessionaire. Some of the photographs of pedestrian guard rails are presented below.

Figure 3-17 Photographs of Pedestrian Guard Rail

km. 13+00 km. 23+800 km. 35+200

Road Land Boundary

Road land boundary pillar is not found / available on Project Road.

3.9 Avenue Plantation and Median Plantation

Avenue plantations are done only in forest land due to ROW issues and median plantation has been provided in the project length as per IRC specification.

Some of the photographs of plantation are presented below.

Figure 3-18 Photographs of Avenue Plantation

km. 16+400-LHS

km. 20+200-LHS

km. 29+00-LHS

km. 76+00-RHS

km. 69+970-RHS

km. 66+600-RHS

Figure 3-19 Photographs of Median Plantation

km. 20+150

km. 24+600

km. 27+620

km. 29+800

km. 43+550

km. 60+961

3.10 Toll Plaza

As per the Concession Agreement, there is one existing toll plaza at km. 42+650 near Dakshina Sekhpur with the following infrastructure.

Table 3-8 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 42+650
2	Number of Tolling Lanes	8 lanes for toll operation plus 2 lanes for over dimensional vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	in each direction
5	Number of Toll Booths	9 singles
6	Canopy	Present
7	Administrative Building	Present
8	Parking cum Toilet Block	Present
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	Tunnel / Yes
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	No
12	Storage facility for Overloaded Material	No
13	High mast Light	Yes
14	Streetlight	Yes (only 20 nos. near Toll plaza i.e., 10 nos. in both direction)
15	Low mast Light	No
16	User Fee Boards	3
17	Cantilever / Gantry Boards	Yes
18	Automatic boom barrier	Yes

Note:

- *Presently, Concessionaire is using Annuity Concessionaire's building as an administration building for toll plaza.*

- *The electric supply for the existing streetlights is provided by the TOT Concessionaire. The maintenance of these streetlights is in the scope of Annuity Concessionaire.*
- *Toll plaza is completed as per rehabilitation work and as per scope given in schedule-B.*

Figure 3-20 Photographs of Toll Plaza

Toll Plaza

Signage

Toll Plaza View

Weigh Bridge at TP

Admin Building at TP

DG Shed at TP

Admin building inside view

Electric Panel Room

Tunnel inside view

3.11 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC

3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.11.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

RFID

3.11.2 Lane Controller with Industrial PC

Toll Lane Controller are located within the Electronic Enclosure placed inside the tunnel below the toll booth which are connected to the common server and are capable of independent storage of data.

Lane Controller in Tunnel at TP

3.11.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVCC at TP

3.11.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at TP

3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at TP

3.11.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

AVC Camera

3.11.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

LPIC

3.11.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane "Open" and "Close" sign consists of a pair of "GREEN" (arrow) and "RED" (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at TP

3.11.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and type of ticket.

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.11.10 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

MSWIM at TP

3.12 Plaza Equipment

3.12.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio WiFi module. Firewall with Sophos antivirus is provided.

Server

3.12.2 55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

Control Room

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.12.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.

3.13 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) installed for the Project Road is controlled by the ATMS center at the toll plaza location (km. 42+650). As per Concession Agreement, ATMS shall conform to ATMS Policy guidelines (2016) which comprises of the following:

- Automatic Traffic Counter cum Classifier (ATCC)
- Mobile Radio communication system
- Emergency Call Box
- Portable Weigh in Motion
- Meteorological Data system
- Variable Message Signboards (VMS)
- CCTV system
- Video Incident Detection System (VIDS)
- Vehicle Actuated Speed Display (VASD)

Status of these systems at site is described below:

3.13.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is installed at Toll Plaza (km 15+465).

3.13.2 Mobile Radio communication System (MRCS)

Mobile Radio communication System (MRCS) is not yet installed. Application for MRCS UHF band has been sought from WPC, DoT, Ministry of Communications which is not yet allocated.

3.13.3 Emergency Call Boxes (ECB)

It is not installed at site.

3.13.4 Portable Weigh in Motion (PWIM)

Portable Weigh in Motion (PWIM) is available at site.

3.13.5 MET System

Meteorological sensors comprise of sensors to measure the atmospheric temperature, humidity, pavement surface temperature, visibility and equipment for measuring wind speed and direction and installed at Toll Plaza km. 42+650.

3.13.6 Variable Message Signboards (VMS)

Variable message sign boards are installed at 14 locations. These display specific messages to the users based on the prevailing conditions on the highway. The message can be changed at any point of time from the HTMS centre. About 250 customised messages can be stored on the system.

km. 17+050-LHS

km. 82+200-RHS

3.13.7 CCTV Surveillance Cameras

Surveillance cameras are installed at 55 locations along the Project Road. The ATMS control room has video wall to monitor these locations through the cameras installed.

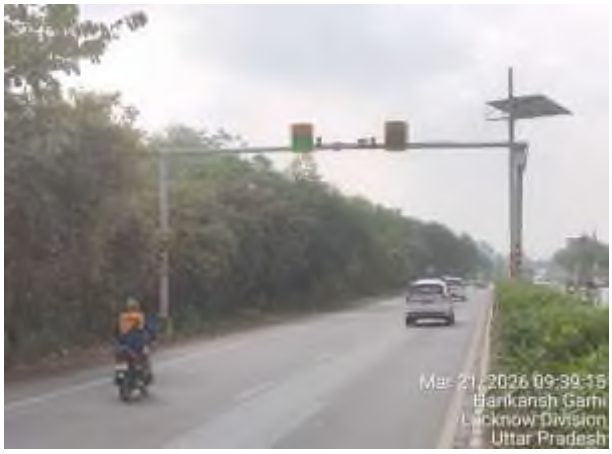
km. 80+100 km. 64+200

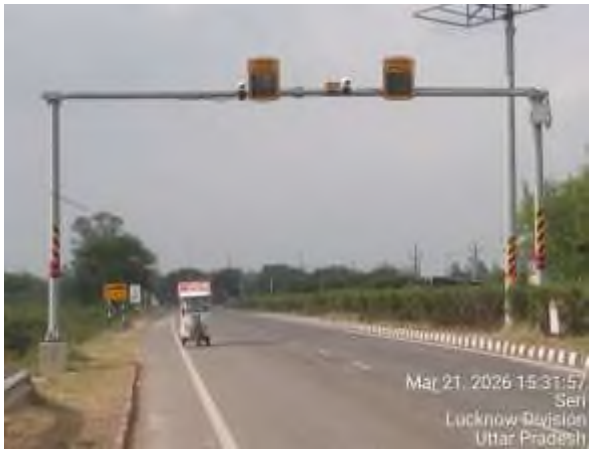
3.13.8 Video Incident Detection System

62 fixed CCTV cameras are installed as part of Video incident detection system.

3.13.9 Vehicle Actuated Speed Display (VASD)

VASD is installed at 3 locations each on LHS and RHS.





Km. 19+620-LHS km. 61+620-RHS

3.13.10 Adequacy of Toll Collection System and ATMS

- Adequacy - All lanes are hybrid ETC system as stipulated by NHAI in Technical Specifications of Hybrid ETC system. NHAI has approved maintenance costs for TMS. TMS shall be upgraded every 5 years at the cost of the Authority.

- The Advanced Traffic Management System (ATMS) installed is as per specifications required by the Authority and in working condition. Some components such as ECB and MRCS have not been installed.

3.13.11 Truck Lay-bye

The following are the truck lay-bye locations.

Table 3-9 Details of Truck Lay-bye

Sr. No.	Chainage (km)	Remarks
1	52+555	LHS
2	32+300	RHS

Figure 3-21 Photographs of Truck Lay Bye

km. 52+555-LHS

km. 30+750-RHS (As per site chainage)

3.14 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Post are in the scope of Annuity Concessionaire. photographs of the Traffic Aid Post and Medical Aid Post are presented below.

Traffic Aid Post and Medical Aid Post

3.15 Toilet Block

There are two nos. of toilet blocks and maintenance of the same is in Annuity Concessionaire's scope.

Table 3-10 Details of Toilet Block

Sr. No.	Chainage (km)	Side		Remarks
		LHS	RHS	
1	42+500	Yes	-	
2	42+700	-	Yes	

Figure 3-22 Photographs of Toilet block

km. 42+500 (LHS)

km. 42+700 (RHS)

3.16 Bus Bays and Passenger Shelters

There are 45 Nos. of bus bays / passenger shelter along the Project Road. Some of the photographs of the bus bays are presented below.

Figure 3-23 Photographs of Bus Bay / Passenger Shelter

Km. 69+250-RHS

Km. 60+650-RHS

Km. 21+550-LHS

Km. 26+350-LHS

3.17 Balance Work Status

During site visit it has been observed that construction of 2 Nos. of VUPs at km. 77+276 and at km. 78+770 along with approaches are balance due to non-availability of land. As informed the Concessionaire, the correspondence is in progress with Authority to resolve the issue. The same is referred as below.

- Concessionaire informed to TDD Consultant that earlier there was a change of scope as IE had proposed an elevated road instead of two nos. new VUP vide their letter no. IE/LKO-RBL/24B/O&M/2021/160 dated 05-07-2021 to NHAI. However, later NHAI decided to continue at site as per their original scope of work given in schedule B vide their letter no. NHAI/PIU/LKO/NH-24B/TOT/2022/3287 Dated 04-10-2022 to IE and the same has been communicated with Concessionaire to start as per the original scope of work vide their letter no. IE/LKORBL/24B/O&M/ 2022/470 Dated 08-10-2022. Concessionaire again informed TDD consultant that LA is in process at NHAI end and after LA, concessionaire will start the work.

3.18 Operation and Maintenance

3.18.1 O&M Contract

As per Clause 15.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall confirm all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement.

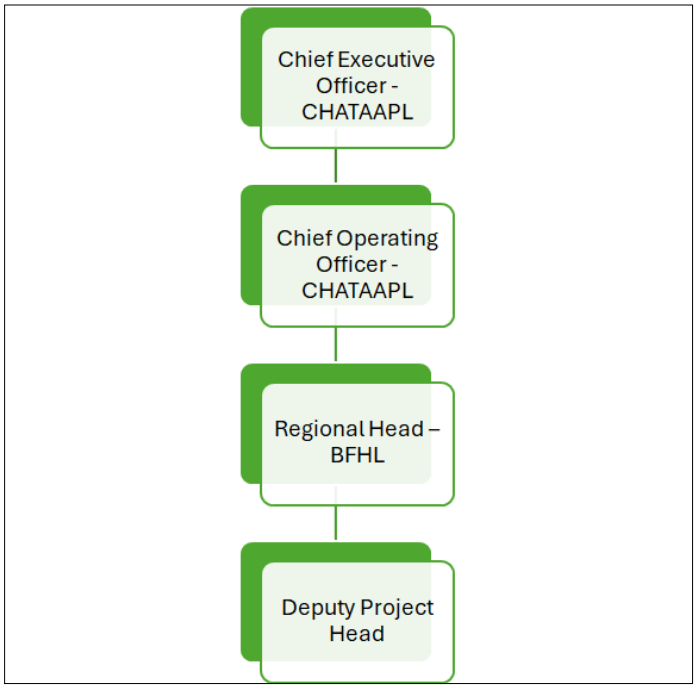
The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

3.18.2 Organization Chart

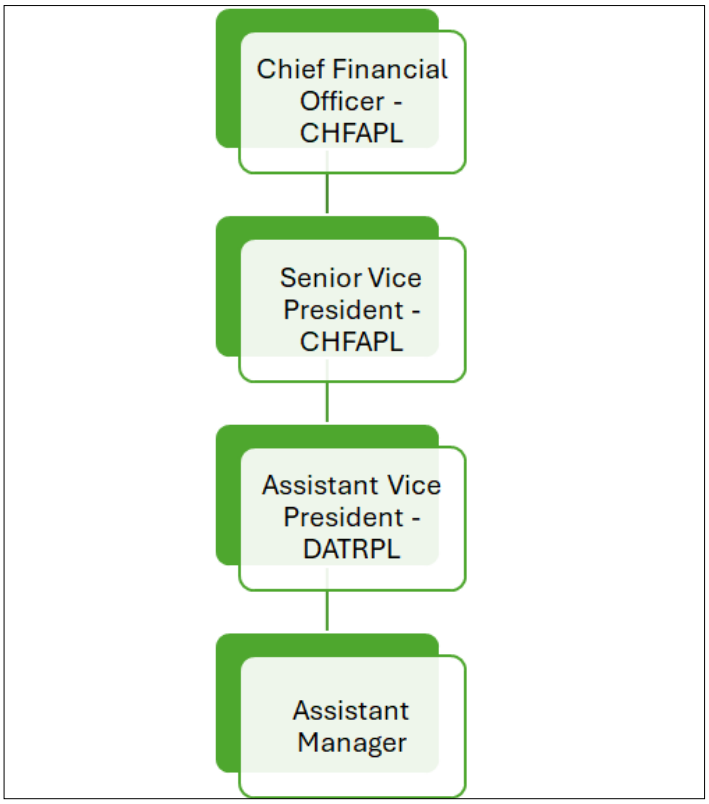
The Concessionaire has given the Organization Chart at site for operation and maintenance. Accordingly, there is 01 Project Head, 01 CFO-CHFA, 01 Executive (F&A), 01 Assistant Manager, 01 Executive, 04 Shift Supervisor (ATMS), 01 Plaza Manager, 01 Assistant Manager, 04 Cashiers, 04 validators and 02 Executive (ATMS) to carry out

O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent sub-contractors.

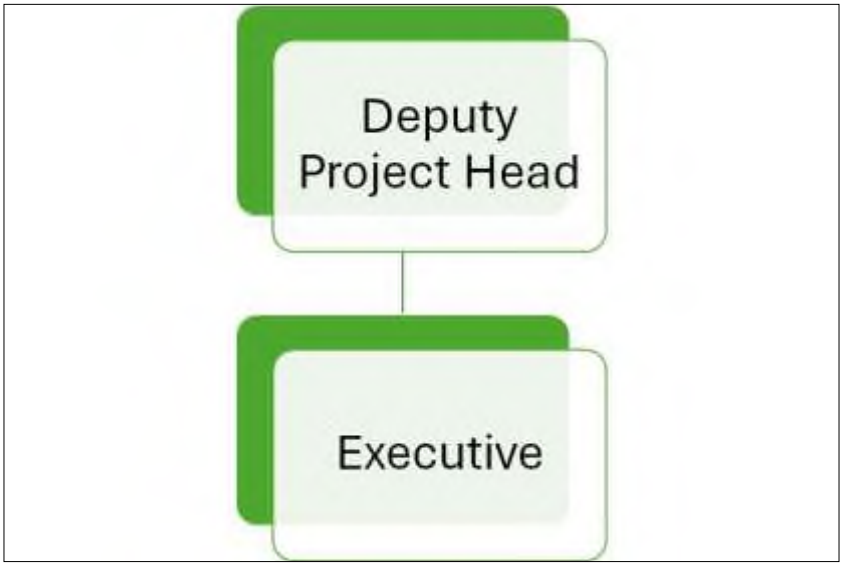
Organization Chart



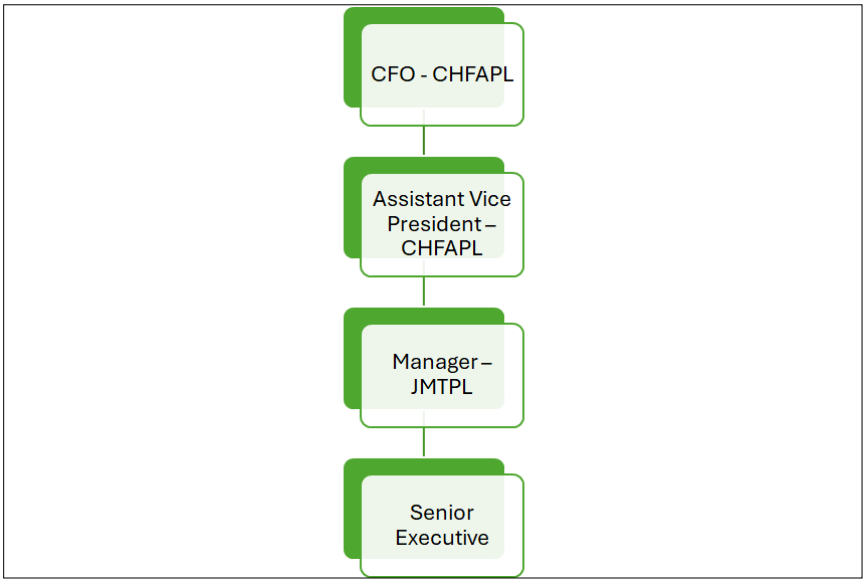
HO – Capital Structuring and Budgeting



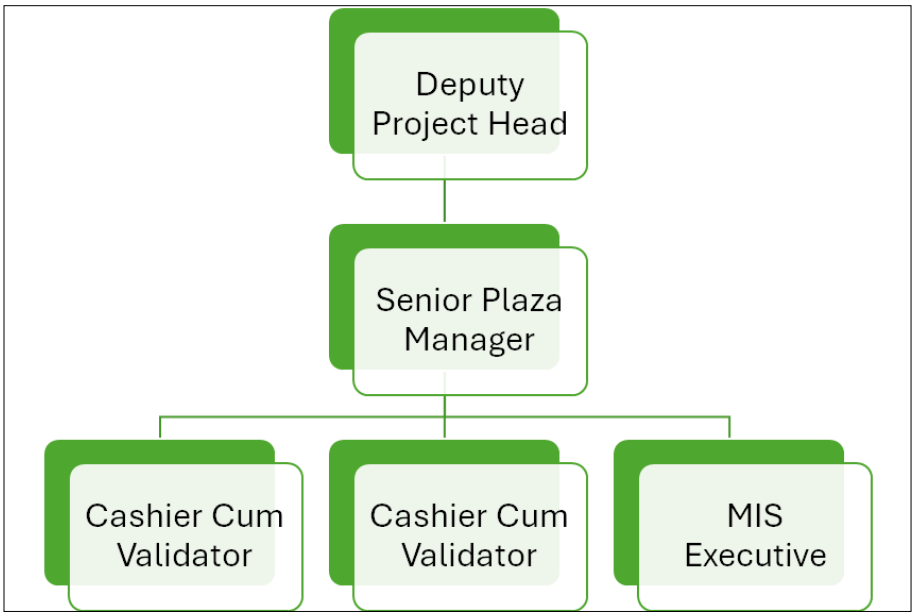
Finance & Accounts - Site



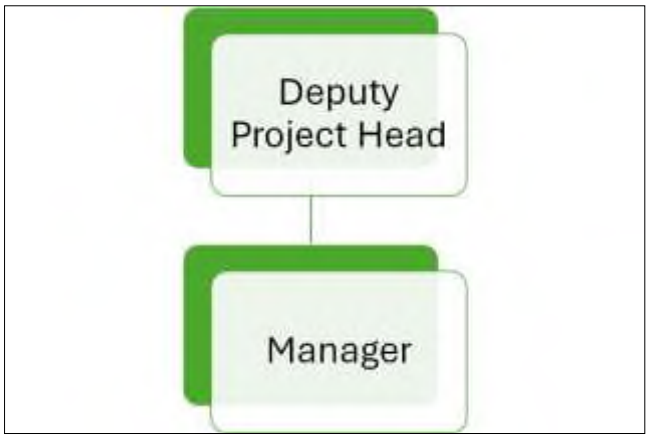
HO – Finance Controlling



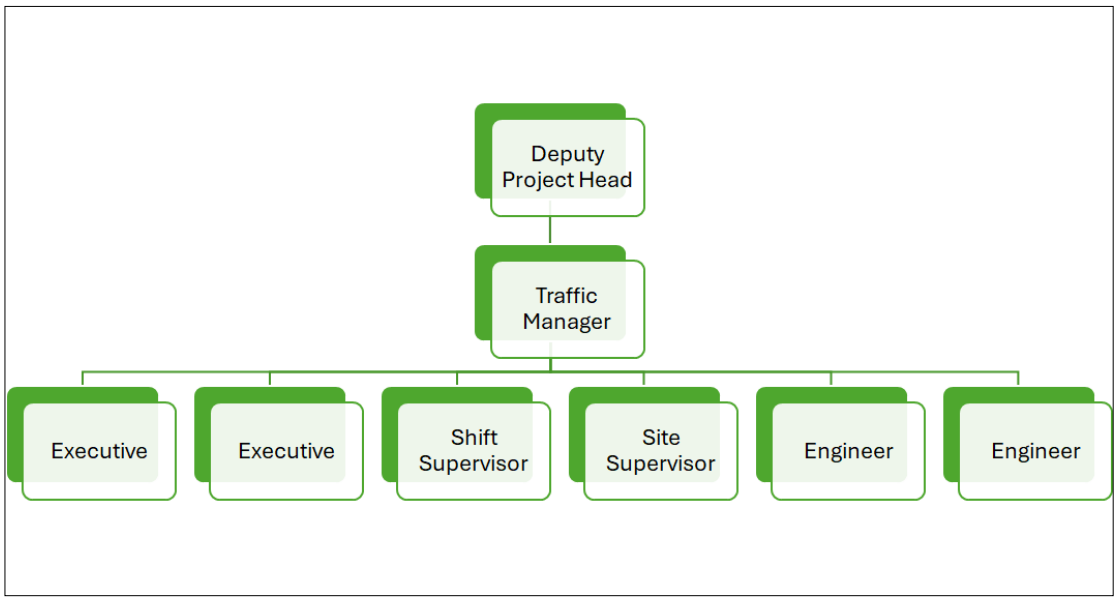
Site - Operations



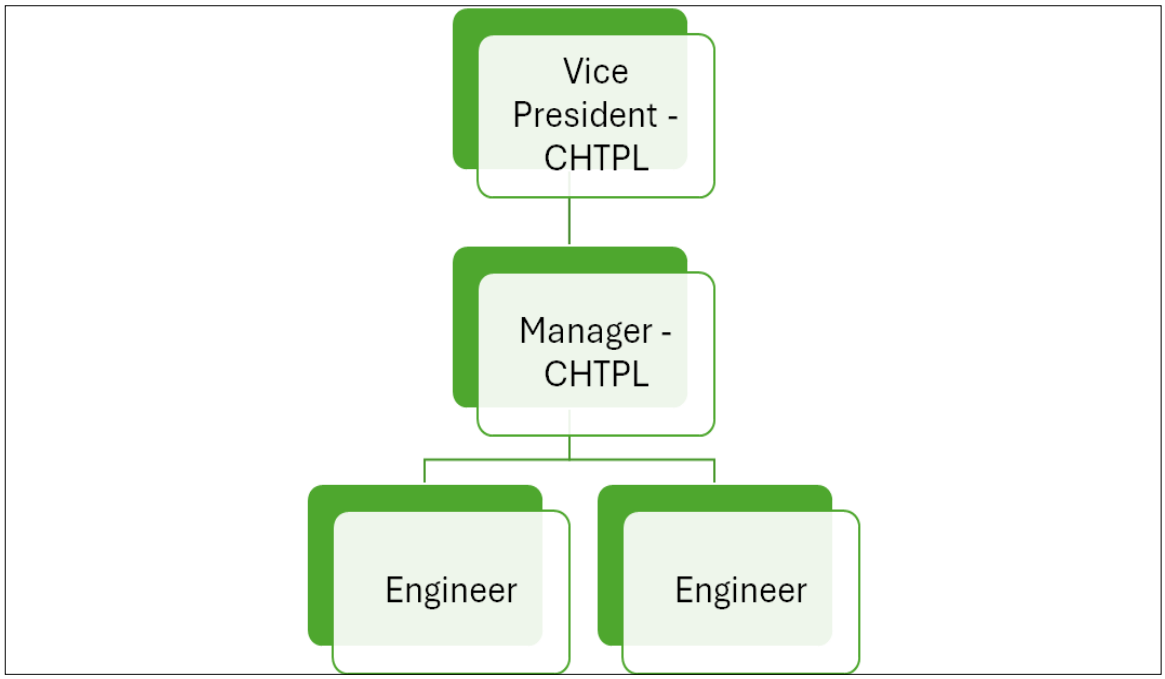
Site – Operation System



Site – ATMS Maintenance



Site – TMS Maintenance



LRTPL - Manpower Summary

S.NO.	DEPARTMENT	HEAD OFFICE	SITE	TOTAL STRENGTH
1	Capital Structure & Budgeting	1	0	1
2	Finance & Accounts	0	0	0
3	Finance Controlling	1	0	1
4	Operations	0	8	8
5	Operations System	0	1	1
6	ATMS Maintenance	0	10	10
7	TMS Maintenance	0	4	4
	TOTAL	2	23	25

3.18.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have been made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.18.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

Currently, the Project Road is maintained by Annuity Concessionaire. The project will be handed over to TOT Concessionaire in March 2029. Hence, routine maintenance is considered from the year 2029 till end of concession period.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Annuity Concessionaire as per Scope of Work. The Annuity Concessionaire has received Completion Certificate on 14th April 2015.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 30 years from the Appointed Date (as TOT Package i.e., 20th October 2020) including construction period. The project will be handed over to TOT Concessionaire in March 2029.

4.2 Axle Load and VDF

The Concessionaire has conducted the Axle Load Survey on Project Road at km. 42+500 (near Toll Plaza) on 23rd July 2019 and 24th July 2019. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor

Sr. No.	Vehicle Category	Direction	
		Lucknow - Raebareli	Raebareli - Lucknow
1	Bus	0.82	0.76
2	LCV	1.48	0.57
3	2-Axle	3.18	3.05
4	3-Axle	5.31	8.55
5	MAV	10.56	17.09

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data as provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
2026-27	1.48	**1.48**	2.11	**2.11**	
2027-28	1.51	**2.99**	2.15	**4.26**	
2028-29	1.55	**4.54**	2.20	**6.46**	Handing over from Annuity Concessionaire in Mar 2029
2029-30	1.58	**6.12**	2.25	**8.71**	
2030-31	1.62	**7.74**	2.30	**11.01**	
2031-32	1.65	**9.39**	2.35	**13.36**	MM Cycle on 4 Lane highway
2032-33	1.69	**11.08**	2.40	**15.76**	
2033-34	1.73	**12.81**	2.46	**18.22**	
2034-35	1.77	**14.58**	2.51	**20.73**	

Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
2035-36	1.81	**16.39**	2.57	**23.30**	
2036-37	1.86	**18.25**	2.63	**25.93**	
2037-38	1.89	**20.14**	2.68	**28.61**	
2038-39	1.94	**22.08**	2.74	**31.35**	MM Cycle on 4 Lane highway
2039-40	1.98	**24.06**	2.80	**34.15**	
2040-41	2.02	**26.08**	2.86	**37.01**	
2041-42	2.06	**28.14**	2.92	**39.93**	
2042-43	2.11	**30.25**	2.99	**42.92**	PCU crossed 40000
2043-44	2.15	**32.40**	3.05	**45.97**	PCU crossed 40000
2044-45	2.20	**34.60**	3.11	**49.08**	PCU crossed 40000
2045-46	2.24	**36.84**	3.17	**52.25**	DPR Preparation for 6 Laning
2046-47	2.29	**39.13**	3.24	**55.49**	DPR Preparation for 6 Laning
2047-48	2.34	**41.47**	3.30	**58.79**	6 Laning of Project Road
2048-49	2.39	**43.86**	3.38	**62.17**	6 Laning of Project Road
2049-50	2.43	**46.29**	3.44	**65.61**	6 Laning of Project Road
2050-51	1.98	**48.27**	2.80	**68.41**	End of Concession Period

4.4 Network Survey Vehicles (NSV) Survey

The O&M is not under the scope of Concessionaire / Client.

4.5 Structural Investigations

The O&M is not under the scope of Concessionaire / Client.

4.6 Test pit and Subgrade Investigation

The Concessionaire has carried out the subgrade investigation for Project Road. The results of the same as provided by the Concessionaire are tabulated as below.

Table 4-3 Test Results Summary of Natural Ground Soil Samples

Sr. No.	Location (km)	Side (LHS / RHS)	Soil Classification as per IS:1498	Gradation: Percent by weight passing through the Sieve (IS:2720-IV)						Clay & silt content %	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		4-Days Soaked CBR (%)	Free Swell Index (%)
				19.0 mm	10.0 mm	4.75 mm	2.0 mm	425 microns	75 microns		Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density (gm/cc)	OMC (%)		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	77+100	LHS	CL	96.7	94.3	93.2	91.5	89.6	85.8	85.8	32	19	13	1.86	11.8	4.1	25.0
2	77+500	RHS	ML	98.9	97.5	95.9	93.7	90.9	87.9	87.9	26	NP	NP	1.83	9.5	4.5	7.1
3	78+700	RHS	ML	100.0	99.5	98.7	97.9	96.4	87.1	87.1	25	NP	NP	1.84	10.7	4.7	11.1
4	79+100	LHS	CL	99.2	96.3	91.7	87.6	81.9	67.7	67.7	29	21	8	1.93	11.6	5.4	20.0

4.7 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full-length periodic maintenance. Schedule-F of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. Only improvement in Riding Quality is expected if the roughness value exceeds 3000 mm/km.

Currently, the Project Road is maintained by the existing Annuity Concessionaire. The project will be handed over to TOT Concessionaire in March 2029. It is assumed that the pavement will be overlaid before handing over the project confirming the pavement parameters kept within the limits as per Table-1 (Maintenance Criteria for Pavements) of Schedule-F. Hence, the major maintenance cycles are proposed between the year 2029 and end of concession period.

As per Article 14 of CA, the Authority shall carry out capacity augmentation under EPC contract if traffic exceeds 40,000 PCU for three consecutive accounting years. As per the traffic study report submitted by the Company, it is observed that the project traffic crosses 40,000 PCU in FY 2043, FY 2044, FY 2045. Assumption has made that execution of 6-laning of project highway will start in the year 2048 or 2049. It is also assumed that during the 6-laning of Project Road, overlay of existing four lane road will be the part of the capacity augmentation. Hence, the major maintenance cycle is adjusted accordingly.

The table below shows the major/ periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-4 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2027 to FY 2028	-	-
2	FY 2029	Handing over of Project Road from Annuity Concessionaire	
3	FY 2030 to FY 2031	-	-
4	FY 2032	Major maintenance with 30 mm BC (PMB) (50%) + Major maintenance with 40 mm BC (PMB) (50%) + Milling & 50 mm DBM (VG-40) (100%)	Major maintenance with 30 mm BC (VG-40) (50%) + Micro-surfacing (50%)
5	FY 2033 to FY 2038	-	-
6	FY 2039	Major maintenance with 40 mm BC (VG40) (100%) + Milling & 50 mm DBM (VG-40) (5%)	Major maintenance with 30 mm BC (VG-40) (50%) + Micro-surfacing (50%)
7	FY 2040 to FY 2047	-	-
8	FY 2048 to	Assumption of Capacity Augmentation to Six Lane Configuration	

Sr. No.	Year	Main Carriageway	Service Road
	FY 2050		
9	FY 2051	End of Concession Period	

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

    a. **Manpower and labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

    b. **Bitumen:** The Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. The same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of bitumen price are considered for unit rates calculation for FY 2028 and onwards, since bitumen prices have been range bound over the last five-six years. Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg last 10 years)
Mathura	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Panipat	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Koyali	All States	VG-10	47,102	37,125
		VG-30	48,402	38,137
		VG-40	51,082	40,251
Haldia	All States	VG-10	46,602	35,683
		VG-30	47,402	36,295
		VG-40	49,962	38,256

Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg last 10 years)
Barauni	All States	VG-10	47,132	36,213
		VG-30	48,432	37,325
		VG-40	50,992	39,286
CPCL	Kerala	VG-10	47,402	35,519
		VG-30	48,402	36,395
		VG-40	50,762	38,120
CPCL	Tamil Nadu	VG-10	47,902	36,019
		VG-30	48,402	36,395
		VG-40	50,962	38,320
CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320
CPCL	Karnataka	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320

c. **Sand and Aggregate:** Market rates are considered from the quarry located nearest to Project Road.

d. **Cement:** Market rates are considered from the nearest local market.

e. **Steel :** Rate of steel is taken from Market rate.

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable PWD SOR.

g. **Actual Rates of items as per work order:** The rates of road marking, road stud, kerb raising, micro surfacing, milling rates etc. are considered as per the work order shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam (VG-40)	Cum	9,825
2	Bituminous Concrete (VG-30)	Cum	10,947
3	Bituminous Concrete (VG-40)	Cum	11,249
4	Bituminous Concrete (PMB)	Cum	13,912
5	Milling	Sqm	92
6	Micro-surfacing	Sqm	162
7	Kerb re-laying	Rmt	311
8	Road Marking	Sqm	607
9	Road Studs	Nos.	179

5.3 Balance Work Cost

As discussed in previous chapters, the construction of two VUPs at km. 77+276 and at km. 78+770 has not started yet due to various reasons stated earlier. However, Concessionaire has worked out the cost of construction of these VUP which was subsequently also approved by IE. The IE has recommended the balance work amounting Rs.53,61,73,996.00 vide their letter no.SAICPL/OMT/NH-24B/LUC-REI/2022/MG/18938 Dated 18-08-2022 to NHAI. The same is presented below.

Table 5-3 Summary of Balance Works

Sr. No.	Items of Work	Balance Cost
1	Earth Work	12,035,953.00
2	Sub-base, Base (Non-Bituminous) & Shoulder	147,206,127.00
3	Bases and Surface course (Bituminous layer)	101,344,029.00
4	Box Culvert	23,061,971.00
5	Pipe Culvert	1,913,756.00
6	Structure at Underpasses	102,540,280.00
7	Drainage and protective works (RE Wall)	144,284,980.00
8	Traffic Signs, Marking & other road Appurtenances	3,786,901.00
	Total Balance Amount (Rs.)	**536,173,996.00**
	Total Balance Amount (Cr.)	**53.62**

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Incident Management Services
4. Electricity and Diesel Charges
5. TMS / HTMS / System Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Insurance Expense
10. IE Fees
11. Horticulture & ROW Maintenance
12. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs

due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

Currently, the Project Road is maintained by existing Annuity Concessionaire. The project will be handed over to TOT Concessionaire in March 2029. Hence, the routine maintenance and horticulture maintenance is considered from year 2029 till end of concession period.

The Routine Operation Cost is presented as below.

Table 5-4 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027-29)	Amount after Annuity (FY 2030-49)	Amount after Annuity & 6 lane Augmentation (FY 2050-51)
1	Salary and Welfare Expenses	1,03,95,000	1,03,95,000	1,03,95,000
2	Tolling Operations Services	3,04,50,445	3,04,50,445	3,04,50,445
3	Toll Security Services	69,11,071	69,11,071	69,11,071
4	Incident Management & Emergency Services	-	2,53,90,836	2,53,90,836
5	Electricity and Diesel Charges	34,03,596	3,08,42,740	3,08,42,740
6	TMS/HTMS/System Expenses	48,38,501	75,04,699	58,12,689
7	Office Operating Expenses	32,53,663	32,53,663	32,53,663
8	Vehicle Running Expenses	36,00,000	36,00,000	36,00,000
9	Professional Fees Expense	48,92,139	71,15,487	82,27,161
10	Community Development	10,41,962	10,41,962	10,41,962
11	Communication Expenses	3,62,250	3,62,250	3,62,250
12	Conveyance Expenses	3,95,182	3,95,182	3,95,182
13	Insurance Expense	26,34,546	26,34,546	26,34,546
14	IE Fees	66,39,054	66,39,054	66,39,054
15	Routine Maintenance Cost (Project Road)	-	2,64,73,654	3,50,60,312
16	Horticulture & ROW Maintenance	-	2,09,16,798	2,09,16,798
17	Miscellaneous including Contingency	31,52,696	54,61,477	54,38,264
	Total Cost (Rs.)	**8,19,70,105**	**18,93,88,865**	**19,73,71,972**
	Total Cost (Cr.)	**8.20**	**18.94**	**19.74**
	Per km Cost (Lakhs)	11.71	27.06	28.20

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in Annexure-II.

Table 5-5 Summary of Major Maintenance Cost

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2027 to FY 2031	-	
2	FY 2032	191.91	

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
3	FY 2033 to FY 2038	-	
4	FY 2039	94.90	
5	FY 2040 to FY 2050	-	
6	FY 2051	-	End of Concession Period
	Total Cost (Cr.)	286.81	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2027	7.40	
2	FY 2034	7.40	
3	FY 2041	7.40	
4	FY 2048	7.40	
Total Cost (Cr.)		**29.60**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-6 Escalation

Year	Escalation	Year	Escalation
2027	-	**2040**	3.99%
2028	4.86%	**2041**	3.99%
2029	4.44%	**2042**	3.99%
2030	4.24%	**2043**	3.99%
2031	4.13%	**2044**	3.99%
2032	4.08%	**2045**	3.99%
2033	4.01%	**2046**	3.99%
2034	4.00%	**2047**	3.99%
2035	4.03%	**2048**	3.99%
2036	4.01%	**2049**	3.99%
2037	3.98%	**2050**	3.99%
2038	3.98%	**2051**	3.99%
2039	4.00%	**2052**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr.)

	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41	FY42	FY43	FY44	FY45	FY46	FY47	FY48	FY49	FY50	FY51
1	Routine O&M Cost																									
1.01	Salary and Welfare Expense	1.04	1.09	1.14	1.19	1.24	1.29	1.34	1.39	1.45	1.51	1.57	1.63	1.69	1.76	1.83	1.90	1.98	2.06	2.14	2.23	2.31	2.41	2.50	2.60	2.71
1.02	Tolling Operations Services	3.05	3.19	3.33	3.48	3.62	3.77	3.92	4.08	4.24	4.41	4.59	4.77	4.96	5.16	5.36	5.58	5.80	6.03	6.27	6.52	6.78	7.05	7.33	7.62	7.93
1.03	Toll Security Services	0.69	0.72	0.76	0.79	0.82	0.86	0.89	0.92	0.96	1.00	1.04	1.08	1.13	1.17	1.22	1.27	1.32	1.37	1.42	1.48	1.54	1.60	1.66	1.73	1.80
1.04	Incident Management Services	-	-	-	2.90	3.02	3.14	3.27	3.40	3.54	3.68	3.82	3.98	4.13	4.30	4.47	4.65	4.83	5.03	5.23	5.44	5.65	5.88	6.11	6.36	6.61
1.05	Electricity and Diesel Charges	0.34	0.36	0.37	3.52	3.67	3.82	3.97	4.13	4.29	4.47	4.64	4.83	5.02	5.22	5.43	5.65	5.87	6.11	6.35	6.60	6.87	7.14	7.43	7.72	8.03
1.06	TMS/HTMS/System Expenses	0.29	0.61	0.64	0.66	0.92	1.32	1.63	0.39	0.81	0.84	0.88	1.22	1.74	2.14	0.51	1.06	1.11	1.15	1.60	2.29	2.81	0.67	1.40	1.46	1.51
1.07	Office Operating Expenses	0.33	0.34	0.36	0.37	0.39	0.40	0.42	0.44	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.60	0.62	0.64	0.67	0.70	0.72	0.75	0.78	0.81	0.85
1.08	Vehicle Running Expenses	0.36	0.38	0.39	0.41	0.43	0.45	0.46	0.48	0.50	0.52	0.54	0.56	0.59	0.61	0.63	0.66	0.69	0.71	0.74	0.77	0.80	0.83	0.87	0.90	0.94
1.09	Professional Fees Expense	0.49	0.51	0.54	0.81	0.85	0.88	0.92	0.95	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.30	1.35	1.41	1.47	1.52	1.58	1.65	1.98	2.06	2.14
1.10	Community Development	0.10	0.11	0.11	0.12	0.12	0.13	0.13	0.14	0.15	0.15	0.16	0.16	0.17	0.18	0.18	0.19	0.20	0.21	0.21	0.22	0.23	0.24	0.25	0.26	0.27
1.11	Communication Expenses	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09	0.09
1.12	Conveyance Expenses	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.09	0.09	0.10	0.10	0.10
1.13	Insurance Expense	0.26	0.28	0.29	0.30	0.31	0.33	0.34	0.35	0.37	0.38	0.40	0.41	0.43	0.45	0.46	0.48	0.50	0.52	0.54	0.56	0.59	0.61	0.63	0.66	0.69
1.14	IE Fees	0.66	0.70	0.73	0.76	0.79	0.82	0.85	0.89	0.92	0.96	1.00	1.04	1.08	1.12	1.17	1.22	1.26	1.31	1.37	1.42	1.48	1.54	1.60	1.66	1.73
1.15	Routine Maintenance Cost	-	-	-	3.02	3.15	3.28	3.41	3.54	3.69	3.83	3.99	4.14	4.31	4.48	4.66	4.85	5.04	5.24	5.45	5.67	5.89	6.13	8.44	8.78	9.13
1.16	Horticulture & ROW Maintenance	-	-	-	2.39	2.49	2.59	2.69	2.80	2.91	3.03	3.15	3.27	3.41	3.54	3.68	3.83	3.98	4.14	4.31	4.48	4.66	4.84	5.04	5.24	5.45
1.17	Miscellaneous and Contingency	0.32	0.33	0.35	0.62	0.65	0.68	0.70	0.73	0.76	0.79	0.82	0.86	0.89	0.92	0.96	1.00	1.04	1.08	1.12	1.17	1.22	1.26	1.31	1.36	1.42
	Subtotal of O&M Cost	8.00	8.70	9.08	21.43	22.54	23.83	25.03	24.73	26.13	27.18	28.26	29.69	31.36	32.94	32.54	34.37	35.74	37.17	39.05	41.23	43.31	42.79	47.53	49.42	51.39
2	Major Maintenance Cost	-	-	-	-	-	221.59	-	-	-	-	-	-	124.77	-	-	-	-	-	-	-	-	-	-	-	-
3	Periodic Cost of TMS/HTMS Replacement	7.40	-	-	-	-	-	-	9.90	-	-	-	-	-	-	13.03	-	-	-	-	-	-	17.14	-	-	-
4	Balance Works Cost	53.62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**69.02**	**8.70**	**9.08**	**21.43**	**22.54**	**245.42**	**25.03**	**34.63**	**26.13**	**27.18**	**28.26**	**29.69**	**156.13**	**32.94**	**45.57**	**34.37**	**35.74**	**37.17**	**39.05**	**41.23**	**43.31**	**59.92**	**47.53**	**49.42**	**51.39**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost (Up to FY 2048)	
Project - Lucknow Raibareli	
Ordinary Repair Cost for Flexible (with GST)	**2,64,73,654**
(Inclusive of GST)	**= 3.78 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7 m or 14 m or 21 m) with 1.5 m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD **2,17,494**	**Urban** More than 4500 CVD **2,51,006**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
						Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	332766.00	384040.00	-	-	-	-
		Paved shoulder	1.70	369740.00	426711.00	66.76	-	2,46,82,548	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	434989.00	502013.00	-	-	-	-
		Paved shoulder	2.20	478487.00	552214.00	-	3.24	-	17,91,106
					TOTAL	**70.000**		**2,64,73,654**	

Routine Maintenance Cost (For FY 2049 onwards)	
Project - Lucknow Raebareli	
Ordinary Repair Cost for Flexible (with GST)	**3,50,60,312**
(Inclusive of GST)	**= 5.01 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7 m or 14 m or 21 m) with 1.5 m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD	**Urban** More than 4500 CVD	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				2,17,494	**2,51,006**				
						Normal	**Urban**	**Normal**	**Urban**
1	Six lane with divided carriageway	without Paved shoulder	2.09	454563.00	524603.00	-	-	-	-
		with Paved shoulder	2.26	491537.00	567274.00	66.76	-	3,28,13,290	-
2	Six lane with divided carriageway and service lane on either side	without Paved shoulder	2.56	556785.00	642576.00	-	-	-	-
		with Paved shoulder	2.76	600284.00	692777.00	-	3.24	-	22,47,022
TOTAL						**70.000**		**3,50,60,312**	

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Potholes repair (50 mm deep)	100 % Pothole free	As & when required	0.50%
	Volume (cum)			2.50
	Rs/m^3			11948
	Cost in Rupees			29,869
	ii) Patch repair	100 % Patch less	As & when required	0.50%
	Area (sqm)			50
	Rs/m^2			478
	Cost in Rupees			23,895
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			90
	Cost in Rupees			22,385
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.00%
	Area (sqm)			150
	Rs/m^2			60
	Cost in Rupees			8,970
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			478
	Cost in Rupees			35,843
	v) Road marking	14%	Once in 7th year & @ Repaired location	32690
	SUB TOTAL			**1,53,652**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**7,414**
3	**Maintenance of Cross Drainage works:**			
	i) Repair of floors	100%	Once in a Year	5055
	ii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			**7,161**
4	**Maintenance of Minor & Major Bridges:**			
	i) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints	100%	As & when required	36,950
	ii) Repair of minor washouts, erosion scour and animal holes			
	iii) Sealing Cracks with Cement/Epoxy Mortar			
	iv) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometre stone etc.		Once in a Year	3695
	ii) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7390
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232
	iv) Traffic Census		Once in a Year	0
	v) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**12,317**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
	GRAND TOTAL (Normal)			**2,17,494**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Centre Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	3706
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**33,512**
	GRAND TOTAL (Urban)			**2,51,006**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY - 2032)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs)**	**Amount (Rs)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						24,37,827	13	3,05,70,353
	For BC	Sqm	2	68,526	8.75		11,99,202	11,99,202		
	For DBM	Sqm	2	68,526	7.25		9,93,625	9,93,625		
	For Misc. Location	Sqm	2	14,000	8.75		2,45,000	2,45,000		
2	BC with 30 mm	Cum	2	41,263	8.75	0.03	21,663	21,663	13,912	30,13,65,320
3	BC with 40 mm	Cum	2	41,263	8.75	0.04	28,884	28,884	13,912	40,18,20,427
4	DBM with 50 mm	Cum	2	68,526	7.25	0.05	49,681	49,681	9,825	48,81,21,673
5	Milling	Sqm	2	68,526	7.25		9,93,625	9,93,625	92	9,18,10,934
	Main Carriageway - Rigid Pavement									
6	Joint Sealant Replacement @ 10% length	Rmt	10%	1,518	3.50	4.50	1,214	1,214	120	1,45,708
7	Dismantling of CC Panels @ 5% area	Cum	5%		23,905	0.30	359	359	1,035	3,71,199
8	Replacement of Panels - PQC @ 5% area	Cum	5%		23,905	0.30	359	359	10,183	36,51,283
9	Replacement of Panels - DLC @ 0% area	Cum	0%		23,905	0.15	0	0	5,566	-
	Service Road									
10	Tack coat	Sqm	1	3,892	5.48		21,328	21,328	13	2,67,452
11	BC with 30 mm	Cum	1	3,892	5.48	0.03	640	640	11,249	71,97,326
12	Micro Surfacing	Sqm	1	3,892	5.48		21,328	21,328	162	34,55,116
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	1,089	18.7		20,356	20,356	13	2,55,265
12	Wearing Coat BC with 30 mm	Cum	1	1,089	18.7	0.03	611	611	13,912	84,95,501
13	Milling of Ex. Wearing Coat	Sqm	1	1,089	18.7		20,356	20,356	92	18,80,900
14	Painting of Crash Barrier	Sqm	4	1,089		1.20	5,228	5,228	107	5,59,439
	Other Works									
15	Raising of Road Kerb	Rmt	2	75,013			1,50,026	1,50,026	311	4,65,82,980

Major Maintenance Cost (FY - 2032)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs)**	**Amount (Rs)**
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	8,557			17,114	17,114	179	30,63,406
	Solar Road Stud	Nos	1				-	-	1,976	-
17	Painting of Kerb	Sqm	2	75,013		0.375	56,260	56,260	130	73,13,753
18	Road Marking	Sqm								
	on BC						52,230	52,230	504	2,63,05,259
	on Micro surfacing						756	756	651	4,92,253
	MCW									
	a) Median & Edge line	Sqm	4	73,500	0.15		44,100			
	b) Lane line	Sqm	2	24,255	0.10		4,851			
	Service Road									
	a) Edge line	Sqm	2	6,487	0.10		1,297			
	b) Lane line	Sqm	1	2,141	0.10		214			
	Junction crossing	Sqm					2,523			
19	Filling of Earthen shoulder	Cum					8,457	8,457	776	65,64,462
	MCW		2	68,526	1.00	0.06	8,223			
	Service Road		1	3,892	1.00	0.06	234			
20	Median Filling	Cum	1	66,225	4.17	-	-	-	417	-
21	Geogrid	Sqm						9,80,000	121	11,85,96,610
22	Miscellaneous	5%								7,74,44,331
Total Major Maintenance Cost (Rs)										**1,62,63,30,948**
Total Major Maintenance Cost with 18% GST (Rs)										**1,91,90,70,519**
Total Major Maintenance Cost with GST (Cr)										**191.91**
Per km Cost (lakh)										**274.15**
Escalation Factor for Major Maintenance Cost (FY - 2032)										**1.24**
Total Escalated Cost for Major Maintenance Cost (FY - 2032) (Cr)										**221.59**

Major Maintenance Cost (FY - 2039)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs)**	**Amount (Rs)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						14,93,884	13	1,87,33,301
	For BC	Sqm	2	68,526	8.75		11,99,202	11,99,202		
	For DBM	Sqm	2	3,426	7.25		49,681	49,681		
	For Misc. Location	Sqm	2	14,000	8.75		2,45,000	2,45,000		
2	BC with 30 mm	Cum	2	-	8.75	0.03	-	-	13,912	-
3	BC with 40 mm	Cum	2	82,526	8.75	0.04	57,768	57,768	11,249	64,98,15,970
4	DBM with 50 mm	Cum	2	3,426	7.25	0.05	2,484	2,484	9,825	2,44,06,084
5	Milling	Sqm	2	3,426	7.25		49,681	49,681	92	45,90,547
	Main Carriageway - Rigid Pavement									
6	Joint Sealant Replacement @ 10% length	Rmt	10%	1,518	3.50	4.50	1,214	1,214	120	1,45,708
7	Dismantling of CC Panels @ 5% area	Cum	5%		23,905	0.30	359	359	1,035	3,71,199
8	Replacement of Panels - PQC @ 5% area	Cum	5%		23,905	0.30	359	359	10,183	36,51,283
9	Replacement of Panels - DLC @ 0% area	Cum	0%		23,905	0.15	0	0	5,566	-
	Service Road									
10	Tack coat	Sqm	1	3,892	5.48		21,328	21,328	13	2,67,452
11	BC with 30 mm	Cum	1	3,892	5.48	0.03	640	640	11,249	71,97,326
12	Micro Surfacing	Sqm	1	3,892	5.48		21,328	21,328	162	34,55,116
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
13	Tack coat	Sqm	1	1,089	18.7		20,356	20,356	13	2,55,265
14	Wearing Coat BC with 30 mm	Cum	1	1,089	18.7	0.03	611	611	11,249	68,69,377
15	Milling of Ex. Wearing Coat	Sqm	1	1,089	18.7		20,356	20,356	92	18,80,900
16	Painting of Crash Barrier	Sqm	4	1,089		1.20	5,228	5,228	107	5,59,439
	Other Works									
17	Raising of Road Kerb	Rmt	-	75,013			-	-	311	-
18	Replacement of Road Stud									

Major Maintenance Cost (FY - 2039)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs)**	**Amount (Rs)**
	Normal Road Stud	Nos	2	8,557			17,114	17,114	179	30,63,406
	Solar Road Stud	Nos	1				-	-	1,976	-
19	Painting of Kerb	Sqm	2	75,013		0.375	56,260	56,260	130	73,13,753
20	Road Marking	Sqm								
	on BC						52,230	52,230	504	2,63,05,259
	on Micro surfacing						756	756	651	4,92,253
	MCW									
	a) Median & Edge line	Sqm	4	73,500	0.15		44,100			
	b) Lane line	Sqm	2	24,255	0.10		4,851			
	Service Road									
	a) Edge line	Sqm	2	6,487	0.10		1,297			
	b) Lane line	Sqm	1	2,141	0.10		214			
	Junction crossing	Sqm					2,523			
21	Filling of Earthen shoulder	Cum					8,457	8,457	776	65,64,462
	MCW		2	68,526	1.00	0.06	8,223			
	Service Road		1	3,892	1.00	0.06	234			
22	Median Filling	Cum	-	66,225	4.17	-	-	-	417	-
23	Geogrid	Sqm	-					-	121	-
24	Miscellaneous	5%								3,82,96,905
Total Major Maintenance Cost (Rs)										**80,42,35,003**
Total Major Maintenance Cost with 18% GST (Rs)										**94,89,97,304**
Total Major Maintenance Cost with GST (Cr)										**94.90**
Per km Cost (lakh)										**135.57**
Escalation Factor for Major Maintenance Cost (FY - 2039)										**1.63**
Total Escalated Cost for Major Maintenance Cost (FY - 2039) (Cr)										**124.77**

FP Project Management

Technical Due Diligence Study of Bharatpur - Mahua (NH-11) Section of NH-30 from km.63+000 to km.120+000 in the State of Rajasthan on BOT Mode

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited

315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025
Tel: +91-22-6660 3901
e-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	RW / NHA	CSB	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 General 7
3.2 Pavement Condition Survey 7
3.3 Bypass / Realignment 10
3.4 Service Road / Slip Road 10
3.5 At-Grade Junctions 11
3.6 Condition Survey of Bridge 13
3.7 Condition Survey of Culverts 20
3.8 Drainage 23
3.9 Slope Protection 23
3.10 Road Furniture 24
3.11 Avenue Plantation and Median Plantation 29
3.12 Toll Plaza 30
3.13 Lane Equipment 30
3.13.1 RFID ETC Transceiver 30
3.13.2 Lane Controller with Industrial PC 31
3.13.3 Automatic Vehicle Classification (AVC) Sensors 31
3.13.4 Automatic Lane Barrier 32

3.13.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 33
3.13.6 Incident Capture Camera (AVC Camera) 33
3.13.7 License Plate Image Capture Camera (LPIC) 33
3.13.8 Over Head Lane Signal (OHLS) 33
3.13.9 Toll Booth Equipment 34
3.14 Plaza Equipment 34
3.14.1 TMS Server 34
3.14.2 55" LED screen for CCTV monitoring 35
3.14.3 Workstations in Control Room, POS room 35
3.15 Truck Lay-bye 36
3.16 Administrative, Operation and Maintenance Base Camp 37
3.17 Toilet Block 37
3.18 Bus Bays and Passenger Shelters 38
3.19 Balance Work Status 39
3.20 Operation and Maintenance 39
3.20.1 O&M Contract 39
3.20.2 Organization Chart 39
3.20.3 Operation 43
3.20.4 Routine Maintenance 43
4 Pavement Investigation and Assessment 44
4.1 General 44
4.2 Axle Load and VDF 44
4.3 Design Traffic 44
4.4 Network Survey Vehicles (NSV) Survey 45
4.5 Structural Investigations 46
4.6 Test pit and Subgrade Investigation 48
4.7 Periodic Maintenance Strategy 50
5 Cost Estimates 51
5.1 General 51
5.2 Rate Assumption 51
5.3 Balance Work Cost 53
5.4 Routine O&M Cost 53
5.5 Major Maintenance Cost 54
5.6 Periodic Replacement of TMS /System 54
5.7 Escalation Assumption 55
5.8 Summary of Cost 55
Annexures 57

Annexure I - Routine Maintenance Cost 58
Annexure II - Major Maintenance Cost 62

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Details of Summary for Structures 13
Table 3-2 Condition Survey of Major Structure 14
Table 3-3 Details of Truck Lay-bye 36
Table 3-4 Details of Toilet Block 37
Table 4-1 Vehicle Damage Factor 44
Table 4-2 MSA Calculation 44
Table 4-3 Test Results Summary of Natural Ground Soil Samples 48
Table 4-4 Test Results Summary of Bituminous Layer Samples 49
Table 4-5 Summary of Pavement Crust Thickness 49
Table 4-6 Major Maintenance Cycle 50
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 51
Table 5-2 Summary of Unit Rates 52
Table 5-3 Summary of Operation Cost 54
Table 5-4 Escalation 55

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start of Project Road 5
Figure 2-3 End of Project Road 5
Figure 3-1 Photographs of Pavement Condition (MCW-LHS) 8
Figure 3-2 Photographs of Pavement Condition (MCW-RHS) 9
Figure 3-3 Photographs of Bypass 10
Figure 3-4 Photographs of Service Road 10
Figure 3-5 Photographs of At-Grade Junctions 11
Figure 3-6 Photographs of Minor Junctions 12
Figure 3-7 Photographs of Road Over Bridge (ROB) 17
Figure 3-8 Photographs of Major Bridge 17
Figure 3-9 Photographs of Minor Bridge 18
Figure 3-10 Photographs of Grade Separator 19
Figure 3-11 Photographs of Underpasses 19
Figure 3-12 Photographs of Slab Culverts 21
Figure 3-13 Photographs of Pipe Culverts 22
Figure 3-14 Photographs of Drainage 23
Figure 3-15 Photographs of Slope Protection and Chute Drain 24
Figure 3-16 Photographs of Pavement Marking 25
Figure 3-17 Photographs of Road Studs 25
Figure 3-18 Photographs of Traffic Signages 26
Figure 3-19 Photographs of Street Light 27

Figure 3-20 Photographs of MBCB / Crash Barrier 27
Figure 3-21 Photographs of Delineators 28
Figure 3-22 Photographs of Pedestrian Guard Rail 28
Figure 3-23 Photographs of Road Land Boundary 29
Figure 3-24 Photographs of Avenue Plantation and Median Plantation 29
Figure 3-25 Photographs of Toll Plaza 30
Figure 3-26 Photographs of Truck Lay-bye 36
Figure 3-27 Photograph of Toilet Block 38
Figure 3-28 Photographs of Bus Bays 38

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Bharatpur - Mahua section of NH-11 from km. 63+000 to km. 120+000 in the State of Rajasthan (hereinafter referred as "Project Road").

M/s. Mahua Bharatpur Expressway Ltd. (MBEL) (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance, and transfer of Mahua to Bharatpur Section (from km. 63+000 to km. 120+000) of NH-11 on BOT Basis. The project was awarded to Concessionaire on 07th March 2005 with a concession period of 25 years including construction period of 3 years by National Highway Authority of India (NHAI). The length of Project Road is 57.000 kms with two toll plazas at km. 64+570 (Ludhawai) and at km. 98+500 (Amoli).

Accordingly, Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.
- Formulation of future major maintenance strategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS) till the end of concession period
- Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyzing the same as per the best engineering / industry practices.

The site visit and inspection were carried out between the periods from **07th March 2026 to 08th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features, and overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates:** The chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement **M/s. Mahua Bharatpur Expressway Ltd. (MBEL),** is a company promoted by Cube Highways or company a Special Purpose Vehicle (SPV) formed for implementing this project on 07th March 2005. The Appointed Date for the Project Road is 10th April 2006.

The project was developed on a BOT basis with a concession period of 25 years from the Appointed Date including construction period of 3 years. The Project Road has received the Completion Certificate on 9th March 2015. The project is currently under operation and Maintenance phase.

2.2 Location

The Project Road is a section of National Highway No. 11 from Bharatpur to Mahua in the state of Rajasthan. The total project length is 57.000 kms.

The Location Map of the Project Road is presented below:

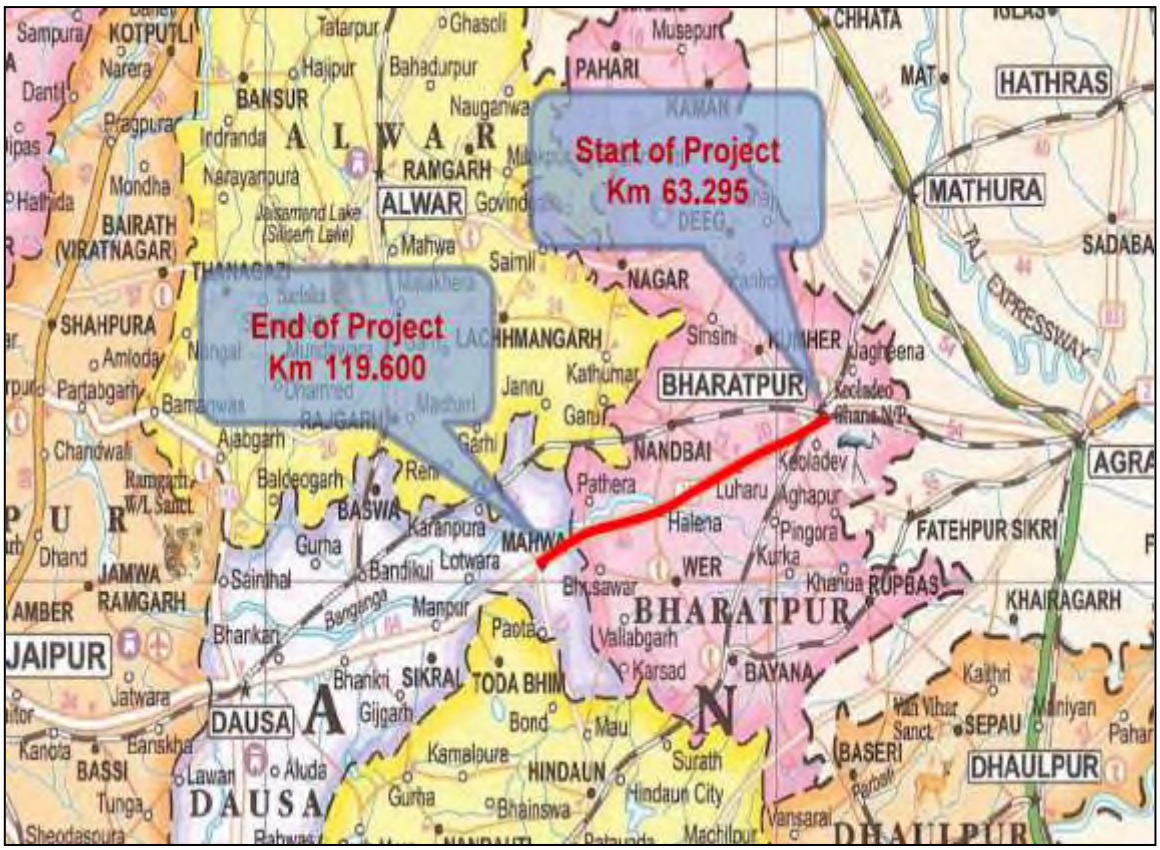


Figure 2-1 Location Map

The photographs taken during the site visit are presented below.

Figure 2-2 Start of Project Road

Start of Project Road (LHS)

Start of Project Road (RHS)

Figure 2-3 End of Project Road

End of Project Road

End of Project Road (RHS)

2.3 Climate

The climate features of the area covered by the Project Road are:

Summer	March - May, with maximum temperature up to 47 ^{0}C.
Monsoon	June - August, with annual rainfall of about 560-660 mm.
Retreating monsoon season	September - November, with dry weather and moderate temperature.
Winter	December - February, temperature falls up to 3 ^{0}C.

2.4 Terrain

This section of National Highway traverses through plain terrain.

2.5 Abutting Land Use

The Project Road is characterized by a mix of habituated areas and agriculture lands.

2.6 Right of Way

The width of existing Right of Way (RoW) for the Project Road varies from 13.50 m to 22.50 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services located along the Project Road were shifted to the PROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, etc.

2.8 Development as per Schedule-B

The Project Road from Bharatpur (km. 63+000) to Mahua (km. 120+000) has been developed as a four-lane divided carriageway with median width of 4.5 m and 2.0 m, service road and other arrangements. The Project Road passes through rural as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.
b) Tolling, operation, management, maintenance, and transfer of the Project Road subject to and in accordance with the provisions of this Agreement.
c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Concessionaire under this Agreement.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	Km.	57.000	
2	Construction of Service Road	Km.	12.980	Both Side
3	Major Bridge	Nos.	01	
4	Minor Bridge	Nos.	04	
5	Pipe Culvert	Nos.	25	
6	Slab Culvert	Nos.	12	
7	Box Culvert	Nos.	03	
8	Underpasses	Nos.	05	
9	Grade Separated Structure	Nos.	01	
10	Rail Over Bridge	Nos.	01	

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 General

The Project Road is four lane divided carriageway and generally has a paved carriageway of 9.0 m with an earthen shoulder of 1.5 m on either side. The Project Road has a median width of 4.5 m in rural section and 2.0 m in urban section.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza including taper is rigid pavement.

3.2 Pavement Condition Survey

Pavement condition survey was carried out from **07th March 2026 to 08th March 2026** through visual inspection for the entire project length. From the visual inspection, the pavement condition of the Project Road for the entire length is generally found to be Good. In the project, Major maintenance work has been done in FY 2025. The same has been intimated to NHAI by the Concessionaire.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (MCW-LHS)

Pavement Condition at km. 67+200

Pavement Condition at km. 72+900

Pavement Condition at km. 76+200

Pavement Condition at km. 78+310

Rigid Pavement at km. 80+600

Rigid Pavement at km. 84+600

Pavement Condition at km. 88+000

Pavement Condition at km. 96+400

Pavement Condition at km. 99+600

Pavement Condition at km. 103+200

Pavement Condition at km. 106+400

Pavement Condition at km. 111+000

Figure 3-2 Photographs of Pavement Condition (MCW-RHS)

Pavement Condition at km. 67+400

Pavement Condition at km. 68+300

Pavement Condition at km. 70+300

Pavement Condition at km. 74+200

Pavement Condition at km. 81+200

Pavement Condition at km. 86+800

Pavement Condition at km. 92+200

Pavement Condition at km. 94+800

Pavement Condition at km. 106+800

Pavement Condition at km. 113+100

Pavement Condition at km. 114+700

Pavement Condition at km. 117+200

3.3 Bypass / Realignment

There is one bypass on Project Road. The detail of the bypass is tabulated below:

Bypass:

Location of Bypass	Design Chainage (km)		Design Length (km)
	From	To	
Mahwa	114+380	118+680	4.30

The photographs taken during the site visit are presented below.

Figure 3-3 Photographs of Bypass

Start of Mahua Bypass

End of Mahua Bypass

3.4 Service Road / Slip Road

The service road with a 5.5 width is constructed in built-up area and adjoining underpass locations. The Project Road has total service road length of 12.980 kms on both sides. The photographs taken during the site visit are presented below.

Figure 3-4 Photographs of Service Road

Service Road at km. 65+260 (LHS)

Service Road at km. 82+700 (RHS)

Service Road at km. 99+800 (LHS)

Service Road at km. 101+650 (LHS)

Service Road at km. 106+100 (LHS)

Slip Road at km. 116+900 (LHS)

3.5 At-Grade Junctions

There are 29 Nos. of At-Grade Junctions along Project Road. The photographs taken during site visit is presented as below:

Figure 3-5 Photographs of At-Grade Junctions

Major Junction at km. 114+380 (RHS)

Major Junction at km. 118+700 (RHS)

Major Junction at km. 116+839 (LHS)

Major Junction at km. 114+350 (RHS)

Figure 3-6 Photographs of Minor Junctions

Minor Junction at km. 71+020 (LHS)

Minor Junction at km. 91+600 (LHS)

Minor Junction at km. 108+800 (RHS)

Minor Junction at km. 115+800 (LHS)

3.6 Condition Survey of Bridge

The inventory of structures including major bridges, minor bridges, ROB's, underpasses and culverts is presented in table as below:

Table 3-1 Details of Summary for Structures

Type of Structure	Total Number of Structures
Major Structures:	
Road Over Bridge (ROB)	01
Grade Separator	01
Major Bridges (MJB)	01
Minor Bridges (MNB)	04
Underpass (UP)	05
Culverts:	
Pipe Culverts	25
Slab Culverts	12
Box Culverts	03
Total	**52**

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-2 Condition Survey of Major Structure

Sr. No.	Name of Structure	Chainage (km)	Size (m)	Width (m)	Remarks
1	Minor Bridge (SLAB)	62+800	5 x 6.40	12	**LHS -** Existing Bridge, Stone masonry is used for Abutment, Pier and Wing wall, RCC deck slab, Tar Paper bearings are used, Median and Shoulder side RCC Railing, Cracks are observed on RCC Railing at span no. 4 and 5, and slope protection are in good condition. Drainage spouts are choked, Structure is in sound condition. Vegetations seen on pier cap at slab joints. **RHS -** Newly constructed Bridge, Substructure RCC abutment and Pier, RCC deck slab, Tar Paper bearings are used, Footpath side RCC Railing, Median side RCC Crash Barrier with handrail. Shoulder side RCC Crash Barrier. Crash barriers are in good condition. Expansion Joints are filled with Bituminous material. A1 side Slope protection damage. Drainage spouts are choked, Structure is in sound condition.
2	ROB	63+236	LHS - 1 x 48.65 RHS - 1 x 14.56 + 1 x 23 + 1 x 14.56	12	**LHS -** Single span Existing Bridge, Substructure RCC abutment, PSC Girder 4 nos. are used, Elastomeric bearing are used, Footpath. Shoulder, Median side RCC Crash Barrier, Expansion Joint, crash barrier and Slope protection are in good condition. Drainage spouts are cleaned, Structure is in sound condition. **RHS -** Newly constructed Bridge, Substructure RCC abutment, PSC Girder 5 no. are used for Railway span, RCC T Beam Girder 5 no. are used for obligatory span, Elastomeric Bearings are used, Footpath, Shoulder, and Median side RCC Crash Barrier. Expansion Joint cleaning is required. Expansion Joint, Crash Barrier and Slope protection are in good condition. Drainage spouts are cleaned, Structure is in sound condition. A return wall with RCC parapet is constructed. One high mass is erected at A1 side.
3	Minor Bridge	63+600	2 x 6.40	LHS - 12.00 RHS - 13.95	**LHS -** Existing Bridge, Stone masonry is used for Abutment, Pier and Return Wall. RCC deck slab, Tar Paper bearings are used, Median and Shoulder side RCC Railing. RCC Railing and slope protection are in good condition. Drainage spouts are choked. The structure is in sound condition.

Sr. No.	Name of Structure	Chainage (km)	Size (m)	Width (m)	Remarks
					RHS - Newly constructed Bridge, Substructure RCC abutment, Pier and Wing Wall, RCC deck slab, Tar Paper bearings are used, Footpath side RCC Railing, Shoulder side RCC Crash Barrier and Median side RCC Crash Barrier with handrail. A2 side Slope protection damaged. Crash barrier is in good condition. Drainage spouts are cleaned. The structure is in sound condition.
4	Ludhawai Underpass	66+305	1 x 11.16	12.25	Newly constructed, RCC Abutments, RCC Girder 4 no. for each span, Elastomeric Bearings are used, RCC Crash Barrier is in good condition. Drainage spouts are choked. The structure is in sound condition.
5	Hantra Underpass	82+050	1 x 11.16	12.25	Newly constructed, RCC Abutments, RCC Girder 4 no. for each span, Elastomeric Bearings are used, RCC Crash Barrier is in good condition. Drainage spouts are choked. Structure is in sound condition Cross Drain on RHS Service Road is damaged and obstructed to traffic. In the VUP cleaning is required.
6	Minor Bridge(SLAB)	92+350 in Skew	3 x 10	13.95	**LHS -** Newly constructed Bridge, Substructure RCC abutment and Pier, RCC deck slab, Tar Paper bearings are used, Footpath side RCC Railing, Shoulder side RCC Crash Barrier, Median side RCC Crash Barrier with handrail. RCC Return wall with RCC railing. Slope protection damaged. Crash barrier is in good condition. Drainage spouts are choked. The structure is in sound condition. At slab joint cracks are seen on Main Carriageway **RHS -** Newly constructed Bridge, Substructure RCC abutment and Pier, RCC deck slab, Tar Paper bearings are used, Footpath side RCC Railing, Shoulder side RCC Crash Barrier Median side RCC Crash Barrier with handrail. RCC Return wall with RCC railing. Crash barrier and slope protection are in good condition. Drainage spouts are choked. Structure is in sound condition. At slab joint cracks are seen on Main Carriageway
7	Major Bridge	95+450	7 x 39.75 + 1 x 40.25	13.95	**LHS and RHS** - Newly constructed Bridge, Substructure RCC abutment and Pier, PSC Girder 4 no., POT PTFE bearings are used, Footpath side RCC Railing, Shoulder side RCC Crash Barrier, Median side RCC Crash Barrier with handrail. Expansion Joint Cleaning work in progress on RHS side. Crash Barrier

Sr. No.	Name of Structure	Chainage (km)	Size (m)	Width (m)	Remarks
					is in good condition, Slope protection is in good condition Except A1 side LHS slope protection not done. Drainage spouts are cleaned. The structure is in sound condition.
8	Chhankarwada Underpass	100+460	1 x 11.16	12.25	Newly constructed, RCC Abutments, RCC Girder 4 no. for each span, Elastomeric Bearings are used, RCC Crash Barrier is in good condition. Drainage spouts are cleaned. Structure is in sound condition
9	Bachhrain Underpass	105+570	1 x 11.16	12.25	Newly constructed, RCC Abutments, RCC Girder 4 no. for each span, Elastomeric Bearings are used, RCC Crash Barrier is in good condition. Drainage spouts are cleaned. Structure is in sound condition
10	Minor Bridge	108+180 in Skew	2 x 7	LHS - 13.95 RHS - 11.00	**LHS -** Newly constructed Bridge, Substructure RCC abutment and Pier, RCC deck slab, Tar Paper bearings are used, RCC return wall, Footpath side RCC Railing, Median side RCC Crash Barrier and shoulder side RCC Crash Barrier with handrail. Crash barrier and slope protection is damaged. The structure is in sound condition. **RHS -** Existing Bridge, Stone masonry are used for Abutment and Pier, RCC deck slab, Tar Paper bearings are used, Parapet Constructed in Brick work, Median side Partly RCC Railing and partly Parapet constructed in stone masonry, Slope protection are in good condition. The structure is in sound condition.
11	Flyover / GS	116+839	LHS and RHS - 1 x 12 + 2 x 16 + 1 x 12	13.5	Newly constructed, Substructure RCC abutment and Pier, RCC Girder 5 no. for each span, Elastomeric bearings are used, Footpath side RCC Railing, Shoulder side RCC Crash Barrier, Expansion Joint and RCC wing wall are in good condition, Drainage spouts are Cleaned. The structure is in sound condition.
12	Mahwa Underpass	118+110	1 x 11.16	12.25	Newly constructed, RCC Abutments, RCC Girder 4 no. for each span, Elastomeric Bearings are used, Shoulder side RCC Crash Barrier and Median side RCC Crash Barrier with handrail. RCC Crash Barrier is in good condition. Drainage spouts are choked. Structure is in sound condition

Figure 3-7 Photographs of Road Over Bridge (ROB)

View of New ROB at km. 63+236 (LHS)

View of Existing ROB at km. 63+236 (RHS)

View of ROB Girder at km. 63+236

View of ROB Wearing Coat at km. 63+236 (LHS)

Figure 3-8 Photographs of Major Bridge

Major Bridge at km. 95+750 (RHS)

Major Bridge at km. 95+750

Major Bridge at km. 95+750 (LHS)

Major Bridge at km. 95+750 (RHS)

Figure 3-9 Photographs of Minor Bridge

Minor Bridge at km. 62+800 (LHS)

Minor Bridge at km. 62+800 (RHS)

Minor Bridge at km. 63+600 (LHS)

Minor Bridge at km. 63+600 (RHS)

Minor Bridge at km. 92+350 (LHS)

Minor Bridge at km. 92+350 (RHS)

Minor Bridge at km. 62+800 (RHS)

Minor Bridge at km. 62+800 (LHS)

Figure 3-10 Photographs of Grade Separator

Grade Separator at km. 116+845 (RHS)

Grade Separator at km. 116+845

Grade Separator at km. 116+845

Grade Separator at km. 116+845 (LHS)

Figure 3-11 Photographs of Underpasses

Underpass at km. 66+305 (LHS)

Underpass at km. 66+305 (RHS)

Underpass at km. 66+305 (RHS)

Underpass at km. 82+050 (LHS)

Underpass at km. 82+050

Underpass at km. 82+050 (RHS)

Underpass at km. 100+460 (LHS)

Underpass at km. 100+460 (RHS)

Underpass at km. 105+570 (LHS)

Underpass at km. 105+570 (RHS)

Underpass at km. 118+110 (RHS)

Underpass at km. 118+110 (LHS)

3.7 Condition Survey of Culverts

The cross-drainage structure includes hume pipe culverts and slab culverts at various locations. There are 25 Nos. of pipe culverts, 12 Nos. of slab culverts and 03 Nos. of box culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found sound. The quality of surface concrete of box culverts is satisfactory. The RCC parapet, crash barrier or RCC railing has been provided at culvert locations which is maintained properly.

In most of culverts, the waterway is clear. However, near to urban area and some location is found blocked due to debris, drainage water or bushes, tree growth, which will be removed by the Concessionaire. The cement concrete pitching or stone pitching has been provided for slope protection.

The culverts are maintained by the Concessionaire during O&M period. However, in case of some culverts, cement concrete pitching has been damaged which required to be addressed under routine repair work by the Concessionaire.

Figure 3-12 Photographs of Slab Culverts

Slab Culvert at km. 118+955 (LHS)

Slab Culvert at km. 109+500 (RHS)

Slab Culvert at km. 72+901 (LHS)

Slab Culvert at km. 79+771 (RHS)

Slab Culvert at km. 89+575 (LHS)

Slab Culvert at km. 105+590 (RHS)

Slab Culvert at km. 115+830 (LHS)

Slab Culvert at km. 118+332 (RHS)

Figure 3-13 Photographs of Pipe Culverts

Pipe Culvert at km. 68+298 (LHS)

Pipe Culvert at km. 70+300 (LHS)

Pipe Culvert at km. 76+500 (RHS)

Pipe Culvert at km. 81+341 (RHS)

Pipe Culvert at km. 86+500 (RHS)

Pipe Culvert at km. 90+609 (RHS)

Pipe Culvert at km. 115+203 (LHS)

Pipe Culvert at km. 115+379 (LHS)

3.8 Drainage

RCC drain is constructed in built-up areas and locations where service roads are provided. The photographs taken during site visit is presented as below:

Figure 3-14 Photographs of Drainage

RCC Drain at km. 65+260 (LHS)

V Shape RCC Drain at km. 66+000 (LHS)

RCC Drain at km. 82+700 (LHS)

RCC Drain at km. 101+650 (RHS)

3.9 Slope Protection

Slope protection and chute drains are found on Project Road at required locations. A few of the slope protection and chute drains are damaged which will be rectified by the Concessionaire. The photographs taken during site visit is presented as below:

Figure 3-15 Photographs of Slope Protection and Chute Drain

Chute Drain at km. 63+000 (RHS)

Slope Protection at km. 63+650 (RHS)

Slope Protection at km. 95+450 (RHS)

Slope Protection at km. 116+750 (LHS)

3.10 Road Furniture

The Concessionaire has provided road furniture along Project Road as per the standards and specifications mentioned in Schedule-C.

Pavement Marking

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Some of the photographs of road marking are presented below.

Figure 3-16 Photographs of Pavement Marking

Road Marking at km. 70+700 (LHS)

Road Marking at km. 74+780 (LHS)

Road Marking at km. 118+700

Road Marking at km. 108+700

Road Studs

Cat's eyes / road studs for the Project Road are done as per the design standards indicated in section 12 of Schedule-D. Cat's eyes have been fixed at junction and at pedestrian crossings locations. Some of the photographs of road studs are presented below.

Figure 3-17 Photographs of Road Studs

Road Studs km. 70+700 (LHS)

Road Studs km. 118+700

Traffic Signage / Median Kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards are properly placed.

Some of the photographs of sign boards are presented below.

Figure 3-18 Photographs of Traffic Signages

Directional Sign Board at km. 70+600 (LHS)

Directional Sign Board at km. 91+160 (RHS)

Kilometer Stone at km. 106+700 (LHS)

Sign Board at km. 114+400 (RHS)

Highway Lighting

Highway lighting is provided at underpasses, flyovers, toll plaza, ROBs and built-up locations. High mast lighting is provided at toll plaza location. Highway lighting is also provided at approaches of underpass and flyovers. Some of the photographs of highway lighting are presented below.

Figure 3-19 Photographs of Street Light

Street Lighting at km. 64+720

Street Lighting at km. 83+050

Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site. Some of the photographs of metal beam crash barriers and concrete crash barriers are presented below.

Figure 3-20 Photographs of MBCB / Crash Barrier

Metal Beam Crash Barrier at km. 118+400 (RHS)

Crash Barrier at km. 117+200 (RHS)

Concrete Barrier at km. 95+450 (LHS)

Concrete Crash Barrier at km. 82+000

Delineators

The traffic delineators are seen in median on curve portion and at median openings along the Project Road. Some of the photographs of delineators are presented below.

Figure 3-21 Photographs of Delineators

Delineators at km. 117+400

Delineators at km. 102+200

Pedestrian Guard Rail

The pedestrian guard rails are provided in between the main carriageway and service road. It is maintained by the Concessionaire. Some of the photographs of pedestrian guard rails are presented below.

Figure 3-22 Photographs of Pedestrian Guard Rail

Pedestrian Guard Rail at km. 65+260

Pedestrian Guard Rail at km. 104+900

Pedestrian Guard Rail at km. 83+500

Pedestrian Guard Rail at km. 87+600

Road Land Boundary

Some of the road land boundary stones are seen along the Project Road. The photographs taken during site visit are presented below.

Figure 3-23 Photographs of Road Land Boundary

Boundary Stone at km. 90+650 (RHS)

Boundary Stone at km. 71+660 (LHS)

3.11 Avenue Plantation and Median Plantation

Avenue plantation and median plantation are done along the project length as per IRC specification except at built-up Locations.

Figure 3-24 Photographs of Avenue Plantation and Median Plantation

Avenue and Median Plantation at km. 68+400 (LHS)

Avenue and Median Plantation at km. 74+400

Median Plantation at km. 76+600

Median Plantation at km. 117+000

3.12 Toll Plaza

As per the Concession Agreement, there are two no. of toll plazas at km. 64+570 (Ludhawali) and at km. 98+500 (Amoli) with the following infrastructure.

Figure 3-25 Photographs of Toll Plaza

Ludhawai Toll Plaza at km. 64+360

Ludhawai Toll Plaza at km. 64+360

Amoli Toll Plaza at km. 98+500

Amoli Toll Plaza at km. 98+500

3.13 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.13.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

3.13.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data at Km 64+360 and at km 98+500 is located in Tunnel.

Lane Controller in Booth at TP

3.13.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

3.13.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. Torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at TP

3.13.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

3.13.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on the island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

3.13.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

3.13.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane “Open” and “Close” sign consists of a pair of “GREEN” (arrow) and “RED” (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at TP

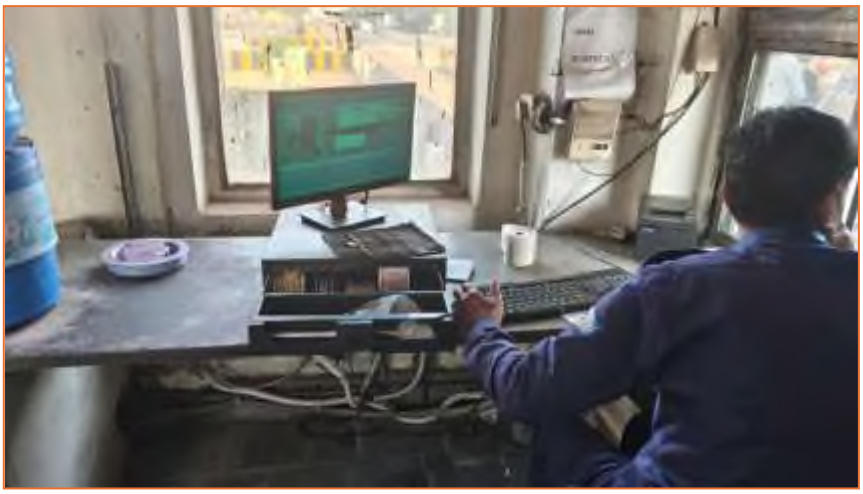
3.13.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and type of ticket.



Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.14 Plaza Equipment

3.14.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio WiFi module. Firewall with Sophos antivirus is provided.

3.14.2 55" LED screen for CCTV monitoring

55" LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.14.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.

3.15 Truck Lay-bye

The Concessionaire has provided truck lay-bye at the following locations.

Table 3-3 Details of Truck Lay-bye

Sr. No.	Design Chainage (km)	Side
1	90+740	LHS
2	91+200	RHS
3	113+820	LHS
4	113+820	RHS

Some of the photographs of the truck lay-bye are presented below.

Figure 3-26 Photographs of Truck Lay-bye

Truck Lay-Bye at km. 91+500

Truck Lay-Bye at km. 114+000 RHS

3.16 Administrative, Operation and Maintenance Base Camp

Traffic Aid Post and Medical Aid Post are in the scope of Concessionaire.

Toll Plaza Administrative Building at km. 64+570

Toll Plaza Administrative Building at km. 98+500

3.17 Toilet Block

There are 04 Nos. toilet blocks at truck lay bye locations and the same is being maintained by the Concessionaire.

Table 3-4 Details of Toilet Block

Sr. No.	Design Chainage (km)	Side
1	90+740	LHS
2	91+200	RHS
3	113+820	LHS
4	113+820	RHS

Some of the photographs of the toilet block are presented below.

Figure 3-27 Photograph of Toilet Block

Toilet Block at km. 91+150 (LHS)

Toilet Block at km. 113+900 (RHS)

3.18 Bus Bays and Passenger Shelters

There are 42 Nos. of bus bays / passenger shelters along Project Road. Some of the photographs of the bus bays are presented below.

Figure 3-28 Photographs of Bus Bays

Bus Bay at km. 70+600 (LHS)

Bus Bay at km. 97+020 (LHS)

Bus Bay at km. 98+950 (RHS)

Bus Bay at km. 118+800 (RHS)

3.19 Balance Work Status

The Project Road has received Completion Certificate on 09th March 2015 by completing all the works as mentioned in the Technical Schedules of Concession Agreement. There are no balance works to be executed as per CA.

3.20 Operation and Maintenance

3.20.1 O&M Contract

As per Clause 18.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, or otherwise make improvements to the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement, Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems, More Specifically.

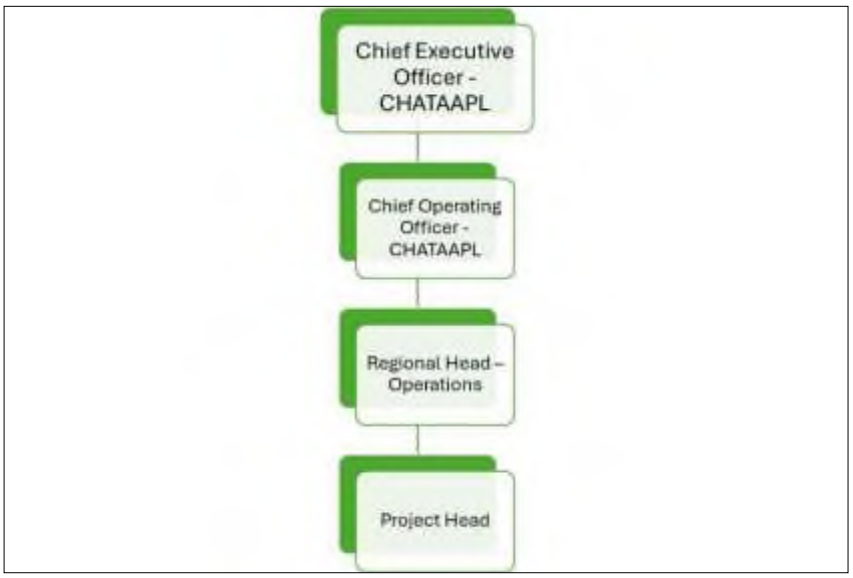
The Concessionaire has been outsourced to carry out the activities related to operation and maintenance of the Project Road including toll operation services, security services.

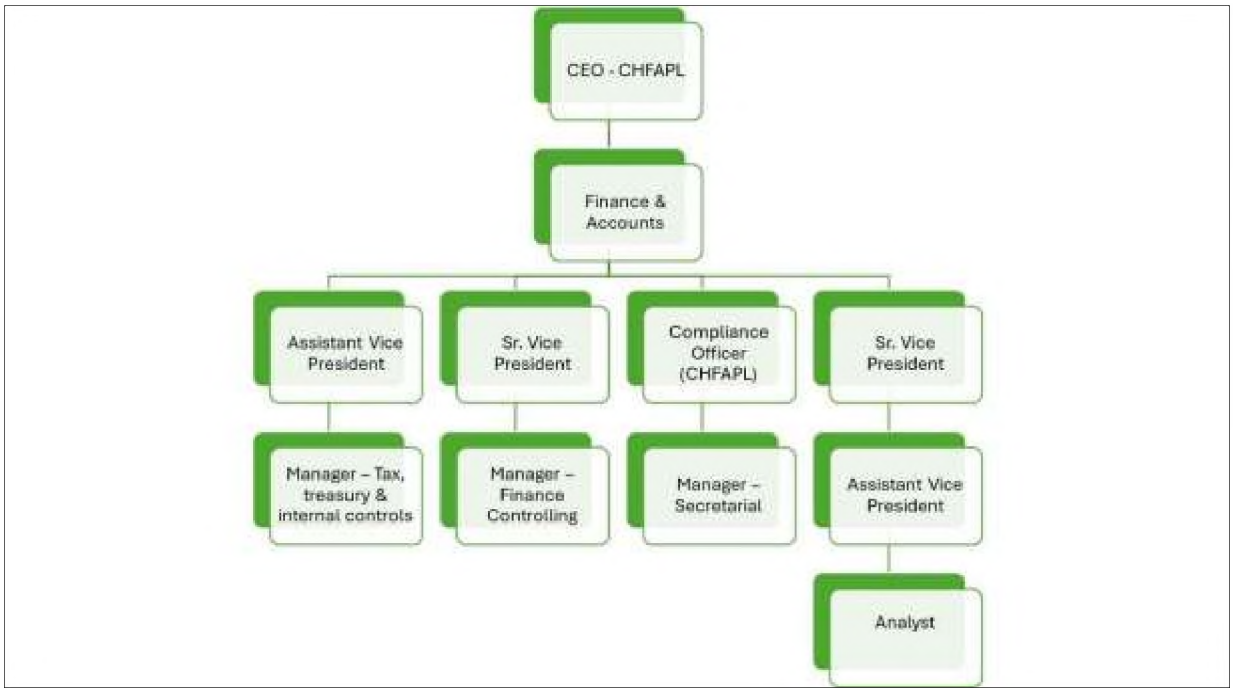
The Operation Cost is presented in the subsequent chapter.

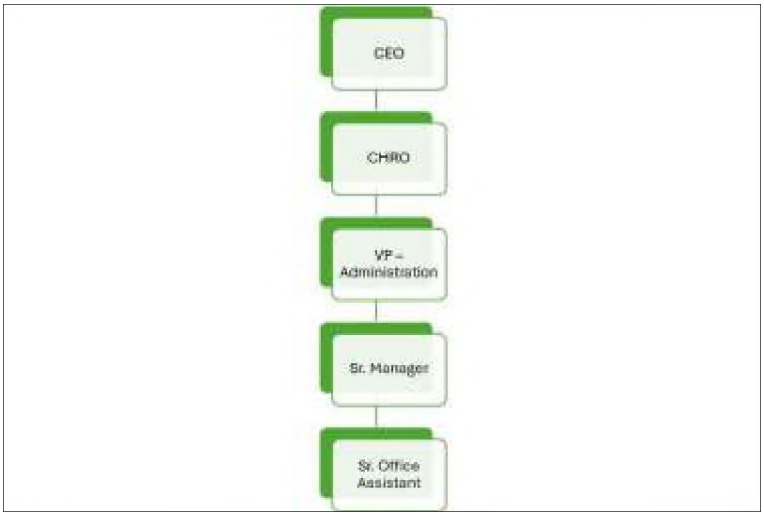
3.20.2 Organization Chart

The Concessionaire has provided the Organization Chart at site for Operation and maintenance. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent subcontractors.

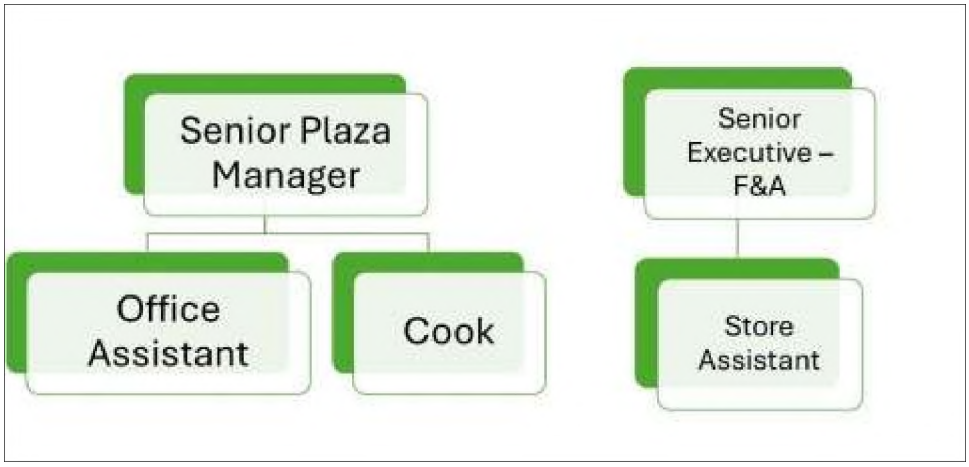
Organization Chart of Head Office Administration



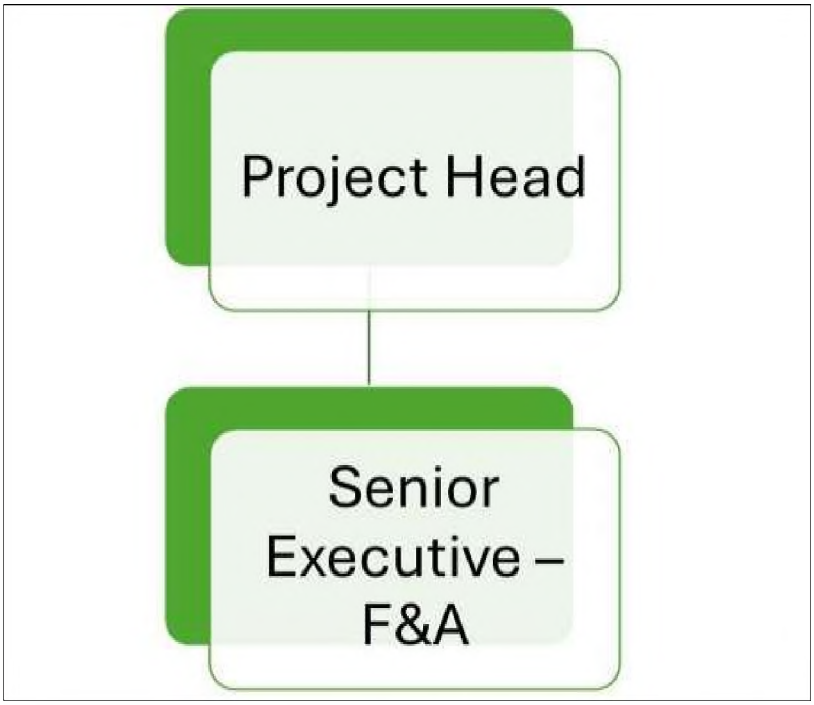




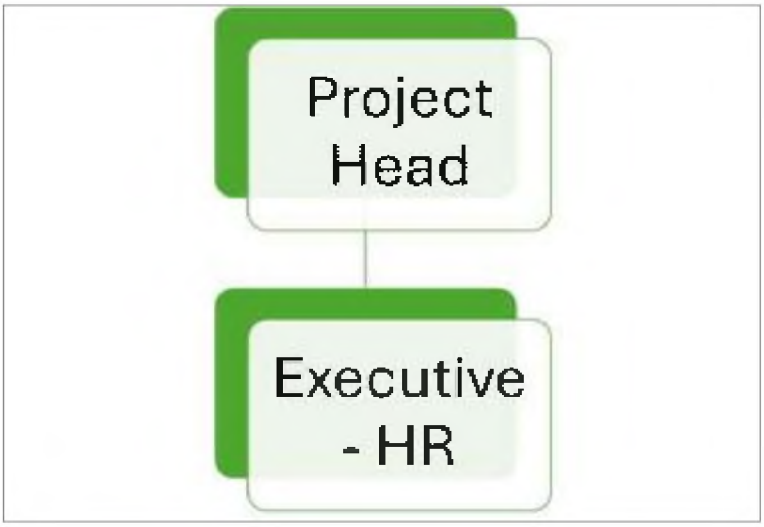
Administration-Site Office

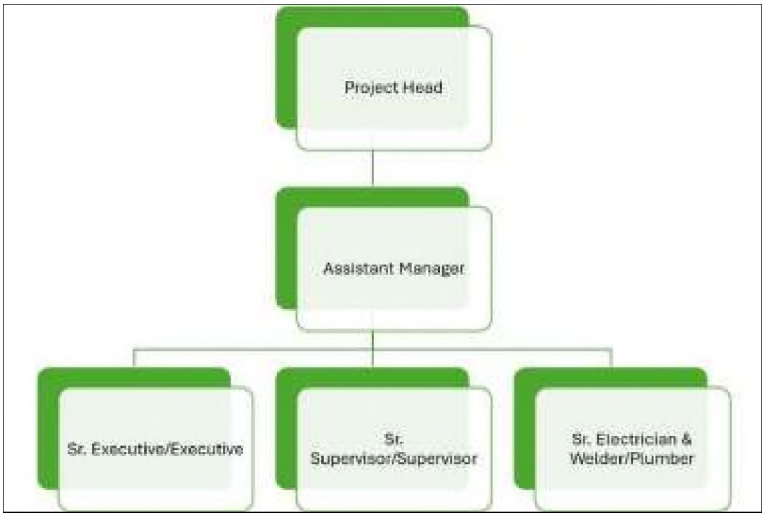


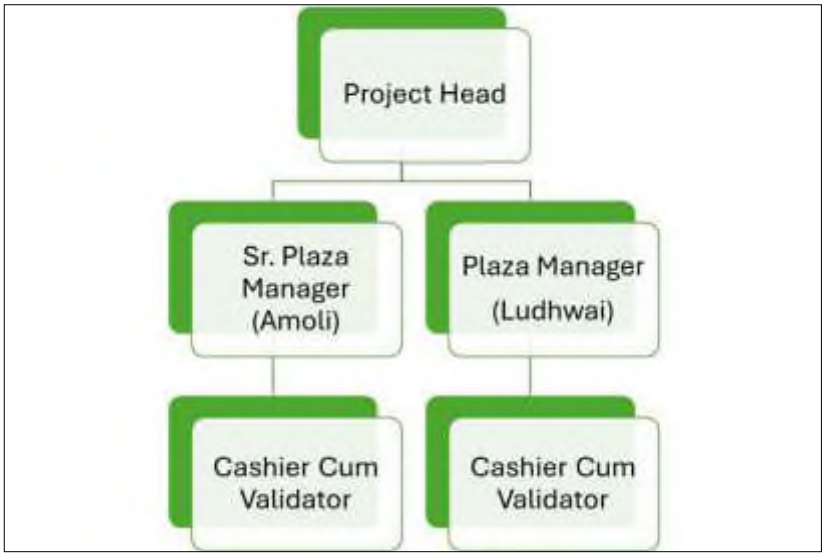
Finance & Accounts – Site office



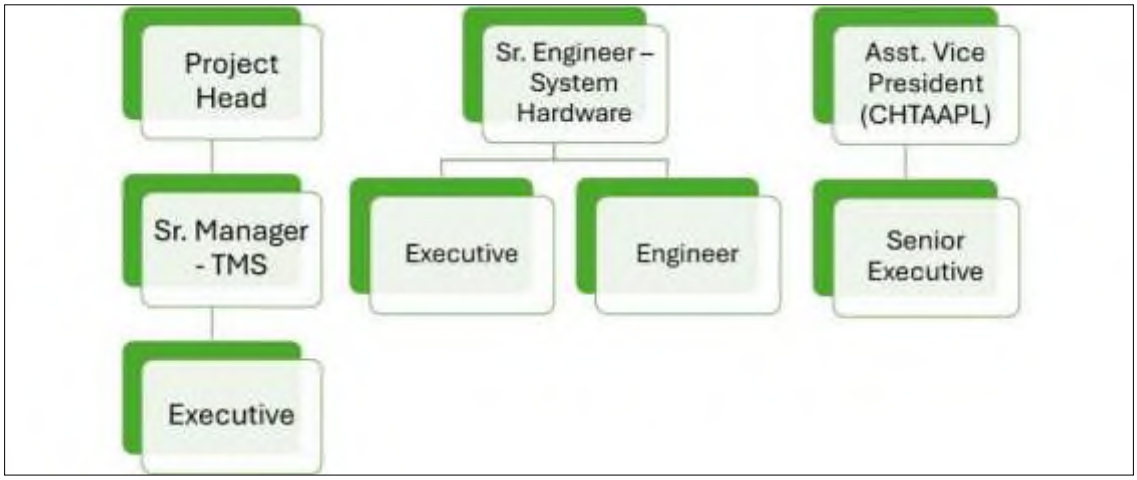
Human and Resources- Site Office







TMS Maintenance – Site Office



MBEL-Manpower Summary

S.NO.	DEPARTMENT	HEAD OFFICE	SITE	TOTAL STRENGTH
1	Administration	1	4	5
2	Finance & Accounts	0	1	1
3	Tax, Treasury & Internal Controls	2	0	2
4	Finance Controlling	1	0	1
5	Human Resource	0	1	1
6	Maintenance	0	9	9
7	Operations	0	11	11
8	TMS Maintenance	0	11	11
9	Secretarial	1	0	1
	Total	5	37	42

3.20.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses incurred towards operation expenses for past years. Necessary assumptions have been made about the expenses of similar types of projects to arrive at the operation cost. The estimates are projected based on the best industry practices and are compared with the operating cost in the vicinity of the project area.

3.20.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

Currently, the entire length of the Project Road is maintained by the Concessionaire.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Concessionaire as per Scope of Work. The Project Road received the Completion Certificate on 9th March 2015.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 25 years from the Appointed Date including a construction period of 36 months.

4.2 Axle Load and VDF

The Concessionaire conducted the axle load survey on Project Road at km. 64+500 (near Ludhawai Toll Plaza) and at km. 98+500 (near Amoli Toll Plaza) from 13th November 2022 to 15th November 2022 and 21st November 2022 to 23rd November 2022 respectively. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor

Vehicle Category	Vehicle Damage Factor			
	At TP-1 (km. 64+500)		At TP-2 (km. 98+500)	
	LHS	RHS	LHS	RHS
Bus	0.941	1.138	0.977	0.994
LCV	0.412	0.716	0.887	0.706
2-Axle	2.226	2.433	2.673	3.612
3-Axle	3.604	4.641	4.021	6.287
MAV	6.249	15.758	9.247	22.362

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

MSA Calculation (TP-1 LHS)			
Year	**MSA**	**Cumulative MSA**	**Remarks**
FY27	4.04	**4.04**	
FY28	4.26	**8.31**	
FY29	4.47	**12.78**	
FY30	4.63	**17.41**	
FY31	4.85	**22.26**	**End of concession period**

MSA Calculation (TP-1 RHS)			
Year	**MSA**	**Cumulative MSA**	**Remarks**
FY27	9.47	**9.47**	
FY28	9.99	**19.46**	
FY29	10.50	**29.96**	
FY30	10.88	**40.83**	
FY31	11.40	**52.24**	**End of concession period**

MSA Calculation (TP-2 LHS)			
Year	**MSA**	**Cumulative MSA**	**Remarks**
FY27	5.80	**5.80**	
FY28	6.11	**11.91**	
FY29	6.42	**18.33**	
FY30	6.65	**24.98**	
FY31	6.97	**31.94**	**End of concession period**

MSA Calculation (TP-2 RHS)			
Year	**MSA**	**Cumulative MSA**	**Remarks**
FY27	13.30	**13.30**	
FY28	14.04	**27.34**	
FY29	14.76	**42.10**	
FY30	15.29	**57.39**	
FY31	16.04	**73.43**	**End of concession period**

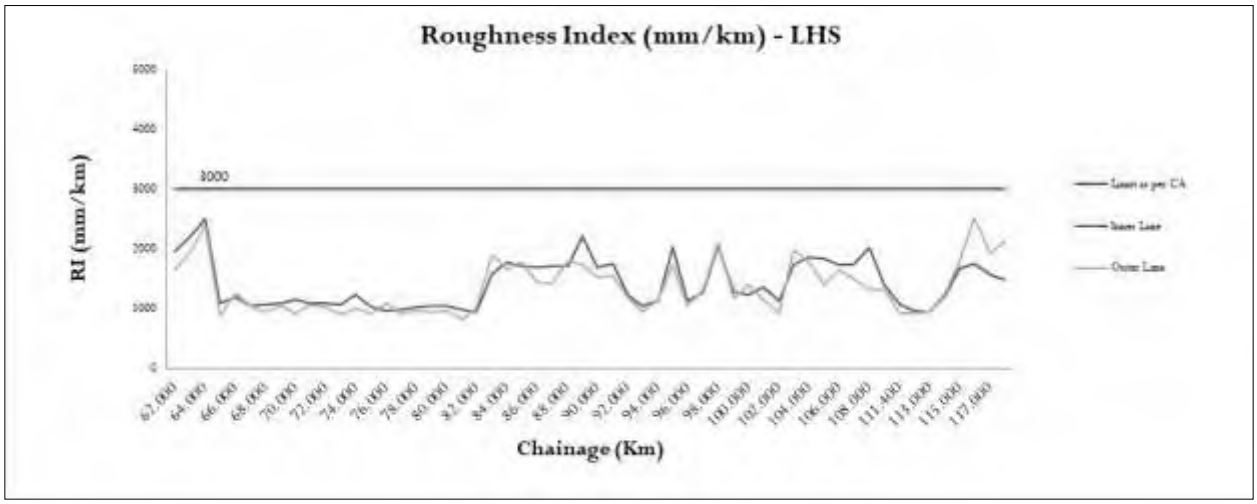
4.4 Network Survey Vehicles (NSV) Survey

The Concessionaire has provided NSV survey data conducted in the month of April 2024. The NSV data is used to assess the riding quality and pavement condition of Project Road. The summary of classification of pavement as per Schedule-L is given in the table below:

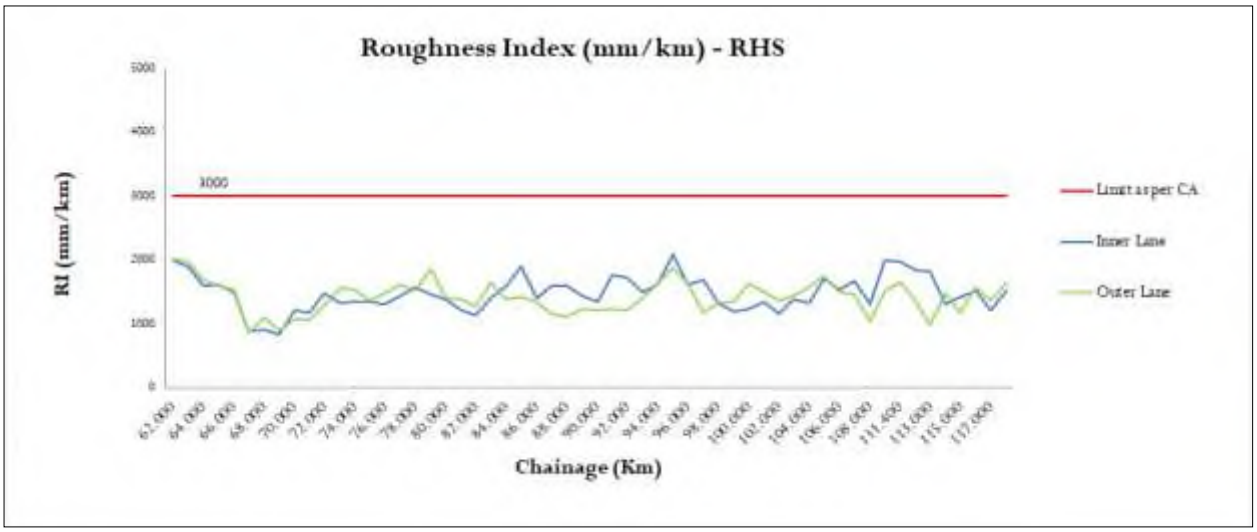
Riding Condition	**Roughness Index Limit (mm/km)**	**Length (km)**			
		LHS		**RHS**	
		Inner	**Outer**	**Inner**	**Outer**
Good	<2000	51.7	53.3	54.2	54.7
Fair	2000-3000	4.00	2.40	1.50	1.00
Poor	>3000	-	-	-	-

From the above table it is observed that the overall condition of pavement is good. At a few stretches the condition is found to be fair.

LHS:



RHS:



4.5 Structural Investigations

An evaluation of existing pavements using Falling Weight Deflectometer (FWD) survey was carried out in the month of September 2024. Summary of FWD Survey report is presented in the table below:

Description	LHS (km)		RHS (km)	
	Inner Lane	Outer lane	Inner Lane	Outer lane
Less than 20 MSA	0.00	0.80	0.80	0.00
20 MSA - 100 MSA	3.20	4.06	3.99	4.78
Greater than 100 MSA	42.58	41.05	41.00	40.85

From the above table, it is concluded that the residual life of the pavement is more than the design life of the Project Road. Hence, immediate major maintenance of the pavement is not required.

The strengthening/ overlay of pavement for project stretch are derived from 15th percentile of corrected E moduli of existing pavement, existing crust thickness etc.

The combination of existing pavement and overlay will be analyzed as a four-layer system to ensure that fatigue and rutting criteria are satisfied for the calculated design traffic in terms of MSA. IITPAVE program is used to compute strain value at bottom of bituminous layer and top of subgrade in order to calculate design life of the proposed overlay. Poisson's ratio values used in overlay analysis from top to bottom of existing pavement layers are 0.5, 0.4 and 0.4 for existing bituminous, existing granular and existing subgrade layers respectively. Elastic modulus of 3000 MPa (VG-40) is used for the new bituminous layer.

4.6 Test pit and Subgrade Investigation

The Concessionaire has carried out the subgrade investigation for Project Road. The results of the same as provided by the Concessionaire are tabulated as below.

Table 4-3 Test Results Summary of Natural Ground Soil Samples

Sr. No.	Name of Road	Location (Km.)	Side (LHS/RHS)	Soil Classification as per IS: 1498	Gradation: Percent by weight passing through the Sieve (IS:2720-IV)						Clay & silt content %	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR (%)	Free Swell Index (%)	Degree of Compaction (%)
					19.0 mm	10.0 mm	4.75 mm	2.0 mm	425 microns	75 microns		Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density gm/cc.	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	NH-21	65+000	LHS	SM	97.5	92.3	83.9	81.3	75.4	26.0	26.0	22	NP	NP	1.89	10.1	1.80	10.0	11.3	0.0	95.2
2	NH-21	70+000	RHS	SM	100.0	100.0	98.3	97.6	94.6	49.0	49.0	24	NP	NP	1.85	10.6	1.78	10.0	8.9	0.0	96.2
3	NH-21	75+000	LHS	SM	96.9	94.2	91.3	90.3	86.0	39.4	39.4	19	NP	NP	1.96	11.0	1.81	9.5	10.7	5.3	92.3
4	NH-21	80+000	RHS	SM	100.0	91.5	82.8	79.5	66.6	28.9	28.9	22	NP	NP	1.98	10.5	1.84	9.0	12.6	0.0	92.9
5	NH-21	85+000	LHS	SM	91.3	85.9	81.4	73.9	62.0	23.2	23.2	23	NP	NP	1.98	9.6	1.83	8.5	13.4	0.0	92.4
6	NH-21	90+000	RHS	ML-CL	100.0	95.4	89.0	86.4	81.1	55.9	55.9	25	19	6	1.88	10.5	1.80	9.5	8.6	11.1	95.7
7	NH-21	96+760	LHS	SM	100.0	97.5	89.6	85.7	79.1	49.9	49.9	21	NP	NP	1.91	8.9	1.82	12.0	11.3	0.0	95.5
8	NH-21	99+720	RHS	SM	79.6	70.4	64.8	62.1	53.5	26.8	26.8	22	NP	NP	2.02	9.0	1.75	10.0	15.2	0.0	86.8
9	NH-21	105+000	LHS	SM	100.0	99.1	98.8	98.6	98.3	34.8	34.8	19	NP	NP	1.97	9.5	1.86	9.0	10.1	0.0	94.4
10	NH-21	109+000	RHS	SM	100.0	93.3	85.9	82.9	70.4	31.9	31.9	22	NP	NP	1.93	8.9	1.82	10.0	12.3	5.3	94.3

Table 4-4 Test Results Summary of Bituminous Layer Samples

Sr. No.	Chainage	Side	Type of Material Tested	Source of Sample	Cumulative Percentage of Passing through IS Sieve (mm), %													Bitumen Content (%)
					45	37.5	26.5	19	13.2	9.5	4.75	2.36	1.18	0.6	0.3	0.15	0.075	
1	64+000	LHS	BC	Core	100.0	100	100.0	100.0	100.0	81.3	64.7	48.1	36.3	28.6	18.8	11.3	4.5	5.23
2	78+260	RHS	DBM	Core	100.0	100.0	100.0	99.9	86.4	62.3	43.9	26.9	16.9	11.6	7.5	5.1	3.5	4.42
3	81+800	RHS	BC	Core	100.0	100.0	100.0	100.0	97.9	77.4	61.5	47.7	31.8	21.5	12.1	6.7	3.4	5.09
4	86+000	RHS	DBM	Core	100.0	100.0	94.8	89.2	74.2	51.1	36.5	26.7	21.1	16.7	8.9	6.4	4.4	4.56
5	113+100	LHS	BC	Core	100.0	100.0	100.0	100.0	91.8	76.2	57.9	49.8	36.7	24.5	17.2	10.7	4.3	5.41
6	118+920	LHS	DBM	Core	100.0	100.0	100.0	96.1	81.0	60.1	41.7	31.7	23.7	18.3	12.5	5.5	2.1	4.81

Table 4-5 Summary of Pavement Crust Thickness

Sr. No.	Existing Road	Location (Km.)	Side (LHS/RHS)	Pavement Composition (mm)			
				Bituminous Layer	Granular Layer - I	Granular Layer- II	Total Thickness
1	NH-21	65.000	LHS	230	230	210	670
2	NH-21	75.000	LHS	250	220	190	660
3	NH-21	85.000	LHS	270	190	210	670
4	NH-21	96.000	LHS	260	230	230	720
5	NH-21	105.000	LHS	280	220	200	700
6	NH-21	70.000	RHS	270	220	200	690
7	NH-21	80.000	RHS	330	200	180	710
8	NH-21	90.000	RHS	320	250	190	760
9	NH-21	99.700	RHS	310	240	180	730
10	NH-21	109.000	RHS	280	240	190	710

4.7 Periodic Maintenance Strategy

Major Maintenance is required in order to comply requirement of Concession Agreement and to maintain performance level as defined in Schedule-L. As per schedule-L of Concession Agreement, periodic maintenance shall be carried out at least once every 5th year from COD and in the last year of concession period.

It is noted that the Concessionaire has carried out 1st major / periodic maintenance in Year 2018 / 19. 2nd cycle of major maintenance is completed in FY 25. The table below shows the major / periodic maintenance cycle throughout the balance concession period for the Project Road. As per Concession Agreement, periodic maintenance shall be carried out in the last year of concession period. Accordingly, major maintenance is proposed in FY 2031 for the entire length. Before carrying out major maintenance, structural evaluation shall be done through surveys and investigation to determine the overlay requirement.

Table 4-6 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2026 to FY2028	-	-
2	FY 2029	30 mm BC (PMB) overlay in 68%, 40 mm BC (PMB) overlay in 32%, and 50 mm DBM (VG-40) overlay in 10% length	30 mm BC (VG-30) overlay in 50% and Micro-surfacing in 50% length
3	FY 2030	-	-
4	FY 2031	30 mm BC (VG-40) overlay for entire length, 50 mm DBM (VG-40) overlay in 5% length	30 mm BC (VG-30) overlay in 50% and Micro-surfacing in 50% length.

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories:

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, concrete etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

a. Manpower and labour: As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

b. Bitumen: The Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards, since bitumen prices have been range bound over the last five-six years.

Rate of Polymer content and modification cost were provided by the client to work out BC rate with PMB.

Following rates of bitumen are considered:

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Sr. No.	Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg. last 10 years)
1	Mathura	All States	VG-10	45,102	35,125
2			VG-30	46,402	36,137
3			VG-40	48,962	38,131
4	Panipat	All States	VG-10	45,102	35,125
5			VG-30	46,402	36,137
6			VG-40	48,962	38,131

Sr. No.	Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg. last 10 years)
7	Koyali	All States	VG-10	47,102	37,125
8			VG-30	48,402	38,137
9			VG-40	51,082	40,251
10	Haldia	All States	VG-10	46,602	35,683
11			VG-30	47,402	36,295
12			VG-40	49,962	38,256
13	Barauni	All States	VG-10	47,132	36,213
14			VG-30	48,432	37,325
15			VG-40	50,992	39,286
16	CPCL	Kerala	VG-10	47,402	35,519
17			VG-30	48,402	36,395
18			VG-40	50,762	38,120
19	CPCL	Tamil Nadu	VG-10	47,902	36,019
20			VG-30	48,402	36,395
21			VG-40	50,962	38,320
22	CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
23			VG-30	45,402	33,395
24			VG-40	47,962	35,320
25	CPCL	Karnataka	VG-10	44,602	32,719
26			VG-30	45,402	33,395
27			VG-40	47,962	35,320

c. **Sand and Aggregate:** Market rates are considered from the quarry located nearest to Project Road.

d. **Cement:** Market rates are considered from the nearest local market.

e. **Steel :** Rate of steel is taken from SAIL.

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable PWD SOR.

g. **Actual Rates of items as per work order:** The rates of road marking, road stud, kerb raising, micro surfacing, milling, aggregate rates etc. are considered as per the work order shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (FY 28 onwards)
1	Dense Bituminous Macadam (PMB)	Cum	10,302
2	Dense Bituminous Macadam (VG-40)	Cum	8,298
3	Bituminous Concrete (PMB)	Cum	11,989
4	Bituminous Concrete (VG-40)	Cum	9,488
5	Bituminous Concrete (VG-30)	Cum	9,175

Sr. No.	Item Description	Unit	Rates (FY 28 onwards)
6	Milling	Sqm	75
7	Micro-surfacing	Sqm	150
8	Kerb Re-laying	Rmt	270
9	Road Marking-On BC Surface	Sqm	423
10	Road Marking-On Micro-Surface	Sqm	526
11	Road Studs	Nos.	170

5.3 Balance Work Cost

As discussed in the previous chapter, there are no balance works to be executed as per CA. Hence, the balanced work cost is **NIL**.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance, and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads:

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Toll Security Services
4. Incident Management & Emergency Services
5. Electricity and Diesel Charges
6. TMS/HTMS/System Expenses
7. Office Operating Expenses
8. Vehicle Running Expenses
9. Professional Fees Expense
10. Community Development
11. Communication Expenses
12. Conveyance Expenses
13. Insurance Expense
14. IE Fees
15. Routine Maintenance Cost (Project Highway)
16. Horticulture & ROW Maintenance
17. Miscellaneous including Contingency

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation Cost is presented as below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (Rs.) (FY 2027)
1	Salary and Welfare Expenses	1,00,80,000
2	Tolling Operations Services	4,86,79,690
3	Toll Security Services	1,08,18,240
4	Incident Management & Emergency Services	2,12,76,228
5	Electricity and Diesel Charges	32,74,928
6	TMS / System Expenses	27,52,500
7	Office Operating Expenses	17,19,150
8	Vehicle Running Expenses	39,60,000
9	Professional Fees Expense	28,65,250
10	Community Development	8,59,575
11	Communication Expenses	5,15,745
12	Conveyance Expenses	5,73,050
13	Insurance Expense	23,49,505
14	IE Fees	40,11,350
15	Routine Maintenance	3,07,92,878
16	Horticulture & ROW Maintenance	1,64,86,408
17	Miscellaneous including Contingency	45,49,408
	Total Cost (Rs.)	**16,55,63,905**
	Total Cost (Cr.)	**16.56**
	Per km Cost (Lakhs)	**28.89**

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2029	70.75	
2	FY 2031	53.46	
	Total	**124.21**	

5.6 Periodic Replacement of TMS /System

Every 5 years, replacement of cost of major TMS system is considered. The same is provided as below.

Sr. No.	Year	ATMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2030	0.58	
Total Cost (Cr.)		**0.58**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-4 Escalation

Year	Escalation	Year	Escalation
2027	-	**2042**	3.99%
2028	4.86%	**2043**	3.99%
2029	4.44%	**2044**	3.99%
2030	4.24%	**2045**	3.99%
2031	4.13%	**2046**	3.99%
2032	4.08%	**2047**	3.99%
2033	4.01%	**2048**	3.99%
2034	4.00%	**2049**	3.99%
2035	4.03%	**2050**	3.99%
2036	4.01%	**2051**	3.99%
2037	3.98%	**2052**	3.99%
2038	3.98%	**2053**	3.99%
2039	4.00%	**2054**	3.99%
2040	3.99%	**2055**	3.99%
2041	3.99%	**2056**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summarised yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr.)

	Year of expense	FY27	FY28	FY29	FY30	FY31
1	Routine O&M Cost					
1.01	Salary and Welfare Expense	1.01	1.06	1.10	1.15	1.20
1.02	Tolling Operations Services	4.87	5.10	5.33	5.56	5.79
1.03	Toll Security Services	1.08	1.13	1.18	1.24	1.29
1.04	Incident Management Services	2.13	2.23	2.33	2.43	2.53
1.05	Electricity and Diesel Charges	0.33	0.34	0.36	0.37	0.39
1.06	TMS/HTMS/System Expenses	0.28	0.29	0.30	0.31	0.33
1.07	Office Operating Expenses	0.17	0.18	0.19	0.20	0.20
1.08	Vehicle Running Expenses	0.40	0.42	0.43	0.45	0.47
1.09	Professional Fees Expense	0.29	0.30	0.31	0.33	0.34
1.10	Community Development	0.09	0.09	0.09	0.10	0.10
1.11	Communication Expenses	0.05	0.05	0.06	0.06	0.06
1.12	Conveyance Expenses	0.06	0.06	0.06	0.07	0.07
1.13	Insurance Expense	0.23	0.25	0.26	0.27	0.28
1.14	IE Fees	0.40	0.42	0.44	0.46	0.48
1.15	Routine Maintenance Cost	3.08	3.23	3.37	3.52	3.66
1.16	Horticulture & ROW Maintenance	1.65	1.73	1.81	1.88	1.96
1.17	Miscellaneous and Contingency	0.45	0.48	0.50	0.52	0.54
	Subtotal of O&M Cost	16.56	17.36	18.13	18.90	19.68
2	Major Maintenance Cost			77.48		59.97
3	Periodic Cost of TMS Replacement	-	-	-	0.66	
	Total Cost	**16.56**	**17.36**	**95.61**	**19.56**	**79.65**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Ordinary Repair Cost for Flexible (with GST)	**3,07,92,878**
(Inclusive of GST)	**= 5.37 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD	**Urban** More than 4500 CVD	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				2,98,907	**3,36,566**	**Normal**	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	457328.00	514946.00	-	-	-	-
		Paved shoulder	1.70	508143.00	572163.00	50.10	-	2,54,57,964	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	597815.00	673132.00	-	-	-	-
		Paved shoulder	2.20	657596.00	740446.00	-	7.21	-	53,34,913
					TOTAL	**57.305**		**3,07,92,878**	

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year (Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Potholes repair (50 mm deep)	100 % Pothole free	As & when required	1.0%
	Volume (cum)			5.00
	Rs/m^3			12685
	Cost in Rupees			63,425
	ii) Patch repair	100 % Patch less	As & when required	1%
	Area (sqm)			100
	Rs/m^2			507
	Cost in Rupees			50,740
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.5%
	Area (sqm)			250
	Rs/m^2			109
	Cost in Rupees			27,140
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.00%
	Area (sqm)			150
	Rs/m^2			89
	Cost in Rupees			13,275
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.50%
	Area (sqm)			112.5
	Rs/m^2			507
	Cost in Rupees			57,083

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
	v) Road marking	14%	Once in 7th year & @ Repaired location	23402
	SUB TOTAL			**2,35,065**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**7,414**
3	**Maintenance of Cross Drainage works:**			
	i) Repair of floors	100%	Once in a Year	5055
	ii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			**7,161**
4	**Maintenance of Minor & Major Bridges:**			
	i) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints	100%	As & when required	36,950
	ii) Repair of minor washouts, erosion scour and animal holes			
	iii) Sealing Cracks with Cement/ Epoxy Mortar			
	iv) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometre stone etc.		Once in a Year	3695
	ii) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7390
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	iv) Traffic Census		Once in a Year	0
	v) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**12,317**
	GRAND TOTAL (Normal)			**2,98,907**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Centre Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	7853
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**37,659**
	GRAND TOTAL (Urban)			**3,36,566**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY - 29)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs)**	**Amount (Rs)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						11,48,211	16	1,83,71,375
	For BC	Sqm	2	59,332	9.00		10,67,984	10,67,984		
	For DBM	Sqm	2	5,731	7.00		80,227	80,227		
	For Misc. Location	Sqm	2	5,038	9.00					
2	BC with 30 mm PMB	Cum	2	40,346	9.00	0.03	21,787	21,787	11,989	26,12,02,808
3	BC with 40 mm PMB	Cum	2	18,986	9.00	0.04	13,670	13,670	11,989	16,38,91,958
3	DBM with 50 mm	Cum	2	5,731	7.00	0.05	4,011	4,011	8,298	3,32,86,182
4	Milling	Sqm	2	5,731	7.00		80,227	96,272	75	72,20,430
5	Micro Surfacing	Sqm	2	-	9.00		-	-	150	-
	Main Carriageway - Rigid Pavement									
6	Joint Sealant Replacement @ 5% length	Rmt	5%	2,841	3.50	4.50	1,137	1,137	135	1,53,434
7	Dismantling of CC Panels @ 1% area	Cum	1%		44,752	0.30	134	134	1,561	2,09,571
8	Replacement of Panels - PQC @ 1% area	Cum	1%		44,752	0.30	134	134	7,162	9,61,531
	Service Road									
8	Tack coat	Sqm	1	7,926	5.50		43,590	43,590	16	6,97,444
9	BC with 30 mm	Cum	1	7,926	5.50	0.03	1,308	1,308	9,488	1,24,07,529
10	Micro Surfacing	Sqm	1	7,926	5.50		43,590	43,590	150	65,38,538
	Structures									
11	Tack coat	Sqm	1	570	17.6		10,049	10,049	16	1,60,787
12	Wearing Coat BC with 30 mm	Cum	1	570	17.6	0.03	301	301	11,989	36,14,389
13	Milling of Ex. Wearing Coat	Sqm	1	570	17.6		10,049	10,049	75	7,53,689
14	Painting of Crash Barrier	Sqm	4	570		1.20	2,736	2,736	114	3,11,904
	Other Works									
15	Raising of Road Kerb	Rmt	2	35,192			70,384	70,384	270	1,90,03,680
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	7,005			14,010	14,010	170	23,81,700
	Solar Road Stud	Nos	1	-			-	-	1,647	-
17	Painting of Kerb	Sqm	2	70,384		0.375	52,788	52,788	107	56,48,316

Major Maintenance Cost (FY - 29)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs)**	**Amount (Rs)**
18	Road Marking	Sqm					52,142	52,142	423	
	on BC						50,464	50,464	423	2,13,29,426
	on Micro-surfacing						1,679	1,679	526	8,82,419
	MCW									
	a) Median & Edge line	Sqm	4	60,170	0.15		36,102	36,102		
	b) Lane line	Sqm	4	19,856	0.10		7,942	7,942		
	Service Road							-		
	a) Edge line	Sqm	2	14,410	0.10		2,882	2,882		
	b) Lane line	Sqm	1	4,755	0.10		476	476		
	Junction crossing	Sqm					4,740	4,740		
19	Filling of Earthen shoulder	Cum					17,743	17,743	675	1,19,76,701
	MCW		3	55,974	2.00	0.06	16,792	16,792		
	Service Road		1	7,926	2.00	0.06	951	951		
20	Median Filling	Cum	-	54,404	4.17	0.05	-	-	675	-
21	Miscellaneous	5%								2,85,50,190
Total Major Maintenance Cost (Rs)										**59,95,53,999**
Total Major Maintenance Cost with 18% GST (Rs)										**70,74,73,719**
Total Major Maintenance Cost with GST (Cr)										**70.75**
Per km Cost (lakh)										**123.46**
Escalation Factor for Major Maintenance Cost (FY - 29)										**1.10**
Total Escalated Cost for Major Maintenance Cost (FY - 29) (Cr)										**77.48**

Major Maintenance Cost (FY - 31)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs)**	**Amount (Rs)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						11,08,097	16	1,77,29,559
	For BC	Sqm	2	55,974	9.00		10,07,532	10,07,532		
	For DBM	Sqm	2	-	3.50		40,114	40,114		
	For Misc. Location	Sqm	2	3,358	9.00		60,452	60,452		
2	BC with 30 mm	Cum	2	59,332	9.00	0.03	32,040	32,040	9,488	30,39,90,943
3	DBM with 50 mm	Cum	2	2,865	7.00	0.05	2,006	2,006	8,298	1,66,43,091
4	Milling	Sqm	2	2,865	7.00		40,114	40,114	75	30,08,513
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 10% length	Rmt	10%	2,841	3.50	4.50	2,273	2,273	135	3,06,867
6	Dismantling of CC Panels @ 5% area	Cum	5%		44,752	0.30	671	671	1,561	10,47,856
7	Replacement of Panels - PQC @ 5% area	Cum	5%		44,752	0.30	671	671	7,162	48,07,654
8	Replacement of Panels - DLC @ 1% area	Cum	1%		44,752	0.15	67	67	3,175	
	Service Road									
8	Tack coat	Sqm	1	7,926	5.50		43,590	43,590	16	6,97,444
9	BC with 30 mm	Cum	1	7,926	5.50	0.03	1,308	1,308	9,488	1,24,07,529
10	Micro Surfacing	Sqm	1	7,926	5.50		43,590	43,590	150	65,38,538
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	570	17.6		10,049	10,049	16	1,60,787
12	Wearing Coat BC with 30 mm	Cum	1	570	17.6	0.03	301	301	9,488	28,60,399
13	Milling of Ex. Wearing Coat	Sqm	1	570	17.6		10,049	10,049	75	7,53,689
14	Painting of Crash Barrier	Sqm	4	570		1.20	2,736	2,736	107	2,92,752
	Other Works									
15	Raising of Road Kerb	Rmt	2	35,192			70,384	70,384	270	1,90,03,680
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	7,005			14,010	14,010	170	23,81,700
	Solar Road Stud	Nos	1	-			-	-	1,647	-
17	Painting of Kerb	Sqm	2	70,384		0.375	52,788	52,788	107	56,48,316
18	Road Marking	Sqm					49,772	49,772		-
	MCW									-

Major Maintenance Cost (FY - 31)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs)**	**Amount (Rs)**
	on BC						48,093	48,093	423	2,03,27,653
	on Micro-surfacing						1,679	1,679	526	8,82,419
	a) Median & Edge line	Sqm	4	60,170	0.15		36,102	36,102		
	b) Lane line	Sqm	4	19,856	0.10		7,942	7,942		
	Service Road									
	a) Edge line	Sqm	2	14,410	0.10		2,882	2,882		
	b) Lane line	Sqm	1	4,755	0.10		476	476		
	Junction crossing	Sqm					2,370	2,370		
19	Filling of Earthen shoulder	Cum					17,743	17,743	675	1,19,76,701
	MCW		3	55,974	2.00	0.06	16,792	16,792		
	Service Road		1	7,926	2.00	0.06	951			
20	Median Filling	Cum	-	55,194	4.17	0.05	-	-	675	-
21	Miscellaneous	5%								2,15,73,304
Total Major Maintenance Cost (Rs)										**45,30,39,393**
Total Major Maintenance Cost with 18% GST (Rs)										**53,45,86,483**
Total Major Maintenance Cost with GST (Cr)										**53.46**
Per km Cost (lakh)										**93.29**
Escalation Factor for Major Maintenance Cost (FY - 31)										**1.19**
Total Escalated Cost for Major Maintenance Cost (FY - 31) (Cr)										**59.97**

FP Project Management

Technical Due Diligence of Mangloor to Telangana/ Maharashtra border section of NH-161 from km. 86+788 to km. 135+751 in the State of Telangana on Hybrid Annuity Mode (HAM)

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited

315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025
Tel: +91-22-6660 3901
e-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

FP/DD/05

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	SG / RB / VK	RMW	SMA

This report is to be regarded as confidential to our client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Development as per Schedule-B 6
2.9 Bypass and Realignment 6
3 Condition Assessment of Project Road 9
3.1 Pavement 9
3.1.1 Pavement Condition Survey 9
3.2 Service Road 14
3.3 Major / Minor Junction 17
3.4 Condition Survey of Structure 18
3.5 Condition Survey of Culverts 27
3.6 Drainage 29
3.7 Slope Protection 30
3.8 Road Furniture 31
3.9 Pavement Marking 31
3.10 Road Studs 33
3.11 Highway Lighting / Solar Blinker 37
3.12 Crash Barriers 37
3.13 Delineators 39
3.14 Pedestrian Guard Rail 40
3.15 Avenue Plantation and median Plantation 41

3.16 Noise Barrier 43
3.17 Protection Wall 44
3.18 Toll Plaza 45
3.19 Advance Traffic Management System (ATMS) 47
3.19.1 Automatic Traffic Counter cum classifier (ATCC) 47
3.19.2 Emergency Call Boxes (ECB) 48
3.19.3 MET System 48
3.19.4 Variable Message Signboards (VMS) 49
3.19.5 CCTV Surveillance Cameras 49
3.19.6 Vehicle Actuated Speed Display (VASD) 50
3.19.7 Adequacy of Toll Collection System and ATMS 50
3.20 Truck Lay bye 50
3.21 Traffic Aid Post and Medical Aid Post 51
3.22 Toilet Block 52
3.23 Bus Bays and Passenger Shelters 53
3.24 Wayside Amenities 53
3.25 Balance Work Status 54
3.26 Organization Chart 55
3.27 Operation 56
3.28 Routine Maintenance 56
4 Pavement Investigation and Assessment 57
4.1 General 57
4.2 Axle Load and VDF 57
4.3 Design Traffic 57
4.4 Network Survey Vehicles (NSV) Survey 58
4.5 Structural Investigation 59
4.6 Test pit and Subgrade Investigation 59
4.7 Periodic Maintenance Strategy 59
5 Cost Estimate 61
5.1 General 61
5.2 Rate Assumption 61
5.3 Balance Works Cost (CAPEX) 62
5.4 Routine O&M Cost 62
5.5 Major Maintenance Cost 64
5.6 Periodic Replacement of TMS / ATMS System 64
5.7 Escalation Assumption 64
5.8 Summary of Cost 65

ANNEXURES **67**
ANNEXURE I - ROUTINE MAINTENANCE COST **68**
ANNEXURE II - MAJOR MAINTENANCE COST **72**

LIST OF TABLES

Table 2-1 Details of Bypass 6
Table 2-2 Details of Realignment 7
Table 3-1 Details of Service Road 14
Table 3-2 Details of Slip Road 14
Table 3-3 Summary of Structures 18
Table 3-4 Condition Survey of Major Structure 19
Table 3-5 Summary for Road Furniture Items 31
Table 3-6 Details of Truck lay bye 50
Table 3-7 Details of Toilet Block 52
Table 3-8 Details of wayside Amenities 53
Table 4-1 Vehicle Damage Factor 57
Table 4-2 MSA Calculation 57
Table 4-3 Roughness Index Summary 58
Table 4-4 FWD Summary 59
Table 4-5 Major Maintenance Cycle 60
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST. 61
Table 5-2 Summary of Unit Rates 62
Table 5-3 Summary of Operation Cost 63
Table 5-4 Summary of Major Maintenance Cost 64
Table 5-5 Escalation 64

LIST OF FIGURES

Figure 2-1 Location Map 4
Figure 2-2 Start / End of the Project Road (LHS) 5
Figure 2-3 Start / End of Project Road (RHS) 5
Figure 2-4 Photograph of Bypass 7
Figure 3-1 Photographs of Pavement Condition (LHS) 10
Figure 3-2 Photographs of Pavement Condition (RHS) 12
Figure 3-3 Photographs of Service Road (LHS) 15
Figure 3-4 Photographs of Service Road (RHS) 16
Figure 3-5 Photographs of Major Junctions 17
Figure 3-6 Photographs of Minor Junctions 17
Figure 3-7 Photographs of Major Structures 22
Figure 3-8 Photographs of Box Culvert / Pipe Culvert 28
Figure 3-9 Photographs of Existing Drains 29
Figure 3-10 Photographs of Slope Protection 30
Figure 3-11 Photographs of Pavement Marking 31
Figure 3-12 Photographs of Road Studs 33
Figure 3-13 Photographs of Road Signages (LHS) 34
Figure 3-14 Photographs of Road Signages (RHS) 36
Figure 3-15 Photographs of Street Light / Solar Blinker 37
Figure 3-16 Photographs of Guard Post / Crash Barrier 38
Figure 3-17 Photographs of Delineator 39
Figure 3-18 Photographs of Pedestrian Guard Rail 40
Figure 3-19 Photographs of Chain Link fencing / Road Land Boundary 41
Figure 3-20 Photographs of Avenue Plantation 42
Figure 3-21 Photographs of Median Plantation 43
Figure 3-22 Photographs of Noise Barrier 44
Figure 3-23 Photographs of Protection Wall 44
Figure 3-24 Photograph of Truck Lay-bye 50
Figure 3-25 Photograph of Traffic / Medical Aid Post 51
Figure 3-26 Photograph of Incident Management 52
Figure 3-27 Photographs of Toilet Blocks 52
Figure 3-28 Photographs of Bus Bay / Passenger Shelter 53
Figure 3-29 Photograph of Wayside Amenities 54

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Mangloor - Telangana / Maharashtra border section of NH-161 from km. 86+788 to km. 135+751 in the State of Telangana (hereinafter referred as "Project Road").

M/s. DBL Mangloor Highways Pvt. Limited (hereafter known as M/s. Mangloor Highways Pvt. Ltd.) vide COI dated 02.12.2022 (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for operation, maintenance, and transfer of Mangloor to Telangana / Maharashtra border section (Design Chainage from km. 86+788 to km. 135+751) of NH-161 or Project Road under Hybrid Annuity basis. The project was awarded to Concessionaire **M/s**. **DBL Mangloor Highways Pvt. Limited**., a company promoted and incorporated by M/s. Dilip Buildcon Ltd. on 09.05.2018 (Including construction period) by National Highway Authority of India (NHAI). Cube Highway group is a shareholder in the Concessionaire company. The length of project as per CA is 48.963 kms with one toll plaza at Dharmaram at km. 96+073.

Accordingly, the Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.,
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.,
- Formulation of future major maintenance strategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / ATMS) till the end of concession period
- Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our proposed team consists of well-qualified Engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader will coordinate the activities between all the key staff who will work closely together. The key is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader will act as the point of contact for Client Technical Study.

The technical study include review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design, and drawings.
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted.
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority.
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyze the same as per the best engineering / industry practices.

The site visit and inspection were carried out between the periods from **09th March 2026** to **10th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies**.**

Chapter 2 **Project Description:** The chapter describes existing project features, and an overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit**.**

Chapter 4 **Pavement Investigation and Assessment:** This chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates:** This chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **M/s. DBL Mangloor Highways Pvt. Limited** (hereafter known as M/s. Mangloor Highways Pvt. Ltd.) is a company promoted by Cube Highway group. The Appointment Date of the project was 12th April 2019. The concession period of the project is 17 years including construction period. The project has received PCOD on 15th December 2021 for the length 47.412 kms out of 48.963 kms. However, presently all work has been completed, and IE has drafted work completion letter to NHAI vide their letter no. MSV/IE(O&M)/PKG II&III/2025/GJW/PIU/504 Dated 05.02.2025 which is under review at NHAI end. Cube Highway group is a shareholder in the Concessionaire company.

2.2 Location

The Project Road is part of National Highway No. 161, of Mangloor - Telangana/ Maharashtra border section in the state of Telangana. The total project length is 48.963 kms as per CA.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map

Figure 2-2 Start / End of the Project Road (LHS)

Start of the Project Road

End of the Project Road

Figure 2-3 Start / End of Project Road (RHS)

Start of the Project Road

End of the Project Road

2.3 Climate

The climate of the region is marked by heavy rainfall with high humidity in the hot season. The Indian Meteorological Department (IMD) has identified the following four seasons in the region.

Sr. No.	Weather	Month
1	Summer	February to May
2	Monsoon	June to September
3	Post Monsoon	October
4	Winter	November to February
5	Maximum Temperature	38 ^{0}C
6	Minimum Temperature	18 ^{0}C
7	Average annual rainfall	910 mm

2.4 Terrain

The Project Road passes through plain to rolling terrain.

2.5 Abutting Land Use

The following are the various developments that are anticipated in the Four Lanning of Mangloor Telangana / Maharashtra border Section.

- Agriculture is the predominant land use along the Project Road.

- This road reduces the travel time for getting access to Hyderabad, Nanded Sahib, Akola, Nagpur and Shegaon which results in better industrial growth and economy.
- The tourism industry gets a great booster as majority of people using this road, for going to places like Nanded Sahib & Shegaon, a group of temples & Gurudwara etc.,

A lot of commercial establishments along the Project Road in the form of hotels and Snack Parlors may be developed in the coming future.

2.6 Right of Way

The width of the existing Right of Way (ROW) for the Project Road varies from 30.0 m to 60.0 m / 180.0 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW and presently no utility shifting is balance at site. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, etc.

2.8 Development as per Schedule-B

The Project Road from Mangloor to Telangana / Maharashtra border (km. 86+788 to km. 135+751) has been developed as a four-lane divided carriageway with median width varies from 4.0 m to 12.0 m, service road and other arrangements. The Project Road passes through rural as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.
b) Operation and maintenance of the Project in accordance with the provisions of this Agreement.
c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all the obligations of the Concessionaire under this Agreement.

2.9 Bypass and Realignment

There are four Bypass on Project Road. The total length of Bypass is 10.63 kms. Apart from these bypasses, there are four realignments in the Project Road. The bypass constructed along the Project Road as well as realignment is as tabulated below.

Table 2-1 Details of Bypass

Sr. No.	Name of Bypass	Design Chainage (km)		Length (km)
		From	To	
1	Pitlam	89+00	91+300	2.30
2	Pedda Kodapgal	99+350	101+640	2.29
3	Mainur	125+150	126+600	1.45
4	Madnoor	128+710	133+300	4.59
			Total	**10.63**

Table 2-2 Details of Realignment

Sr. No.	Existing Chainage (km)		Design Chainage (km)		Length (km)
	From	To	From	To	
1	108.440	108.900	103.200	103.600	0.400
2	109.750	111.380	104.450	105.700	1.250
3	111.680	112.280	106.000	106.570	0.570
4	122.390	123.390	116.650	117.600	0.950
				Total	**3.170**

Figure 2-4 Photograph of Bypass

km. 89+00

km. 99+350

km. 101+640

km. 125+150

km. 126+600

km. 128+710

km. 133+300

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 8.5 m with earthen shoulder of 1.75 to 2.00 meter on either side. The Project Road has median width varies from 4.0 m to 12.0 m.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza including taper is rigid pavement.

3.1.1 Pavement Condition Survey

Pavement condition survey was carried out from **09th March 2026 to 10th March 2026** through visual inspection for the entire project length. From the visual inspection, it is found that the average pavement condition of the Project Road is Good. The summary of pavement condition survey is presented as below.

Rating	Main carriageway	
	LHS	RHS
Fair/Good	100.00 %	100.00 %
Total	**100.00 %**	**100.00 %**

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (LHS)

km. 89+00

km. 90+00

km. 91+950

km. 93+650

km. 102+150

km. 102+400

km. 103+550

km. 106+800

km. 110+200

km. 113+00

km. 114+050

km. 118+600

Road Shoulder (LHS)

km. 89+00

km. 91+950

km. 93+200

km. 95+600

km. 97+400

km. 102+150

km. 103+550

km. 110+200

km. 113+00

km. 113+550

km. 118+600

km. 127+600

Figure 3-2 Photographs of Pavement Condition (RHS)

km. 135+400

km. 133+600

km. 128+00

km. 126+600

km. 124+00

km. 121+350

km. 118+700

km. 116+600

km. 114+00

km. 110+400

km. 104+600

km. 100+400

Road Shoulder (RHS)

km. 128+00

km. 124+00

km. 118+700

km. 104+600

km. 88+00

3.2 Service Road

a) Existing Service Road

The width of service road is found to be 7.0 m and it is constructed in built-up area and adjoining underpasses and flyover locations. The scope of service road as per CA is 9.90 kms as well as slip road is 27.010 kms. However, 1.55 kms of service road has de-scoped by NHAI due to non-availability of ROW. The details of service road are presented as below.

Table 3-1 Details of Service Road

Sr. No.	Design Chainage (km)		Length (km)		Width (m)	Side	Remarks
	From	To	LHS	RHS			
1	89+010	89+450	0.440	0.440	7.0	Both	Bypass
2	100+320	100+720	0.400	0.400	7.0	Both	Bypass
3	125+620	126+600	0.980	0.980	7.0	Both	Bypass
4	129+080	132+000	2.920	2.920	7.0	Both	Bypass
5	133+090	133+300	0.210	0.210	7.0	Both	Bypass
	Sub Total on each side		**4.950**	**4.950**			
	Total		**9.900**				

Table 3-2 Details of Slip Road

Sr. No.	Design Chainage (km)		Length (km)		Width (m)	Side	Remarks
	From	To	LHS	RHS			
1	89+450	91+300	1.850	1.850	7.0	Both	
2	91+300	91+800	0.500	0.500	7.0	Both	
3	94+740	95+250	0.510	0.510	7.0	Both	
4	98+700	99+275	0.575	0.575	7.0	Both	
5	99+275	100+320	1.045	1.045	7.0	Both	
6	100+720	101+880	1.160	1.160	7.0	Both	
7	116+150	117+190	1.040	1.040	7.0	Both	
8	120+460	121+350	0.890	0.890	7.0	Both	
9	124+535	125+150	0.615	0.615	7.0	Both	
10	125+150	125+620	0.470	0.470	7.0	Both	
11	128+160	129+080	0.920	0.920	7.0	Both	
12	132+000	133+090	1.090	1.090	7.0	Both	
13	133+300	134+150	0.850	0.850	7.0	Both	
14	134+150	134+700	0.550	0.550	7.0	Both	
15	134+150	135+250	1.100	1.100	7.0	Both	
16	94+400	94+740	0.340	0.340	7.0	Both	
	Length on each side		13.505	13.505			
	Total Length (km)		**27.010**				

The photographs taken during the site visit are presented below.

Figure 3-3 Photographs of Service Road (LHS)

km. 89+200

km. 91+150

km. 94+400

km. 99+150

km. 100+400

km. 101+320

km. 114+056

km. 116+573

Figure 3-4 Photographs of Service Road (RHS)

km. 133+896

km. 131+450

km. 132+620

km. 130+608

km. 126+600

km. 125+310

km. 121+060

km. 120+750

3.3 Major / Minor Junction

As per the Concession Agreement, there are 4 nos. of existing major junctions although including COS there are 5 nos. of major junctions as well as 20 nos. of minor junctions.

The photographs taken during the site visit are presented below.

Figure 3-5 Photographs of Major Junctions

km. 90+117

km. 116+573

km. 133+865

Figure 3-6 Photographs of Minor Junctions

km. 97+940

km. 109+380

km. 110+366

km. 114+056

km. 114+300

km. 119+00

3.4 Condition Survey of Structure

The inventory of structures including Major Bridges, Minor Bridges, ROB's, Underpasses and Culverts is presented in table as below:

Table 3-3 Summary of Structures

Type of Structure	Total Number of Structures
Major Structures:	
Road Over Bridge (ROB)	-
Flyover	-
Major Bridges (MJB)	01
Minor Bridges (MNB)	09 + 01 (COS)
Vehicular Underpass (VUP)	08 + 01 (COS)
Pedestrian Underpass (PUP/LVUP)	04
Culverts:	
Reconstruction of Box / Slab Culverts	11
Reconstruction of Pipe to Box Culvert	32
New Construction of Box Culvert	45 + 6 (COS)

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-4 Condition Survey of Major Structure

Major Bridge

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway Width (m)	Type of Sub-structure	Type of Super-structure	Type of foundation	Remarks
1	108+762	LHS	4 span - 81.88 M length	1 x 16	RCC	RCC Voided Slab	-	Re-Construction - Structure is in sound condition. Expansion Joint, crash barrier and slope protection are in good condition.
		RHS	4 span - 81.88 M length	1 x 16	RCC	Solid slab	-	Re-Construction - Structure is in sound condition. Expansion Joint, crash barrier and slope protection are in good condition.

Minor Bridge

Sr. No.	Design Chainage (km)	Structural Configuration	Structure Type	Span Arrangement (No. x Length)	Total Structure Width (m)	Remarks
1	100+034	New 4-Lane bridge on LHS and RHS	Precast PSC Girder	One Span - Length-38.70m	LHS-14.5m RHS-14.5m	New Bridge - RCC Substructure with Precast PSC Girder Super Structure and Structure is in sound condition. In Bridge opening soil needs to be cleared which is under the Bridge.
2	111+104	New 6-Lane bridge	Box type	Two Span -Total Length-14.23m	LHS-16.0m RHS-16.0m	Re-Construction - RCC box type - Structure is in sound condition. As informed, vegetation is being cleaned on regular basis.
3	117+441	New 6-Lane bridge	Box type	Four Span -Total Length-34.04 m	LHS-16.0m RHS-16.0m	Re-Construction - RCC box type - Structure is in sound condition. As informed, vegetation is being cleaned on regular basis.
4	117+664	New 6-Lane bridge	Box type	Four Span -Total Length-47.20 m	LHS-16.0m RHS-16.0m	Re-Construction - RCC box type - Structure is in sound condition. As informed, vegetation is being cleaned on regular basis.
5	119+950	New 6-Lane bridge	Box type	Four Span -Total Length-34.04 m	LHS-16.0m RHS-16.0m	Re-Construction - RCC box type - Structure is in sound condition. Slope protection is in good condition.

Sr. No.	Design Chainage (km)	Structural Configuration	Structure Type	Span Arrangement (No. x Length)	Total Structure Width (m)	Remarks
6	120+191	New 6-Lane bridge	Box type	Two Span -Total Length-18.28 m	LHS-16.0m RHS-16.0m	New Construction - RCC box type - Structure is in sound condition. Slope protection is in good condition.
7	127+030	New 6-Lane bridge	Box type	Two Span -Total Length-14.23 m	LHS-16.0m RHS-16.0m	New Construction - RCC box type - Structure is in sound condition. Slope protection is in good condition.
8	127+256	New 6-Lane bridge	Box type	Five Span -Total Length-20.80 m	LHS-16.0m RHS-16.0m	New Construction - RCC box type - Structure is in sound condition. Slope protection is in good condition.
9	131+926	New 6-Lane bridge	Box type	Four Span -Total Length-37.04 m	LHS-14.5 m RHS-14.5 m LHS Service Road-11 m RHS Service Road-11 m	New Construction - RCC box type - Structure is in sound condition. As informed, vegetation is being cleaned on regular basis.
10	132+935	New 6-Lane bridge	Box type	Single Span - Total Length----- m	LHS-14.5 m RHS-14.5 m LHS Service Road-11 m RHS Service Road-11 m	New Construction - RCC box type - Structure is in sound condition. As informed, vegetation is being cleaned on regular basis.

VUP and PUP

Sr. No.	Chainage (km)	Side	Type	Span Arrangement (m)	Width (m)	Vertical Clearance (m)	Type of structure	Remarks
1	90+117	LHS	VUP	1 x 15.0	1 x 14.5	5.5	Box	Box Type - Structure is in sound condition
		RHS		1 x 15.0	1 x 14.5	5.5	Box	Box Type - Structure is in sound condition
2	91+150	LHS	VUP	2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
3	94+942	LHS	LVUP	1 x 12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition

Sr. No.	Chainage (km)	Side	Type	Span Arrangement (m)	Width (m)	Vertical Clearance (m)	Type of structure	Remarks
		RHS		1 x 12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
4	99+150	LHS	VUP	2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
5	101+320	LHS	VUP	2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
6	114+353	LHS	LVUP	1 x 12	1 x 14.5	4.0	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		1 x 12	1 x 14.5	4.0	RCC Girder	RCC Girder - Structure is in sound condition
7	116+573	LHS	VUP	1 x 15	1 x 14.5	5.5	Box	Box Type - Structure is in sound condition
		RHS		1 x 15	1 x 14.5	5.5	Box	Box Type - Structure is in sound condition
8	121+060	LHS	LVUP	1 x 12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
		RHS		1 x 12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
9	125+310	LHS	VUP	2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
10	128+910	LHS	VUP	2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
11	130+608	LHS	VUP	1 x 14.5	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		1 x 14.5	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
12	132+620	LHS	VUP	2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
		RHS		2 x 30	1 x 14.5	5.5	RCC Girder	RCC Girder - Structure is in sound condition
13	133+896	LHS	LVUP	1 x 12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition
		RHS		1 x 12	1 x 14.5	4.0	Box	Box Type - Structure is in sound condition

Figure 3-7 Photographs of Major Structures

Major Bridge

Structural View at km. 108+900

WC at km. 108+900

Expansion Joint at km. 108+900

General View at km. 108+900

Minor Bridge

Structural & WC View at km. 117+441

Structural & WC View at km. 117+664

Structural & WC View at km. 119+950

Structural & WC View at km. 120+191

Structural & WC View at km. 127+030

Structural & WC View at km. 127+256

Structural & WC View at km. 131+926

Structural & Crash Barrier View at km. 132+935

VUP / PUP

View of VUP at Km. 90+117

Structural View of VUP & RE Wall at km. 91+150

View of LVUP at km. 94+942

REW at km. 94+942

VUP at km. 99+150

VUP at km. 101+320

REW at Km. 101+320

LVUP & REW at km. 114+353

VUP at km. 116+573

LVUP & REW at Km. 121+060

VUP & REW at km. 125+310

VUP at km. 128+910

VUP & REW at km. 130+608

VUP at km. 132+620

REW at Km. 132+620

LVUP at km. 133+896

3.5 Condition Survey of Culverts

The cross-drainage structures include reconstruction and new construction of box culverts at various locations. There are total 94 Nos. of culverts in which 11 Nos. of reconstruction of box culverts, 32 Nos. of reconstruction of pipe to box culverts, 45 Nos. of new construction of box culverts, and 06 Nos. box culverts (constructed under Change of Scope) along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway with service road on both side and construction of new four lane carriageway at proposed bypass location. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts and slab culverts is found to be satisfactory. The RCC parapet, metal beam crash barrier or RCC railing has been provided at culvert locations which is maintained properly.

Vegetation growth and accumulation of debris at waterway is being removed and cleaned by the Concessionaire on regular basis.

Figure 3-8 Photographs of Box Culvert / Pipe Culvert

Km. 87+329

km. 88+026

km. 89+053

km. 91+961

Km. 93+328

km. 93+996

km. 97+704

km. 101+738

Km. 102+148

km. 103+200

km. 106+660 k

m. 103+896

3.6 Drainage

a) Existing Drains

There are lined and unlined drains including median drain along the Project Road.

Some photographs taken during the site visit are presented below.

Figure 3-9 Photographs of Existing Drains

km. 114+056-LHS

km. 133+896-LHS

km. 132+620-RHS

km. 114+353-RHS

3.7 Slope Protection

The slope protection and chute drain constructed along Project Road are found to be in satisfactory condition.

Some of the photographs taken during the site visit are presented below.

Figure 3-10 Photographs of Slope Protection

km. 88+026 LHS

km. 105+100 LHS

km. 108+900 LHS

km. 117+441 RHS

km. 119+950 RHS

km. 122+584 RHS

3.8 Road Furniture

The Concessionaire shall maintain the road furniture as per Schedule-C.

a) Summary of Quantity for Road Furniture Items

The following details show the summary of quantity for road furniture's items.

Table 3-5 Summary for Road Furniture Items

Sr. No.	Description	Unit	Quantity
1	Traffic Solar Blinkers	No.	96
2	W-beam Crash Barriers in both direction	kms	15.439
3	Delineator	Nos.	675
4	km Stone	Nos.	98
5	Informatory Signs	Nos.	250
6	Mandatory Signs	Nos.	130
7	Cautionary Signs	Nos.	946
8	Pedestrian Guard Rail	m	256
9	Highway Patrol Vehicles	Nos.	1
10	Ambulances	Nos.	1
11	Cranes	Nos.	1
12	Way side Amenities	Nos.	2

3.9 Pavement Marking

Pavement marking for the Project Road is done as per the design standards indicated in Schedule-D. Pavement marking is maintained by the Concessionaire.

Some of the photographs of road marking are presented below:

Figure 3-11 Photographs of Pavement Marking

km. 88+200-LHS

km. 89+00-LHS

km. 93+900-LHS

km. 94+400-LHS

km. 99+150-LHS

km. 116+573-LHS

km. 133+600 RHS

km. 128+00-RHS

km. 126+600-RHS

km. 121+060 RHS **km. 116+573-RHS**

3.10 Road Studs

Road studs / cat's eye for the Project Road is done as per the design standards indicated in Schedule-D. Road studs / cat's eye has been fixed at junction, edge of paved shoulder and zebra crossing. Damaged cat's eye can be replaced wherever required under O&M.

Some of the photographs of road studs are presented below.

Figure 3-12 Photographs of Road Studs

km. 91+150-LHS **km. 94+500-LHS** **km. 98+100-LHS**

km. 133+600-RHS

km. 132+00-RHS

km. 116+600-RHS

Traffic Signage / Median Kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road & Kilometre stone etc, the design for the traffic signs along the Project Road is done as per the design standards indicated in Schedule-D.

The height, lateral clearance, location, and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards & Median kerb paint are generally in good condition except few locations.

Some of the photographs of sign boards are presented below.

Figure 3-13 Photographs of Road Signages (LHS)

km. 86+800

km. 87+329

km. 88+600

km. 89+053

km. 93+450

km. 93+900

km. 103+896

km. 105+00

km. 106+800

km. 113+200

km. 115+00

km. 135+700

Figure 3-14 Photographs of Road Signages (RHS)

km. 135+550

km. 133+950

km. 133+896

Km. 132+00

Km. 131+450

km. 126+850

km. 126+600

km. 124+00

km. 123+750

km. 122+800

km. 121+550

km. 119+000

3.11 Highway Lighting / Solar Blinker

Highway Lighting is provided at underpasses, flyovers, toll plaza, truck lay byes, passenger shelters, major and minor junctions, and built-up locations. High mast lighting is provided at toll plaza.

At underpass and flyover locations, highway lighting is provided at the structure locations and at its approaches.

Solar amber blinker signals are provided at median opening and service road, junctions and bus stop locations. These lights are properly maintained and are in good working condition. Some of the photographs of highway lightings are presented below.

Figure 3-15 Photographs of Street Light / Solar Blinker

km. 91+150

km. 94+500 At Toll Plaza

km. 98+00

km. 102+400

km. 106+800

3.12 Crash Barriers

Metal beam & Concrete crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided and maintained by the Concessionaire.

Some of the photographs of metal beam crash barriers are presented below.

Figure 3-16 Photographs of Guard Post / Crash Barrier

km. 87+329-LHS

km. 101+320-LHS

km. 103+200-LHS

km. 108+900-LHS

km. 117+664-LHS

km. 122+584-LHS

km. 134+850-RHS

km. 109+600-RHS

km. 108+400-RHS

km. 103+850-RHS

km. 99+150-RHS

km. 88+00-RHS

3.13 Delineators

The traffic delineators are provided and maintained by the Concessionaire for road users in abnormal condition of weather in the Project Road. Some of the photographs of delineators are presented below.

Figure 3-17 Photographs of Delineator

km. 97+940

km. 102+148

km. 103+250

3.14 Pedestrian Guard Rail

The pedestrian guard rails are provided in the median between service road and main carriageway, passenger shelters, truck lay bye and underpass locations. It is maintained by the Concessionaire. However, at few locations rectification is needed.

Some of the photographs of pedestrian guard rails are presented below.

Figure 3-18 Photographs of Pedestrian Guard Rail

km. 89+200

km. 94+942

km. 100+400

km. 114+353

km. 121+060

km. 133+896

Road Land Boundary / Chain Link Fencing

For the Project Road, the Concessionaire has done the chain link fencing at ROW to avoid any kind of encroachments. The Concessionaire needs to rectify wherever required. The photographs are presented as above.

Figure 3-19 Photographs of Chain Link fencing / Road Land Boundary

LHS

km. 87+329

km. 91+961

km. 93+328

RHS

km. 131+450

km. 130+608

km. 121+550

3.15 Avenue Plantation and median Plantation

Avenue plantations is done along the project length except at built-up locations as per IRC specification. Avenue plantation work is provided at required locations.

Some of the photographs taken during site visit are presented below.

Figure 3-20 Photographs of Avenue Plantation

LHS

km. 87+329

km. 91+961

km. 93+328

km. 99+150

km. 102+148

km. 104+600

RHS

km. 132+620

km. 127+950

km. 121+060

km. 109+600 **km. 108+400** **km. 100+400**

Figure 3-21 Photographs of Median Plantation

km. 88+200 **km. 89+00** **km. 90+00**

km. 94+500 **km. 95+600** **km. 102+150**

3.16 Noise Barrier

Noise barriers are provided in built-up sections and are properly maintained by the concessionaire however concessionaire need to rectify the barrier wherever required. Some of the photographs of noise barrier are presented below.

Figure 3-22 Photographs of Noise Barrier

km. 94+500-LHS

km. 114+00-LHS

km. 116+00-LHS

km. 116+600-RHS

km. 114+00-RHS

km. 94+450-RHS

3.17 Protection Wall

The protection wall is provided wherever required in the project. It is maintained by the Concessionaire.

Figure 3-23 Photographs of Protection Wall

km. 103+250-LHS

km. 104+600-LHS

km. 105+550-RHS

km. 103+400-RHS

3.18 Toll Plaza

There is one toll plaza at km. 96+035 near Dharmaram village. As it is a HAM project, it is being operated by NHAI through their external vendor namely Hulye Construction Pvt. Ltd. The toll operation is not in the scope of the Concessionaire.

View of Toll Plaza

Toll fee Sign Board

Ariel View of Toll Plaza

Toll Plaza Admin & O&M Building UPS Room

View of Tunnel at TP DG Shed

O&M Building Staff Quarter

Solar Panel Control Room

Electric Panel Room

Weigh Bridge

Office inside view

3.19 Advance Traffic Management System (ATMS)

Advance Traffic Management System (ATMS) installed for the project road is controlled by the ATMS center near the toll plaza location (km. 96+035). As per Concession agreement ATMS shall conform to ATMS Policy Guidelines (2016) which comprises of the following:

- Automatic Traffic Counter cum Classifier (ATCC)
- Mobile Radio communication system
- Emergency Call Box
- Meteorological Data system
- Variable Message Signboards (VMS)
- CCTV system
- Video Incident Detection System (VIDS)

Status of these systems at site are described below:

3.19.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is installed at km. 95+930.

ATCC

3.19.2 Emergency Call Boxes (ECB)

Emergency Call Boxes are installed along the project length, and all are functional. The same are maintained by the Concessionaire.

km. 93+200

km. 97+400

km. 134+850

3.19.3 MET System

Meteorological sensors comprise of sensors to measure the atmospheric temperature, humidity, pavement surface temperature, visibility and equipment for measuring wind speed and direction and installed at km. 96+035 at Toll Plaza office building in Dharmaram village.

MET

3.19.4 Variable Message Signboards (VMS)

Variable message sign boards are installed in the Project Road. These display specific messages to the users based on the prevailing conditions on the Project Road. The message can be changed at any point of time from the ATMS centre. About 250 customised messages can be stored on the system.

km. 88+250 LHS km. 128+00 RHS

3.19.5 CCTV Surveillance Cameras

Surveillance Cameras are installed along the Project Road which are monitored through the ATMS control room.

Control Room for ATMS at TP

Server TMS & ATMS at TP km. 86+800

km. 89+00

km. 91+200

3.19.6 Vehicle Actuated Speed Display (VASD)

VASD / speedometers are installed along the Project Road which are monitored through the ATMS control room. The same are in working condition.

km. 127+550

3.19.7 Adequacy of Toll Collection System and ATMS

The Advance Traffic Management System (ATMS) installed is as per specifications required by the Authority and the same is in working condition.

3.20 Truck Lay bye

The following are the Truck Lay-Bye cum Rest Room locations.

Table 3-6 Details of Truck lay bye

Sr. No.	Chainage as per Site (km)	Side
1	93+900	BHS
2	118+500	BHS
3	135+225	BHS

Figure 3-24 Photograph of Truck Lay-bye

km. 93+900-LHS

km. 118+600-LHS

km. 135+400-LHS

km. 135+550-RHS

km. 118+500-RHS

km. 93+800-RHS

3.21 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Post are in the scope of Concessionaire.

Figure 3-25 Photograph of Traffic / Medical Aid Post

Traffic and Medical Aid Post

Figure 3-26 Photograph of Incident Management

Ambulance

Cranes

Route Patrol Vehicle

3.22 Toilet Block

Apart from toll plaza, there are 30 nos. of toilet blocks along the Project Road i.e., at Toll Plaza, Truck Lay Bye, Rest Area, Passenger Shelters etc., which is in Concessionaire's scope. The detailed photographs can be seen in the section of passenger shelters.

Table 3-7 Details of Toilet Block

Sr. No.	Chainage (km)	Side		Remarks
		LHS	RHS	
1	96+073	Yes	Yes	

Figure 3-27 Photographs of Toilet Blocks

Toilet Block at TP-RHS

Toilet Block at TP-LHS

3.23 Bus Bays and Passenger Shelters

There are 22 nos. bus bays / passenger shelters along the Project Road. All are in operational condition. Some of the photographs are presented below.

Figure 3-28 Photographs of Bus Bay / Passenger Shelter

km. 88+400-LHS

km. 98+100-LHS

km. 106+750-LHS

km. 126+400-RHS

km. 123+200-RHS

km. 121+350-RHS

3.24 Wayside Amenities

There are two no. of Wayside Amenities (BHS) along the Project Road. Presently, all the which was in the scope of Concessionaire has been completed. The operation of the same is being done by NHAI through external vendors. Some of the photographs are presented below.

Table 3-8 Details of wayside Amenities

Sr. No.	Description	Quantity (Nos.)	Chainage (km)	Side
1	Wayside Amenities	02	113+207	BHS

Figure 3-29 Photograph of Wayside Amenities

km. 113+200-LHS

km. 113+200-RHS

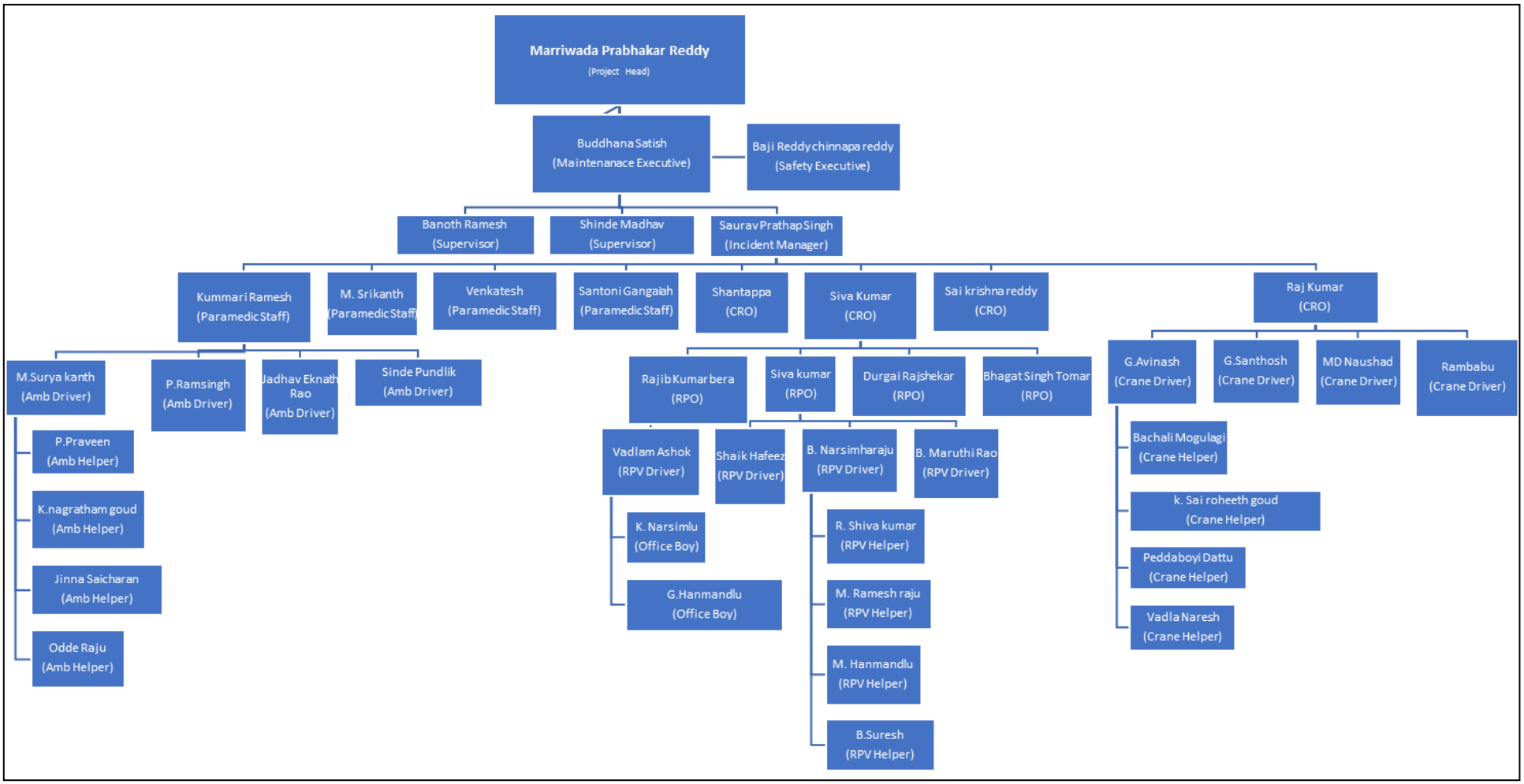
3.25 Balance Work Status

Presently, all work has been completed. IE has issued the completion certificate effecting from 27th October 2025 vide their letter no. MSV/IE (O&M)/Pkg-II&III/2025/MHPL/1005 Dated 10.12.2025.

3.26 Organization Chart

The Concessionaire has prepared the Organization Chart to maintain the site during Operation and maintenance. The same is presented below.

Organization Chart



3.27 Operation

Operation cost is comprised of manpower cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, and other miscellaneous expenses. As the Project is in Annuity mode, the Toll Operation is not in the Scope of Concessionaire. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have been made from the expenses of similar types of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.28 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

The project is currently under the Operation and Maintenance stage. The concession period of the project is 17 years from the Appointed / Commencement Date (i.e., 12th April 2019) including construction period of 2 years (730 days).

The project has received Completion Certificate on 27th October 2025.

4.2 Axle Load and VDF

The Concessionaire has conducted the Axle Load Survey on Project Road at km. 96+050 from 21st July 2021 to 22nd July 2021. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor

Sr. No.	Vehicle Type	Direction	
		LHS (Mangloor-MH border)	RHS (MH border -Mangloor)
1	BUS	0.861	0.951
2	LCV	0.714	0.929
3	2-Axle	3.253	2.968
4	3-Axle	6.127	7.464
5	MAV	9.204	10.958

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

MSA Calculations MHPL Project									
Year	4 Lane				6 Lane				Remarks
	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	
2025-26	-	**-**	-	**-**	-	**-**	-	**-**	
2026-27	1.49	**1.49**	1.76	**1.76**	1.20	**1.20**	1.41	**1.41**	
2027-28	1.57	**3.06**	1.85	**3.61**	1.25	**2.45**	1.48	**2.89**	
2028-29	1.65	**4.71**	1.94	**5.55**	1.32	**3.77**	1.55	**4.44**	1st MM cycle
2029-30	1.73	**6.44**	2.04	**7.59**	1.38	**5.15**	1.63	**6.07**	
2030-31	1.81	**8.25**	2.14	**9.73**	1.45	**6.60**	1.71	**7.78**	
2031-32	1.91	**10.16**	2.24	**11.97**	1.52	**8.12**	1.80	**9.58**	
2032-33	2.00	**12.16**	2.36	**14.33**	1.60	**9.72**	1.89	**11.47**	
2033-34	2.10	**14.26**	2.47	**16.80**	1.68	**11.40**	1.98	**13.45**	
2034-35	2.21	**16.47**	2.60	**19.40**	1.76	**13.16**	2.08	**15.53**	
2035-36	2.32	**18.79**	2.73	**22.13**	1.85	**15.01**	2.18	**17.71**	2nd MM cycle

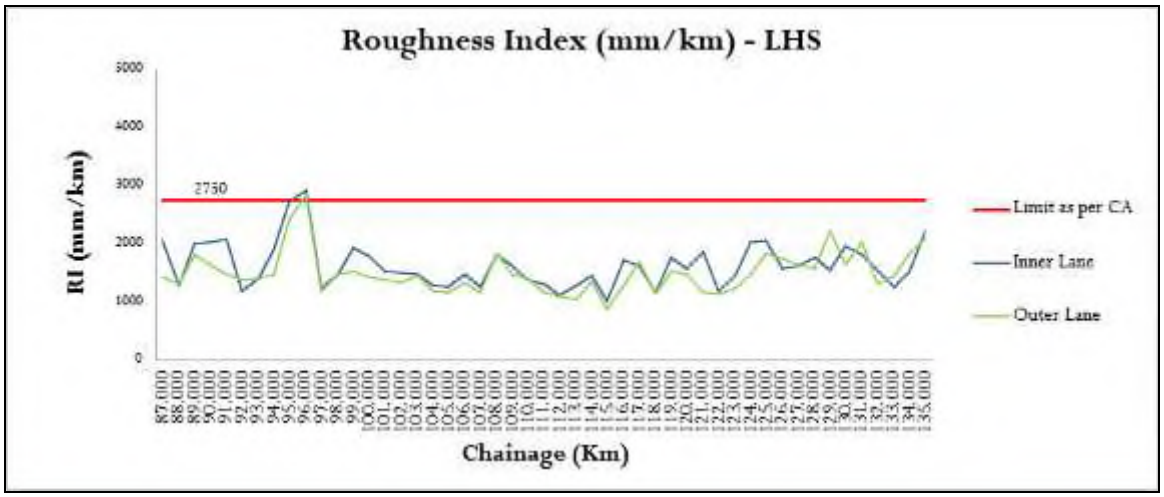
MSA Calculations MHPL Project									
Year	4 Lane				6 Lane				Remarks
	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	
2036-37	2.43	**21.22**	2.87	**25.00**	1.95	**16.96**	2.29	**20.00**	

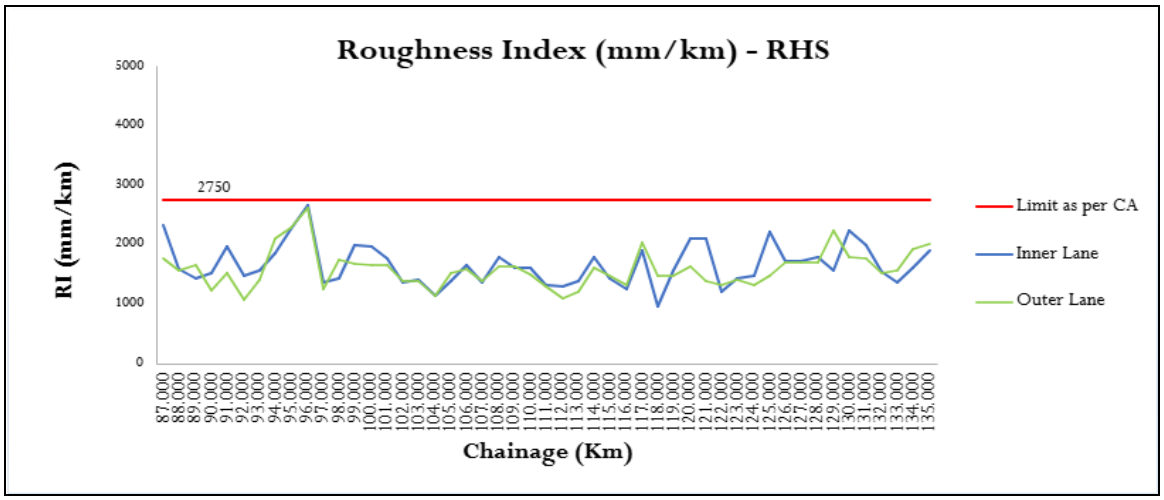
4.4 Network Survey Vehicles (NSV) Survey

The Concessionaire has provided NSV survey data conducted in May 2024. The NSV data is used to assess the riding quality and pavement condition of project road. The summary of Roughness Index is given in table below:

Table 4-3 Roughness Index Summary

Sr. No.	Rating	Roughness Value as per CA limit	Length (km)			
			LHS		RHS	
			Inner Lane	Outer Lane	Inner Lane	Outer Lane
1	Good - Fair	<2750	47.70	47.70	48.70	48.70
2	Poor	>2750	1.00	1.00	-	-





The summary of Rutting of the Project is given in the table below:

Rut Depth (mm)	Length of the Road Effected with Rutting (km)			
	LHS		RHS	
	Inner Lane	Outer Lane	Inner Lane	Outer Lane
<5	25.75	12.75	43.21	32.21
5-10	22.97	33.99	5.75	16.75
>10	0.00	1.00	0.00	0.00
Total Length	48.72	47.74	48.96	48.96

4.5 Structural Investigation

Falling Weight Deflectometer survey was conducted for flexible pavement by the Concessionaire in October 2025. The summary of the FWD survey report is presented in the table below.

Table 4-4 FWD Summary

Remaining life (MSA)	Length (Km)				Remark
	LHS		RHS		
	Inner Edge	Outer Edge	Inner Edge	Outer Edge	
<10	4.00	4.00	10.75	6.00	
10-20	14.75	16.00	20.00	17.00	
20-30	13.50	13.95	12.20	13.95	
>30	16.20	15.00	6.00	12.00	
Total Length	48.45	48.95	48.95	48.95	

From the above table, it is observed that residual life of the pavement is more than the cumulative design MSA up to FY 2030 i.e., up to the 1st Major Maintenance Cycle except 1 kms on RHS. The periodic maintenance of the Project Road is proposed considering the above results.

4.6 Test pit and Subgrade Investigation

The required data / details are yet to be received from the Concessionaire / Client. The same will be updated after receiving the data from Concessionaire / Client.

4.7 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full-length periodic maintenance. Schedule-k of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-K requirement to maintain the road in serviceable condition. Only improvement in Riding Quality is expected if the roughness value exceeds 2750 mm / km.

The project has received PCOD on 15th December 2021 for the length 47.412 kms out of 48.963 kms. Hence, the major maintenance cycle is adjusted accordingly.

The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-5 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2026 to FY 2028	-	-
2	FY 2029	Major maintenance with 35 mm BC (VG-40) (60%) + Micro-surfacing (40%) + Milling & 50 mm DBM (2.5%)	Major Maintenance with Micro-surfacing (100%)
3	FY 2030 to FY 2035	-	-
4	FY 2036	Major maintenance with 35 mm BC (VG-40) (40%) + Micro-surfacing (60%) + Milling & 50 mm DBM (2.5%)	Major Maintenance with Micro-surfacing (100%)

**End of concession period as per Concession Agreement is FY 2037.*

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATE

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost (CAPEX)
II. Balance Repair / Rectification Works
III. Routine O&M Cost
IV. Major Maintenance Cost
V. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per Government of Telangana Common SoR (Road & Bridge Works) 2024-25. The input rates for SoR were adopted as below:
   a. **Manpower and labour:** As per applicable minimum wages published by Sschedule of Rates, Government of Telangana.
   b. **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

   Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards, since bitumen prices have been range bound over the last five-six years. Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST.

Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg last 10 years)
Mathura	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Panipat	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Koyali	All States	VG-10	47,102	37,125
		VG-30	48,402	38,137
		VG-40	51,082	40,251
Haldia	All States	VG-10	46,602	35,683
		VG-30	47,402	36,295
		VG-40	49,962	38,256
Barauni	All States	VG-10	47,132	36,213
		VG-30	48,432	37,325
		VG-40	50,992	39,286
CPCL	Kerala	VG-10	47,402	35,519

Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg last 10 years)
		VG-30	48,402	36,395
		VG-40	50,762	38,120
CPCL	Tamil Nadu	VG-10	47,902	36,019
		VG-30	48,402	36,395
		VG-40	50,962	38,320
CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320
CPCL	Karnataka	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320

c. **Sand and Aggregate:** Market rates are considered from the quarry located nearest to Project Road.

d. **Cement:** Market rates are considered from the nearest local market.

e. **Steel :** Rate of steel is taken from Market rate.

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable PWD SOR.

g. **Actual Rates of items as per work order:** The rates of road marking, road stud, kerb raising, micro surfacing, milling, aggregate rates etc. are considered as per the work order shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book / rate as per work order adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam (VG-40)	Cum	8,251
2	Bituminous Concrete (VG-40)	Cum	9,416
3	Bituminous Concrete (VG-30)	Cum	8,927
4	Milling	Sqm	92
5	Micro-surfacing	Sqm	155
6	Kerb Re-laying	Rmt	316
7	Road Marking	Sqm	501
8	Road Studs	Nos.	179

5.3 Balance Works Cost (CAPEX)

As discussed in the previous chapter, the cost of balance works as per CA is found to be **NIL**.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and

ROW maintenance, routine maintenance, and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Tolling Operations Services (Not in Scope)
3. Incident Management Services
4. Electricity and Diesel Charges
5. HTMS Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Insurance Expense
10. IE Fees
11. Horticulture & ROW Maintenance
12. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation and Maintenance cost (Routine O&M) is presented below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2026-37)	Remarks
1	Salary and Welfare Expenses	44,85,000	
2	Tolling Operations Services	-	
3	Toll Security Services	12,22,178	
4	Incident Management & Emergency Services	3,19,70,147	
5	Electricity and Diesel Charges	95,47,813	
6	HTMS Expenses	90,10,507	
7	Office Operating Expenses	23,64,913	
8	Vehicle Running Expenses	48,75,000	
9	Professional Fees Expense	95,72,267	
10	Community Development	15,76,609	
11	Communication Expenses	1,40,769	
12	Conveyance Expenses	2,81,537	
13	Insurance Expense	1,12,70,000	
14	IE Fees	23,36,759	
15	Routine Maintenance Cost (Project Road)	1,60,44,180	
16	Horticulture & ROW Maintenance	1,75,40,897	
17	Miscellaneous including Contingency	35,46,140	

Sr. No.	Particulars	Amount (FY 2026-37)	Remarks
	Total Cost (Rs.)	**12,57,84,715**	
	Total Cost (Cr.)	**12.58**	
	Per km Cost (Lakhs)	25.69	

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Table 5-4 Summary of Major Maintenance Cost

Sr. No.	Year	Major Maintenance Cost (Cr)	Remarks
1	FY 2026 - FY 2028	-	
2	FY 2029	49.92	
3	FY 2030 -FY 2035	-	
4	FY 2036	43.56	
5	FY 2037	-	
Total Cost (Cr.)		**93.48**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr)	Remarks
1	FY 2026 - FY 2028	-	
2	FY 2029	3.94	
3	FY 2030 -FY 2035	-	
4	FY 2036	3.94	
5	FY 2037		
Total Cost (Cr.)		**7.88**	

5.7 Escalation Assumption

The following escalation is considered basis discussions with Client and our internal estimates.

Table 5-5 Escalation

Year	Escalation	Year	Escalation
2027	-	**2043**	3.99%
2028	4.86%	**2044**	3.99%
2029	4.44%	**2045**	3.99%
2030	4.24%	**2046**	3.99%
2031	4.13%	**2047**	3.99%
2032	4.08%	**2048**	3.99%
2033	4.01%	**2049**	3.99%
2034	4.00%	**2050**	3.99%
2035	4.03%	**2051**	3.99%
2036	4.01%	**2052**	3.99%
2037	3.98%	**2053**	3.99%
2038	3.98%	**2054**	3.99%
2039	4.00%	**2055**	3.99%
2040	3.99%	**2056**	3.99%
2041	3.99%	**2057**	3.99%

Year	Escalation	Year	Escalation
2042	3.99%	**2058**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period along with escalation as mentioned in above clause.

Escalated O&M Cost (in INR Cr.)

Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37
Routine O&M Cost											
Salary and Welfare Expense	0.45	0.47	0.49	0.51	0.53	0.55	0.58	0.60	0.62	0.65	0.68
Tolling Operations Services	-	-	-	-	-	-	-	-	-	-	-
Toll Security Services	0.12	0.13	0.13	0.14	0.15	0.15	0.16	0.16	0.17	0.18	0.18
Incident Management Services	3.20	3.35	3.50	3.65	3.80	3.96	4.11	4.28	4.45	4.63	4.81
Electricity and Diesel Charges	0.95	1.00	1.05	1.09	1.13	1.18	1.23	1.28	1.33	1.38	1.44
TMS/HTMS/System Expenses	0.28	0.47	-	0.06	0.13	0.21	0.22	0.38	0.63	-	0.08
Office Operating Expenses	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.34	0.36
Vehicle Running Expenses	0.49	0.51	0.53	0.56	0.58	0.60	0.63	0.65	0.68	0.71	0.73
Professional Fees Expense	0.96	1.00	1.05	1.09	1.14	1.18	1.23	1.28	1.33	1.39	1.44
Community Development	0.16	0.17	0.17	0.18	0.19	0.20	0.20	0.21	0.22	0.23	0.24
Communication Expenses	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Conveyance Expenses	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04
Insurance Expense	1.13	1.18	1.23	1.29	1.34	1.39	1.45	1.51	1.57	1.63	1.70
IE Fees	0.23	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.33	0.34	0.35
Routine Maintenance Cost	1.60	1.68	1.76	1.83	1.91	1.99	2.06	2.15	2.23	2.32	2.42
Horticulture & ROW Maintenance	1.75	1.84	1.92	2.00	2.09	2.17	2.26	2.35	2.44	2.54	2.64
Miscellaneous and Contingency	0.35	0.37	0.39	0.40	0.42	0.44	0.46	0.47	0.49	0.51	0.53
Subtotal of O&M Cost	11.96	12.72	12.79	13.40	14.02	14.66	15.24	16.01	16.89	16.91	17.67
Major Maintenance Cost	-	-	55.83	-	-	-	-	-	-	62.40	-
Periodic Cost of TMS/HTMS Replacement	-	-	4.32	-	-	-	-	-	-	5.71	-
Balance Works Cost	-	-	-	-	-	-	-	-	-	-	-
Total Cost	**11.96**	**12.72**	**72.94**	**13.40**	**14.02**	**14.66**	**15.24**	**16.01**	**16.89**	**85.02**	**17.67**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Ordinary Repair Cost for Flexible (with GST)	**1,60,44,180**
(Inclusive of GST)	**= 3.28 lakhs per km**

National Highways / State Highways (Flexible Pavement)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal**	**Urban**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				More than 4500 CVD	More than 4500 CVD				
				1,61,249	**1,93,361**	**Normal**	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	246711	295842	296566	-	-	-	-
		Paved shoulder	274124	328713	329518	31.07	0.35	8,518,129	115,050
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	322499	386722	387668	-	-	-	-
		Paved shoulder	354748	425394	426435	4.91	-	1,742,522	-
1	Six lane with divided carriageway	without Paved shoulder	337011	404124	405113	-	-	-	-
		with Paved shoulder	364423	436995	438065	0.89	-	323,972	-
2	Six lane with divided carriageway and service lane on either side	without Paved shoulder	412798	495004	496216	-	-	-	-
		with Paved shoulder	445048	533676	534982	10.38	1.36	4,618,708	725,799
					TOTAL		**48.963**		**16,044,180**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity More than 4500 CVD BT Surface**
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	0.25%
	Volume (cum)			1.25
	Rs/m^3			10001
	Cost in Rupees			12,501
	ii) Patch repair	100 % Patch less	As & when required	0.25%
	Area (sqm)			25
	Rs/m^2			400
	Cost in Rupees			10,001
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			74
	Cost in Rupees			18,443
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.00%
	Area (sqm)			150
	Rs/m^2			49
	Cost in Rupees			7,347
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			400
	Cost in Rupees			30,002
	v) Road marking	10%	Once in 10th year & @ Repaired location	19113
	SUB TOTAL			**97,407**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**7,414**
3	**Maintenance of Cross Drainage works:**			
	i) Repair of floors	100%	Once in a Year	5055
	ii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			**7,161**
4	**Maintenance of Minor & Major Bridges:**			
	i) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints	100%	As & when required	
	ii) Repair of minor washouts, erosion scour and animal holes			
	iii) Sealing Cracks with Cement/ Epoxy Mortar			
	iv) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometer stone etc.		Once in a Year	3695
	ii) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7390
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232
	iv) Traffic Census		Once in a Year	0
	v) Provision for roughness measurement		Twice in a Year	0

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	SUB TOTAL			**12,317**
	GRAND TOTAL (Normal)			**1,61,249**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	2306
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**32,112**
	GRAND TOTAL (Urban)			**1,93,361**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						6,59,821	12	77,33,102
	4 lane section									
	For BC	Sqm	2	21,428	9.17		3,92,894	3,92,894		
	For DBM	Sqm	2	893	7.00		12,500	12,500		
	For Misc. Location	Sqm	2	2,143	9.17		39,289	39,289		
	6 lane section									
	For BC	Sqm	2	7,043	13.50		1,90,156	1,90,156		
	For DBM	Sqm	2	271	11.00		5,967	5,967		
	For Misc. Location	Sqm	2	704	13.50		19,016	19,016		
2	BC with 35 mm						22,447	22,447	9,416	21,13,54,798
	4 lane section	Cum	2	23,571	9.17	0.04	15,126			
	6 lane section	Cum	2	7,747	13.50	0.04	7,321			
3	DBM with 50 mm						923	923	8,251	76,18,490
	4 lane section	Cum	2	893	7.00	0.05	625			
	6 lane section	Cum	2	271	11.00	0.05	298			
4	Milling for DBM						18,467	18,467	92	16,98,950
	4 lane section	Sqm	2	893	7.00		12,500			
	6 lane section	Sqm	2	271	11.00		5,967			
5	Micro surfacing									
	4 lane section	Sqm	2	14,286	9.17		2,61,929	2,61,929	155	4,06,64,491
	6 lane section	Sqm	2	4,695	13.50		1,26,770	1,26,770	155	1,96,81,105
	Main Carriageway - Rigid Pavement									
6	Joint Sealant Replacement @ 10% length	Rmt	10%	3,648	3.50	4.50	2,919	2,919	59	1,72,205
7	Dismantling of CC Panels @ 5% area	Cum	5%		57,462	0.30	862	862	1,021	8,79,864
8	Replacement of Panels - PQC @ 5% area	Cum	5%		57,462	0.30	862	862	7,249	62,48,053
	Service Road									
9	Tack coat	Sqm	1	-	7.5		-	-	12	-
10	BC with 30 mm	Cum	1	-	7.5	0.03	-	-	8,927	-

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
11	Micro Surfacing	Sqm	1	40,601	7.5		3,04,508	3,04,508	155	4,72,74,789
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
12	Tack coat	Sqm	1	445	27.1		12,058	12,058	12	1,41,314
13	Wearing Coat BC with 35 mm	Cum	1	445	27.1	0.04	422	422	9,416	39,73,484
14	Milling of Ex. Wearing Coat	Sqm	1	445	27.1		12,058	12,058	92	11,09,290
15	Micro surfacing	Sqm	1	445	27.1		12,058	12,058	155	18,71,927
16	Painting of Crash Barrier	Sqm	1	29,223		1.12	32,584	32,584	116	37,79,703
	Other Works									
17	Raising of Road Kerb	Rmt	1	39,677			39,677	39,677	316	1,25,47,788
18	Replacement of Road Stud									
	Normal Road Stud	Nos	2	17,954			35,908	35,908	179	64,27,532
	Solar Road Stud	Nos	1	-			-	-	1,922	-
19	Painting of Kerb	Sqm	1	66,128		0.315	20,830	20,830	134	27,91,263
20	Road Marking	Sqm					46,448	46,448	501	2,32,70,390
	4 Lane MCW Section									
	a) Median & Edge line	Sqm	4	37,500	0.15		22,500			
	b) Lane line	Sqm	2	12,375	0.10		2,475			
	6 Lane MCW Section									
	a) Median & Edge line	Sqm	4	14,565	0.15		8,739			
	b) Lane line	Sqm	4	4,806	0.10		1,923			
	Service Road									
	a) Edge line	Sqm	2	36,910	0.10		7,382			
	b) Lane line	Sqm	1	12,180	0.10		1,218			
	Junction crossing	Sqm					2,212			
21	Filling of Earthen shoulder	Cum					6,804	6,804	533	36,27,418
	MCW		2		97,206	0.04	6,804			
22	Miscellaneous	5%								2,01,43,298
Total Major Maintenance Cost (Rs)										**42,30,09,253**
Total Major Maintenance Cost with GST (Rs)										**49,91,50,919**
Total Major Maintenance Cost with GST (Cr)										**49.92**

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
									Per km Cost (lakh)	**101.94**
									Escalation Factor for (FY 2029)	**1.15**
									Total Escalated Cost for (FY 2029) (Cr)	**55.83**

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						4,46,036	12	52,27,545
	4 lane section									
	For BC	Sqm	2	14,286	9.17		2,61,929	2,61,929		
	For DBM	Sqm	2	893	7.00		12,500	12,500		
	For Misc. Location	Sqm	2	1,429	9.17		26,193	26,193		
	6 lane section									
	For BC	Sqm	2	4,695	13.50		1,26,770	1,26,770		
	For DBM	Sqm	2	271	11.00		5,967	5,967		
	For Misc. Location	Sqm	2	470	13.50		12,677	12,677		
2	BC with 35 mm						14,965	14,965	9,416	14,09,03,198
	4 lane section	Cum	2	15,714	9.17	0.04	10,084			
	6 lane section	Cum	2	5,165	13.50	0.04	4,881			
3	DBM with 50 mm						923	923	8,251	76,18,490
	4 lane section	Cum	2	893	7.00	0.05	625			
	6 lane section	Cum	2	271	11.00	0.05	298			
4	Milling for DBM						18,467	18,467	92	16,98,950
	4 lane section	Sqm	2	893	7.00		12,500			
	6 lane section	Sqm	2	271	11.00		5,967			
5	Micro surfacing									
	4 lane section	Sqm	2	21,428	9.17		3,92,894	3,92,894	155	6,09,96,736
	6 lane section	Sqm	2	7,043	13.50		1,90,156	1,90,156	155	2,95,21,657
	Main Carriageway - Rigid Pavement									
6	Joint Sealant Replacement @ 10% length	Rmt	10%	3,648	3.50	4.50	2,919	2,919	59	1,72,205

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
7	Dismantling of CC Panels @ 5% area	Cum	5%		57,462	0.30	862	862	1,021	8,79,864
8	Replacement of Panels - PQC @ 5% area	Cum	5%		57,462	0.30	862	862	7,249	62,48,053
	Service Road									
9	Tack coat	Sqm	1	-	7.5		-	-	12	-
10	BC with 30 mm	Cum	1	-	7.5	0.03	-	-	8,927	-
11	Micro Surfacing	Sqm	1	40,601	7.5		3,04,508	3,04,508	155	4,72,74,789
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
12	Tack coat	Sqm	1	445	27.1		12,058	12,058	12	1,41,314
13	Wearing Coat BC with 35 mm	Cum	1	445	27.1	0.04	422	422	9,416	39,73,484
14	Milling of Ex. Wearing Coat	Sqm	1	445	27.1		12,058	12,058	92	11,09,290
15	Micro surfacing	Sqm	1	445	27.1		12,058	12,058	155	18,71,927
16	Painting of Crash Barrier	Sqm	1	29,223		1.12	32,584	32,584	116	37,79,703
	Other Works									
17	Raising of Road Kerb	Rmt	1	26,451			26,451	26,451	316	83,65,192
18	Replacement of Road Stud									
	Normal Road Stud	Nos	2	5,985			11,970	11,970	179	21,42,630
	Solar Road Stud	Nos	1	-			-	-	1,922	-
19	Painting of Kerb	Sqm	1	66,128		0.315	20,830	20,830	134	27,91,263
20	Road Marking	Sqm					46,448	46,448	501	2,32,70,390
	4 Lane MCW Section									
	a) Median & Edge line	Sqm	4	37,500	0.15		22,500			
	b) Lane line	Sqm	2	12,375	0.10		2,475			
	6 Lane MCW Section									
	a) Median & Edge line	Sqm	4	14,565	0.15		8,739			
	b) Lane line	Sqm	4	4,806	0.10		1,923			
	Service Road									
	a) Edge line	Sqm	2	36,910	0.10		7,382			
	b) Lane line	Sqm	1	12,180	0.10		1,218			
	Junction crossing	Sqm					2,212			
21	Filling of Earthen shoulder	Cum					6,804	6,804	533	36,27,418

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	MCW		2		97,206	0.04	6,804			
22	Miscellaneous	5%								1,75,80,705
Total Major Maintenance Cost (Rs.)										**36,91,94,804**
Total Major Maintenance Cost with GST (Rs.)										**43,56,49,868**
Total Major Maintenance Cost with GST (Cr.)										**43.56**
Per km Cost (lakh)										**88.98**
Escalation Factor for (FY 2036)										**1.52**
Total Escalated Cost for (FY 2036) (Cr.)										**62.40**

FP Project Management

Technical Due Diligence of Madurai - Kanyakumari (Package-1) of NH-44 from km. 0+000 to km. 52+300 in the State of Tamil Nadu

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	VKD / VMK	CSB	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 5
2.7 Existing Utilities 5
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 8
3.3 Junctions / Intersections 9
3.4 Condition Survey of Bridge 9
3.5 Condition Survey of Culverts 14
3.6 Drainage 15
3.7 Slope Protection 15
3.8 Road Furniture 15
3.8.1 Pavement Marking 15
3.8.2 Road Studs 15
3.8.3 Traffic Signage / Median Kerb painting / KM Stone 15
3.8.4 Highway Lighting 17
3.8.5 Crash Barriers 17
3.8.6 Delineators 18
3.8.7 Pedestrian Guard Rail 18
3.8.8 Road Land Boundary 18

3.9 Avenue Plantation and Median Plantation 19
3.10 Toll Plaza 19
3.11 Lane Equipment 20
3.11.1 RFID ETC Transceiver 20
3.11.2 Lane Controller with Industrial PC 21
3.11.3 Automatic Vehicle Classification (AVC) Sensors 21
3.11.4 Automatic Lane Barrier 21
3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 22
3.11.6 Incident Capture Camera (AVC Camera) 22
3.11.7 License Plate Image Capture Camera (LPIC) 22
3.11.8 Over Head Lane Signal (OHLS) 22
3.11.9 Toll Booth Equipment 23
3.11.10 Medium Speed Weigh in Motion (MSWIM) 24
3.12 Plaza Equipment 24
3.12.1 TMS Server 24
3.12.2 55” LED screen for CCTV monitoring 24
3.12.3 Workstations in Control Room, POS room 25
3.13 Advanced Traffic Management System (ATMS) 25
3.13.1 Automatic Traffic Counter cum classifier (ATCC) 25
3.13.2 Mobile Radio communication System (MRCS) 25
3.13.3 Emergency Call Boxes (ECB) 25
3.13.4 Portable Weigh in Motion (PWIM) 26
3.13.5 MET System 26
3.13.6 Variable Message Signboards (VMS) 26
3.13.7 CCTV Surveillance Cameras 26
3.13.8 Video Incident Detection System 26
3.13.9 Vehicle Actuated Speed Display (VASD) 26
3.13.10 Adequacy of Toll Collection System and ATMS 27
3.14 Traffic Aid Post and Medical Aid Post 27
3.15 Toilet Block 27
3.16 Bus Bays and Passenger Shelters 27
3.17 Balance Work Status 27
3.18 Operation and Maintenance 27
3.18.1 O&M Contract 27
3.18.2 Organization Chart 28
3.18.3 Operation 29
3.18.4 Routine Maintenance 29

4 Pavement Investigation and Assessment 31
4.1 General 31
4.2 Axle Load and VDF 31
4.3 Design Traffic 31
4.4 Network Survey Vehicles (NSV) Survey 32
4.5 Falling Weight Deflectometer (FWD) Survey 33
4.6 Test pit and Subgrade Investigation 34
4.7 Periodic Maintenance Strategy 39
5 Cost Estimates 41
5.1 General 41
5.2 Rate Assumption 41
5.3 Balance Work Cost 43
5.4 Routine O&M Cost 43
5.5 Major Maintenance Cost 44
5.6 Periodic Replacement of TMS / ATMS System 44
5.7 Escalation Assumption 45
5.8 Summary of Cost 45
Annexures 47
Annexure I - Routine Maintenance Cost 48
Annexure II - Major Maintenance Cost 53

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Details of Summary for Structures 9
Table 3-2 Condition Survey of Major Structure 10
Table 3-3 Details of Summary for Toll Plaza Items 19
Table 4-1 Vehicle Damage Factor 31
Table 4-2 MSA Calculation 31
Table 4-3 Summary of Roughness Index 32
Table 4-4 Test Results Summary of Natural Ground Soil Samples 36
Table 4-5 Major Maintenance Cycle 39
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 41
Table 5-2 Summary of Unit Rates 42
Table 5-3 Summary of Operation Cost 44
Table 5-4 Escalation 45

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start and End of Project Road 5
Figure 3-1 Photographs of Pavement Condition (MCW) 7
Figure 3-2 Photographs of Service Road 8
Figure 3-3 Photographs of Junctions 9
Figure 3-4 Photographs of Major Structures 13
Figure 3-5 Photographs of Hume Pipe Culvert and Box Culvert 14
Figure 3-6 Photographs of Pavement Marking 15
Figure 3-7 Photographs of Sign Boards 16
Figure 3-8 Photographs of Highway Lighting 17
Figure 3-9 Photographs of MBCB / Crash Barrier 17
Figure 3-10 Photographs of Delineator 18
Figure 3-11 Photographs of Pedestrian Guard Rail 18
Figure 3-12 Photographs of Avenue Plantation & Median Plantation 19
Figure 3-13 Photographs of Toll Plaza 20

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Madurai to Kanyakumari section (Package-I) km. 0+000 to km. 52+300 in the State of Tamil Nādu (hereinafter referred as "Project Road").

Madurai Kanyakumari Tollway Private Limited (MKTPL) (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance, and transfer of Madurai to Kanyakumari Section (from km. 0+000 to km. 52+300) of NH-44. The project was awarded to Concessionaire on 20th October 2020. The length of Project Road is 52.300 kms with one toll plaza at Kappalur Village at km. 18+935.

Accordingly, the Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.
- Formulation of future major maintenance strategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period
- Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design, and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets, mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyze the same as per the best engineering / industry practices.

The site visit and inspection were carried out on **13th March 2026 and 14th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features, overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates:** The chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **Madurai Kanyakumari Tollway Private Limited,** is a company promoted by Cube Highways or company a Special Purpose Vehicle (SPV) formed for implementing this project on 27th December 2019. The Appointed Date for the Project Road is 20th October 2020.

The project is being developed under TOT (Toll Operate Transfer) Bundle-3 with a concession period of 30 years from the Appointed Date. The end of the concession period is in the year 2046 as per the traffic report submitted by the Company.

2.2 Location

The Project Road is part of National Highway No. 44 (old NH-7) of Madurai - Kanyakumari section in the state of Tamil Nādu. The total project length is 52.300 kms.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map

The photographs taken during the site visit are presented below.

Figure 2-2 Start and End of Project Road

Start of Project Road at km. 0+000

End of Project Road at km. 52+300

2.3 Climate

The project area being in the region south-east of the western ghats, the area is hot and dry for eight months of the year. Cold winds are experienced during February and March. The hottest months are from March to July. The project stretches experiences a moderate climate from August to October, tempered by heavy rain and thundershowers, and a slightly cooler climate from November to February. Fog and dew are rare, occurring only during the winter season. Being equidistant from mountains and the sea, it experiences similar monsoon pattern with North-east monsoon and South-west monsoon, with the former providing more rain during October to December. Temperatures during summer generally reach a maximum of 42°C and a minimum of 26.3°C, although temperatures up to 43°C are not uncommon. Winter temperatures range between 29.6°C and 18°C. The average rainfall for the project is about 857.60 mm per year, occurring almost entirely within the three months of the South-west Monsoon.

2.4 Terrain

The Project Road traverses through plain terrain.

2.5 Abutting Land Use

The land use along the Project Road is predominantly agriculture or barren with intermittent built-up area.

2.6 Right of Way

The width of the existing Right of Way (ROW) for the Project Road is 60 m throughout its length.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC cables, etc.

2.8 Development as per Schedule-B

The Project Road from Madurai (km. 0+000) to Virudhunagar (km. 52+300) has been developed as a four-lane divided carriageway with median width of 2 m, service road at some built up locations and other arrangements. The Project Road passes through rural as well as built-up sections.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km.	52.30	
2	Construction of Service Road	km.	1.050	
3	Widening of Pipe Culvert	Nos.	01	
4	Repair & rehabilitation of Major Bridges	Nos.	03	
5	Repair & rehabilitation of Minor Bridges	Nos.	12	
6	Repair & rehabilitation of Box Culvert	Nos.	19	
7	Repair & rehabilitation of Pipe Culvert	Nos.	59	
8	Repair & rehabilitation of ROB	Nos.	02	
9	Repair & rehabilitation Vehicular Underpass (VUP)	Nos.	09	
10	Improvement of Junctions	Nos.	09	
11	Provision of Drain	km.	1.050	

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 9.0 m with earthen shoulder of 1.5 m on either side. The Project Road has a median width of 2.0 m throughout its length.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

Pavement condition survey was carried on **13th March 2026 and 14th March 2026** through visual inspection for the entire project length. From the visual inspection, it is found that the average pavement condition of the Project Road is found to be Good.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (MCW)

km. 2+994

km. 4+005

km. 14+780

km. 39+600

km. 51+100

km. 52+500

3.2 Service Road / Slip Road

The width of the service road varies from 5.5 m to 7.0 m. The service road is constructed in a built-up area and adjoining underpass locations. The Project Road has total service road length of 40.730 kms.

The photographs taken during the site visit are presented below.

Figure 3-2 Photographs of Service Road

Service Road / Slip Road at km. 14+700 (LHS)

Service Road / Slip Road at km. 20+370 (LHS)

3.3 Junctions / Intersections

There are a total of 09 nos. of junctions / intersections along Project Road.

The photographs taken during site visit is presented as below:

Figure 3-3 Photographs of Junctions

Junction at km. 2+150

Junction at km. 3+400

3.4 Condition Survey of Bridge

The inventory of structures including major bridges, minor bridges, ROB's, underpasses and culverts is presented in table as below:

Table 3-1 Details of Summary for Structures

Type of Structure	Total Number of Structures
Road Over Bridge (ROB)	2
Major Bridges (MJB)	3
Minor Bridges (MNB)	12
Vehicular Underpass (VUP)	09
Culverts	78
Total	**104**

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-2 Condition Survey of Major Structure

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
Major Bridges								
1	2+994	LHS	17x23.8	7.5	10	RCC	Open	The structure is sound in condition. However, expansion joints need to clean.
		RHS	17x23.8	7.5	10	RCC	Open	The structure is sound in condition. However, expansion joints need to clean.
2	33+150	LHS	7x8.8	7.5	10.25	RCC	Open	The structure is sound in condition. However, expansion joints need to be cleaned, and vegetation need to be removed.
		RHS	7x8.8	7.5	10.25	RCC	Open	The structure is sound in condition.
3	51+350	LHS	5x20	7.5	10	RCC	Open	The structure is sound in condition.
		RHS	15x6.5	7.5	11	RCC	Open	The structure is sound in condition. However, expansion joints need to be cleaned, and vegetation needs to be removed.

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
Minor Bridges								
1	6+280	LHS	1x6	7.5	16.42	RCC	Open	The structure is sound in condition.
		RHS	1x6	7.5	16.42	RCC	Open	The structure is sound in condition.
2	7+800	LHS	1x10	10.5	13.5	RCC	Open	The structure is sound in condition.
		RHS	1x10	10.5	13.5	RCC	Open	The structure is sound in condition.
3	20+620	LHS	1x9.6	9	10.25	RCC	Open	The structure is sound in condition.
		RHS	1x9.6	9	10.25	RCC	Open	The structure is sound in condition.
4	20+960	LHS	1x9.6	9	10.25	RCC	Open	The structure is sound in condition.
		RHS	1x9.6	9	10.25	RCC	Open	The structure is sound in condition.
5	21+230	LHS	1x9.6	9	10.25	RCC	Open	The structure is sound in condition.
		RHS	1x9.6	9	10.25	RCC	Open	The structure is sound in condition.
6	23+850	LHS	4x8.8	9	10.25	RCC	Open	The structure is sound in condition.

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
								The vegetation needs to clear.
		RHS	4x8.8	9	10.25	RCC	Open	The structure is sound in condition. The vegetation needs to clear.
7	26+370	LHS	1x10	10.5	13.8	RCC	Open	The structure is sound in condition.
		RHS	1x10	10.5	13.8	RCC	Open	The structure is sound in condition.
8	31+980	LHS	2x4.4	9.25	10.25	RCC	Open	The structure is sound in condition.
		RHS	2x4.4	9.25	10.25	RCC	Open	The structure is sound in condition.
9	37+902	LHS	2x7.1	9.25	10.25	RCC	Open	The structure is sound in condition.
		RHS	2x7.1	9.25	10.25	RCC	Open	The structure is sound in condition.
10	39+555	LHS	1x8	9.25	10.25	RCC	Open	The structure is sound in condition.
		RHS	1x8	9.25	10.25	RCC	Open	The structure is sound in condition.
11	46+000	LHS	2x6.9	9.25	10.25	RCC	Open	The structure is sound in condition.
		RHS	2x6.9	9.25	10.25	RCC	Open	The structure is sound in condition.
12	51+000	LHS	13x3.8	7.5	10.5	RCC	Open	The structure is sound in condition. The Vegetation needs to be removed.
		RHS	12x3.8	7	9.5	RCC	Open	The structure is sound in condition. The Vegetation needs to be removed.

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Total Length of Bridge (m)	Carriageway (m)	Type of structure	Type of foundation	Deck Width (m)	Remarks
ROB									
1	0+590	LHS	2x19	38	7.5	RCC	Open	11	The structure is sound in condition.
		RHS	3x22	66	7.5	RCC / Steel	Open	10	The structure is sound in condition.
2	8+800	LHS	1x29.6	29.6	7.5	RCC	Open	12	The structure is sound in condition.
		RHS	1x29.6	29.6	7.5	RCC	Open	12	The structure is sound in condition.

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Total Length of Bridge (m)	Carriageway (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
VUP									
1	0+980	LHS	2x10	20	10.5		RCC	Open	The structure is sound in condition.
		RHS	2x10	20	10.5	27.5	RCC	Open	The structure is sound in condition.
2	7+080	LHS	2x10	20	10.5	27.5	RCC	Open	The structure is sound in condition.
		RHS	2x10	20	10.5		RCC	Open	The structure is sound in condition.
3	8+900	LHS	1x14.5	14.5	7.5	31	RCC	Open	The structure is sound in condition. The vegetation needs to clear.
		RHS	1x14.5	14.5	7.5		RCC	Open	The structure is sound in condition.
4	14+630	LHS	1x10	10	10.75		RCC	Open	The structure is sound in condition.
		RHS	1x10	10	10.75	27.5	RCC	Open	The structure is sound in condition.
5	20+370	LHS	1x10	10	10.75		RCC	Open	The structure is sound in condition.
		RHS	1x10	10	10.75	27.5	RCC	Open	The structure is sound in condition.
6	22+754	LHS	1x10	10	10.75		RCC	Open	The structure is sound in condition.
		RHS	1x10	10	10.75	27.5	RCC	Open	The structure is sound in condition.
7	25+625	LHS	2x10	20	10.5		RCC	Open	The structure is sound in condition.
		RHS	2x10	20	10.5	27.5	RCC	Open	The structure is sound in condition.
8	26+645	LHS	1x10	10	10.75		RCC	Open	The structure is sound in condition.
		RHS	1x10	10	10.75	27.5	RCC	Open	The structure is sound in condition.
9	49+850	LHS	2x10	20	10.5		RCC	Open	The structure is sound in condition.
		RHS	2x10	20	10.5	24.7	RCC	Open	The structure is sound in condition.

Figure 3-4 Photographs of Major Structures

View of ROB structure at km. 0+590

View of Major Bridge at km. 2+994

View of New VUP at km. 14+630

View of Minor Bridge at km. 23+850

View of VUP at km. 26+645

View of Major Bridge at km.33+150

View of VUP at km. 49+850

View of Major Bridge at km. 51+35

3.5 Condition Survey of Culverts

The cross-drainage structure includes Hume pipe culverts and box culverts at various locations. There is total 78 Nos. of culverts along the Project Road. The height of the culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involved strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts is satisfactory. The RCC parapet, metal beam crash barrier or RCC railing has been provided at culvert locations wherever required which is maintained properly.

In most of culverts, the waterway is clear. However, near to urban area, it is found blocked due to debris, drainage water or bushes, tree growth, which has to be removed and cleaned before monsoon to clear waterway. The stone pitching has been provided for slope protection.

The photographs taken during the site visit are presented below.

Figure 3-5 Photographs of Hume Pipe Culvert and Box Culvert

Box culvert at km. 27+210

Box culvert at km. 31+070

Hume pipe culvert at km. 12+717

Hume pipe culvert at km. 23+502

3.6 Drainage

There is 5.506 kms of existing drain (which includes drain on both sides) along the Project Road as per Concession Agreement. However, 0.950 kms of RCC drain is additionally constructed in locations where service roads are provided.

3.7 Slope Protection

Slope protection and chute drains are found on Project Road at required locations.

3.8 Road Furniture

The Concessionaire has provided additional road furniture along the Project Road as per the standards and specifications mentioned in Schedule-C. Details of the items are provided below.

3.8.1 Pavement Marking

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. The pavement marking is found to be Good throughout the Project Road.

Some of the photographs of road marking are presented below.

Figure 3-6 Photographs of Pavement Marking

Pedestrian Marking at km. 2+000 (LHS)

Road marking at km. 20+680 (LHS)

3.8.2 Road Studs

Road studs/ cat's eye for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Road studs / cat's eye has been fixed at junction and zebra crossings.

3.8.3 Traffic Signage / Median Kerb painting / KM Stone

Traffic signs includes roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in Schedule-D.

The height, lateral clearance, location, and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements. Roadside signs, overhead signs, kerb mounted signs, vertical post of sign boards, chevron boards and median kerb paint are all in good condition. Some of the photographs of sign boards are presented below.

Figure 3-7 Photographs of Sign Boards

Hazard Marker & Median Sign Board

Place Name / Direction Sign Board

Kilometre Stone

Information Sign Board for median opening

Information sign board related to diversion

Speed limit indicator sign board

3.8.4 Highway Lighting

Highway lighting is provided at underpasses, flyovers, toll plaza, ROBs and built-up locations. High mast lighting is provided at toll plaza location. Highway lighting is also provided at approaches of underpass and flyovers.

Some of the photographs of highway lighting are presented below.

Figure 3-8 Photographs of Highway Lighting

Highway Lighting at Toll Plaza

Highway Lighting at km. 33+400

3.8.5 Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site.

Some of the photographs of metal beam crash barriers are presented below:

Figure 3-9 Photographs of MBCB / Crash Barrier

Metal beam crash barrier at km. 8+900

Metal beam crash barrier at km. 12+700 (LHS)

3.8.6 Delineators

The traffic delineators are provided by the Concessionaire for road users in abnormal condition of weather for the Project Road. The same is maintained by the Concessionaire. Some of the photographs of delineators are presented below.

Figure 3-10 Photographs of Delineator

Road Delineator at km. 10+000

Road Delineator at km. 14+780

3.8.7 Pedestrian Guard Rail

The pedestrian guard rails are provided in the median. It is maintained by the Concessionaire. Some of the photographs of pedestrian guard rails are presented below.

Figure 3-11 Photographs of Pedestrian Guard Rail

At km. 18+010 - Between MCW and SR

At km. 49+350 - Between MCW and SR

3.8.8 Road Land Boundary

Road land boundary pillars have been found on Project Road.

3.9 Avenue Plantation and Median Plantation

Avenue plantation is provided in open country locations and median plantation has been provided in the project length as per IRC specification. Some of the photographs of avenue plantation and median plantation are presented below.

Figure 3-12 Photographs of Avenue Plantation & Median Plantation

Avenue Plantation

Median Plantation

3.10 Toll Plaza

As per the Concession Agreement, there is one existing toll plaza at Kappalur Village at km. 18+935 with the following infrastructure.

Table 3-3 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 18+935
2	Number of Tolling Lanes	8 lanes for toll operation plus 2 lanes for over-dimensional vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	in each direction
5	Number of Toll Booths	9 singles
6	Canopy	Present
7	Administrative Building	Present
8	Parking cum Toilet Block	Present
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	Tunnel/no
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	No
12	Storage facility for Overloaded Material	No
13	High mast Light	Yes
14	Streetlight	Yes (only 20 nos. near Toll Plaza. 10 nos. in both direction)
15	Low mast Light	No
16	User Fee Boards	4
17	Cantilever/Gantry Boards	Yes

Sr. No.	Particulars	Details
18	Automatic boom barrier	Yes

Figure 3-13 Photographs of Toll Plaza

Toll Plaza at km. 18+935

Toll Plaza at km. 18+935

3.11 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.11.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

RFID

3.11.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data.

3.11.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of camera based, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVCC at Toll Plaza

3.11.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at Toll Plaza

3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at Toll Plaza

3.11.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on the island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

3.11.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

LPIC at Toll Plaza

3.11.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane “Open” and “Close” sign consists of a pair of “GREEN” (arrow) and “RED” (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at Toll Plaza

3.11.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and type of ticket.

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.11.10 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

MSWIM at Toll Plaza

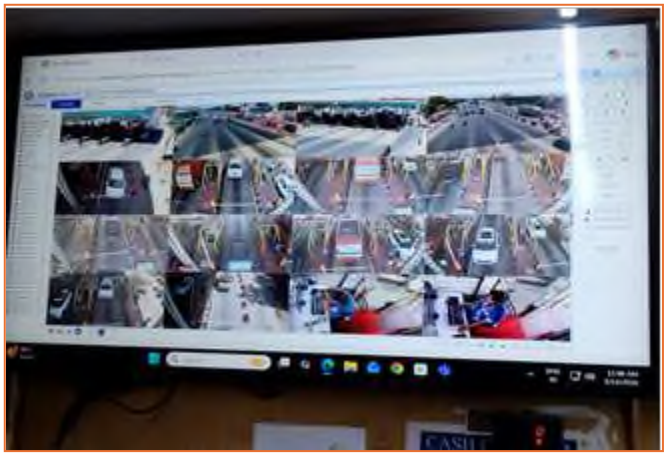
3.12 Plaza Equipment

3.12.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio WiFi module. Firewall with Sophos antivirus is provided.

3.12.2 55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).



The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.12.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.

3.13 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) installed for the Project Road is controlled by the ATMS center at the toll plaza location (km. 18+935). As per Concession Agreement, ATMS shall conform to ATMS Policy guidelines (2016) which comprises of the following:

Automatic Traffic Counter cum Classifier (ATCC)

- Mobile Radio communication system
- Emergency Call Box
- Portable Weigh in Motion
- Meteorological Data system
- Variable Message Signboards (VMS)
- CCTV system
- Video Incident Detection System (VIDS)
- Vehicle actuated Speed Display (VASD)

Status of these systems at site is described below:

3.13.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is installed at Toll Plaza (km 18+935).

3.13.2 Mobile Radio communication System (MRCS)

Mobile Radio communication System (MRCS) is not yet installed. Application for MRCS UHF band has been sought from WPC, DoT, Ministry of Communications which is not yet allocated.

3.13.3 Emergency Call Boxes (ECB)

ECB's are not installed at site.

3.13.4 Portable Weigh in Motion (PWIM)

PWIM is provided at site and is not functioning.

3.13.5 MET System

Meteorological sensors comprise of sensors to measure the atmospheric temperature, humidity, pavement surface temperature, visibility and equipment for measuring wind speed and direction and installed at Toll Plaza km 18+935.

3.13.6 Variable Message Signboards (VMS)

Variable message sign boards are installed at 11 locations. These display specific messages to the users based on the prevailing conditions on the highway. The message can be changed at any point of time from the HTMS centre. About 250 customised messages can be stored on the system.

3.13.7 CCTV Surveillance Cameras

There are 29 nos. PTZ cameras and 186 VIDS cameras are installed along the Project Road. The ATMS control room has video wall to monitor these locations through the cameras installed. At toll plaza 4 PTZ and 10 lane cover cameras are installed.

3.13.8 Video Incident Detection System

186 fixed CCTV cameras are installed as part of Video incident detection system.

3.13.9 Vehicle Actuated Speed Display (VASD)

VASD is installed at 10 locations each on LHS and RHS.

Actuated Speed Display

3.13.10 Adequacy of Toll Collection System and ATMS

- Adequacy-All lanes are hybrid ETC system as stipulated by NHAI in Technical Specifications of Hybrid ETC system. NHAI has approved maintenance costs for TMS. TMS shall be upgraded every 5 years at the cost of the Authority.

- The Advanced Traffic Management System (ATMS) installed is as per specifications required by the Authority and in working condition.

3.14 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Posts are under construction at Toll Plaza location.

3.15 Toilet Block

There is one no. of temporary toilet block at Toll Plaza. The same is maintained by the Concessionaire.

3.16 Bus Bays and Passenger Shelters

There are 27 Nos. of bus bays / passenger shelters along Project Road.

3.17 Balance Work Status

There is no balance work to be executed as per the Concession Agreement.

It is to be noted that at present, at three different locations along the Project Road, NHAI has allotted extra / COS works to third party on stand-alone basis. For these 3 locations, along the project length, underpass & approach construction is being carried out by the third party. Thus, a total length of 4.31 km of project length (where COS / new construction works are in progress), out of total project length of 52.30 km is not under the maintenance scope of the Concessionaire at present.

3.18 Operation and Maintenance

3.18.1 O&M Contract

As per Clause 15.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other

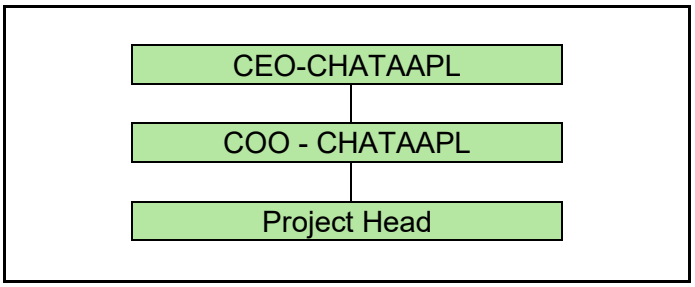
requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall conform to all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement.

The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

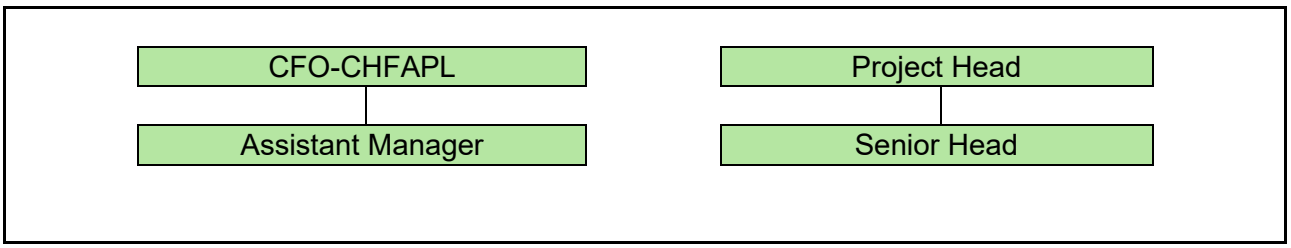
3.18.2 Organization Chart

The Concessionaire has shared the Organization Chart at site for Operation and maintenance. Accordingly, there are 01 Project Head, 01 Senior Executive (HR), 01 Manager (TMS / IT), 01 Executive (TMS / IT), 01 Senior Supervisor, 01 Electrician, 01 Supervisor, 01 Plaza Manager, 01 Assistant Plaza Manager, 01 Document Controller, 03 Cashiers and 03 Validators, 01 Traffic and Road Safety Manager to carry out O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent sub-contractors.

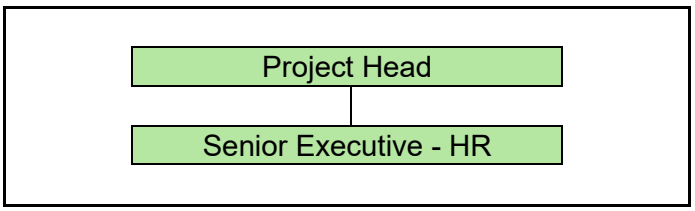
Organization Chart

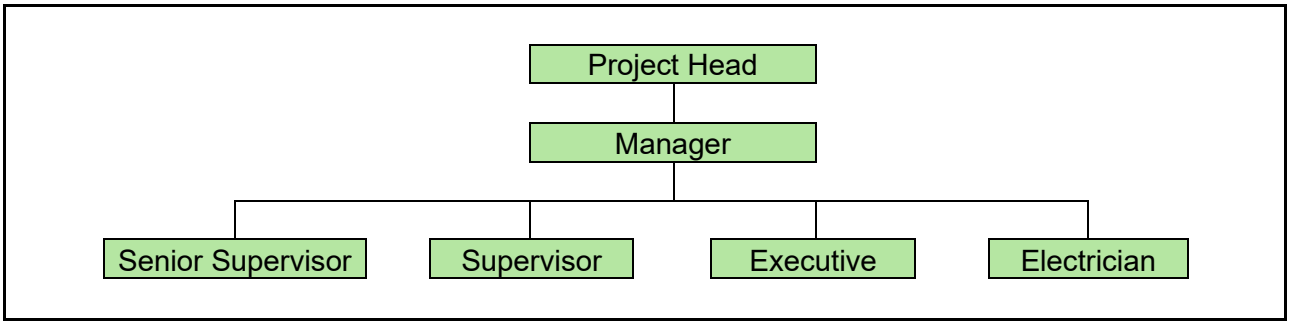


Finance & Accounts

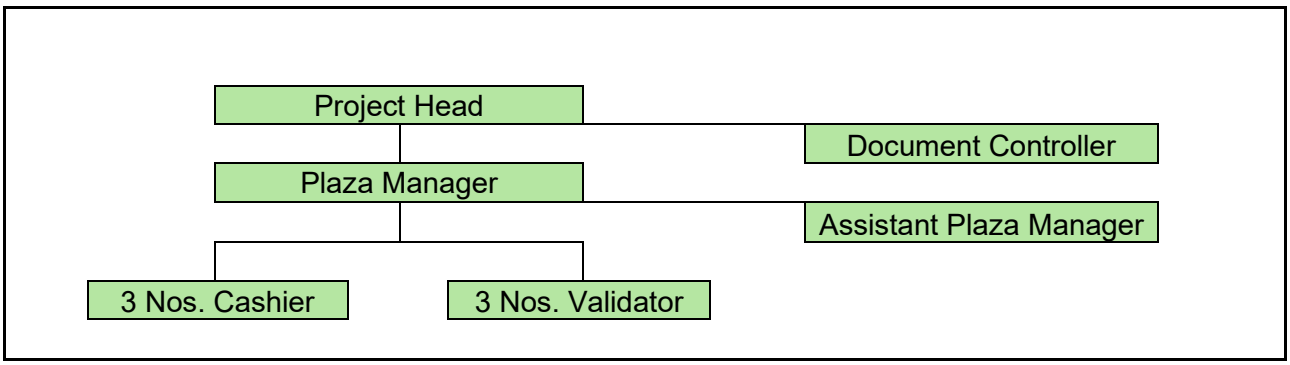


Human Resource Maintenance

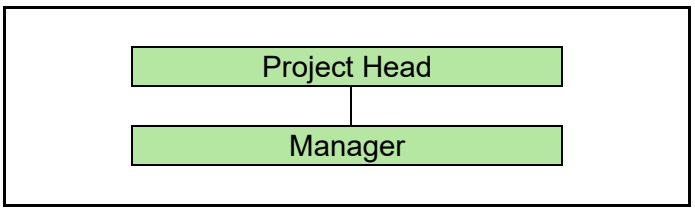




Operations



Traffic & Road Safety



3.18.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on the best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.18.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been

used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

Currently, the entire length of the Project Road is maintained by Concessionaire.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Article 15 and Schedule-F of the Concession Agreement define the Operation and Maintenance requirement during the concession period.

The project is currently under the Operation and Maintenance stage. The Concession Period of the project is 30 years from the Appointed Date (as TOT Package i.e., 20th October 2020) including construction period.

4.2 Axle Load and VDF

The Concessionaire has conducted the Axle Load Survey on Project Road at km. 18+975 (near Toll Plaza) on 12th March 2020 and 14h March 2020. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor

Weighted Average VDF Values			
Sr. No.	Vehicle Type	Direction	
		Madurai - Kanyakumari	Kanyakumari - Madurai
1	BUS	1.012	0.848
2	LCV	0.655	0.682
3	2-Axle	2.201	3.238
4	3-Axle	5.018	5.994
5	MAV	11.958	7.918

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data as provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

MSA Calculation					
Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
FY27	3.22	**3.22**	2.83	**2.83**	DPR Preparation
FY28	3.35	**6.57**	2.93	**5.76**	DPR Preparation
FY29	3.47	**10.04**	3.04	**8.80**	Upgradation to 6-Lane & 1st MM Cycle
FY30	3.60	**13.64**	3.14	**11.94**	Upgradation to 6-Lane
FY31	3.73	**17.37**	3.25	**15.19**	Upgradation to 6-Lane
FY32	3.09	**20.46**	2.69	**17.88**	
FY33	3.23	**23.69**	2.80	**20.68**	
FY34	3.34	**27.03**	2.90	**23.58**	
FY35	3.47	**30.50**	3.00	**26.58**	

MSA Calculation					
Year	**MSA**	**Cumulative**	**MSA**	**Cumulative**	**Remarks**
FY36	3.59	**34.09**	3.09	**29.67**	
FY37	3.71	**37.80**	3.20	**32.87**	2nd MM Cycle
FY38	3.84	**41.64**	3.30	**36.17**	2nd MM Cycle
FY39	3.97	**45.61**	3.41	**39.58**	
FY40	4.11	**49.72**	3.51	**43.09**	
FY41	4.24	**53.96**	3.62	**46.71**	
FY42	4.38	**58.34**	3.74	**50.45**	
FY43	4.53	**62.87**	3.85	**54.30**	
FY44	4.67	**67.54**	3.97	**58.27**	3rd MM Cycle
FY45	4.83	**72.37**	4.09	**62.36**	3rd MM Cycle
FY46*	4.98	**77.35**	4.21	**66.57**	End of concession period as per Appointed date & CA

**Actual end of concession period as per Concession Agreement is October 2050. As per recent traffic study conducted by Concessionaire, the revised concession period is upto FY 2046.*

4.4 Network Survey Vehicles (NSV) Survey

Roughness Index

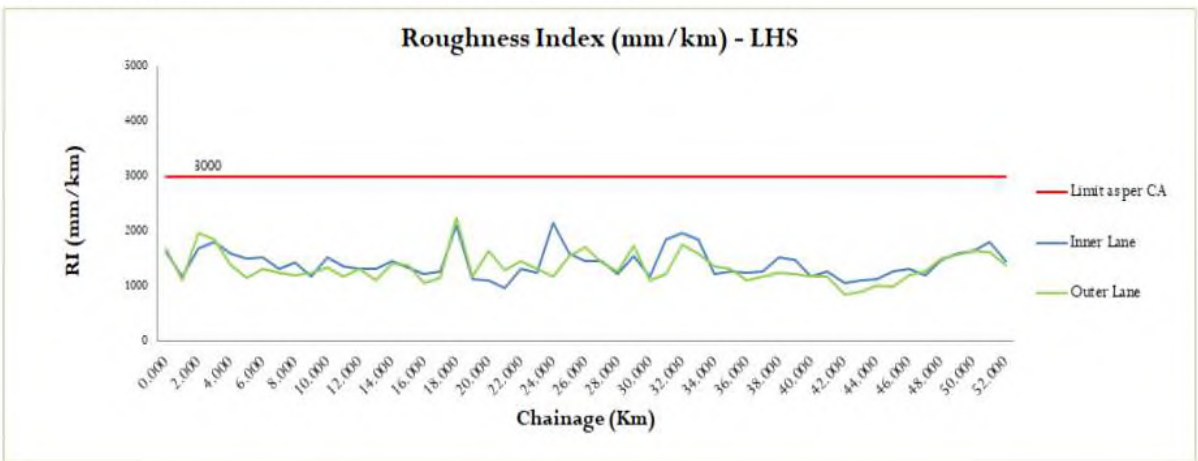
The Concessionaire has conducted pavement condition survey on each lane of carriageway through NSV. The NSV survey was conducted on the Project Road from 5th January 2025 to 18th January 2025. The summary of the same is presented below.

Table 4-3 Summary of Roughness Index

Table 2-1: Summary of RI Limit as per Schedule F of CA

Roughness Summary % as per Schedule F of CA (mm/km)					
Condition	Limit as per Schedule F of CA (mm/km)	LHS		RHS	
		Inner Lane	Outer Lane	Inner Lane	Outer Lane
Good	<3000	100.00%	100.00%	100.00%	100.00%
Poor	>3000	0.00%	0.00%	0.00%	0.00%

Figure 2-3: Roughness Summary for MKTPL as per Schedule F of CA



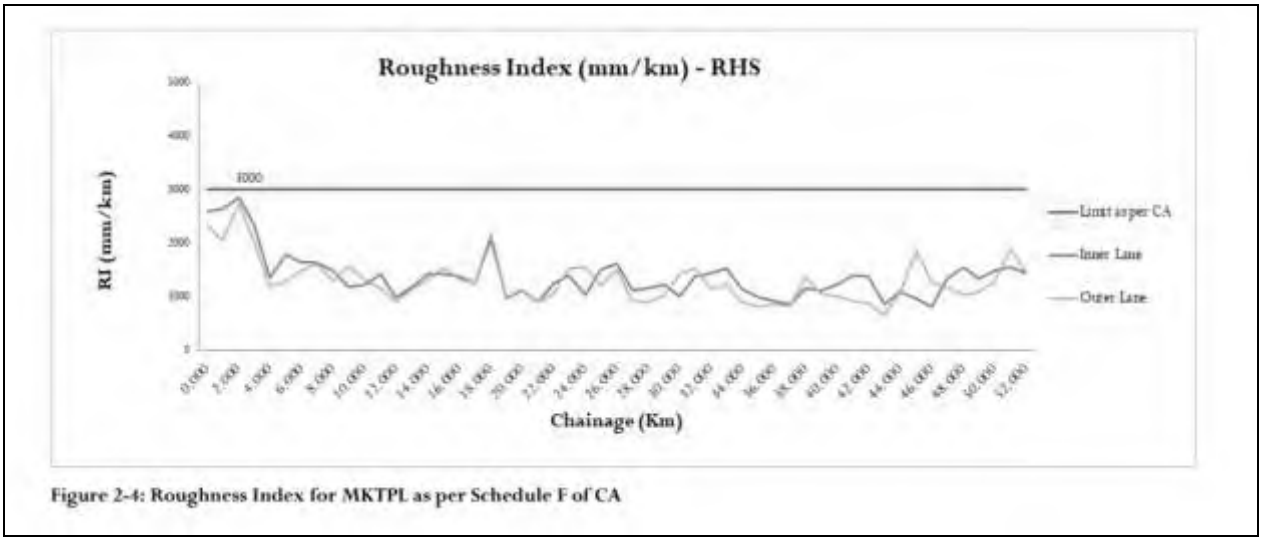
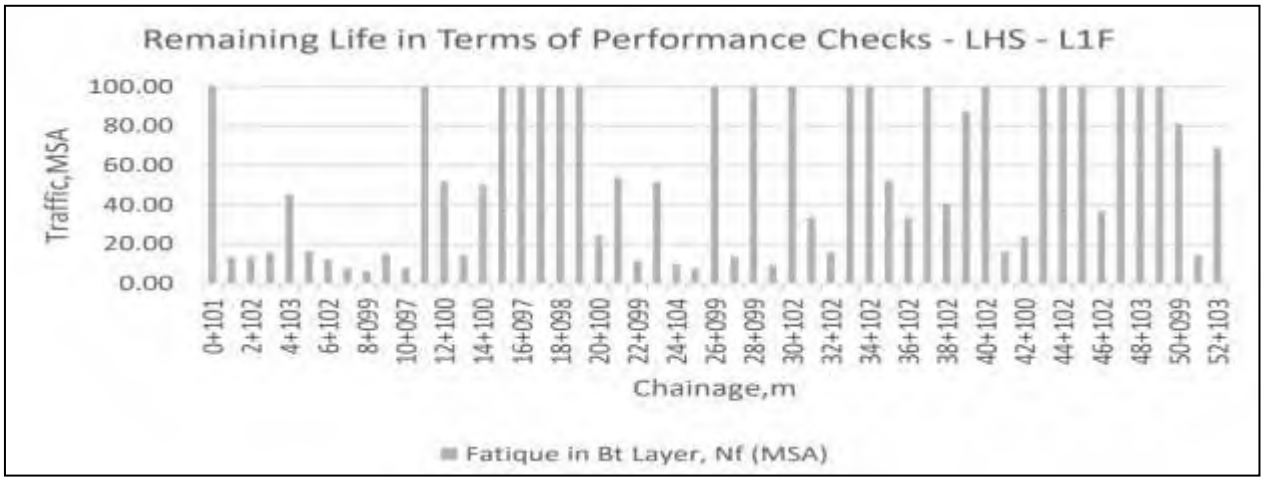


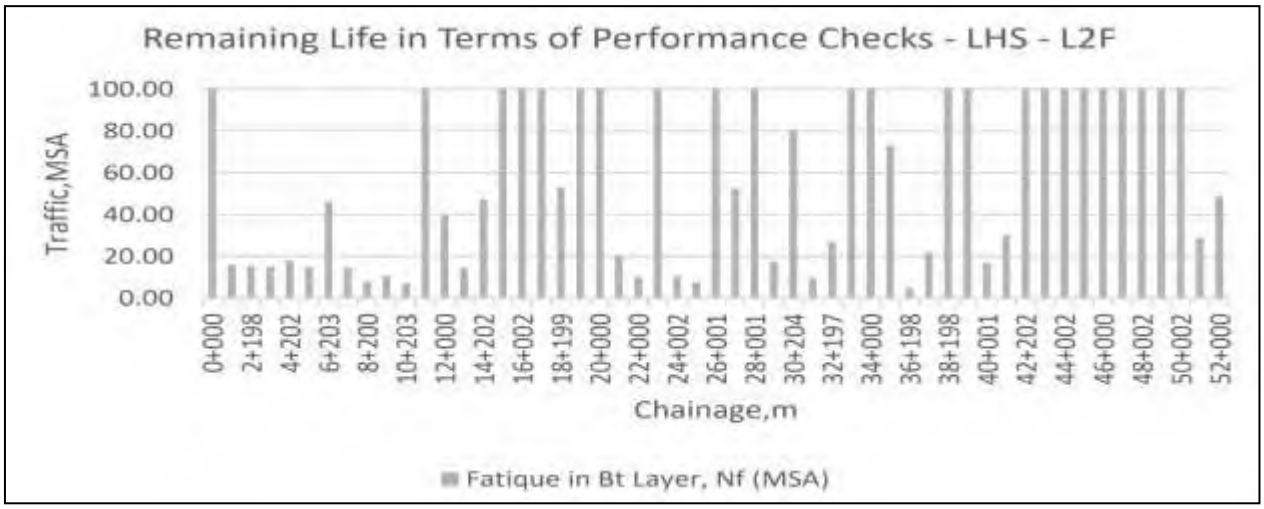
Figure 2-4: Roughness Index for MKTPL as per Schedule F of CA

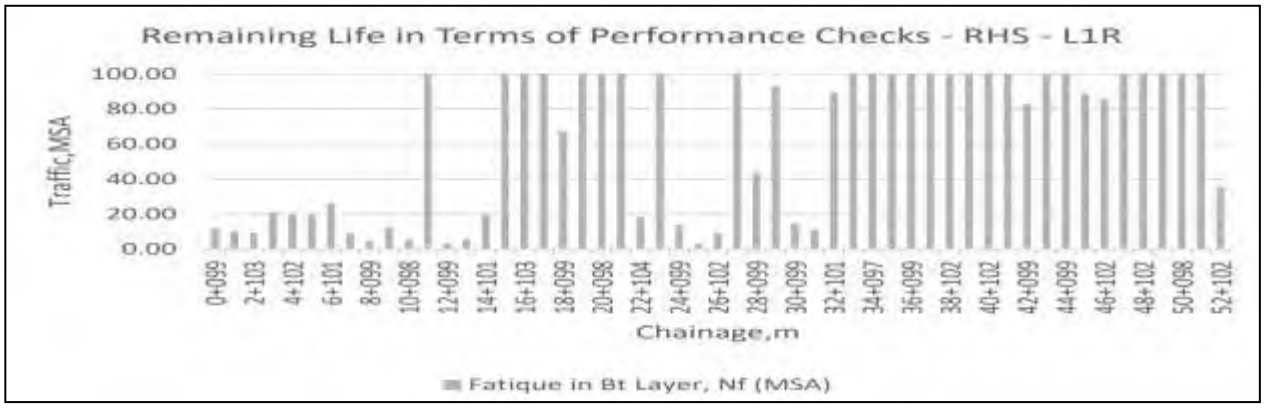
4.5 Falling Weight Deflectometer (FWD) Survey

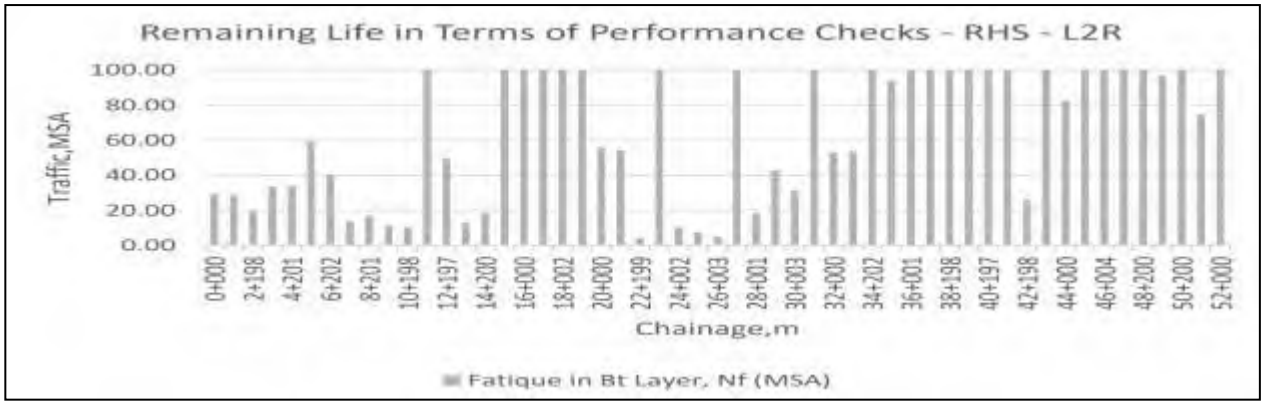
The structural evaluation and analysis of the remaining life of project was carried out in conformity with IRC:115-2014 “Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique”.

The FWD survey was conducted on the Project Road on 24th January 2025 to 27th January 2025. The summary of the same is presented below.









However, the maintenance can be carried out on as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. However, improvement in Riding Quality is expected if the roughness value exceeds 3000 mm/km.

4.6 Test pit and Subgrade Investigation

The Concessionaire has carried out the subgrade investigation for Project Road. The results of the same as provided by the Concessionaire are tabulated as below.

CBR Analysis

Sr. No.	Road Name	Existing Chainage (km)	Side	DCP-CBR
1	NH-7	0+000	LHS	24.7
2	NH-7	2+300	RHS	13.8
3	NH-7	5+050	LHS	11.4
4	NH-7	7+500	RHS	10.3
5	NH-7	10+000	LHS	11.8
6	NH-7	12+500	RHS	14.4
7	NH-7	17+500	RHS	12.2
8	NH-7	20+500	LHS	12.6
9	NH-7	22+500	RHS	14.4
10	NH-7	25+200	LHS	17.7
11	NH-7	27+600	RHS	18.5
12	NH-7	30+000	LHS	17.4
13	NH-7	32+500	RHS	14.5
14	NH-7	35+000	LHS	17.9
15	NH-7	37+500	RHS	18.2
16	NH-7	40+000	LHS	11.6

Sr. No.	Road Name	Existing Chainage (km)	Side	DCP-CBR
17	NH-7	42+500	RHS	10.9
18	NH-7	45+000	LHS	13.7
19	NH-7	46+800	RHS	17.5
20	NH-7	49+000	LHS	17.1
21	NH-7	49+950	LHS	17.4
22	NH-7	51+600	RHS	14.6
Average DCP - Equivalent CBR				**15.1**

Table 4-4 Test Results Summary of Natural Ground Soil Samples

Sr. No.	Location (km)	Side (LHS / RHS)	Carriageway Type	Soil Classification as per IS: 1498	Gradation: Percent by weight passing through the Sieve (IS:2720-IV)						Clay & silt content %	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR (%)	Free Swell Index (%)	Degree of Compaction (%)
					19.0 mm	10.0 mm	4.75 mm	2.0 mm	425 micron	75 micron		Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density (gm/cc)	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	0+000	LHS	MCW	SM	96.9	90.3	76.1	67.5	37.9	14.7	14.7	22	NP	NP	2.12	8.4	1.93	8.0	20.3	0.0	91.0
2	2+300	RHS	MCW	SM	100.0	100.0	90.0	75.6	54.0	26.8	26.8	25	NP	NP	2.11	8.0	1.93	9.0	11.7	9.3	91.5
3	5+050	LHS	MCW	SM-SC	98.9	91.4	81.2	63.6	44.9	24.3	24.3	29	22	7	2.07	9.3	1.97	9.0	11.3	12.5	95.2
4	7+500	RHS	MCW	SC	98.7	96.5	89.5	68.7	49.6	25.1	25.1	32	23	9	2.05	9.4	1.92	8.0	10.7	20.0	93.7
5	10+000	LHS	MCW	SM-SC	100.0	96.6	87.3	66.1	40.7	27.2	27.2	28	21	7	2.10	9.0	1.96	10.0	9.8	11.1	93.3
6	12+500	RHS	MCW	SM-SC	100.0	97.6	86.1	73.0	47.9	25.3	25.3	27	22	5	2.08	9.1	1.92	9.0	10.9	10.0	92.3
7	17+500	RHS	Service Road	SM	100.0	98.8	91.7	87.3	67.6	35.0	35.0	22	NP	NP	1.99	8.7	1.82	8.0	11.2	0.0	91.5
8	20+500	LHS	MCW	SM	98.1	94.2	83.4	68.7	47.5	22.1	22.1	25	NP	NP	2.08	8.6	1.93	8.0	14.3	0.0	92.8
9	22+500	RHS	MCW	SC	91.5	83.7	73.5	68.8	46.2	26.3	26.3	35	22	13	2.04	11.3	1.96	8.0	13.5	30.0	96.1
10	25+200	LHS	MCW	SM	92.0	76.9	71.5	61.6	39.2	16.1	16.1	25	NP	NP	2.14	8.2	1.94	10.0	16.5	0.0	90.7
11	27+600	RHS	Service Road	SM	97.8	88.5	80.3	67.5	36.8	12.2	12.2	24	NP	NP	2.16	7.8	1.93	6.0	20.2	0.0	89.4
12	30+000	LHS	MCW	SM	94.5	90.7	81.2	58.6	43.1	15.8	15.8	24	NP	NP	2.12	8.3	1.91	7.0	16.1	0.0	90.1
13	32+500	RHS	MCW	SM	98.6	91.9	85.3	73.2	48.7	26.7	26.7	26	NP	NP	2.08	8.1	1.94	9.0	13.6	0.0	93.3
14	35+000	LHS	MCW	SM	93.0	85.9	74.9	62.3	43.7	23.2	23.2	26	NP	NP	2.09	8.2	1.94	9.0	15.0	0.0	92.8
15	37+500	RHS	MCW	SM	90.5	74.8	59.6	53.9	27.3	12.9	12.9	26	NP	NP	2.13	7.9	1.90	12.0	18.9	0.0	89.2
16	40+000	LHS	MCW	SM	100.0	99.0	95.2	87.2	69.8	36.6	36.6	21	NP	NP	2.04	8.6	1.95	10.0	10.1	9.3	95.6
17	42+500	RHS	MCW	SM	98.8	87.2	76.0	60.4	56.1	34.5	34.5	24	NP	NP	2.02	9.2	1.92	12.0	10.8	0.0	95.0
18	45+000	LHS	MCW	SM-SC	82.6	75.0	62.0	45.4	30.0	16.6	16.6	28	21	7	2.13	8.8	1.94	8.0	14.3	12.5	91.1
19	46+800	RHS	MCW	SM	94.5	87.4	74.9	53.3	31.0	15.7	15.7	22	NP	NP	2.11	8.3	1.93	8.0	18.7	9.3	91.5
20	49+000	LHS	MCW	SM	94.6	90.7	80.1	62.8	33.0	14.2	14.2	26	NP	NP	2.15	8.0	1.97	7.0	20.2	0.0	91.6
21	49+950	LHS	MCW	SM	96.3	91.2	78.7	58.4	45.1	25.2	25.2	24	NP	NP	2.06	8.7	1.93	9.0	13.3	0.0	93.7
22	51+600	RHS	MCW	SM	100.0	97.5	89.5	73.0	46.0	22.5	22.5	27	NP	NP	2.09	9.1	1.92	6.0	13.6	0.0	91.9

Granular Layer Investigation

Sr. No.	Chainage (km)	Side (LHS /RHS)	Type of Sample	Cumulative Percentage of Passing through IS Sieve (mm)												MoRTH 5th Revision	MoRTH 4th Revision	Atterberg Limits			Specific Gravity	W.A (%)	AIV (%)
				75	53.0	45.0	26.5	22.4	11.2	9.5	4.75	2.36	0.600	0.425	0.075			Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)			
1	0+000	LHS	GSB	100.0	91.9	69.1	31.1	30.4	26.1	26.7	19.3	17.4	12.3	10.2	0.2	53 mm, 26.5mm IS Sieve Material is Slightly Coarser Side in GSB-III & IV	53 mm, 26.5mm IS Sieve Material is Slightly Coarser Side in GSB-IV& V	25	NP	NP	2.83	0.34	31.56
2	2+300	RHS	GSB	100.0	80.8	79.0	50.0	46.7	27.7	22.0	16.6	12.2	6.2	4.3	0.2	53mm IS Sieve Material is Slightly Coarser side in GSB-IV	53mm IS Sieve Material is Slightly Coarser side in GSB-V	22	NP	NP	2.82	0.43	32.32
3	5+050	LHS	WMM	100.0	100.0	100.0	58.3	51.2	37.5	32.2	26.3	21.6	9.5	6.9	1.0	22.4mm,11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	22.4mm,11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	24	NP	NP	2.79	0.44	28.97
4	7+500	RHS	WMM	100.0	100.0	100.0	50.2	40.3	29.8	29.0	27.6	23.3	16.3	13.0	1.7	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	20	NP	NP	2.82	0.34	30.38
5	10+000	LHS	GSB	100.0	100.0	92.6	61.6	52.4	34.8	30.4	24.9	21.9	10.7	8.1	0.9	Confirming to GSB-III & IV	Confirming to GSB-IV & V	23	18	5	2.80	0.45	33.23
6	12+500	RHS	GSB	100.0	98.3	86.4	76.5	64.3	48.6	26.4	13.2	9.5	6.0	4.2	1.3	53mm,4.75mm IS Sieve Material is Slightly Coarser Side in GSB-IV	53mm,4.75mm IS Sieve Material is Slightly Coarser Side in GSB-V	22	NP	NP	2.81	0.24	35.18
7	17+500	RHS	WMM	100.0	100.0	100.0	65.5	55.6	43.5	30.5	28.8	19.2	13.8	7.9	0.7	22.4mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	22.4mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	20	NP	NP	2.80	0.29	31.25
8	20+500	LHS	GSB	100.0	90.7	72.2	37.3	29.2	13.9	10.2	6.8	5.4	2.3	1.8	0.2	Not Conforming to Any Gradation	Not Conforming to Any Gradation	22	NP	NP	2.82	0.32	32.19
9	22+500	RHS	GSB	100.0	100.0	72.3	62.3	29.2	20.3	17.6	9.8	8.2	6.4	2.3	1.2	4.75mm IS Sieve Material Slightly Coarser side in GSB-III & IV	4.75mm IS Sieve Material Slightly Coarser side in GSB-IV & V	21	NP	NP	2.80	0.31	34.23
10	25+200	LHS	WMM	100.0	100.0	100.0	98.8	52.0	45.2	21.1	22.2	19.0	13.2	10.8	3.4	22.4mm, 4.75mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	22.4mm, 4.75mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	22	NP	NP	2.83	0.61	35.47
11	27+600	RHS	WMM	100.0	100.0	98.6	66.6	58.7	35.2	29.6	24.5	19.5	11.6	8.8	0.5	22.4mm,11.2mm 4.75mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	22.4mm,11.2mm 4.75mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	23	NP	NP	2.82	0.40	28.19
12	30+000	LHS	GSB	100.0	89.2	89.9	58.6	53.0	38.1	33.1	26.0	19.6	6.6	4.0	0.3	53 mm, IS Sieve Material is Slightly Coarser Side in GSB-IV	Conforming to GSB-IV & V	22	NP	NP	2.82	0.23	34.43
13	32+500	RHS	GSB	100.0	100.0	86.5	58.1	45.2	41.1	37.1	34.0	28.1	22.1	10.2	4.1	Confirming to GSB-IV	Confirming to GSB-V	22	19	3	2.80	0.34	29.45

Sr. No.	Chainage (km)	Side (LHS /RHS)	Type of Sample	Cumulative Percentage of Passing through IS Sieve (mm)												MoRTH 5th Revision	MoRTH 4th Revision	Atterberg Limits			Specific Gravity	W.A (%)	AIV (%)
				75	53.0	45.0	26.5	22.4	11.2	9.5	4.75	2.36	0.600	0.425	0.075			Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)			
14	35+000	LHS	WMM	100.0	100.0	100.0	74.2	66.8	45.5	39.0	30.6	26.9	14.6	10.3	0.9	Conforming to WMM Gradation	Conforming to WMM Gradation	23	NP	NP	2.81	0.37	33.24
15	37+500	RHS	WMM	100.0	100.0	100.0	79.8	72.8	44.8	34.6	25.8	22.7	13.5	10.7	1.3	Conforming to WMM Gradation	Conforming to WMM Gradation	20	NP	NP	2.79	0.39	31.24
16	40+000	LHS	GSB	95.3	95.3	85.4	55.6	52.2	39.4	36.4	31.6	26.6	15.6	11.4	0.6	53 mm, IS Sieve Material is Slightly Coarser Side in GSB-IV	53 mm, IS Sieve Material is Slightly Coarser Side in GSB-V	24	NP	NP	2.81	0.40	30.12
17	42+500	RHS	GSB	100.0	100.0	94.4	57.3	51.2	37.8	32.3	26.0	21.0	11.2	8.0	0.3	Conforming to GSB-III & IV	Conforming to GSB-IV & V	22	NP	NP	2.82	0.42	32.16
18	45+000	LHS	WMM	100.0	100.0	100.0	59.6	52.3	38.1	32.5	28.3	22.8	12.3	8.2	1.2	22.4mm,11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	22.4mm,11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	20	NP	NP	2.84	0.37	34.32
19	46+800	RHS	WMM	100.0	100.0	100.0	92.3	76.5	45.6	34.2	29.1	19.2	14.3	8.5	1.6	Confirming to WMM Gradation	Confirming to WMM Gradation	24	NP	NP	2.81	0.37	35.82
20	49+000	LHS	WMM	100.0	100.0	100.0	47.6	41.8	32.8	28.4	25.6	21.5	18.2	15.2	1.1	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	20	NP	NP	2.79	0.42	29.85
21	49+950	LHS	GSB	100.0	100.0	100.0	79.4	71.5	39.2	30.1	21.3	15.4	6.7	4.7	0.7	Conforming to GSB-IV	Conforming to GSB-V	22	NP	NP	2.80	0.38	35.23
22	51+600	RHS	GSB	100.0	100.0	100.0	73.5	26.3	22.4	20.1	18.5	15.6	10.4	8.4	0.7	Conforming to GSB-III & IV	Conforming to GSB-IV & V	23	NP	NP	2.83	0.23	33.28

4.7 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full length periodic maintenance. Schedule-F of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. Only improvement to Riding Quality is expected if the roughness value exceeds 3000 mm/km.

Overlay laying work on LHS and RHS is completed at site in the month of October 2021. Means Financial year FY 2022, so that as per our experience next overlay cycle has come in the FY 2029.

As per Article 14 of CA, Authority shall carry out capacity augmentation under EPC contract if traffic exceeds 40,000 PCU for three consecutive accounting years. Recent traffic study reveals that, the project traffic crosses 40,000 PCU in FY 2025, FY 2026, FY 2027. Assumption has made that execution of 6-laning of Project Road will start in the year FY 2029 or FY 2030. It is also assumed that during 6-laning of Project Road, overlay of existing four lane road will be the part of the capacity augmentation. Hence, the major maintenance cycle is adjusted accordingly.

The summary of the major maintenance planned up to end of concession period is presented in the below table.

Table 4-5 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2027 to FY 2028	-	
2	FY 2029	Major maintenance with 30 mm BC with PMB (100%) + Milling & 50 mm DBM (9%)	Major maintenance with 30 mm BC with VG-40 (50%) + Micro-surfacing (50%)
3	FY 2029 to FY 2031	Assumption of Capacity Augmentation to Six Lane Configuration	
4	FY 2032 to FY 2036	-	
5	FY 2037	Major maintenance with 30 mm BC with PMB (100%) + Milling & 50 mm DBM (10%)	Major maintenance with 30 mm BC with VG-40 (50%) + Micro-surfacing (50%)
6	FY 2038 to FY 2043	-	
7	FY 2044	Major maintenance with 30 mm BC with PMB (100%) + Milling & 50 mm DBM (10%)	Major maintenance with 30 mm BC with VG-40 (50%) + Micro-surfacing (50%)
8	FY 2045	-	
9	FY 2046*	End of concession period	

**Actual end of concession period as per Concession Agreement is October 2050. As per recent traffic study conducted by Concessionaire, the revised concession period is upto FY 2046.*

Note: *As per traffic data provided by the Company, 6-laning of the Project Road is expected to commence in FY 2029. Accordingly, the preparation of Detailed Project Report (DPR) is expected to commence in FY 2027 i.e., in the current year. However, there is no such activities for preparation of DPR is observed at site. It is assumed that the upgradation to 6-laning may be delayed. Hence, the major maintenance cycle has been considered in FY 2029.*

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

   a. **Manpower and labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

   b. **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

      Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards, since bitumen prices have been range bound over the last five-six years. Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg last 10 years)
Mathura	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Panipat	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Koyali	All States	VG-10	47,102	37,125
		VG-30	48,402	38,137

Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg last 10 years)
		VG-40	51,082	40,251
Haldia	All States	VG-10	46,602	35,683
		VG-30	47,402	36,295
		VG-40	49,962	38,256
Barauni	All States	VG-10	47,132	36,213
		VG-30	48,432	37,325
		VG-40	50,992	39,286
CPCL	Kerala	VG-10	47,402	35,519
		VG-30	48,402	36,395
		VG-40	50,762	38,120
CPCL	Tamil Nadu	VG-10	47,902	36,019
		VG-30	48,402	36,395
		VG-40	50,962	38,320
CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320
CPCL	Karnataka	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320

c. **Sand and Aggregate:** Rates are taken from Public works Department Tamilnadu SOR FY 2025-26.

d. **Cement:** Rates are taken from Public works Department Tamilnadu SOR FY 2025-26.

e. **Steel :** Rates are taken from Public works Department Tamilnadu SOR FY 2025-26

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable NHAI Standard data book.

g. **Actual Rates of items as per work order:** The rates of road marking, road stud, kerb raising, micro-surfacing, milling, median filling rates etc. are considered as per the work order shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam	Cum	9,088
2	Bituminous Concrete (VG-40)	Cum	10,214
3	Bituminous Concrete (PMB)	Cum	12,519

Sr. No.	Item Description	Unit	Rates (Rs.)
4	Milling	Sqm	90
5	Micro-surfacing	Sqm	162
6	Kerb Re-laying	Rmt	330
7	Road Marking on BC surface	Sqm	573
8	Road Marking on micro surface	Sqm	682
9	Road Studs	Nos.	202

5.3 Balance Work Cost

As discussed in the previous chapter, the balance works cost for the Project Road is **NIL**.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Toll Security Services
4. Incident Management & Emergency Services
5. Electricity and Diesel Charges
6. TMS/HTMS/System Expenses
7. Office Operating Expenses
8. Vehicle Running Expenses
9. Professional Fees Expense
10. Community Development
11. Communication Expenses
12. Conveyance Expenses
13. Insurance Expense
14. IE Fees
15. Routine Maintenance Cost (Project Road)
16. Horticulture & ROW Maintenance
17. Miscellaneous including Contingency

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation and Maintenance cost (Routine O&M) is presented below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027 to 2032)	Amount (FY 2033 onwards)
1	Salary and Welfare Expenses	1,13,85,000	1,13,85,000
2	Tolling Operations Services	2,89,76,749	2,89,76,749
3	Toll Security Services	58,16,999	58,16,999
4	Incident Management & Emergency Services	2,19,62,820	2,19,62,820
5	Electricity and Diesel Charges	37,63,822	37,63,822
6	TMS / HTMS / System Expenses	70,00,881	75,48,013
7	Office Operating Expenses	37,14,834	37,14,834
8	Vehicle Running Expenses	30,49,800	30,49,800
9	Professional Fees Expense	53,07,491	87,87,514
10	Community Development	13,17,272	13,17,272
11	Communication Expenses	3,62,250	3,62,250
12	Conveyance Expenses	13,17,272	13,17,272
13	Insurance Expense	60,03,756	60,03,756
14	IE Fees	25,55,104	25,55,104
15	Routine Maintenance Cost (Project Road)	2,67,90,729	3,46,16,562
16	Horticulture & ROW Maintenance	1,78,84,717	1,78,84,717
17	Miscellaneous including Contingency	41,01,362	42,62,448
	Total Cost (Rs.)	**15,13,10,858**	**16,33,24,931**
	Total Cost (Cr.)	**15.13**	**16.33**
	Per km Cost (Lakhs)	28.93	31.23

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Summary of Major Maintenance Cost

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2027 to FY 2028	-	
2	FY 2029	66.91	1st MM cycle
3	FY 2030 to FY 2036	-	
4	FY 2037	102.85	2nd MM cycle
5	FY 2038 to FY 2043	-	
6	FY 2044	82.27	3rd MM cycle
	Total	**252.03**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of cost of major TMS / ATMS system is considered. The same is provided as below:

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2027	6.25	
2	FY 2034	6.25	
3	FY 2041	6.25	
Total Cost (Cr.)		**18.75**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-4 Escalation

Year	Escalation	Year	Escalation
2025	-	**2041**	3.99%
2026	-	**2042**	3.99%
2027	5.25%	**2043**	3.99%
2028	4.86%	**2044**	3.99%
2029	4.44%	**2045**	3.99%
2030	4.24%	**2046**	3.99%
2031	4.13%	**2047**	3.99%
2032	4.08%	**2048**	3.99%
2033	4.01%	**2049**	3.99%
2034	4.00%	**2050**	3.99%
2035	4.03%	**2051**	3.99%
2036	4.01%	**2052**	3.99%
2037	3.98%	**2053**	3.99%
2038	3.98%	**2054**	3.99%
2039	4.00%	**2055**	3.99%
2040	3.99%	**2056**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr.)

Sr. No.	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41	FY42	FY43	FY44	FY45	FY46
1	Routine O&M Cost																				
1.01	Salary and Welfare Expense	1.14	1.19	1.25	1.30	1.35	1.41	1.47	1.52	1.59	1.65	1.71	1.78	1.85	1.93	2.00	2.08	2.17	2.25	2.34	2.44
1.02	Tolling Operations Services	2.90	3.04	3.17	3.31	3.44	3.59	3.73	3.88	4.03	4.20	4.36	4.54	4.72	4.91	5.10	5.31	5.52	5.74	5.97	6.20
1.03	Toll Security Services	0.58	0.61	0.64	0.66	0.69	0.72	0.75	0.78	0.81	0.84	0.88	0.91	0.95	0.98	1.02	1.07	1.11	1.15	1.20	1.25
1.04	Incident Management Services	2.20	2.30	2.41	2.51	2.61	2.72	2.83	2.94	3.06	3.18	3.31	3.44	3.58	3.72	3.87	4.02	4.18	4.35	4.52	4.70
1.05	Electricity and Diesel Charges	0.38	0.39	0.41	0.43	0.45	0.47	0.48	0.50	0.52	0.55	0.57	0.59	0.61	0.64	0.66	0.69	0.72	0.75	0.78	0.81
1.06	TMS / HTMS / System Expenses	0.54	0.64	0.74	0.85	0.89	1.09	1.39	0.73	0.85	0.98	1.12	1.17	1.43	1.83	0.96	1.12	1.29	1.48	1.53	1.88
1.07	Office Operating Expenses	0.37	0.39	0.41	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.63	0.65	0.68	0.71	0.74	0.76	0.80
1.08	Vehicle Running Expenses	0.30	0.32	0.33	0.35	0.36	0.38	0.39	0.41	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.63	0.65
1.09	Professional Fees Expense	0.53	0.56	0.58	0.61	0.63	0.66	1.13	1.18	1.22	1.27	1.32	1.38	1.43	1.49	1.55	1.61	1.67	1.74	1.81	1.88
1.10	Community Development	0.13	0.14	0.14	0.15	0.16	0.16	0.17	0.18	0.18	0.19	0.20	0.21	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28
1.11	Communication Expenses	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08
1.12	Conveyance Expenses	0.13	0.14	0.14	0.15	0.16	0.16	0.17	0.18	0.18	0.19	0.20	0.21	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28
1.13	Insurance Expense	0.60	0.63	0.66	0.69	0.71	0.74	0.77	0.80	0.84	0.87	0.90	0.94	0.98	1.02	1.06	1.10	1.14	1.19	1.24	1.29
1.14	IE Fees	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.37	0.38	0.40	0.42	0.43	0.45	0.47	0.49	0.51	0.53	0.55
1.15	Routine Maintenance Cost	2.68	2.81	2.93	3.06	3.18	3.31	4.45	4.63	4.82	5.01	5.21	5.42	5.64	5.86	6.10	6.34	6.59	6.85	7.13	7.41
1.16	Horticulture & ROW Maintenance	1.79	1.88	1.96	2.04	2.13	2.21	2.30	2.39	2.49	2.59	2.69	2.80	2.91	3.03	3.15	3.27	3.41	3.54	3.68	3.83
1.17	Miscellaneous and Contingency	0.41	0.43	0.45	0.47	0.49	0.51	0.55	0.57	0.59	0.62	0.64	0.67	0.69	0.72	0.75	0.78	0.81	0.84	0.88	0.91
	Subtotal of O&M Cost	14.97	15.77	16.55	17.32	18.04	18.94	21.44	21.57	22.54	23.54	24.58	25.56	26.80	28.21	28.38	29.64	30.95	32.32	33.61	35.24
2	Major Maintenance Cost	-	-	71.51	-	-	-	-	-	-	-	140.99	-	-	-	-	-	-	136.02	-	-
3	Periodic Cost of TMS/ HTMS Replacement	6.25	-	-	-	-	-	-	8.36	-	-	-	-	-	-	11.00	-	-	-	-	-
4	Balance Works Cost	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**21.22**	**15.77**	**88.05**	**17.32**	**18.04**	**18.94**	**21.44**	**29.93**	**22.54**	**23.54**	**165.57**	**25.56**	**26.80**	**28.21**	**39.38**	**29.64**	**30.95**	**168.34**	**33.61**	**35.24**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost (4-lane)	
Ordinary Repair Cost for Flexible (with GST)	**2,67,90,729**
(inclusive of GST)	**= 5.12 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD **2,47,605**	**Urban** More than 4500 CVD **2,97,935**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
						Normal	**Urban**	**Normal**	**Urban**
5	Four-lane with divided carriageway	Without paved shoulder	1.53	378836.00	455840.00	-	-	-	-
		Paved shoulder	1.70	420929.00	506489.00	31.94	-	1,34,42,368	-
6	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	495210.00	595869.00	-	-	-	-
		Paved shoulder	2.20	544732.00	655456.00	-	20.37	-	1,33,48,361
TOTAL							**52.300**		**2,67,90,729**

Routine Maintenance Cost (6-Lane)	
Ordinary Repair Cost for Flexible (with GST)	**3,46,16,562**
(inclusive of GST)	**= 6.62 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal**	**Urban**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				More than 4500 CVD	More than 4500 CVD				
				2,47,605	**2,97,935**				
						Normal	**Urban**	**Normal**	**Urban**
1	Six lane with divided carriageway	without Paved shoulder	2.09	517495.00	622683.00	-	-	-	-
		with Paved shoulder	2.26	559588.00	673332.00	31.94	-	1,78,70,443	-
2	Six lane with divided carriageway and service lane on either side	without Paved shoulder	2.56	633869.00	762713.00	-	-	-	-
		with Paved shoulder	2.76	683390.00	822299.00	-	20.37	-	1,67,46,119
TOTAL							**52.300**		**3,46,16,562**

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Potholes repair (50 mm deep)	100 % Pothole free	As & when required	1.00%
	Volume (cum)			5.00
	Rs/m^3			11269
	Cost in Rupees			56,345
	ii) Patch repair	100 % Patch less	As & when required	1.00%
	Area (sqm)			100
	Rs/m^2			451
	Cost in Rupees			45,076
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.00%
	Area (sqm)			200
	Rs/m^2			79
	Cost in Rupees			15,810
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.00%
	Area (sqm)			150
	Rs/m^2			53
	Cost in Rupees			7,912
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			451
	Cost in Rupees			33,807
	v) Road marking	14%	Once in 7th year & @ Repaired location	13793

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	SUB TOTAL			**1,72,743**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Jungle Clearance	100%	Twice in a Year	2069
	iii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**9,483**
3	**Maintenance of Cross Drainage works:**			
	i) Cleaning of culvert bed	100%	Once in a Year	2793
	ii) Repair of floors	100%	Once in a Year	5055
	iii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			9,954
4	**Maintenance of Minor & Major Bridges:**			
	i) Cleaning and removal of dirt & vegetation from pier caps, Bearings, Expansion Joints, Superstructure, Substructure and Retaining wall etc.	100%	As & when required	36,950
	ii) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints			
	iii) Repair of minor washouts, erosion scour and animal holes			
	iv) Sealing Cracks with Cement/ Epoxy Mortar			
	v) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Turfing and Arboriculture		Once in a Year	2463
	ii) Maintenance of gang hut store, sheds, animal &		Once in a Year	3695

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	debris removal			
	iii) Lettering, Painting of Km stones & kerbs, sign boards, hectometre stone etc.		Once in a Year	3695
	iv) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7390
	v) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232
	vi) Traffic Census		Once in a Year	0
	vii) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**18,475**
	GRAND TOTAL (Normal)			**2,47,605**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Centre Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	20523
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**50,329**
	GRAND TOTAL (Urban)			**2,97,935**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						10,18,776	18	1,81,24,016
	For BC	Sqm	1	1	9,09,302.20		9,09,302	9,09,302		
	For DBM	Sqm	1	1	64,008.20		64,008	64,008		
	For Misc. Location	Sqm	1	1	45,465.11		45,465	45,465		
2	BC with 30 mm	Cum	1	1	9,54,767.31	0.03	28,643	28,643	12,520	35,86,08,597
3	DBM with 50 mm	Cum	1	1	64,008.20	0.05	3,200	3,200	9,088	2,90,84,653
4	Milling	Sqm	1	1	64,008.20		64,008	64,008	90	57,60,738
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,402	3.50	4.50	561	561	123	68,960
6	Dismantling of CC Panels @ 2% area	Cum	2%		22,076	0.30	132	132	978	1,29,473
7	Replacement of Panels - PQC @ 2% area	Cum	2%		22,076	0.30	132	132	9,321	12,34,615
	Service Road									
8	Tack coat	Sqm	1	20,365	7.00		1,42,555	1,49,683	18	26,62,856
9	BC with 30 mm	Cum	1	20,365	7.00	0.03	4,277	4,490	10,214	4,58,63,723
10	Micro Surfacing	Sqm	1	20,365	7.00		1,42,555	1,49,683	162	2,42,48,606
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	963	18.7		17,965	17,965	18	3,19,590
12	Wearing Coat BC with 30 mm	Cum	1	963	18.7	0.03	539	539	12,520	67,47,458
13	Milling of Ex. Wearing Coat	Sqm	1	963	18.7		17,965	17,965	90	16,16,812
14	Painting of Crash Barrier	Sqm	4	963		1.12	4,296	4,296	109	4,68,250
	Other Works									
15	Raising of Road Kerb	Rmt		91,721			-	-	330	-
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	6,393			12,786	12,786	202	25,77,658
17	Painting of Kerb	Sqm	2	91,721		0.375	68,791	68,791	109	74,98,175
18	Road Marking	Sqm					48,865	48,865	573	
	Road Marking on BC						43,883	43,883	573	2,51,44,722

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Road Marking on Micro surfacing						4,982	4,982	682	33,97,927
	MCW									
	a) Median & Edge line	Sqm	4	54,915	0.15		32,949			
	b) Lane line	Sqm	2	18,122	0.10		3,624			
	Service Road									
	a) Edge line	Sqm	2	42,767	0.10		8,553			
	b) Lane line	Sqm	1	14,113	0.10		1,411			
	Junction crossing	Sqm					2,327			
19	Filling of Earthen shoulder	Cum					14,682	14,682	440	64,64,305
	MCW		2	50,991	2.00	0.06	12,238			
	Service Road		1	20,365	2.00	0.06	2,444			
20	Miscellaneous	5%								2,70,01,057
Total Major Maintenance Cost (Rs.)										**56,70,22,189**
Total Major Maintenance Cost with GST (Rs.)										**66,90,86,184**
Total Major Maintenance Cost with GST (Cr.)										**66.91**
Per km Cost (lakh)										**127.93**
Escalation Factor for Major Maintenance Cost (FY 2029)										**1.10**
Total Escalated Cost for Major Maintenance (FY 2029) (Cr.)										**71.51**

Major Maintenance Cost (FY 2037)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						15,57,187	18	2,77,02,350
	For BC	Sqm	2	50,991	13.50		13,76,752	13,76,752		
	For DBM	Sqm	2	5,230	10.50		1,09,830	1,09,830		
	For Misc. Location	Sqm	2	2,615	13.50		70,605	70,605		
2	BC with 30 mm	Cum	2	53,606	13.50	0.03	43,421	43,421	12,520	54,36,24,100
3	DBM with 50 mm	Cum	2	5,230	10.50	0.05	5,492	5,492	9,088	4,99,05,599
4	Milling	Sqm	2	5,230	10.50		1,09,830	1,09,830	90	98,84,700
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,402	3.50	4.50	561	561	123	68,960
6	Dismantling of CC Panels @ 2% area	Cum	2%		22,076	0.30	132	132	978	1,29,473
7	Replacement of Panels - PQC @ 2% area	Cum	2%		22,076	0.30	132	132	9,321	12,34,615
	Service Road									
8	Tack coat	Sqm	1	20,365	7.00		1,42,555	1,56,811	18	27,89,659
9	BC with 30 mm	Cum	1	20,365	7.00	0.03	4,277	4,704	10,214	4,80,47,709
10	Micro Surfacing	Sqm	1	20,365	7.00		1,42,555	1,56,811	162	2,54,03,301
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	963	28.0		26,970	26,970	18	4,79,789
12	Wearing Coat BC with 30 mm	Cum	1	963	28.0	0.03	809	809	12,520	1,01,29,725
13	Milling of Ex. Wearing Coat	Sqm	1	963	28.0		26,970	26,970	90	24,27,264
14	Painting of Crash Barrier	Sqm	4	963		1.12	4,296	4,296	109	4,68,250
	Other Works									
15	Raising of Road Kerb	Rmt	2	91,721			1,83,442	1,83,442	330	6,05,35,728
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	6,393			12,786	12,786	202	25,77,658
17	Painting of Kerb	Sqm	2	91,721		0.375	68,791	68,791	109	74,98,175
18	Road Marking	Sqm					52,670	52,670	573	
	Road Marking on BC	Sqm					47,688	47,688	573	2,73,25,336
	Road Marking on Micro surfacing	Sqm					4,982	4,982	682	33,97,927
	MCW									

Major Maintenance Cost (FY 2037)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	a) Median & Edge line	Sqm	4	54,915	0.15		32,949			
	b) Lane line	Sqm	4	18,122	0.10		7,249			
	Service Road									
	a) Edge line	Sqm	2	42,767	0.10		8,553			
	b) Lane line	Sqm	1	14,113	0.10		1,411			
	Junction crossing	Sqm					2,508			
19	Filling of Earthen shoulder	Cum					14,682	14,682	440	64,64,305
	MCW		2	50,991	2.00	0.06	12,238			
	Service Road		1	20,365	2.00	0.06	2,444			
20	Median Filling	Cum	1	50,559	4.17	0.10	21,083			
20	Miscellaneous	5%								4,15,04,731
Total Major Maintenance Cost (Rs.)										**87,15,99,354**
Total Major Maintenance Cost with GST (Rs.)										**1,02,84,87,237**
Total Major Maintenance Cost with GST (Cr.)										**102.85**
Per km Cost (lakh)										**196.65**
Escalation Factor for Major Maintenance Cost (FY 2037)										**1.51**
Total Escalated Cost for Major Maintenance (FY 2037) (Cr.)										**140.99**

Major Maintenance Cost (FY 2044)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						15,57,187	18	2,77,02,350
	For BC	Sqm	2	50,991	13.50		13,76,752	13,76,752		
	For DBM	Sqm	2	5,230	10.50		1,09,830	1,09,830		
	For Misc. Location	Sqm	2	2,615	13.50		70,605	70,605		
2	BC with 30 mm	Cum	2	53,606	13.50	0.03	43,421	43,421	10,214	44,34,79,036
3	DBM with 50 mm	Cum	2	5,230	10.50	0.05	5,492	5,492	9,088	4,99,05,599
4	Milling	Sqm	2	5,230	10.50		1,09,830	1,09,830	90	98,84,700
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,402	3.50	4.50	561	561	123	68,960
6	Dismantling of CC Panels @ 2% area	Cum	2%		22,076	0.30	132	132	978	1,29,473
7	Replacement of Panels - PQC @ 2% area	Cum	2%		22,076	0.30	132	132	9,321	12,34,615
	Service Road									
8	Tack coat	Sqm	1	20,365	7.00		1,42,555	1,56,811	18	27,89,659
9	BC with 30 mm	Cum	1	20,365	7.00	0.03	4,277	4,704	10,214	4,80,47,709
10	Micro Surfacing	Sqm	1	20,365	7.00		1,42,555	1,56,811	162	2,54,03,301
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	963	28.0		26,970	26,970	18	4,79,789
12	Wearing Coat BC with 30 mm	Cum	1	963	28.0	0.03	809	809	10,214	82,63,653
13	Milling of Ex. Wearing Coat	Sqm	1	963	28.0		26,970	26,970	90	24,27,264
14	Painting of Crash Barrier	Sqm	4	963		1.12	4,296	4,296	109	4,68,250
	Other Works									
15	Raising of Road Kerb	Rmt		91,721			-	-	330	-
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	6,393			12,786	12,786	202	25,77,658
17	Painting of Kerb	Sqm	2	91,721		0.375	68,791	68,791	109	74,98,175
18	Road Marking	Sqm					52,670	52,670	499	
	Road Marking on BC	Sqm					47,688	47,688	499	2,37,84,488
	Road Marking on Micro surfacing	Sqm					4,982	4,982	682	33,97,927
	MCW									

Major Maintenance Cost (FY 2044)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	a) Median & Edge line	Sqm	4	54,915	0.15		32,949			
	b) Lane line	Sqm	4	18,122	0.10		7,249			
	Service Road									
	a) Edge line	Sqm	2	42,767	0.10		8,553			
	b) Lane line	Sqm	1	14,113	0.10		1,411			
	Junction crossing	Sqm					2,508			
19	Filling of Earthen shoulder	Cum					14,682	14,682	440	64,64,305
	MCW		2	50,991	2.00	0.06	12,238			
	Service Road		1	20,365	2.00	0.06	2,444			
20	Miscellaneous	5%								3,32,00,345
Total Major Maintenance Cost (Rs.)										**69,72,07,255**
Total Major Maintenance Cost with GST (Rs.)										**82,27,04,561**
Total Major Maintenance Cost with GST (Cr.)										**82.27**
Per km Cost (lakh)										**157.30**
Escalation Factor for Major Maintenance Cost (FY 2044)										**1.98**
Total Escalated Cost for Major Maintenance (FY 2044) (Cr.)										**136.02**

FP Project Management

Technical Due Diligence of Mangalwedha to Solapur Section of NH-166 from km.321+600 to km.378+100 in the State of Maharashtra on Hybrid Annuity Mode (HAM)

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited

315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025
Tel: +91-22-6660 3901
e-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

FP/DD/05

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	TSM / RMW	AKA	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Service Road 6
2.9 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 8
3.3 Major / Minor Intersection 9
3.4 Inventory and Condition Survey of Structures and Bridges 11
3.4.1 Cross Drainage (Bridges and Culverts) 11
3.4.2 Minor Bridges 13
3.4.3 Major Bridge (length > 60 m) 15
3.4.4 Vehicular Underpasses 17
3.4.5 Light Vehicular Underpasses 18
3.4.6 ROB 19
3.5 Drainage 20
3.6 Slope Protection 20
3.7 Road Furniture 21
3.7.1 Pavement Marking 21
3.7.2 Traffic Signage 21

3.7.3 Highway Lighting 22
3.7.4 Road Studs / Cat eyes 22
3.7.5 Pedestrian Guard Rail 23
3.7.6 Avenue Plantation and Median Plantation 23
3.7.7 Traffic Signage / Median kerb painting / KM Stone 24
3.7.8 Crash Barriers 25
3.7.9 Delineators 26
3.8 Toll Plaza 26
3.9 Bus Bays and Passenger Shelters 29
3.10 Truck Lay Bye 29
3.11 Advanced Traffic Management System (ATMS) 30
3.11.1 Automatic Traffic Counter cum classifier (ATCC) 30
3.11.2 Emergency Call Boxes (ECB) 31
3.11.3 Variable Message Signs System 31
3.11.4 CCTV Surveillance Cameras 32
3.12 Video Incident Detection System 32
3.13 Balance Work Status 32
3.14 Operation and Maintenances 33
3.14.1 O&M Contract 33
3.14.2 Organization Chart 33
3.14.3 Operation 34
3.14.4 Routine Maintenance 34
4 Pavement Investigation and Assessment 35
4.1 General 35
4.2 Surveys and Investigation 35
4.2.1 Pavement Condition Survey 35
4.2.2 Observation and Conclusion 35
4.2.3 Network Survey Vehicles (NSV) Survey 35
4.2.4 Roughness Survey 35
4.2.5 Periodic Maintenance Strategy 37
5 Cost Estimates 38
5.1 General 38
5.2 Rate Assumption 38
5.3 Balance Work Cost (CAPEX) 39
5.4 Routine O&M Cost 39
5.5 Major Maintenance Cost 40
5.6 Periodic Replacement of TMS / ATMS System 40

5.7 Escalation Assumptions 40
5.8 Summary of Cost.....41
Annexures 43
Annexure I - Routine Maintenance Cost.....44
Annexure II - Major Maintenance Cost.....48

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Details of Summary for Structures 11
Table 3-2 Details of New Minor Bridges 13
Table 3-3 Details of Major Bridges 15
Table 3-4 Details of Vehicular Underpasses 17
Table 3-5 Details of Light Vehicular Underpasses 18
Table 3-6 Details of ROB 19
Table 3-7 Details of Summary for Toll Plaza Items 27
Table 4-1 Summary of Pavement Condition 35
Table 4-3 Result of Roughness Survey as per CA 36
Table 4-4 Major Maintenance Cycle 37
Table 5-1 Summary of Unit Rates 38
Table 5-2 Summary of Operation Cost 39
Table 5-3 Escalation 41

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start of the Project Roads 5
Figure 2-3 End of Project Road 5
Figure 3-1 Photographs of Pavement Condition (Main Carriageway) 7
Figure 3-2 Photographs of Service Road 9
Figure 3-3 Photograph of Major Junction 10
Figure 3-4 Photographs of Minor Junctions 10
Figure 3-5 Photographs of Culverts 13
Figure 3-6 Photographs of Minor Bridge 14
Figure 3-7 Photographs of Major Bridges 16
Figure 3-8 Photographs of Vehicular Underpasses 17
Figure 3-9 Photographs of Light Vehicular Underpass 18
Figure 3-10 Photographs of Drainage 20
Figure 3-11 Photographs of Slope Protection 21
Figure 3-12 Photographs of Road Marking 21
Figure 3-13 Photographs of Traffic Signage 22
Figure 3-14 Photographs of Highway Lighting 22
Figure 3-15 Photographs of Road Studs 23
Figure 3-16 Photographs of Pedestrian Guard Rail 23
Figure 3-17 Photographs of Avenue and Median Plantation 24
Figure 3-18 Photographs of Road Signages 24
Figure 3-19 Photographs of MBCB / Crash Barrier 26
Figure 3-20 Photographs of Delineator 26
Figure 3-21 Photographs of Toll Plaza 27
Figure 3-22 Photographs of Bus Bays / Passenger Shelter 29
Figure 3-23 Photographs of Truck Lay Bye 30
Figure 3-24 Photographs of ATCC 31
Figure 3-25 Photographs of ECB 31
Figure 3-26 Photographs of VMS 32
Figure 3-27 Photographs of CCTV Surveillance Camera 32

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of National Highway No. 166 including the section from Mangalwedha to Solapur (km. 321+600 to km. 378+100) on Hybrid Annuity Mode in the State of Maharashtra (approx. 56.500 kms) (hereinafter referred as "Project Road").

M/s. DBL Mangalwedha Solapur Highway Private Limited (DMSHPL) (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for development, maintenance and management of National Highway No. 166 including the section from Mangalwedha to Solapur (Sangli Solapur Package-4) on Hybrid Annuity Mode.

The Date of Concession Agreement is 10th May 2018. The concession period of the project is 17 years commencing from the Appointed Date including implementation period. Appointed Date of the project is 23rd May 2019. The Provisional Completion Certificate was issued on 14th December 2021 for the length of 52.760 km out of 56.500 kms. The project has also received Final Completion Certificate for the length of 55.800 kms with effective from 01st March 2023.

Sr. No.	Description	Date
1	Date of Signing the Concession Agreement	10th May 2018
2	Appointed Date	23rd May 2019
3	Scheduled Project Completion Date	21st May 2021
4	Scheduled End of Concession	18th May 2036
5	Date of issue of Provisional Completion Certificate	14th December 2021
6	Date of Commencement of Commercial Operation	14th December 2021
7	Date of Issue of Completion Certificate	1st March 2023

Presently, the project is under operation and maintenance and the Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets.
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.,
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.,
- Formulation of future major maintenance strategy

- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified Engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets, mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimates.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Client. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyses the same as per the best engineering / industry practices.

The site visit and inspection of the project site was carried out during the period from **7th March 2026 to 8th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for technical due diligence study**.**

Chapter 2 **Project Description:** The chapter describes existing project features, overview of project development etc.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on the site visit**.**

Chapter 4 **Pavement Investigation and Assessment:** This chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance

Chapter 5 **Cost Estimates**: This chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **M/s. DBL Mangalwedha Solapur Highway Private Limited (DMSHPL),** is a company promoted by Cube Highways or company a Special Purpose Vehicle (SPV) formed for implementing this project on 10th May 2018.

2.2 Location

The Site of the Four-Lane divided Project Road comprises the section of National Highway 166 commencing from Design km. 321+600 at Mangalwedha to Design km. 378+100 (Approx Length is 56.500 kms) at Solapur in the State of Maharashtra.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map

The photographs taken during the site visit are presented below.

Figure 2-2 Start of the Project Roads

Start of Project at km. 321+600 (LHS & RHS)

Figure 2-3 End of Project Road

End of Project at km. 377+400 (LHS) **End of Project at km. 377+400 (RHS)**

2.3 Climate

The project location has three distinct seasons: summer, monsoon and winter. Typical summer months are from March to May, with maximum temperatures ranging from 30 °C to 45 °C. The monsoon lasts from June to the end of September, with moderate rainfall. The project location receives an average rainfall of 545 mm (21.5 in) per year. Winter begins in November and lasts until the end of February with the temperatures occasionally dropping below 10 °C (50 °F).

2.4 Terrain

The Project Road traverses through plain / rolling terrain.

2.5 Abutting Land Use

The Project Road passes through residential and agricultural zones.

2.6 Right of Way

The width of the existing Right of Way (RoW) varies from 20 m to 30 m in rural areas and 20 m to 25 m in built-up areas, except Toll Plaza area.

2.7 Existing Utilities

During the widening of the Project Road, various affected utility services located along the Project Road were shifted out / at the edge of the ROW. The different types of utilities found along the road include, electrical poles, telephone poles, hand pumps, permanent structures, temples etc.

2.8 Service Road

The total length of service road on both sides is 30.098 kms.

2.9 Development as per Schedule-B

The Project Road from Design Chainage km. 321.100 at Mangalwedha to Design Chainage km. 378.100 at Solapur (Approx Length is 56.500 kms) has been developed as a four-lane paved carriageway 18.0m wide excluding median. The Project Road passes through rural as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the concession period:

a) Construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.
b) Operation and maintenance of the Project in accordance with the provisions of this Agreement.
c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of the Concession Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Concessionaire under the Concession Agreement.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Particulars	Unit	Scope as per Schedule-B	Constructed as per site
1	O&M of Main Carriageway	Km	56.500	55.800*
2	Service road / Slip Road	Km	30.098	29.909
3	Rail Over Bridge (ROB)	Nos.	01	Descope
4	Major Bridge	Nos.	03	03
5	Minor Bridge	Nos.	18	18
6	Vehicular Underpass	Nos.	4 + 1 (COS)	05
7	Light Vehicular Underpass	Nos.	13 - 1 (COS)	12
8	Slab and Box Culverts	Nos.	12	12
9	Hume Pipe Culverts	Nos.	92	92

** 0.700 km length is Descoped from total length of the Project. Project has received Completion Certificate for the length of 55.800 km.*

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The paved carriageway is 18.0 m wide excluding the median. The project is widened to a four lane-carriageway with a width of 18.0 m as per standard cross section including paved shoulders. Service / Slip Road of 7.5 m width has been provided on one side or both sides wherever required in built-up area to cater for the local traffic.

The entire stretch of Project Road, Service / Slip Road and Toll Plaza are constructed with rigid pavement. Rigid pavement for main carriageway and service / slip roads are designed for a design life of 30 years.

3.1.1 Pavement Condition Survey

A pavement condition survey was carried out from **7th March 2026 to 8th March 2026** through visual inspection for the entire project length. From the visual inspection, the pavement condition of the Project Road is found to be Good. The total project length of 55.800 kms is in good condition. During the site visit, at some locations cracks are observed on the pavement. However, rectification work is in progress at such location of the Project Road.

Some of the photographs taken during the site visit are presented below.

Figure 3-1 Photographs of Pavement Condition (Main Carriageway)

Pavement Condition at km. 376+420 (RHS)

Pavement Condition at km. 363+280 (LHS)

Pavement Condition at km. 354+200 (RHS)

Pavement Condition at km. 346+900 (LHS)

Pavement Condition at km. 342+010 (RHS)

Pavement Condition at km. 335+400

Pavement condition at km. 332+730 (LHS)

Pavement Condition at km. 328+200 (LHS)

3.2 Service Road / Slip Road

The service / slip road of width 7.5 m is constructed in built-up areas and adjoining underpass locations. The Project Road has total service / slip road length of 29.909 kms.

The photographs taken during the site visit are presented below.

Figure 3-2 Photographs of Service Road

Pavement Condition at km. 367+ 450 (RHS)

Pavement Condition at km. 367+040 (LHS)

Pavement Condition at km. 356+800 (RHS)

Pavement Condition at km. 338+600 (RHS)

Pavement Condition at km. 326+950 (RHS)

3.3 Major / Minor Intersection

There are 01 no. of major junction and 90 nos. of minor junctions along the Project Road.

The photographs taken during site visit are presented as below.

Figure 3-3 Photograph of Major Junction

Solapur Vijapur Highway Underpass Crossing at km. 370+400

Figure 3-4 Photographs of Minor Junctions

T-Junction at km. 372+200 (RHS)

T-Junction at km. 340+930 (RHS)

T-Junction at km. 342+370 (RHS)

T-Junction at km. 331+800

Junction at km. 339+810 (RHS)

3.4 Inventory and Condition Survey of Structures and Bridges

The inventory of structures including major bridges, minor bridges, underpasses and culverts is presented in table as below:

Table 3-1 Details of Summary for Structures

Sr. No.	Particulars	Unit	Total Number of Structures As per CA	Total Number of Structures as per site
1	Rail Over Bridge (ROB)	Nos.	01	Descope
2	Major Bridge	Nos.	03	03
3	Minor Bridge	Nos.	18	18
4	Vehicular Underpass	Nos.	4 + 1 (COS)	05
5	Light Vehicular Underpass	Nos.	13 - 1 (COS)	12
6	Slab and Box Culverts	Nos.	12	12
7	Hume Pipe Culverts	Nos.	92	92

All major structures and CD works were visually inspected. The CD structures are generally sufficient for storm water drainage. The waterway needs regular cleaning. All the old bridges are 2-lane and are widened to 2 additional lanes. The type of foundation for these structures is open foundation. At some of the bridges, settlement in approaches and cracks in the pavement has been observed which need to be repaired. New bridges are constructed in 2-lane with footpath keeping a provision of converting into 3-lane in future. The wearing course and expansion joints are found in good condition. Crash barriers are RCC type and are in sound condition. Return wall are of RCC type and pitching has been provided in almost all bridges. RE walls are provided for the approaches of the structure.

The detailed condition survey of major bridges, minor bridges, flyovers and culverts was carried out by visual inspection. The observations and findings are presented below.

3.4.1 Cross Drainage (Bridges and Culverts)

Slab culverts are visually inspected. Some culverts are old and widened. The old structures have been strengthened with repair and rehabilitation during widening. The widening is either concentric or eccentric. The quality of concrete of abutment, slab, and wing wall, or return wall, parapet wall is satisfactory. The slope protection has been done at major locations. The slopes are stable. Generally, all the slab culverts are found in

sound condition. The waterway needs to be cleaned on both sides of the culverts. Box culverts are visually inspected. The RCC box culverts are retained and widened. The RCC quality of new box culverts is good. The structure number is painted on the parapet wall or crash barrier in most of the culverts. The waterway is clear in some of the culverts and needs to be cleared for a few culverts, particularly in urban areas.

Pipe culverts are visually inspected. The pipe culverts are either newly constructed or reconstructed. Some of the pipe culverts are retained and widened. The widening is either concentric or eccentric. In most of the culverts, the ends are blocked by debris, garbage or vegetation especially in urban areas or buried underground. Regular cleaning of the waterway is required to avoid damage to pavement.

The following photographs were taken during the inspection of culverts.

Figure 3-5 Photographs of Culverts

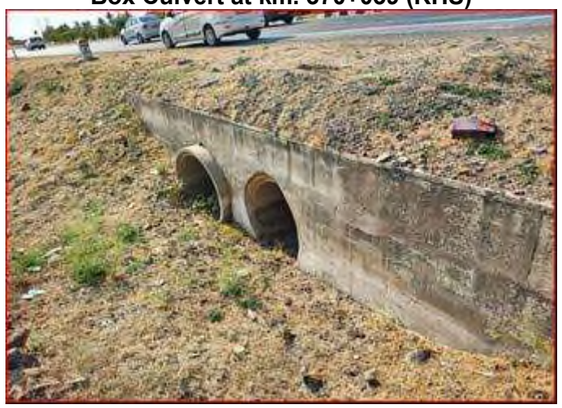
Box Culvert at km. 374+980 (RHS)

Pipe Culvert at km. 371+080 (RHS)

Box Culvert at km. 370+039 (RHS)

Box Culvert at km. 329+800

Pipe Culvert at km. 342+470 (RHS)



Pipe Culvert at km. 342+010 (RHS)

3.4.2 Minor Bridges

Table 3-2 Details of New Minor Bridges

Sr. No.	Existing Chainage (km)	Design Chainage (km)	Proposed structural configuration	Proposed Structure type	Proposed span arrangement (m)	Total width of the structure (m)	TDD Consultant's Remarks
New Construction							
1	-	351+348	2 lane c/w with footpath	RCC Box Structure	2 x 10.00	32.00	Structure is in good condition. The pavement is in good condition.
Re-construction							
2	317+060	323+654	2 lane c/w with footpath	RCC Structure	2 x 3.70	32.00	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
3	341+400	348+936	2 lane c/w with footpath	RCC Structure	3 x 4.80	32.00	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts needs to be cleaned regularly.
4	351+803	359+355	2 lane c/w with footpath	RCC Structure	2 x 12.00	32.00	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
5	359+816	367+265	2 lane c/w with footpath	RCC Structure	1 x 10.00	32.00	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.
6	362+620	370+054	2 lane c/w with footpath	RCC Structure	1 x 6.40	32.00	The structure is in good condition. Condition of pavement, crash barrier, slope protection is in good condition. Waterway, drainage spouts need to be cleaned regularly.

Sr. No.	Existing Chainage (km)	Design Chainage (km)	Proposed structural configuration	Proposed Structure type	Proposed span arrangement (m)	Total width of the structure (m)	TDD Consultant's Remarks
Widening, Repair & Rehabilitation							
7	320+100	327+649	2 lane c/w	RCC Structure	3 x 4.40	35.00	All structures are in good condition. Pavement condition, footpath, railing, Crash barriers are in good condition. Debris and silt removal is necessary at some locations. Minor settlement of approach is observed in some locations. Vegetation removal, drainage spouts cleaning is required. At MNB km. 331+054 RHS waterway found blocked by BC soil.
8	320+620	328+164	2 lane c/w	RCC Structure	1 x 6.40	35.00	
9	323+239	331+054	2 lane c/w	RCC Structure	4 x 5.90	35.00	
10	323+953	331+469	2 lane c/w	RCC Structure	1 x 6.30	35.00	
11	325+183	332+715	2 lane c/w	RCC Structure	2 x 4.00	35.00	
12	337+100	344+585	2 lane c/w	RCC Structure	1 x 7.30	35.00	
13	339+720	347+221	2 lane c/w	RCC Structure	3 x 7.00	35.00	
14	348+200	355+900	2 lane c/w (Skew)	RCC Structure	2 x 5.50	35.00	
15	350+330	357+771	2 lane c/w	RCC Structure	3 x 4.80	35.00	
16	362+007	369+421	2 lane c/w	RCC Structure	2 x 5.80	35.00	
17	365+300	372+649	2 lane c/w	RCC Structure	3 x 6.80	35.00	
18	368+900	376+493	2 lane c/w	RCC Structure	4 x 8.50	35.00	

The following photographs were taken during the inspection of Minor Bridges.

Figure 3-6 Photographs of Minor Bridge

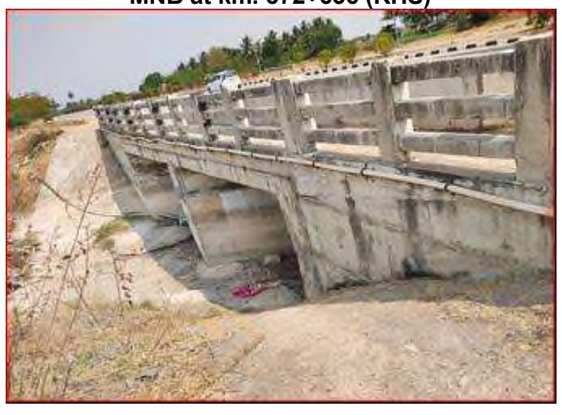
MNB at km. 376+493 (LHS)

MNB at km. 372+636 (RHS)

MNB at km. 369+421

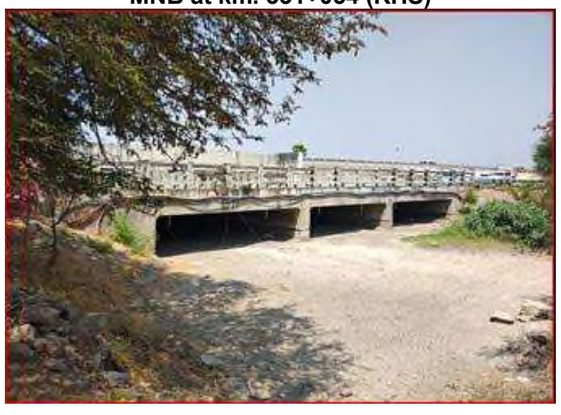
MNB at km. 331+054 (RHS)

MNB at km. 357+771 (LHS)



MNB at km. 355+900 (LHS)

MNB at km. 351+348 (LHS)



MNB at km. 347+221

MNB at km. 327+649 (Median)

MNB at km. 328+164 (RHS)

MNB at km. 331+469 (RHS)

3.4.3 Major Bridge (length > 60 m)

There are 03 Nos. of Major Bridges on Project Road, out of which 2 Nos. are new construction and 1 No. is widening of existing Major Bridge. All Major Bridges are visually inspected. The structures are generally sufficient for the crossing of river water. The waterway needs regular cleaning. Old structures are present on the right side of locations. The old bridges are 2-lane with footpaths. Old bridges have RCC railing. The sub-structures are constructed with RCC piers. The expansion joints in the bridges need to be cleaned. Minor settlement in approaches has been observed. New bridges are constructed in 2-lane with footpath. Old bridges on RHS have RCC pier and T-beam girders. The wearing course and expansion joints are found to be in good condition. W-beam and RCC type crash barriers are in sound condition. Drainage spouts need to be cleaned regularly. Further, vegetation and silt need to be removed from the waterway for smooth flow of water.

Table 3-3 Details of Major Bridges

Sr. No.	Design Chainage (km)	New Chainage (km)	Type of Structure	No. of Span	Span Arrangement (m)	No. of Lane	Side	Construction Scheme	TDD Consultant's Remarks
1	331+563	339+050	Major Bridge (Bhima River)	8	8 x 30.00	2	LHS	New Construction	The structure is in good condition. RCC railing & Concrete crash barriers are in good condition. Waterway cleaning is required.
				8	8 x 30.00	2	RHS	New Construction	The structure is in good condition. RCC railing & Concrete crash barriers are in good condition. Waterway cleaning is required.
2	357+352	364+829	Major Bridge (Sina River)	7	7 x 32.00	2	LHS	New Construction	The structure is in good condition. RCC railing, Concrete crash barriers are in good condition. Cleaning of Expansion joint is required.
				7	7 x 32.00	2	RHS	New Construction	The structure is in good condition. RCC railing, Concrete crash barriers are in good condition. Cleaning of Expansion joint is required.
3	366+354	373+943	Major Bridge (Adila Nala)	11	-	2	LHS	Old Construction	The structure is in sound condition. Pipe railing is in good condition. Vegetation over the structure needs to be removed, reinforcement is exposed at some locations which needs to be rectified. Pavement over the structure is in good condition.
				6	6 x 19.60	2	RHS	New Construction	The structure is in good condition. RCC railing, Concrete crash barriers are in good condition. Cleaning of Expansion joint is required.

The following photographs were taken during the inspection of Major Bridges.

Figure 3-7 Photographs of Major Bridges

Major Bridge at km. 373+924 (LHS - Old structure)

Girders of Major Bridge at km. 373+924 (RHS)

Sub-structure & Railing condition on Major Bridge at km. 373+924 (LHS)

Girder & Bearing condition of Major Bridge at km. 373+924 (RHS)

Abutment & Bearings of Major Bridge at km. 364+924

Median view of Major Bridge at km. 364+924

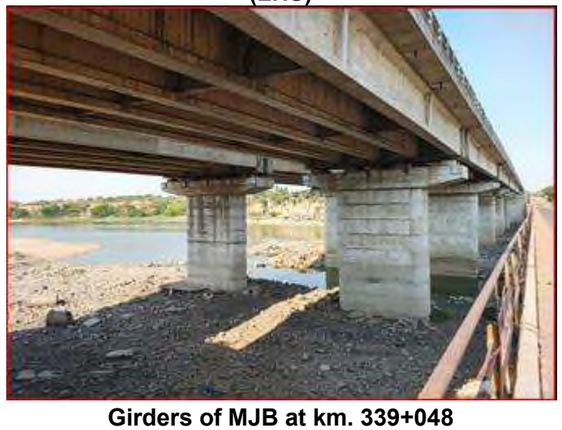
Bearings of P2 Major Bridge at km. 364+924 (RHS)

Wearing coat at Major Bridge at km. 364+924 (LHS)

Sub-structure of Major Bridge at km. 339+048

P1-RHS Bearings of Major Bridge at km. 339+048

Abutment condition of Major Bridge at km. 339+048 A2 (BHS)


Girders of MJB at km. 339+048

3.4.4 Vehicular Underpasses

Table 3-4 Details of Vehicular Underpasses

Sr. No.	New Chainage (km)	Type of Structure	No. of Span	Span Width (m)	No. of Lane	Construction scheme	TDD Consultant's Remarks
1	322+710	VUP	1	15.00	4	New construction	The overall structure condition of all underpasses is found to be good. RCC crash barriers, W-beam crash barriers, slope protection work, wearing coat is found to be good. Minor settlement on approaches is noticed. RE Wall, Lighting arrangement under structures, pavement under structures is in good condition.
2	326+100	VUP	1	20.00	4	New construction	
3	357+328	VUP	1	20.00	4	New construction	
4	367+041	VUP	1	20.00	4	New construction	
5	324+540	VUP	2	15.00	4	New Construction	

Following photographs were taken during the inspection of Underpasses:

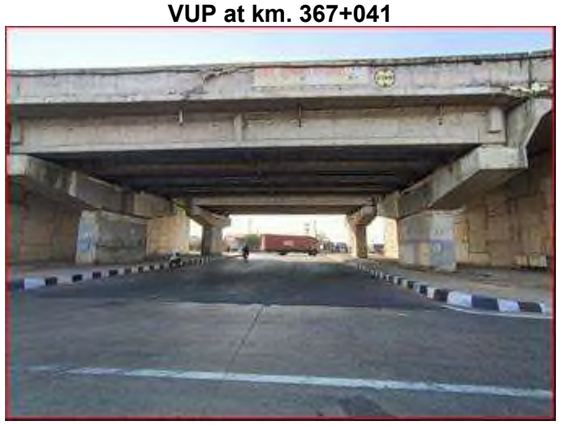
Figure 3-8 Photographs of Vehicular Underpasses

VUP at km. 367+041

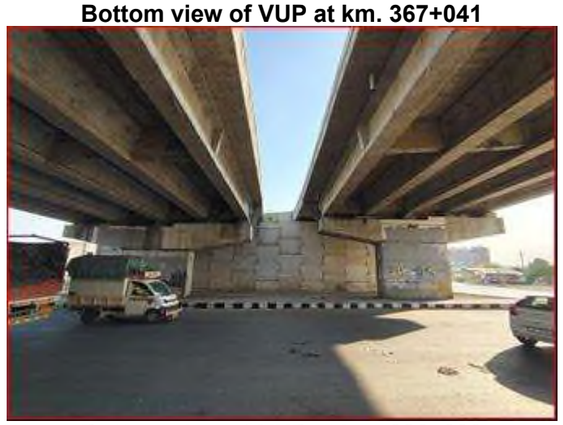
Bottom view of VUP at km. 367+041

Side view of VUP at km. 357+328

Bottom view of VUP at km. 357+238

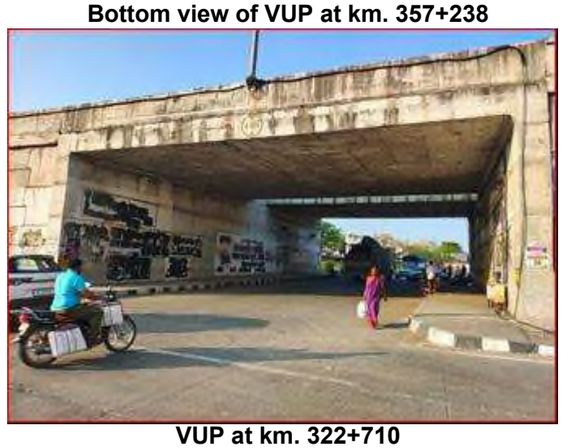


VUP at km. 326+090



Bottom view of VUP at km. 326+090

VUP at km. 324+540



VUP at km. 322+710

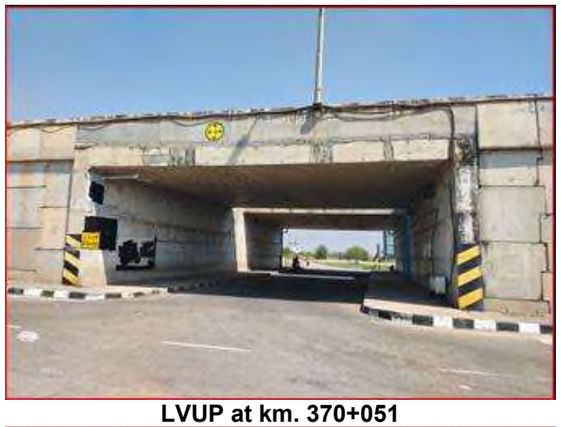
3.4.5 Light Vehicular Underpasses

Table 3-5 Details of Light Vehicular Underpasses

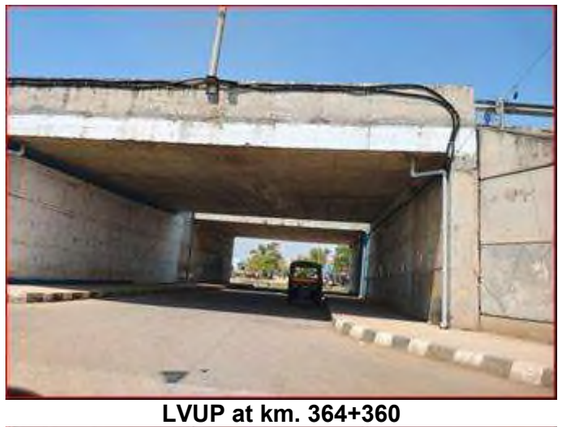
Sr. No.	New Chainage (km)	Type of Structure	No. of Span	Span Width (m)	No. of Lane	Construction scheme	TDD Consultant's Remarks
1	323+565	LVUP	1	12.00	4	New construction	The overall structure condition of all Light vehicular underpasses is found to be good. RE Wall, RCC crash barriers, W-beam crash barriers, slope protection work, wearing coat, lighting arrangement under structure is found to be good. Cleaning of drainage spout is required.
2	337+347	LVUP	1	12.00	4	New construction	
3	338+700	LVUP	1	12.00	4	New construction	
4	339+317	LVUP	1	12.00	4	New construction	
5	345+054	LVUP	1	12.00	4	New construction	
6	348+382	LVUP	1	12.00	4	New construction	
7	351+580	LVUP	1	12.00	4	New construction	
8	359+300	LVUP	1	12.00	4	New construction	
9	354+350	LVUP	1	12.00	4	New construction	
10	365+216	LVUP	1	12.00	4	New construction	
11	368+220	LVUP	1	12.00	4	New construction	
12	370+065	LVUP	1	12.00	4	New construction	

The following photographs were taken during the inspection of the Light Vehicular Underpass.

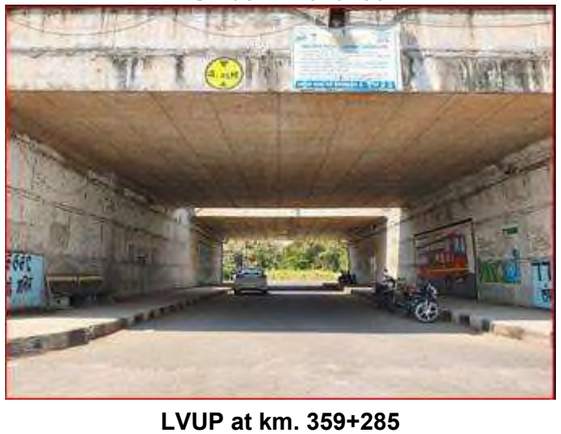
Figure 3-9 Photographs of Light Vehicular Underpass

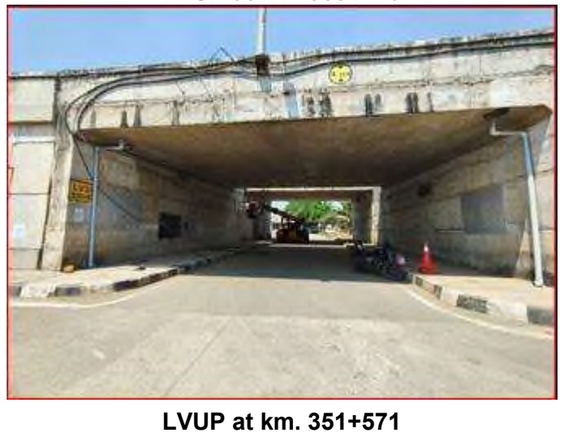

LVUP at km. 370+051

LVUP at km. 368+170

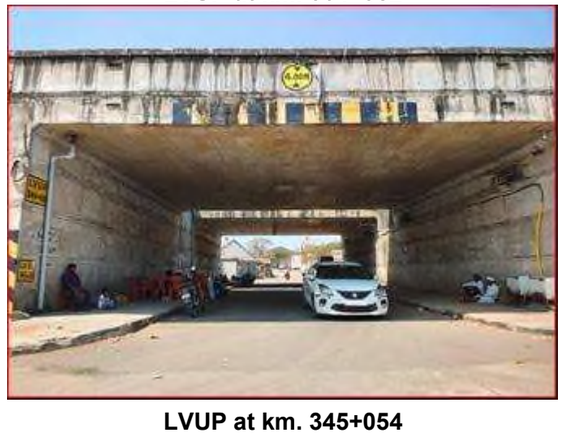

LVUP at km. 364+360

LVUP at km. 364+982


LVUP at km. 359+285


LVUP at km. 351+571

LVUP at km. 348+382


LVUP at km. 345+054

LVUP at km. 338+715

LVUP at km. 337+340

LVUP at km. 339+317

3.4.6 ROB

There was 01 No. of ROB on Project Road at km. 377+800 as per the Concession Agreement. Due to some issues, the Authority has de-scoped the construction of ROB.

Table 3-6 Details of ROB

Sr. No.	Design Chainage (km)	Type of Structure	No. of Span	Span Width (m)	Length (m)	No. of Lane	Construction scheme	TDD Consultant's Remarks
1	377+800	ROB	1	25.00	64.01	4	New Construction on LHS & Re-construction on RHS	De-scoped

3.5 Drainage

Drains are constructed at the Project Road to have good drainage. Covered lined drains are provided at the sides of the service. Median cut drains are provided at superelevation locations. Chute drains are also constructed at a high embankment portion of the Project Road. The drainage condition of Project Road is in order. Silt deposits need to be removed during routine maintenance. Earthen drains are also provided in rural areas. The condition of the same is good to fair.

The photographs taken during the site visit are presented below.

Figure 3-10 Photographs of Drainage

Earthen Drain km. 371+060 (RHS)

Chute Drain provided at slope at km. 364+500 (RHS)

RCC Drain at MCW km.375+000 (RHS)

RCC Drain at Service Road at km. 370+036

3.6 Slope Protection

Slope protection is found on Project Road at some locations. At a few locations, the slope protection is damaged, which needs to be rectified by the Concessionaire.

The photographs taken during the site visit are presented below.

Figure 3-11 Photographs of Slope Protection

Slope Protection at km.364+600 (LHS)

Slope Protection at km. 347+200

3.7 Road Furniture

3.7.1 Pavement Marking

Pavement marking for the Project Road is done as per the design standards. Pavement marking has faded out at some locations which need to be rectified by the Concessionaire.

Some of the photographs of road marking are presented below.

Figure 3-12 Photographs of Road Marking

Pavement Marking km. 326+950 (RHS)

Pavement Marking at km. 322+250 (LHS)

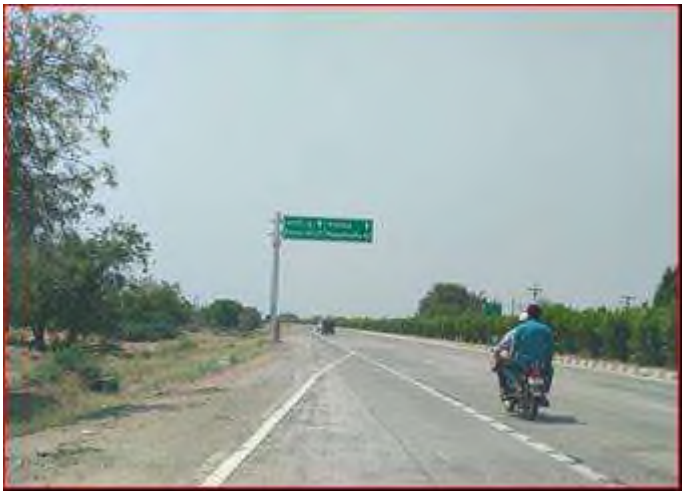
3.7.2 Traffic Signage

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards.

Some of the photographs of traffic signage are presented below.

Figure 3-13 Photographs of Traffic Signage

Hazard Marking Sign board at MNB km. 331+469



Informatory Sign board at km. 363+700 (RHS)

3.7.3 Highway Lighting

Highway Lighting is provided in urban and semi-urban areas of the Project Road. Lighting is provided at the locations of truck lay-bye, bus bay, toll plazas, underpasses, service road stretches and at intersections / interchanges. IS:1944 (Part I and II) is followed for lighting installations. High mast lighting systems are provided at toll plaza.

Some of the photographs taken during site visit are presented below.

Figure 3-14 Photographs of Highway Lighting

Highway Lighting at km. 375+050 (Median)

Highway Lighting at km. 364+600 (Median)

3.7.4 Road Studs / Cat eyes

The Concessionaire has provided cat's eyes / studs as per Schedule-D on the curves, road junctions, zebra crossings, in municipal area and village settlement and ramps etc. to provide the proper visibility to the road users.

Some of the photographs taken during site visit are presented below.

Figure 3-15 Photographs of Road Studs

Road Studs on Project Road at km. 375+005

Road Studs on Project Road at km. 336+600 (RHS)

3.7.5 Pedestrian Guard Rail

The pedestrian guard rails are provided between main carriageway and service road at built-up locations. The pedestrian guard rails are observed to be in good condition.

Some of the photographs taken during site visit are presented below.

Figure 3-16 Photographs of Pedestrian Guard Rail

Pedestrian Guard Rail at km. 337+900 (RHS)

Pedestrian Guard Rail at km. 337+900 (LHS)

3.7.6 Avenue Plantation and Median Plantation

Avenue plantations and median plantation are done along the project length except at built-up locations as per IRC specification. Median Plantation needs proper regular maintenance. Avenue plantation work is provided at required locations.

Some of the photographs taken during site visit are presented below.

Figure 3-17 Photographs of Avenue and Median Plantation

Median Plantation at km. 369+400

Avenue Plantation at km. 371+060 (RHS)

3.7.7 Traffic Signage / Median kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Median kerb paint is found faded at few locations which will be rectified by the Concessionaire.

Some of the photographs of sign boards are presented below.

Figure 3-18 Photographs of Road Signages

Hazard marking signage at km. 375+020

Kerb Painting & Hectometer Stone at km.336+600 (Median)

Speed Camera at km. 371+200

Kerb painting at km. 363+280

RBS stone at km. 372+000 (RHS)

Overhead Gantry on Project Road at km. 336+600 (LHS)

3.7.8 Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site.

Some of the photographs of metal beam crash barriers are presented below.

Figure 3-19 Photographs of MBCB / Crash Barrier

MBCB provided in Shoulder at km. 364+400 (RHS)

MBCB provided at km.339+790 (RHS)

3.7.9 Delineators

The traffic delineators are provided by Concessionaire on the Project Road for road users. The same are maintained by the Concessionaire.

Some of the photographs of delineators are presented below.

Figure 3-20 Photographs of Delineator

Delineators along the Project Road at km. 369+050 & at km. 342+360

3.8 Toll Plaza

As per the Concession Agreement, there is one toll plaza on the Project Road at km. 343+510. The details of the Toll Plaza are as follows.

Table 3-7 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details		Remarks
		LHS	RHS	
1	Number of Tolling Lanes	8	8	
2	Weigh in Motion Facility (Number of Lanes)	8	8	
3	No. of ETC lanes	8	8	
4	No of Toll booths	15		
5	Canopy	Present		
6	Administrative building	Present		
7	Parking cum Toilet box	Present		
8	Availability of Tunnel or Elevated walkaway for movement between Toll lanes and administrative building	Tunnel/Yes		
9	Availability of static weigh bridge	Yes		2 numbers
10	Availability of Loading/Unloading Facility for Overloading vehicles	No		
11	Storage facility for Overloaded material	No		
12	High mast light	Yes		
13	Streetlight	Yes		
14	Low mast light	No		
15	User fee boards	Yes		
16	Cantilever/Gantry boards	Yes		
17	Automatic boom barrier	Yes		

Figure 3-21 Photographs of Toll Plaza

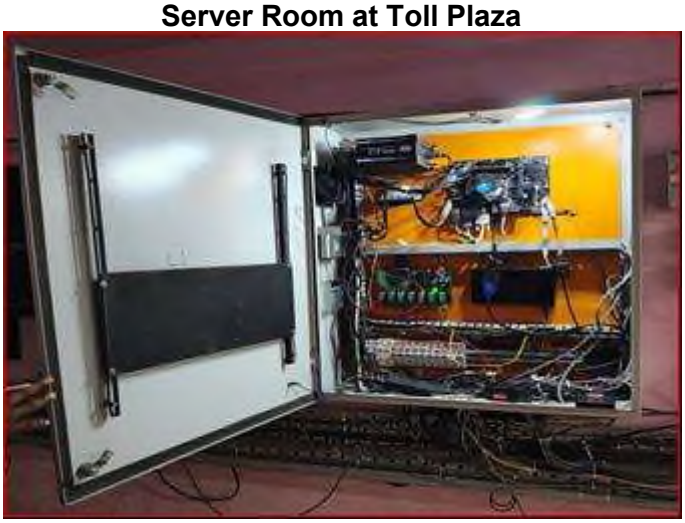
View of Toll Plaza at km. 343+510

Admin Building at Toll Plaza

Control Room at Toll Plaza

Server Room at Toll Plaza

Tunnel at Toll Plaza



Lane Controller at Toll Plaza

Static Weigh Bridge at Toll Plaza

Ambulance at Toll Plaza

Traffic and Medical Aid Post at Toll Plaza

Lab & O&M center at Toll Plaza

3.9 Bus Bays and Passenger Shelters

There are 38 Nos. of bus bays / passenger shelters along the Project Road.

Some of the photographs of the bus bays are presented below.

Figure 3-22 Photographs of Bus Bays / Passenger Shelter

Bus Bay at Basweshwar Nagar at km. 372+100 (RHS)

Bus Bay at km. 342+650 RHS

3.10 Truck Lay Bye

There is 01 Nos. of truck lay bye at km. 349+950 (LHS) constructed and km. 349+950 (RHS) is descope.

Some of the photographs of the truck lay bye are presented below.

Figure 3-23 Photographs of Truck Lay Bye

Truck lay bye at km. 349+950 (LHS)

Toilet Block at Truck lay bye at km. 349+950 (LHS)

3.11 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) installed for the Project Road is controlled by the ATMS center at toll plaza location (km. 343+440). The ATMS is provided and being maintained as per the requirement of the Concession Agreement. The ATMS provided are listed below.

- Automatic Traffic Counter cum Classifier (ATCC)
- Emergency Call Box
- Variable Message Signs System (Fixed/Portable)
- Mobile communication System
- Mobile Radio Communication System
- Integrated ATMS Software and System Architecture
- ATMS Control Center integrated with above sub-components
- Weigh-in-motion (Portable)
- Vehicle actuated speed detection camera.

Status of these systems at site are described below.

3.11.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is installed at Toll Plaza (km. 343+440).

Figure 3-24 Photographs of ATCC

ATCC near Toll Plaza

ATCC at Toll Plaza

3.11.2 Emergency Call Boxes (ECB)

ECB is installed on the Project Road at the locations as per the requirement. Some of the photographs of the ECB are presented below.

Figure 3-25 Photographs of ECB

ECB at km. 371+500 (RHS)

ECB at km. 356+220 (RHS)

3.11.3 Variable Message Signs System

VMS is installed on the Project Road at the locations as per the requirement. Some of the photographs of the VMS are presented below.

Figure 3-26 Photographs of VMS

VMS at km. 371+000

VMS at km. 369+040 (RHS)

3.11.4 CCTV Surveillance Cameras

Surveillance cameras are installed as per CA requirement along the Project Road. The HTMS control room has video wall to monitor these locations through the cameras installed.

Figure 3-27 Photographs of CCTV Surveillance Camera

CCTV at km. 371+500 (LHS)

CCTV at km. 364+400 (Median)

3.12 Video Incident Detection System

CCTV cameras are installed as part of Video incident detection system.

3.13 Balance Work Status

The Concessionaire has received Completion Certificate for the length of 55.800 kms with effective from 01st March 2023. Hence, there is no balance work on Project Road.

3.14 Operation and Maintenances

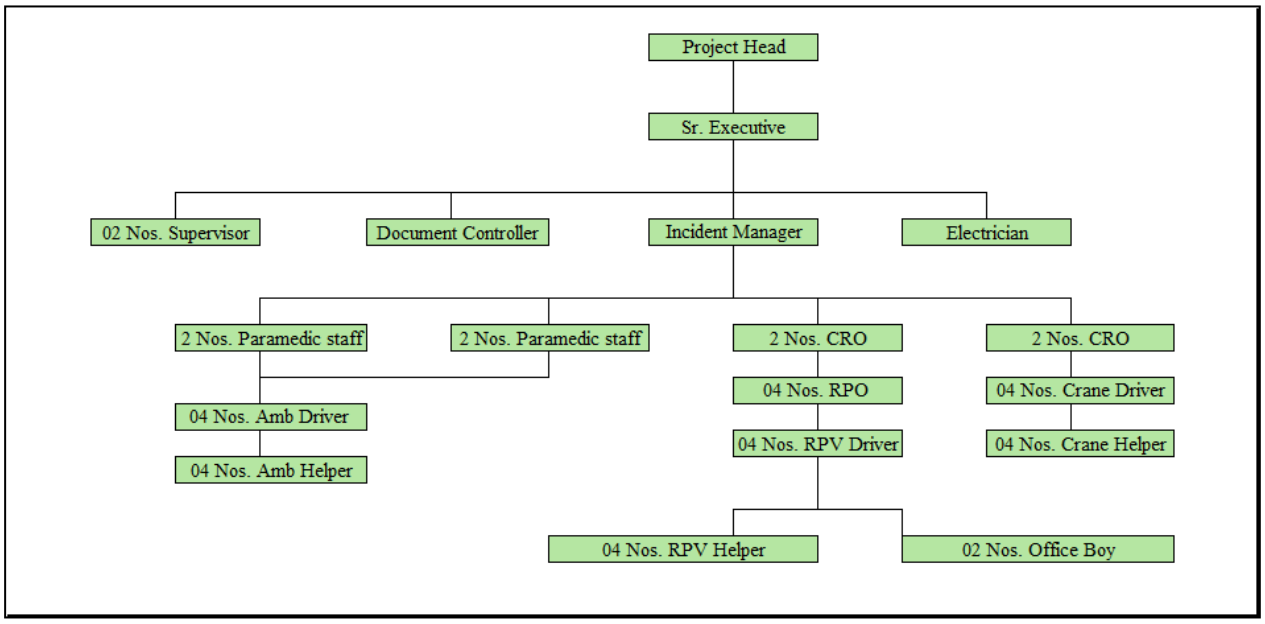
3.14.1 O&M Contract

As per Clause 17.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall conform to all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement. The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including security services, Incident management services.

3.14.2 Organization Chart

The Concessionaire has given the Organization Chart at site for Operation and maintenance. Accordingly, there is 01 Project Head, 01 Senior Executive- Maintenance, 02 Supervisor, 01 Electrician, 01 Incident Manager, 01 Document Controller to carry out O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent subcontractors.

Organization Charts



3.14.3 Operation

Operation cost is comprised of manpower cost, Security cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.14.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Concessionaire as per scope of work. The Concessionaire has received Completion Certificate on 01st March 2023 for the length of 55.800 out of the length project is 56.500 kms (55.80 kms length after descope).

The project is currently under the Operation and Maintenance stage. The concession period of the project is 17 years from the Appointed Date 23rd May 2019 including construction period of 2 years.

4.2 Surveys and Investigation

4.2.1 Pavement Condition Survey

Pavement condition survey was carried out by the Technical Consultant from **7th March 2026 to 8th March 2026** through visual inspection for the project road and for the entire length.

The summary of pavement condition based on the visual inspection is tabulated below.

Table 4-1 Summary of Pavement Condition

Sr. No.	Chainage (km)		Length (km)	Visual Condition (As per IRC:115-2014)	
	From	To		Left Carriageway	Right Carriageway
1	321+600	377+450	55.800	Good	Good

4.2.2 Observation and Conclusion

From the above table, it is observed that the overall pavement condition for the entire project stretch is found to be Good. The repair & rectification work, wherever required, is in progress on the Project Road.

4.2.3 Network Survey Vehicles (NSV) Survey

The Concessionaire has conducted pavement condition survey on each lane of each carriageway with NSV. The NSV survey was conducted on the Project Road from 15th December 2025 to 16th December 2025.

4.2.4 Roughness Survey

Roughness survey results were provided by the Concessionaire for analysis and to assess the riding quality on each direction (each lane) of the carriageway of Project Road.

The side-wise results of Roughness Survey are presented as below.

Table 4-2 Result of Roughness Survey as per CA

Table 1-3 Roughness summary for Rigid pavement as per Schedule

Roughness Summary as per Schedule: NH-166: MSHPL: (1km Data)									
S.no	Condition	BI (mm/km)	LHS				RHS			
			Inner Lane		Outer Lane		Inner Lane		Outer Lane	
			Length (km)	Length (%)	Length (km)	Length (%)	Length (km)	Length (%)	Length (km)	Length (%)
1	Limiting value	<=2750	53.800	96.42	53.600	96.40	53.500	96.40	45.100	82.15
2		>2750	2.000	3.58	2.000	3.60	2.000	3.60	9.800	17.85
Total Surveyed length (km)			55.800	100.00	55.600	100.00	55.500	100.00	55.500	100.00

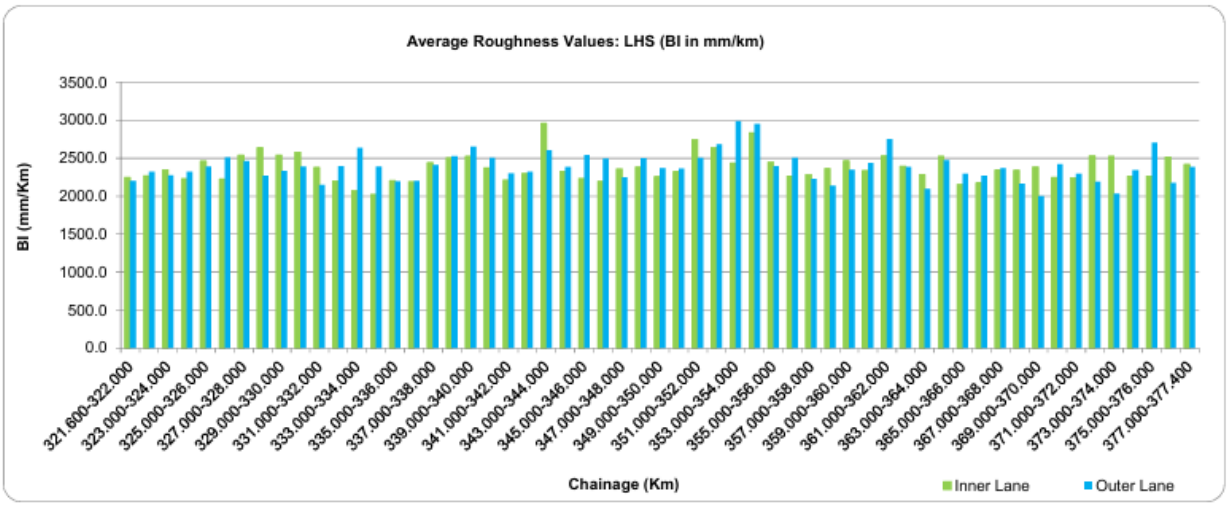


Figure 1-1 Illustrative summary of Roughness on LHS direction

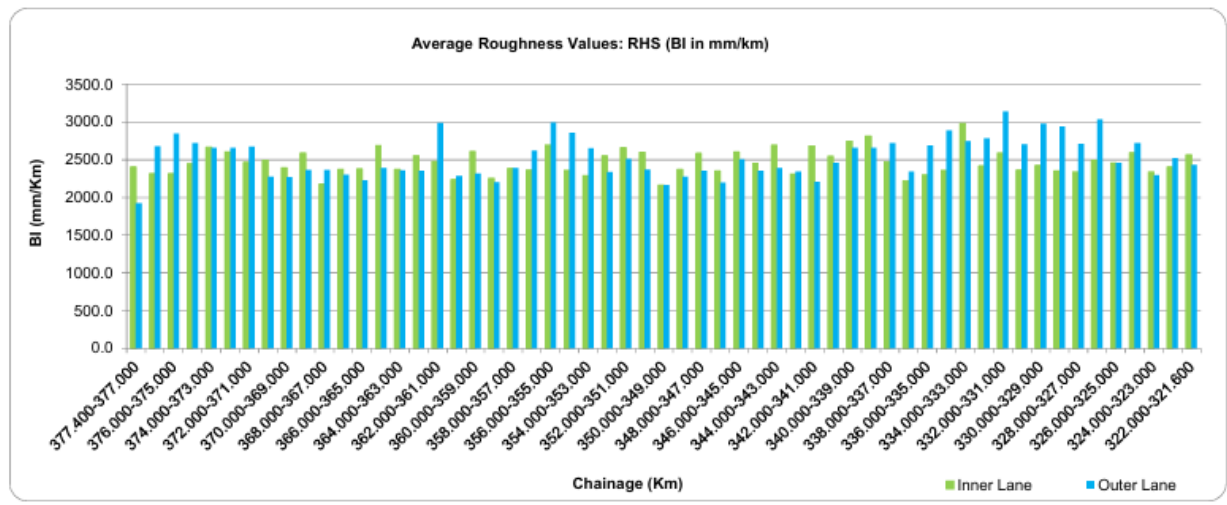


Figure 1-2 Illustrative summary of Roughness on RHS direction

Observation and Conclusion:

As per the Concession Agreement (CA), the specified roughness value for the project is 2750 mm/km. Based on this criterion, the overall pavement condition of the entire project stretch is assessed to be in Good to Fair condition, except for a stretch of 4.00 km.

The increase in roughness values at several locations is primarily attributed to the presence of rumble strips and ongoing maintenance activities at the site. The

Concessionaire has already initiated the PQC panel replacement work at these locations. The cost associated with the PQC panel replacement is being accounted under routine maintenance.

4.2.5 Periodic Maintenance Strategy

As per Schedule-K of Concession Agreement, the riding quality of the pavement shall be ensured by satisfying the minimum requirements given herein under:

1. Surface roughness of the Project Road on completion of construction shall not exceed 2750 mm/km as measured by a standard rough meter / bump integrator.

   The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-3 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2023 to FY 2028	-	-
2	FY 2029	Major maintenance with Re-texturing and Grinding with 40% + Replacement of PQC Panel 2%	Major maintenance with Re-texturing and Grinding with 25% + Replacement of PQC Panel 1%
3	FY 2030 to FY 2035	-	-
4	FY 2036	Major maintenance with Re-texturing and Grinding with 60% + Replacement of PQC Panel 2%	Major maintenance with Re-texturing and Grinding with 25% + Replacement of PQC Panel 1%
5	FY 2037	-	-

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Work Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

Unit rates of different items (Concrete, PQC, DLC etc.) are calculated as per Govt. of Maharashtra P.W.D. SSR 2022-23. The input rates for SSR were adopted as below.

a. **Manpower and Labour:** As per applicable minimum wages published by State Schedule of Rates, Government of Maharashtra.

b. **Sand and Aggregate:** Market rates are considered from the quarry located nearest to the Project Road.

c. Cement: Rate of Cement is taken from MH SSR 2022-23.

d. Steel : Rate of steel is taken from MH SSR 2022-23.

e. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable MH SSR 2022-23.

f. **Rates of items as per Work Order:** The rates of Milling, Road marking, road Stud etc. are considered as per the Work Order issued to Contractor at Site shared by the client.

1. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-1 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Pavement Quality Concrete	Cum	7,381
2	Dry Lean Concrete	Cum	4,381
3	Retexturing and grinding	Sqm	120
4	Joint sealant	Sqm	86
5	Road Marking	Sqm	485
6	Road Studs	Nos.	193

5.3 Balance Work Cost (CAPEX)

As discussed in the previous chapter, there is no balance work in the Project Highway.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have been made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Toll Security Services
3. Incident Management Services
4. Electricity
5. HTMS Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Community Development
10. Communication Expenses
11. Conveyance Expenses
12. Insurance Expense
13. IE Fees
14. Horticulture & ROW Maintenance
15. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation Cost is presented as below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-2 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027-36)
1	Salary and Welfare Expenses	74,10,600
2	Security Expenses	15,81,826
3	Incident Management & Emergency Services	2,03,07,859
4	Electricity Charges	2,78,92,216

Sr. No.	Particulars	Amount (FY 2027-36)
5	TMS / HTMS / System Expenses	1,13,09,361
6	Office Operating Expenses	35,73,625
7	Vehicle Running Expenses	25,53,000
8	Professional Fees Expense	1,62,43,750
9	Community Development	16,24,375
10	Communication Expenses	3,96,348
11	Conveyance Expenses	4,22,338
12	Insurance Expense	92,00,460
13	IE Fees	1,36,73,000
14	Routine Maintenance Cost (Project Road)	2,20,27,461
15	Horticulture & ROW Maintenance	1,81,72,944
16	Miscellaneous including Contingency	46,47,550
	Total Cost (Rs.)	**16,10,36,712**
	Total Cost (Cr.)	**16.10**
	Per km Cost (in Lakhs)	28.50

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2023 to FY 2028	-	
2	FY 2029	27.83	
3	FY 2030 to FY 2035	-	
4	FY 2036	32.68	
5	FY 2037	-	
Total Cost (Cr.)		**60.52**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2029	4.51	
2	FY 2036	4.51	
Total Cost (Cr.)		**9.02**	

5.7 Escalation Assumptions

The following escalation is considered basis discussions with Client and our internal estimates.

Table 5-3 Escalation

Year	Escalation	Year	Escalation
2028	4.86%	**2041**	3.99%
2029	4.44%	**2042**	3.99%
2030	4.24%	**2043**	3.99%
2031	4.13%	**2044**	3.99%
2032	4.08%	**2045**	3.99%
2033	4.01%	**2046**	3.99%
2034	4.00%	**2047**	3.99%
2035	4.03%	**2048**	3.99%
2036	4.01%	**2049**	3.99%
2037	3.98%	**2050**	3.99%
2038	3.98%	**2051**	3.99%
2039	4.00%	**2052**	3.99%
2040	3.99%	**2053**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summarised yearly for remaining concession period along with escalation as mentioned in Clause 5.7.

Escalated O&M Cost (in INR Cr.)

	Year of expense	FY 27	FY 28	FY 29	FY 30	FY 31	FY 32	FY 33	FY 34	FY 35	FY 36	FY 37
1	Routine O&M Cost											
1.01	Salary and Welfare Expense	0.74	0.78	0.81	0.85	0.88	0.92	0.96	1.00	1.04	1.08	1.12
1.02	Security Expenses	0.16	0.17	0.17	0.18	0.19	0.20	0.20	0.21	0.22	0.23	0.24
1.03	Incident Management Services	2.03	2.13	2.23	2.33	2.42	2.52	2.62	2.73	2.84	2.95	3.07
1.04	Electricity and Diesel Charges	2.79	2.93	3.06	3.19	3.33	3.46	3.60	3.75	3.90	4.05	4.21
1.05	TMS / HTMS / System Expenses	0.52	0.68	-	0.22	0.23	0.24	0.42	0.69	0.90	-	0.29
1.06	Office Operating Expenses	0.36	0.37	0.39	0.41	0.43	0.44	0.46	0.48	0.50	0.52	0.54
1.07	Vehicle Running Expenses	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.37	0.39
1.08	Professional Fees Expense	1.62	1.70	1.78	1.86	1.94	2.02	2.10	2.18	2.27	2.36	2.45
1.09	Community Development	0.16	0.17	0.18	0.19	0.19	0.20	0.21	0.22	0.23	0.24	0.25
1.10	Communication Expenses	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06
1.11	Conveyance Expenses	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06
1.12	Insurance Expense	0.92	0.97	1.01	1.05	1.10	1.14	1.19	1.24	1.29	1.34	1.39
1.13	IE Fees	1.37	1.43	1.50	1.57	1.63	1.70	1.77	1.84	1.91	1.99	2.07
1.14	Routine Maintenance Cost	2.20	2.31	2.42	2.52	2.63	2.73	2.84	2.96	3.08	3.20	3.33
1.15	Horticulture & ROW Maintenance	1.82	1.91	1.99	2.08	2.17	2.26	2.35	2.44	2.54	2.64	2.75
1.16	Miscellaneous and Contingency	0.44	0.47	0.46	0.49	0.51	0.53	0.56	0.59	0.62	0.61	0.65
1	Subtotal of O&M Cost	15.46	16.37	16.39	17.33	18.04	18.78	19.71	20.77	21.79	21.69	22.86
2	Major Maintenance Cost	-	-	30.42	-	-	-	-	-	-	46.88	-
3	Periodic Cost of TMS/HTMS Replacement	-	-	4.95	-	-	-	-	-	-	6.56	-
4	Balance Works Cost (COPEX)	-	-	-	-	-	-	-	-	-	-	-
	Balance Repair / Rectification Works	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**15.46**	**16.37**	**51.76**	**17.33**	**18.04**	**18.78**	**19.71**	**20.77**	**21.79**	**75.12**	**22.86**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Ordinary Repair Cost for Flexible (with GST)	**2,20,27,461**
(Inclusive of GST)	**= 3.95 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways - Rigid Pavement									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m/2m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Rigid Pavement**		**Project Length (km)**		**Per Year Project Maintenance Cost**	
				Normal	**Urban**				
				More than 4500 CVD	More than 4500 CVD				
				1,62,662	**1,97,915**				
						Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	248873.00	302811.00	-	-	-	-
		Paved shoulder	1.70	276526.00	336456.00	39.96	-	1,10,48,928	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	325325.00	395831.00	-	-	-	-
		Paved shoulder	2.20	357857.00	435414.00	-	0.64	-	2,78,665
3	Six lane with divided carriageway and service lane on either side	without Paved shoulder	2.90	471721.00	573955.00	-	-	-	-
		with Paved shoulder	3.10	504253.00	613538.00	-	15.20	-	93,28,109
TOTAL						**55.800**		**2,06,55,702**	

Ordinary Repairs

Details of Ordinary Repair in Rs. for one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				CC Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	0.00%
	Volume (cum)			0.00
	Rs/m^3			15635
	Cost in Rupees			0
	ii) Patch repair	100 % Patch less	As & when required	0.00%
	Area (sqm)			10
	Rs/m^2			625
	Cost in Rupees			6,254
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			107
	Cost in Rupees			26,845
	b) Width less than 3 mm	75 % Crack Less	As & when required	1.50%
	Area (sqm)			112.5
	Rs/m^2			81
	Cost in Rupees			9,160
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	0.00%
	Area (sqm)			10
	Rs/m^2			625
	Cost in Rupees			6,254
	v) Road marking	10%		13737

Details of Ordinary Repair in Rs. for one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				CC Surface
1	**2**	**3**	**4**	**5**
	vi) Joint Sealant Repair/Replacement	7%		21609
	SUB TOTAL			**83,859**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Jungle Clearance	100%	Twice in a Year	2069
	iii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**9,483**
3	**Maintenance of Cross Drainage works:**			
	i) Cleaning of culvert bed	100%	Once in a Year	2793
	ii) Repair of floors	100%	Once in a Year	5055
	iii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			**9,954**
4	**Maintenance of Minor & Major Bridges:**			
	i) Cleaning and removal of dirt & vegetation from pier caps, Bearings, Expansion Joints, Superstructure, Substructure and Retaining wall etc.	100%	As & when required	36,950
	ii) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints			
	iii) Repair of minor washouts, erosion scour and animal holes			
	iv) Sealing Cracks with Cement/ Epoxy Mortar			
	v) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Turfing and Arboriculture		Once in a Year	4926
	ii) Maintenance of gang hut store, sheds, animal & debris		Once in a Year	3695

Details of Ordinary Repair in Rs. for one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **CC Surface**
1	**2**	**3**	**4**	**5**
	removal			
	iii) Lettering, Painting of Km stones & kerbs, sign boards, hectometer stone etc.		Once in a Year	3695
	iv) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 5 Years	7390
	v) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232
	vi) Traffic Census		Once in a Year	0
	vii) Provision for roughness measurement		Twice in a Year	1478
	SUB TOTAL			**22,416**
	GRAND TOTAL (Normal)			**1,62,662**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	10%		5447
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**35,253**
	GRAND TOTAL (Urban)			**1,97,915**

ANNEXURE II - MAJOR MAINTENANCE COST

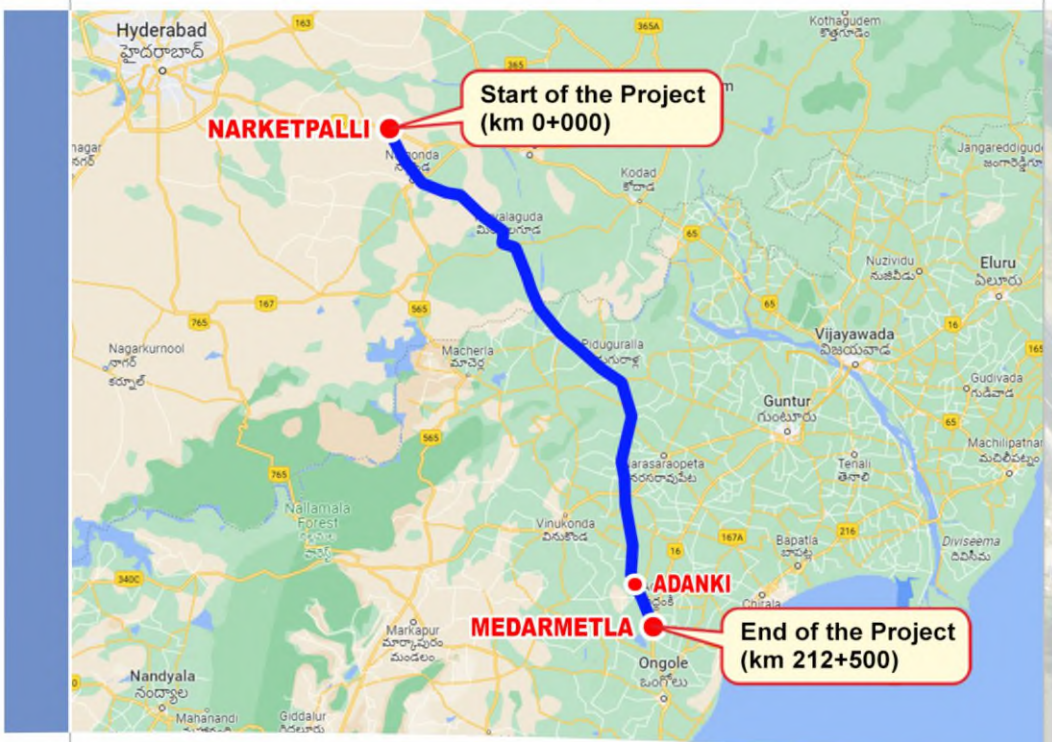
Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
A	**Main Carriageway**									
1	Retexturing and Grinding	Sqm	40%	54,728	20.40		4,46,554	4,46,554	120	5,35,86,538
2	Replacement of PQC Slab	Cum	2%	54,728	20.40	0.30	6,698	6,698	10,492	7,02,78,744
3	Joint sealant (Silicone)	RMT	40%	70,882	4.50	3.50	2,26,821	2,26,821	86	1,95,63,339
4	Retexturing and Grinding For Misc. Location	Sqm	7%	4,46,554			31,259	31,259	120	37,51,058
5	Replacement of PQC Slab For Misc. Location	Cum	7%	6,698			469	469	10,492	49,19,512
6	Joint sealant (Silicone) For Misc. Location	RMT	7%	2,26,821			15,877	15,877	86	13,69,434
7	Filling of Earthen shoulder	Cum	20%	1,48,560.80		0.05	1,486	1,486	601	8,92,850
B	**Service Road**									
8	Retexturing and Grinding	Sqm	25%	30,006	7.50		56,261	56,261	120	67,51,260
9	Replacement of PQC Slab	Sqm	1%	30,006	7.50	0.25	563	563	10,492	59,02,852
10	Joint sealant (Silicone)	Cum	25%	14,288	4.50	3.50	28,577	28,577	86	24,64,746
C	**Structure- Deck Slab**									
11	Milling	Sqm	100%	1,072	27.00		28,944	28,944	93	26,96,134
12	Tack Coat	Sqm	100%	1,072	27.00		28,944	28,944	17	4,92,048
13	Bituminous Concrete	Cum	100%	1,072	27.00	0.05	1,447	1,447	13,316	1,92,70,915
14	Painting of Crash Barrier	Rmt	2.00	1,072	1.00	1.20	2,573	2,573	111	2,85,581
D	**Miscellaneous**									
15	Kerb Replacement	Rmt	0%	1,39,462			-	-	311	-
16	Painting of Kerbs	Sqm	1	1,39,462		0.32	43,930	43,930	111	48,76,275
17	Painting of Crash Barrier	Sqm	2	14,132		1.12	31,514	31,514	111	34,98,044
18	Thermoplastic paint									
	a) Median & Edge line	Sqm	100%				46,751	46,751	485	2,26,88,321
	Main Carriageway 4L		4	40,596	0.15		24,358			
	Main Carriageway 6L		4	15,204	0.15		9,122			
	Service Road		2	15,003	0.10		3,001			
	b) Lane line									
	Main Carriageway 4L		2	14,209	0.10		2,842			
	Main Carriageway 6L		4	5,321	0.10		2,129			

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Service Road		2	5,251	0.10		1,050			
	c) Junction crossing						4,250			
19	Replacement of Road Stud	No	50%				7,038	7,038	193	13,59,742
	Main Carriageway 4L		4	2,256			9,024			
	Main Carriageway 6L		4	846			3,384			
	Service Road		2	834			1,668			
20	Miscellaneous	5%								1,12,32,370
Total Major Maintenance Cost (Rs.)										**23,58,79,761**
Total Major Maintenance Cost with 18% GST (Rs.)										**27,83,38,118**
Total Major Maintenance Cost with GST (Cr.)										**27.83**
Per km Cost (lakh)										**49.88**
Escalation Factor for Major Maintenance Cost (FY 2029)										**1.10**
Total Escalated Cost for Major Maintenance (FY 2029) (Cr.)										**30.42**

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
A	**Main Carriageway:**									
1	Retexturing and Grinding	Sqm	60%	54,728	20.40		6,69,832	6,69,832	120	8,03,79,806
2	Replacement of PQC Slab	Cum	2%	54,728	20.40	0.30	6,698	6,698	10,492	7,02,78,744
3	Joint sealant (Silicone)	RMT	60%	70,882	4.50	3.50	3,40,232	3,40,232	86	2,93,45,009
4	Retexturing and Grinding For Misc. Location	Sqm	7%		6,69,832		46,888	46,888	120	56,26,586
5	Replacement of PQC Slab For Misc. Location	Cum	7%		6,698		469	469	10,492	49,19,512
6	Joint sealant (Silicone) For Misc. Location	RMT	7%		3,40,232		23,816	23,816	86	20,54,151
7	Filling of Earthen shoulder	Cum	20%		1,48,560.80	0.05	1,486	1,486	601	8,92,850
B	**Service Road**									
8	Retexturing and Grinding	Sqm	25%	30,006	7.50		56,261	56,261	120	67,51,260
9	Replacement of PQC Slab	Sqm	1%	30,006	7.50	0.25	563	563	10,492	59,02,852
10	Joint sealant (Silicone)	Cum	25%	14,288	4.50	3.50	28,577	28,577	86	24,64,746
C	**Structure- Deck Slab**									

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
11	Milling	Sqm	100%	1,072	27.00		28,944	28,944	93	26,96,134
12	Tack Coat	Sqm	100%	1,072	27.00		28,944	28,944	17	4,92,048
13	Bituminous Concrete	Cum	100%	1,072	27.00	0.05	1,447	1,447	13,316	1,92,70,915
14	Painting of Crash Barrier	Rmt	2.00	1,072	1.00	1.20	2,573	2,573	111	2,85,581
D	**Miscellaneous**									
15	Kerb Replacement	Rmt	0%	1,39,462			-	-	311	-
16	Painting of Kerbs	Sqm	1	1,39,462		0.32	43,930	43,930	111	48,76,275
17	Painting of Crash Barrier	Sqm	2	14,132		1.12	31,514	31,514	111	34,98,044
18	Thermoplastic paint									
	a) Median & Edge line	Sqm	100%				46,751	46,751	485	2,26,88,321
	Main Carriageway 4L		4	40,596	0.15		24,358			
	Main Carriageway 6L		4	15,204	0.15		9,122			
	Service Road		2	15,003	0.10		3,001			
	b) Lane line									
	Main Carriageway 4L		2	14,209	0.10		2,842			
	Main Carriageway 6L		4	5,321	0.10		2,129			
	Service Road		2	5,251	0.10		1,050			
	c) Junction crossing						4,250			
19	Replacement of Road Stud	No	50%				7,038	7,038	193	13,59,742
	Main Carriageway 4L		4	2,256			9,024			
	Main Carriageway 6L		4	846			3,384			
	Service Road		2	834			1,668			
20	Miscellaneous	5%								1,31,89,129
Total Major Maintenance Cost (Rs.)										**27,69,71,704**
Total Major Maintenance Cost with 18% GST (Rs.)										**32,68,26,611**
Total Major Maintenance Cost with GST (Cr)										**32.68**
Per km Cost (lakh)										**58.57**
Escalation Factor for Major Maintenance Cost (FY 2036)										**1.45**
Total Escalated Cost for Major Maintenance (FY 2036) (Cr.)										**46.88**

FP Project Management



Technical Due Diligence of Narketpally - Addanki - Medarametla (NAMEL) Section (from km. 0+000 to km. 212+500) of SH-2 in the State of Andhra Pradesh and Telangana on DFBOT mode

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited

315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025
Tel: +91-22-6660 3901
e-mail: pfmumbai@fpindia.com www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	13-May-2026	TSM / RB / STP	RMW	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location of the Project Road 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.2 Pavement Condition Survey 7
3.3 Service Road / Slip Road 8
3.4 Major / Minor Intersection 9
3.5 Condition Survey of Bridge 11
3.5.1 Underpasses 17
3.5.2 ROB 18
3.6 Condition Survey of Culvert 20
3.7 Drainage 22
3.8 Slope Protection 22
3.9 Road Furniture 23
3.10 Avenue Plantation and Median Plantation 29
3.11 Toll Plaza 30
3.12 Lane Equipment 32
3.12.1 RFID ETC Transceiver 33
3.12.2 Lane Controller with Industrial PC 33
3.12.3 Automatic Vehicle Classification (AVC) Sensors 34

3.12.4 Automatic Lane Barrier 34
3.12.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 34
3.12.6 Incident Capture Camera (AVC Camera) 35
3.12.7 License Plate Image Capture Camera (LPIC) 35
3.12.8 Over Head Lane Signal (OHLS) 35
3.12.9 Toll Booth Equipment 36
3.12.10 Weigh in Motion (MSWIM) 36
3.13 Plaza Equipment 37
3.13.1 TMS Server 37
3.13.2 55" LED screen for CCTV monitoring 37
3.13.3 Workstations in Control Room, POS room 38
3.14 Advanced Traffic Management System (ATMS) 38
3.14.1 Automatic Traffic Counter cum classifier (ATCC) 39
3.14.2 Mobile Radio communication System (MRCS) 39
3.14.3 Emergency Call Boxes (ECB) 39
3.14.4 MET System 39
3.14.5 Variable Message Signboards (VMS) 39
3.14.6 CCTV Surveillance Cameras 40
3.14.7 Video Incident Detection System 40
3.14.8 Adequacy of Toll Collection System and ATMS 41
3.15 Truck Lay-bye 41
3.16 Bus Bays and Passenger Shelters 41
3.17 Balance Work Status 42
3.18 Operation and Maintenance 43
4 Pavement Investigation and Assessment 46
4.1 General 46
4.2 Surveys and Investigation 46
4.3 Axle Load and VDF 46
4.4 Design Traffic 47
4.5 Network Survey Vehicles (NSV) Survey 48
4.6 FWD Survey 50
4.7 Periodic Maintenance Strategy 51
5 Cost Estimates 53
5.1 General 53
5.2 Rate Assumption 53
5.3 Balance Work Cost (CAPEX) 55
5.4 Routine O&M Cost 55

5.5 Major Maintenance Cost....56
5.6 Periodic Replacement of TMS /System....56
5.7 Escalation Assumption....57
5.8 Summary of Cost....57
Annexures....59
Annexure I - Routine Maintenance Cost....60
Annexure II - Major Maintenance Cost....64

List of Tables

Table 3-1 Details of Summary for Structures 11
Table 3-2 Details of New Minor Bridges 12
Table 3-3 Details of Major Bridges 14
Table 3-4 Details of Public Underpasses 17
Table 3-5 Details of ROB 18
Table 3-6 Details of Summary for Toll Plaza Items 30
Table 4-1 Vehicle Damage Factor 46
Table 4-2 MSA Calculation 47
Table 4-3 Result of Roughness Survey 48
Table 4-4 Major Maintenance Cycle 52
Table 4-5 Major Maintenance Strategy 52
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 53
Table 5-2 Summary of Unit Rates 54
Table 5-3 Summary of Operation Cost 56
Table 5-4 Escalation 57

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start of the Project Road 5
Figure 2-3 End of the Project Road 5
Figure 3-1 Photographs of Pavement Condition (Main Carriageway) 7
Figure 3-2 Photographs of Service Road / Slip Road 9
Figure 3-3 Photographs of Major Junctions 10
Figure 3-4 Photographs of Minor Junctions 10
Figure 3-5 Photographs of Minor Bridges 13
Figure 3-6 Photographs of Major Bridges 15
Figure 3-7 Photographs of Public Underpass 17
Figure 3-8 Photographs of ROB 18
Figure 3-9 Photographs of Box Culverts / Hume Pipe Culverts 21
Figure 3-10 Photographs of Drainage 22
Figure 3-11 Photographs of Slope Protection 23
Figure 3-12 Photographs of Pavement Marking 23
Figure 3-13 Photographs of Road Studs 24
Figure 3-14 Photographs of Traffic Signages 25
Figure 3-15 Photographs of Highway Lighting 27
Figure 3-16 Photographs of Crash Barrier 28
Figure 3-17 Photographs of Delineator 29
Figure 3-18 Photographs of Pedestrian Guard Rail 29
Figure 3-19 Photographs of Avenue Plantation and Median Plantation 30
Figure 3-20 Photographs of Toll Plaza 31
Figure 3-21 Photographs of ECB 39
Figure 3-22 Photographs of CCTV Surveillance Camera 40
Figure 3-23 Photographs of CCTV Surveillance Camera 40
Figure 3-24 Photographs of Truck Lay-bye 41
Figure 3-25 Photograph of Bus Bay / Passenger Shelter 42

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an infrastructure investment trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed M/s. **FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Narketpally - Addanki - Medarametla (NAMEL) section of SH-2 from km. 0+000 to km. 212+500 in the State of Andhra Pradesh and Telangana under Public Private Partnership on DBFOT (Toll) basis (hereinafter referred as "Project Road").

N.A.M. Expressway Limited Hyderabad, (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance, and transfer of Narketpally - Addanki - Medarametla (NAMEL) section of SH-2 from km. 0.000 to km. 212.500 or Project Road under DBFOT mode. The project was awarded to Concessionaire on 23rd July 2010 with a concession period of 24 years (from Appointed Date including 30 months construction period) by National Highway Authority of India (NHAI). The length of Project Road is 212.860 kms with three Nos. of toll plaza at km. 41+200, km. 110+000 and km. 168+000.

Accordingly, the Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting technical due diligence of Project Road is presented below.

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, Punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, Axle Load, material investigations etc.
- Formulation of future major maintenance strategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Annual Routine Maintenance and Major Maintenance forecast for all projects till the end of concession period (considering the traffic projections presented in the traffic study reports).
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period.
- Review of balance work cost for Project Road including estimation of quantities and item rates.

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our proposed team consists of well-qualified Engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client Technical Study.

The technical study shall include review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement survey conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project as per the contract and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams are expected to carry out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection.
- The information like material sources and the probable cost is collected for the purpose of cost estimates.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity are gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the Consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyse the same as per the best engineering / industry practices.

The site visit and inspection for the reconnaissance, road inventory and condition survey were carried from **16th March 2026** to **19th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies**.**

Chapter 2 **Project Description:** The chapter describes existing project features, and overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit**.**

Chapter 4 **Pavement Investigation and Assessment:** This chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance

Chapter 5 **Cost Estimates**: This chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India had signed the Concession Agreement with **N.A.M. Expressway Limited**, is a company promoted by Cube Highways or company a Special Purpose Vehicle (SPV) formed for implementing this Project on 23rd July 2010. The Appointed Date for the Project Road is 18th January 2011. The Supplementary Agreement was also executed on 27th January 2016.

The Project Road is being developed through PPP mode on DBFOT (Design, Built, Finance, Operate and Transfer) with concession period of 24 years from the Appointed Date.

2.2 Location of the Project Road

The Project Road is a State Highway No. 2 of Narketpally - Addanki - Medarametla section in the state of Andhra Pradesh and Telangana. The total length of Project Road is 212.860 kms.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map

The Photographs taken during the site visit are presented as below.

Figure 2-2 Start of the Project Road

Figure 2-3 End of the Project Road

2.3 Climate

Summer temperature of project area reaches as high as 44 °C (111 °F) (March - May) has the highest temperatures but these are usually followed by monsoon rains and the annual average rainfall 794.5 mm receiving both northeast and southwest monsoons. The winter season (from November / to February) is the most enjoyable with a pleasant climate. Winter months are usually dry, with little to no rainfall. The average annual temperature is 24.5 °C. Cyclones may occur at any time of the year, but occur more commonly in the period from October to December.

2.4 Terrain

This section of State Highway traverses through plain / rolling terrain.

2.5 Abutting Land Use

The land used along Project Road is predominantly agriculture with intermittent built-up settlements.

2.6 Right of Way

The width of the existing Right of Way (Row) for the Project Road varies from 30.0 m to 35.0 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services located along the Project Road were shifted to the PROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, etc.

2.8 Development as per Schedule-B

The Project Road from Narketpally (km. 0+000) to Medarametla (km. 212+500) has been developed as a four-lane divided carriageway with other facilities such as service road, toll plaza, truck lay-bye, bus bays and other arrangements. The Project Road passes through rural as well as built up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Tolling, operation, management, maintenance, and transfer of the Project Road subject to and in accordance with the provisions of this Agreement; and

b) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of this Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Concessionaire under this Agreement.

Following is the Scope of Work as per Schedule B of the Concession Agreement.

Sr. No.	Description	Unit	Scope	Remarks
1	Construction of Main Carriageway	km	212.860	
2	Construction of Service Road	km	25.5	
3	Construction of Major Bridges	Nos.	7	
4	Construction of ROB	Nos.	2	
5	Construction of Minor Bridges	Nos.	46	
6	Improvement of Major Junction	Nos.	5	
7	Improvement of Minor Junction	Nos.	34	

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 8.75 m with an earthen shoulder of 1.0 m to 1.5 m on either side. The Project Road has a median width of 1.5 m to 4.5 m throughout its length. The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the toll plaza including taper is of rigid pavement.

3.2 Pavement Condition Survey

The pavement condition survey was carried out from **16th March 2026 to 19th March 2026** through visual inspection for the entire project length. From the visual inspection, the pavement condition of the entire project road is found to be Good to fair. During the site visit, some cracks and rutting were observed at few locations. The Concessionaire is carrying out major maintenance and routine maintenance for Project Road which is witnessed during the site visit.

The photographs taken during the site visit are presented below.

Figure 3-1 Photographs of Pavement Condition (Main Carriageway)

Pavement Condition at km. 2+150 (RHS)

Pavement Condition at km. 16+630 (LHS)

Pavement Condition at km. 50+990 (RHS)

Pavement Condition at km. 91+090 (RHS)

Pavement Condition at km. 96+800 (LHS)

Pavement Condition at km. 123+600 (LHS)

Pavement Condition at km. 129+300 (LHS)

Pavement Condition at km. 154+510 (RHS)

3.3 Service Road / Slip Road

The service road / slip road of width 3.75 / 5.50 m is constructed at built-up locations and at adjoining underpass locations. The service road / slip road is provided for total length of 25.50 kms as per Concession Agreement.

The photographs taken during the site visit are presented below.

Figure 3-2 Photographs of Service Road / Slip Road

Pavement Condition at km. 100+120 (RHS)

Pavement Condition at km. 61+000 (RHS)

Pavement Condition at km. 74+100 (RHS)

Pavement Condition at km. 77+700 (LHS)

Pavement Condition at km. 100+120 (RHS)

Pavement Condition at km. 137+000 km (LHS)

3.4 Major / Minor Intersection

There are 05 nos. of major junctions and 35 nos. of minor junctions along Project Road. The photographs taken during the site visit are presented below.

Figure 3-3 Photographs of Major Junctions

Major Junction at km. 34+875

Major Junction at km. 0+900

Major Junction at km. 61+000

Major Junction at km. 141+845

Figure 3-4 Photographs of Minor Junctions

Minor Junction at km. 91+090 LHS

Minor Junction at km. 113+650

Minor Junction at km. 120+950

3.5 Condition Survey of Bridge

The inventory of structures including major bridges, minor bridges, underpass and culverts is presented in table below:

Table 3-1 Details of Summary for Structures

Sr. No.	Particulars	Unit	Total Number of Structures as per site
1	Road Over Bridge (ROB)	Nos.	02
72	Road Under Bridge (RUB)	Nos.	02 (Not in the scope of Concessionaire)
3	Flyover	Nos.	02 (Not in the scope of Concessionaire)
4	Major Bridge	Nos.	05
5	Minor Bridge	Nos.	53
6	Vehicular Underpass (PUP)	Nos.	10
7	Light Vehicular Underpass	Nos.	-
8	Slab Culverts	Nos.	58
9	Box Culverts	Nos.	49
10	Hume Pipe Culverts	Nos.	323

All major structures and CD works were visually inspected. The structures are generally sufficient for storm water drainage. The waterway needs regular cleaning. All the old bridges are 2-lane and widened to 2 additional lanes. Generally, the structures have open foundation. At few bridges, approach settlement and pavement cracks were observed. New bridges are constructed with 2-lane with footpath keeping a provision of converting into 3-lane configuration in future. The wearing course and expansion joints are found satisfactory. The crash barriers are of RCC type and are in sound condition. The return walls are of RCC type and pitching has been provided in all bridges.

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-2 Details of New Minor Bridges

Sr. No.	Type of Structure	Chainage (km)	Size	Length of Structure (m)	Type of Construction	FPPM Comments
1	Minor Bridge	05+955	6 x 2.10	12.60	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
2	Minor Bridge	06+029	12 x 2.12	25.44	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
3	Minor Bridge	09+275	2 x 6.40	12.80	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
4	Minor Bridge	11+592	2 x 7.40	14.80	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
5	Minor Bridge	16+721	3 x 7.85	23.55	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
6	Minor Bridge	16+978	3 x 3.50	10.50	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
7	Minor Bridge	17+372	2 x 7.85	15.70	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
8	Minor Bridge	30+844	2 x 4.40	8.80	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
9	Minor Bridge	34+345	3 x 6.35	19.05	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
10	Minor Bridge	35+210	3 x 7.00	21.00	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
11	Minor Bridge	41+710		13.50	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
12	Minor Bridge	48+231	3 x 4.40	13.20	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
13	Minor Bridge	50+919	5 x 8.75 + 2 x 9.70	63.15	Concentric widening	Overall structure, pavement, railing is in good condition on LHS new structure & RHS is Old Structure.
14	Minor Bridge	56+325	2 x 5.40	10.80	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
15	Minor Bridge	58+774	4 x 3.50	14.00	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
16	Minor Bridge	67+331	5 x 7.75	38.75	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
17	Minor Bridge	68+206	3 x 9.40	28.20	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
18	Minor Bridge	70+290	3 x 7.30	21.90	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
19	Minor Bridge	73+474	10 x 3.50	35.00	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
20	Minor Bridge	77+924	3 x 3.80	11.40	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
21	Minor Bridge	82+752	3 x 7.35	22.05	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
22	Minor Bridge	89+524	3 x 3.00	9.00	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
23	Minor Bridge	93+359	8 x 3.00	24.00	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
24	Minor Bridge	96+370	4 x 3.80	15.20	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
25	Minor Bridge	97+047	3 x 3.00	9.00	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
26	Minor Bridge	98+164	4 x 3.80	15.20	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
27	Minor Bridge	99+610	7 x 5.30	37.10	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
28	Minor Bridge	106+290	3 x 4.20	12.60	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
29	Minor Bridge	108+517	5 x 8.76	43.80	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
30	Minor Bridge	111+815	3 x 4.00	12.00	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
31	Minor Bridge	114+370	1 x 10.00	10.00	New Construction	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
32	Minor Bridge	117+800	1 x 7.90	7.90	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
33	Minor Bridge	121+950	ACOD (Bypass)	7.00	New Construction	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
34	Minor Bridge	123+245	ACOD (Bypass)	40.00	New Construction	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
35	Minor Bridge	123+630	ACOD (Bypass)	40.00	New Construction	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
36	Minor Bridge	124+284	ACOD (Bypass)	40.00	New Construction	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
37	Minor Bridge	124+760	ACOD (Bypass)	40.00	New Construction	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
38	Minor Bridge	129+345	2 x 6.70	13.40	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
39	Minor Bridge	129+418	4 x 6.70	26.80	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
40	Minor Bridge	135+156	2 x 8.00	16.00	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
41	Minor Bridge	141+745	6 x 8.85	53.10	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
42	Minor Bridge	141+805	5 x 6.50	32.50	Concentric widening	Overall structure, pavement, railing is in good condition on RHS. Old structure on LHS needs to be maintained
43	Minor Bridge	146+672	7 x 5.00	35.00	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
44	Minor Bridge	146+834	3 x 3.80	11.40	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
45	Minor Bridge	152+004	3 x 7.35	22.05	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
46	Minor Bridge	154+490	5 x 9.758	48.79	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
47	Minor Bridge	156+844	4 x 8.80	35.20	New Construction	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
48	Minor Bridge	163+200	5 x 8.75	43.75	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
49	Minor Bridge	166+666	13 x 3.00	39.00	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.

Sr. No.	Type of Structure	Chainage (km)	Size	Length of Structure (m)	Type of Construction	FPPM Comments
50	Minor Bridge	172+390	8 x 3.80	30.40	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
51	Minor Bridge	178+460	2 x 4.50	9.00	Concentric widening	Overall structure, pavement, railing is in good condition on both sides.
52	Minor Bridge	185+295	3 x 4.40	13.20	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.
53	Minor Bridge	210+440	1 x 7.50	7.50	Concentric widening	Overall structure, pavement, railing is in good condition on both sides. Waterway cleaning is required.

The photographs taken during the site visit are presented below.

Figure 3-5 Photographs of Minor Bridges

MNB at km. 9+275

MNB at km. 11+592

MNB at km. 17+372

MNB at km. 34+345

MNB at km. 50+919

MNB at km. 58+774

MNB at km. 70+290

MNB at km. 73+474

MNB at km. 129+345

MNB at km. 156+844

MNB at km. 172+390

MNB at km. 178+460

Major Bridge (length > 60 m)

There are 06 Nos. of major bridges on Project Road. All major bridges are visually inspected. The structures are generally sufficient for the crossing of river water. The waterway needs regular cleaning. Old structures are present on the right side of Project Road. The old bridges have 2-lane configurations and have RCC railing. The sub-structures are constructed with RCC piers. The expansion joints of the bridges need to be cleaned. New bridges are constructed with 2-lane + footpath. Old bridges on RHS have RCC pier and T-beam girders. The wearing course and expansion joints were found to be in good condition. W-beam and RCC type crash barriers are in sound condition. Drainage spouts need to be cleaned on a regular basis. Further, vegetation and silt need to be removed from the waterway for smooth flow of water.

Table 3-3 Details of Major Bridges

Sr. No.	Existing Chainage (km)	Design Chainage (km)	Type of Bridge	Existing Structure Span Details (m)	Type of Widening	Length of the Bridge (m)	FPPM Comments
1	29+989	29+972	RCC Slab	12x9.75	Eccentric	120.00	The structure is in good condition. Old structure is present on LHS and New structure is on RHS. Expansion joints condition is good. Railing is in good condition. Waterway needs to be cleaned.
2	53+497	52+435	RCC Solid Slab	6x10.90	Eccentric	66.00	New Structure is on LHS side, while old structure is in RHS side. Overall structure is in good condition on both sides. Vegetation is seen in the waterway, which needs to be cleaned for proper water flow. Pavement, expansion joint, railing is in good condition.
3	87+400	87+290	RCC Deck with Girders	13x35.40	Eccentric	500.00	New Structure is present on LHS and old structure is on RHS. Both the structures are in sound condition. Footpath with railing is provided on LHS. Expansion joint condition is good. Pavement condition is good on LHS and needs to be repaired on RHS. Expansion Joint Replacement work is in progress on old structure.
4	101+000	100+895	RCC Solid Slab	16x12.50	Eccentric	200.00	Overall structural condition is found good. Pavement, Expansion Joints, footpath and railing is in good condition. Cleaning is necessary for the flow of water.
5	196+600	197+560	RCC Solid Slab	22x8.90	Eccentric	200.00	New Structure is on RHS and Old structure is on LHS. Overall structural condition is good. Expansion joints, Pavement, railing and footpath on RHS is in good condition.
6	206+400	207+260	RCC Deck with Girders	4x18.30	Eccentric	74.00	New structure on LHS is in good condition. Footpath, railing, expansion joint and pavement is in very good condition. Old structure on RHS is in good condition.. Waterway cleaning is required for the smooth flow of water.

The photographs taken during the site visit are presented below.

Figure 3-6 Photographs of Major Bridges

MJB at km. 29+989 (LHS) - Old Structure

MJB at km. 29+989 (LHS) - Old Structure

MJB at km. 29+989 (RHS) - New Structure

MJB at km. 29+989 (BHS)

MJB at km. 53+497 (RHS) - Old structure

MJB at km. 53+497 (RHS) - Old structure

MJB at km. 53+497 (LHS) - New structure

MJB at km. 53+497 (LHS) - New structure

Major Bridge at km. 87+400 (LHS) - New Structure

Major Bridge at km. 87+400 (BHS)

Major Bridge at km. 87+400 (LHS) - New Structure

Major Bridge at km. 87+400 (RHA) - Old Structure Expansion Joint Replacement

Major Bridge at km. 100+906 (LHS)

Major Bridge at km. 100+906 (LHS)

Major Bridge at km. 100+906 (LHS)

Major Bridge at km. 100+906 (RHS)

Major Bridge at km. 197+560 (LHS)

Major Bridge at km. 197+560 (LHS)

Major Bridge at km. 197+560 (RHS)

Major Bridge at km. 197+560 (RHS)

Major Bridge at km. 207+260 (LHS)

Major Bridge at km. 207+260 (LHS)

Major Bridge at km. 207+260 (RHS)

Major Bridge at km. 207+260 (RHS)

3.5.1 Underpasses

Table 3-4 Details of Public Underpasses

Sr. No.	Type of Structure	Chainage (km)	Size	Type of structure	No. of Lane	Construction Scheme	Remarks
1	Underpass	04+800	1 x 4.00 x 2.50	PUP	4	New construction	The overall structure condition of all PUP is found to be good. RCC Retaining Wall, RCC crash barriers, W-beam crash barriers, wearing coat, lighting arrangement is found to be good.
2	Underpass	12+700	1 x 4.00 x 2.50	PUP	4	New construction	
3	Underpass	25+850	1 x 4.00 x 2.50	PUP	4	New construction	
4	Underpass	74+100	1 x 4.00 x 2.50	PUP	4	New construction	
5	Underpass	77+700	1 x 4.00 x 2.50	PUP	4	New construction	
6	Underpass	97+700	1 x 4.00 x 2.50	PUP	4	New construction	
7	Underpass	100+120	1 x 4.00 x 2.50	PUP	4	New construction	
8	Underpass	101+630	1 x 4.00 x 2.50	PUP	4	New construction	
9	PUP (COS)	113+954	-	PUP	4	New construction	
10	Underpass	137+830	1 x 4.00 x 2.50	PUP	4	New construction	

The photographs taken during the site visit are presented below.

Figure 3-7 Photographs of Public Underpass

PUP at km. 4+800

PUP at km. 12+700

PUP at km. 25+850

PUP at km. 74+100

PUP at km. 77+700

PUP at km. 97+700

PUP at km. 100+120

PUP at km. 101+630

PUP at km. 113+954

PUP at km. 137+830

3.5.2 ROB

There are 02 Nos. of ROBs on Project Road. Details of ROBs are as presented below.

Table 3-5 Details of ROB

Sr. No.	Type of Structure	Chainage (km)	Size (m)	Length of structure (m)	Width of structure (m)	Remarks
1	ROB	125+262	1 x 16.62 1 x 28.78	51.00	27.50	Overall structure, pavement, railing is in good condition on both sides.
2	ROB	163+830	1 x 30.00	30.00	11.50	The structure condition of old structure on LHS is sound. ROB Work on RHS is incomplete. Approach work on RHS is completed. Traffic is moving on LHS side for both the directions.

The photographs taken during the site visit are presented below.

Figure 3-8 Photographs of ROB

ROB at km. 125+262

ROB at km. 125+262

ROB at km. 125+262

ROB at km. 125+262

ROB at km. 163+830

ROB at km. 163+830

ROB at km. 163+830

ROB at km. 163+830

3.6 Condition Survey of Culvert

The cross-drainage structure includes hume pipe culverts, box culverts and slab culverts at various locations. There are 323 Nos. of pipe culverts, 58 Nos. of slab culverts and 49 Nos. of box culverts along the Project Road. The height of the culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on a sample basis.

The Project Road involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath the existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts and slab culverts is found satisfactory. The RCC railing has been provided at culvert locations which is maintained properly.

At some culverts, the waterway needs to be cleaned. It is observed that waterways are blocked due to debris near urban areas. It is also found that bushes and tree growth are observed which must be removed and cleaned before monsoon. The wing wall has been provided for slope protection.

The culverts are maintained by the Concessionaire during the O&M period. However, damaged wing walls were observed at few culverts, which need to be addressed under routine repair work.

The photographs taken during the site visit are presented below.

Figure 3-9 Photographs of Box Culverts / Hume Pipe Culverts

Box Culvert at km. 2+100

Box Culvert at km. 6+200

Box Culvert at km. 78+200

Box Culvert at km. 86+489

Box Culvert at km. 86+800

Box Culvert at km. 122+400

Box Culvert at km. 152+600

HPC at km. 209+600

3.7 Drainage

The drains are to be constructed on the Project Road to have good drainage for surface water. Covered lined drains are provided along the service / slip roads. Median cut drains are provided at superelevation locations. Chute drains are also constructed at high embankment portion of the Project Road. The drainage condition of Project Road is found to be satisfactory. Silt deposits need to be removed during routine maintenance. Earther drains are also provided in rural areas. The condition of the same is good to fair.

The photographs taken during site visit is presented as below:

Figure 3-10 Photographs of Drainage

RCC Drain at km. 4+820 (LHS)

RCC Covered Drain at km. 11+610 (LHS)

RCC Open Drain at km. 38+000 LHS

Median RCC Open Drain at km. 118+200

3.8 Slope Protection

Slope protection for high embankment areas has been done by providing revetment, chute drain and pitching at some locations. The same has been found as per the standards of O&M contracts.

The photographs taken during the site visit are presented below.

Figure 3-11 Photographs of Slope Protection

Slope Protection at km. 18+250

Slope Protection at km. 121+930 LHS

3.9 Road Furniture

Pavement Marking

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Pavement marking is faded at some locations which needs rectification.

The photographs taken during the site visit are presented below.

Figure 3-12 Photographs of Pavement Marking

km. 34+625 LHS

km. 113+650 LHS

km. 120+950 Median

km. 157+500 (LHS)

Road Studs

The Concessionaire has provided road studs on the curves, road junctions, pedestrian crossings, municipal area, village settlements and ramps to provide the proper visibility to the road users. These are provided as per standards. The Concessionaire has replaced all the road studs on the Project Road.

The photographs taken during the site visit are presented below.

Figure 3-13 Photographs of Road Studs

km. 53+460

km. 77+927.

Traffic signage / Median kerb painting / KM Stone

Traffic signs includes roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Painting at median kerb is found faded at few locations which needs to be rectified by the Concessionaire.

The photographs taken during the site visit are presented below.

Figure 3-14 Photographs of Traffic Signages

Hectometre stone at km.67+200

Gantry Board at km. 0+220 LHS

Kilometre stone at km. 17+000 RHS

Kerb painting at km. 17+400

Gantry Board at km. 9+900

Go Slow Sign Board at km. 11+570 LHS

Hazard marker Sign Board at km.29+870

School ahead Sign Board at km. 99+620 LHS

Speed limit Sign board at km. 9+220

Name board with direction at km. 0+850 LHS

Highway Lighting

Highway Lighting is provided at urban and semi-urban areas of the Project Road. Lighting is provided at the locations of truck lay-bye, bus bay, toll plazas, underpasses, service road and at intersections. IS:1944 (Part-I and Part-II) is followed for installation of lighting. High mast lighting systems are provided at toll plaza locations.

The photographs taken during the site visit are presented below.

Figure 3-15 Photographs of Highway Lighting

Highway Lighting at Service road km. 18+250

Highway Lighting at km. 74+450

Highway Lighting at km. 100+895

High mast Lighting at TP km. 110+000

Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are properly maintained at site.

The photographs taken during the site visit are presented below.

Figure 3-16 Photographs of Crash Barrier

Crash Barrier at km. 6+020 LHS

Crash Barrier at km. 113+850 LHS

Crash Barrier at km. 129+340 LHS

Crash Barrier at km. 154+500 LHS

Delineators

The traffic delineators are provided by Concessionaire for road users on the Project Road. The same are maintained by the Concessionaire.

The photographs taken during the site visit are presented below.

Figure 3-17 Photographs of Delineator

Delineator at km. 77+927

Delineator at km. 157+500 ROB Approach LHS

Pedestrian Guard Rail

The pedestrian guard rails are provided in the median between service road and main carriageway at built-up locations.

The photographs taken during the site visit are presented below.

Figure 3-18 Photographs of Pedestrian Guard Rail

Pedestrian Guard Rail at km. 12+400 (LHS)

Pedestrian Guard Rail at km. 137+000 (LHS)

3.10 Avenue Plantation and Median Plantation

Avenue plantations and median plantations are done along the project length as per IRC specification except at built-up locations. Median plantation needs regular maintenance. Avenue plantation work is in progress at required location as per CA.

The photographs taken during the site visit are presented below.

Figure 3-19 Photographs of Avenue Plantation and Median Plantation

Avenue Plantation at km. 2+150 LHS

Median Plantation at km. 6+020

Avenue Plantation at km. 6+120 LHS

Median Plantation at km. 88+300

3.11 Toll Plaza

The Concessionaire has constructed 03 nos. of Toll Plaza at km. 41+200, km. 110+000 and km. 168+000. The details of the Toll Plaza are tabulated below.

Table 3-6 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details		Remarks
		LHS	RHS	
1	Number of Tolling Lanes	4	4	
2	Weigh-in-Motion Facility (Number of Lanes)	4	4	
3	No. of ETC lanes	4	4	
4	No of Toll booths	8		
5	Canopy	Present		
6	Administrative building	Temporary arrangement is made		
7	Parking cum toilet box	Present		
8	Availability of tunnel or elevated walkaway for	Tunnel / Yes		

Sr. No.	Particulars	Details		Remarks
		LHS	RHS	
	movement between toll lanes and administrative building			
9	Availability of static weigh bridge	No		Installation is pending
10	Availability of loading / unloading facility for overloading vehicles	No		
11	Storage facility for overloaded material	No		
12	High mast light	Yes		
13	Street light	Yes		
14	Low mast light	No		
15	User fee boards	Yes		
16	Cantilever / gantry boards	Yes		
17	Automatic boom barrier	Yes		

The photographs taken during the site visit are presented below.

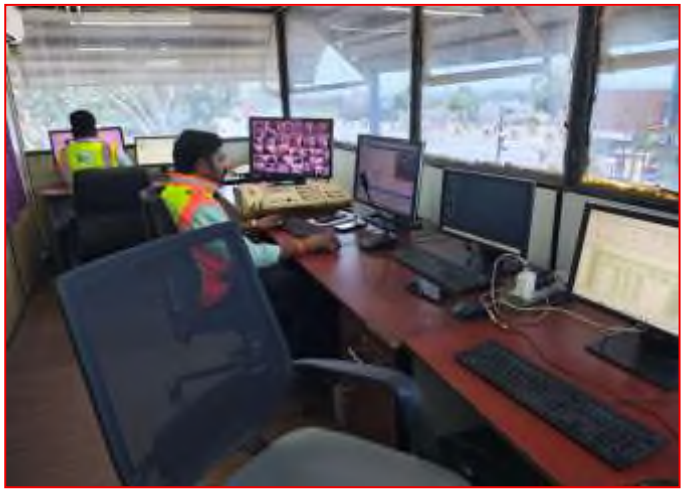
Figure 3-20 Photographs of Toll Plaza

Toll Plaza at km. 110+000

New Admin Building at Toll Plaza at km. 41+200

Toll Plaza-2 at km. 41+200

Ambulance at km. 110+000 Toll Plaza



Inside view of Control Room at Toll Plaza-2

Patrolling Vehicle at km.173+060 RHS

Fare board at Toll Plaza-1

Toll Plaza-1 at km. 41+200 Narketpally end view

Server at Toll Plaza-3 at km. 168+000

Ambulance at Toll Plaza-3 at km. 168+000

3.12 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC

3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.12.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

RFID at Toll Plaza

3.12.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which is connected to the common server and are capable of independent storage of data.

Inside View of Toll Booth

3.12.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

3.12.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

Automatic Lane Barrier at Toll Plaza

3.12.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

Lane Traffic Light (LTL) at Toll Plaza -02 and User Fare Display (UFD)

3.12.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

AVC Camera

3.12.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3m pole facing incoming vehicle to capture the image of the vehicle number plate.

3.12.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane “Open” and “Close” sign consists of a pair of “GREEN” (arrow) and “RED” (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

Over Head Lane Signal at Toll Plaza

3.12.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and type of ticket.

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.
Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.12.10 Weigh in Motion (MSWIM)

Weigh in Motion (WIM) is installed on entry lanes of Toll Plaza.

MSWIM at Toll Plaza

3.13 Plaza Equipment

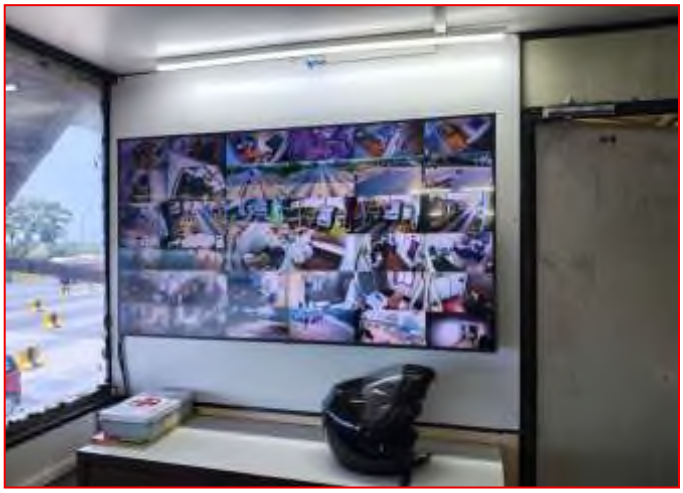
3.13.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio Wi-Fi module. Firewall with Sophos antivirus is provided.

TMS server at Toll Plaza

3.13.2 55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).



LED screen at Toll Plaza

The toll plaza manager can observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager can comprehend the situation at the lane by a zoomed view of the particular lane.

3.13.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.

POS room at Toll Plaza

3.14 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) installed for the project road is controlled by the ATMS center at the toll plaza location (km 467.700). As per Concession agreement ATMS shall conform to ATMS Policy guidelines (2016) which comprises of the following:

- Automatic Traffic Counter cum Classifier (ATCC)
- Mobile Radio Communication System (MRCS)
- Emergency Call Box (ECB)
- Portable Weigh in Motion
- Meteorological Data system

- Variable Message Signboards (VMS)
- CCTV system
- Video Incident Detection System (VIDS)
- Vehicle actuated Speed Display (VASD)

Status of these systems at site is described below:

3.14.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is not installed at Toll Plazas.

3.14.2 Mobile Radio communication System (MRCS)

Mobile Radio communication System (MRCS) is not yet installed.

3.14.3 Emergency Call Boxes (ECB)

Emergency Call Box (ECB) are missing at many locations on the Project Road. The Concessionaire has already purchased the required material for installation. It is informed that the work of installation will commence soon.

The photographs taken during the site visit are presented below.

Figure 3-21 Photographs of ECB

ECB at km. 21+400 LHS is not working on the project site

3.14.4 MET System

MET system is not yet installed.

3.14.5 Variable Message Signboards (VMS)

VMS is not installed on the Project Road due to land issues. It is informed that the installation work of VMS will start soon.

3.14.6 CCTV Surveillance Cameras

Surveillance cameras are installed as per CA requirement along the Project Road. The HTMS control room has video wall to monitor these locations through the cameras installed.

The photographs taken during the site visit are presented below.

Figure 3-22 Photographs of CCTV Surveillance Camera

CCTV at Toll Plaza-2

CCTV at Toll Plaza-3

3.14.7 Video Incident Detection System

CCTV cameras are installed as part of Video incident detection system.

Figure 3-23 Photographs of CCTV Surveillance Camera

Surveillance Camera at km. 102+430

Surveillance Camera at km. 141+850

3.14.8 Adequacy of Toll Collection System and ATMS

- Adequacy - All lanes are hybrid ETC system as stipulated by NHAI in technical specifications of Hybrid ETC system. NHAI has approved maintenance costs for TMS. TMS shall be upgraded every 5 years at the cost of the Authority.
- Advanced Traffic Management System (ATMS) installed is as per specifications required by the Authority and in working condition. Some components such as ATCC, ECB, MET system and MRCS have not been installed.

3.15 Truck Lay-bye

There are 05 Nos. of truck lay-bye without facilities such as Toilet Blocks on Project Road.

The photographs taken during the site visit are presented below.

Figure 3-24 Photographs of Truck Lay-bye

Truck lay bye at km. 19+900 (LHS)

Truck lay bye at km. 127+650 (RHS)

3.16 Bus Bays and Passenger Shelters

The Concessionaire has constructed 23 Nos. of bus bays and passenger shelters along Project Road.

The photographs taken during the site visit are presented below.

Figure 3-25 Photograph of Bus Bay / Passenger Shelter

Bus Bay and Shelter at km. 4+390 LHS

Bus Bay Shelter at km. 99+630 LHS

Bus Bay Shelter at km. 101+950 LHS

Bus Bay and Shelter at km. 107+500 LHS

3.17 Balance Work Status

For the execution of balance works as per Concession Agreement, the Concessionaire has executed an 'AMENDMENT AGREEMENT' with M/s. Ramky Infrastructure Limited on 11th August 2020. This agreement is an amendment to the Engineering Procurement & Construction Agreement dated 30-Nov-2008.

M/s. Ramky Infrastructure Limited, being the earlier promoter for this Project, the scope of the work is defined through a fixed Bill of Quantities and Rates. The Agreement value was fixed on a lump sum basis. The details of the Contract value are as follows.

1. Part-A - Rs. 74.12 Crores (work to be executed by M/s. Ramky)
2. Part-B - Rs. 24.13 Crores (work to be de-scoped at own cost of M/s. Ramky)
3. **Total - Rs. 98.25 Crores**

As per the details provided by the Concessionaire, the work executed as per the Amendment Agreement till end of 28th February 2025 is Rs. 46.07 Crores.

Thus, the balance work as on 28th February 2025 is worked out be 52.18 Crores.

3.18 Operation and Maintenance

a) O&M Contract

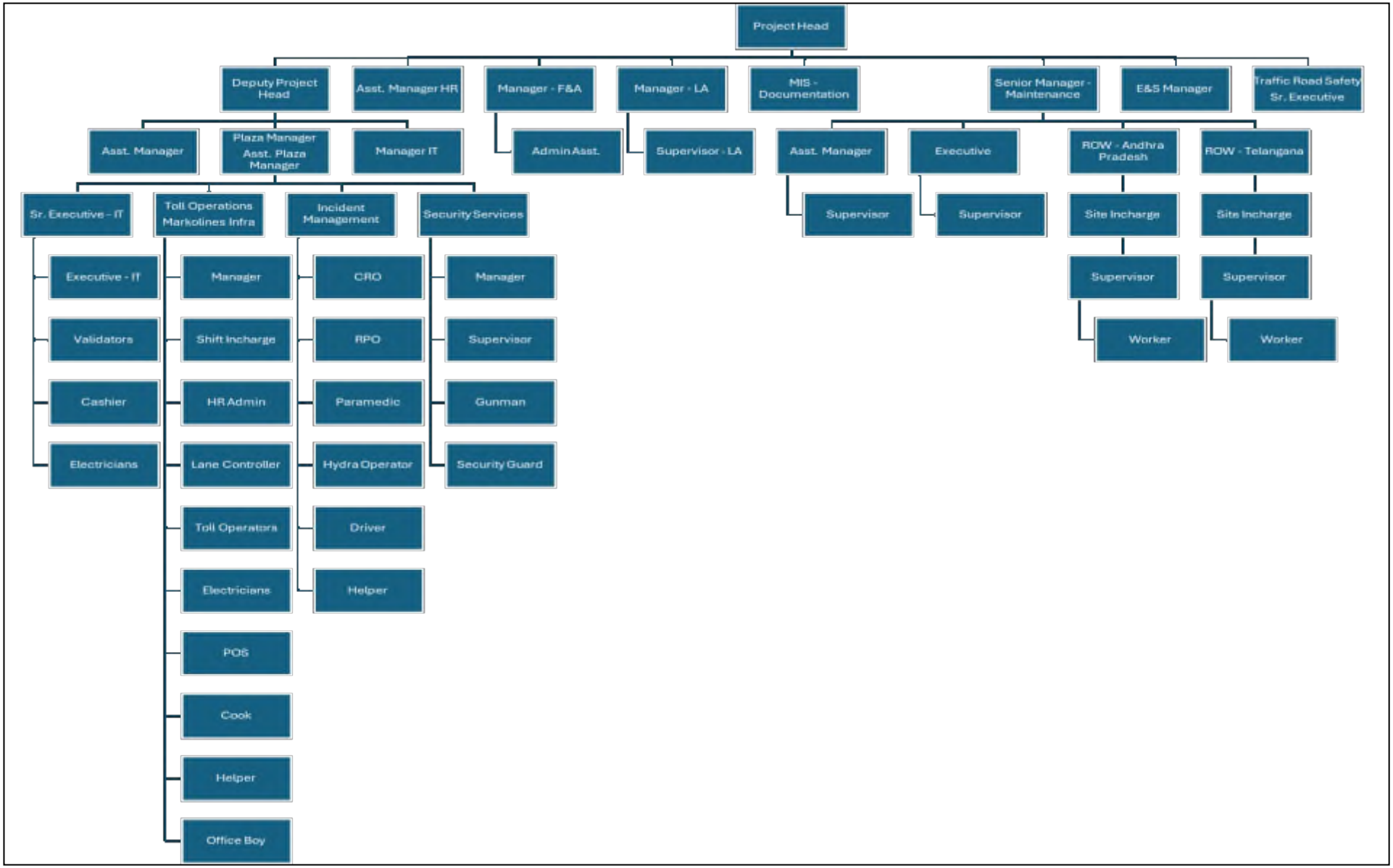
As per Article 17 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall meet all the requirements laid down in the Concession Agreement.

The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, Incident management service.

b) Organization Chart

The Concessionaire has provided the Organization Chart for Operation and maintenance. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent sub-contractors.

Organization Chart



c) Operation

The Operation Cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have been made from the expense of similar types of projects to arrive at the operation cost. The estimates are projected based on the best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

d) Routine Maintenance

The Routine Maintenance Cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Concessionaire as per Scope of Work. The Concessionaire has received a Provisional Completion Certificate on 06th March 2014 for the length of 190.38 kms out of 212.860 kms.

The Project Road is currently in the Operation and Maintenance stage. The concession period of the project is 24 years from the Appointed Date (18th January 2011) including construction period of 2.5 years. The end of scheduled concession period is 17th October 2035. As informed by the Concessionaire, the concession period of the Project Road is likely to extend up to March 2040 on the basis of the traffic data.

4.2 Surveys and Investigation

Pavement Condition Survey

The pavement condition survey was carried out by the Technical Consultant during the period from **16th March 2026 to 19th March 2026** through visual inspection of the total Project Road.

From the visual inspection, the pavement condition of the entire project road is found to be Good to Fair. During the site visit, some rutting and cracks were observed at few of the locations. The Concessionaire is carrying out routine maintenance for Project Road which is witnessed during the site visit.

4.3 Axle Load and VDF

In order to estimate vehicle-loading pattern in the project area, and to determine vehicle damage factor for the commercial vehicles, axle load survey of the vehicles plying on the project road stretch was carried out at three different locations of project stretch.

The Axle load survey was conducted by the Concessionaire at three toll plaza locations. i.e., at km. 41+200, at km. 110+000 and at km. 168+000 in the month of February 2025. The survey was carried out for both directions (LHS and RHS) simultaneously and for 24 hours using standard weigh pads. The survey was carried out using random sample method for goods vehicles i.e., for LCV, bus, trucks and multi-axle vehicles with special axle configuration count. The vehicle damage factors for various categories of vehicles were provided.

The Summary of VDF is presented as below.

Table 4-1 Vehicle Damage Factor

Sr. No.	Vehicle Type	TP at km. 41+200		TP at km. 110+000		TP at km. 168+000	
		Direction		Direction		Direction	
		Narketpalli-Addanki	Addanki-Narketpalli	Narketpalli-Addanki	Addanki-Narketpalli	Narketpalli-Addanki	Addanki-Narketpalli
1	BUS	0.984	1.006	0.787	1.004	0.805	0.751
2	LCV	0.972	0.753	1.739	1.109	1.050	1.303
3	2-Axle	2.611	3.271	3.610	3.465	3.136	3.775
4	3-Axle	4.618	6.126	5.861	5.611	5.769	5.781
5	MAV	6.131	12.495	11.338	11.447	10.64	11.837

4.4 Design Traffic

The Traffic in Million Standard Axles (MSA) for the homogeneous section based on the traffic data as provided by the Concessionaire has been used for future projections. The estimated design MSA is computed and presented in the subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

MSA Calculations - Madgullapally					
Year	**MSA (LHS)**	**Cumulative MSA (LHS)**	**MSA (RHS)**	**Cumulative MSA (RHS)**	**Remarks**
2025-26	2.54	**2.54**	4.32	**4.32**	
2026-27	2.86	**5.40**	4.94	**9.26**	
2027-28	3.00	**8.40**	5.19	**14.45**	
2028-29	3.14	**11.54**	5.44	**19.89**	
2029-30	3.14	**14.68**	5.45	**25.34**	
2030-31	3.11	**17.79**	5.40	**30.74**	
2031-32	3.13	**20.92**	5.45	**36.19**	
2032-33	3.29	**24.21**	5.74	**41.93**	
2033-34	3.45	**27.66**	6.03	**47.96**	
2034-35	3.61	**31.27**	6.32	**54.28**	End of concession period as per CA
2035-36	3.77	**35.04**	6.63	**60.91**	
2036-37	3.95	**38.99**	6.95	**67.86**	
2037-38	4.13	**43.12**	7.28	**75.14**	
2038-39	4.31	**47.43**	7.63	**82.77**	
2039-40	4.51	**51.94**	7.99	**90.76**	Extended End of concession period

MSA Calculations - Tummalacheruvu					
Year	**MSA (LHS)**	**Cumulative MSA (LHS)**	**MSA (RHS)**	**Cumulative MSA (RHS)**	**Remarks**
2025-26	5.69	**5.69**	5.65	**5.65**	
2026-27	5.98	**11.67**	5.94	**11.59**	
2027-28	6.41	**18.08**	6.38	**17.97**	
2028-29	6.52	**24.60**	6.49	**24.46**	
2029-30	6.55	**31.15**	6.52	**30.98**	
2030-31	6.67	**37.82**	6.65	**37.63**	
2031-32	7.03	**44.85**	7.00	**44.63**	
2032-33	7.17	**52.02**	7.14	**51.77**	
2033-34	7.52	**59.54**	7.50	**59.27**	
2034-35	7.89	**67.43**	7.87	**67.14**	End of concession period as per CA
2035-36	8.28	**75.71**	8.26	**75.40**	
2036-37	8.68	**84.39**	8.66	**84.06**	
2037-38	9.10	**93.49**	9.08	**93.14**	
2038-39	9.54	**103.03**	9.52	**102.66**	
2039-40	9.99	**113.02**	9.98	**112.64**	Extended end of concession period

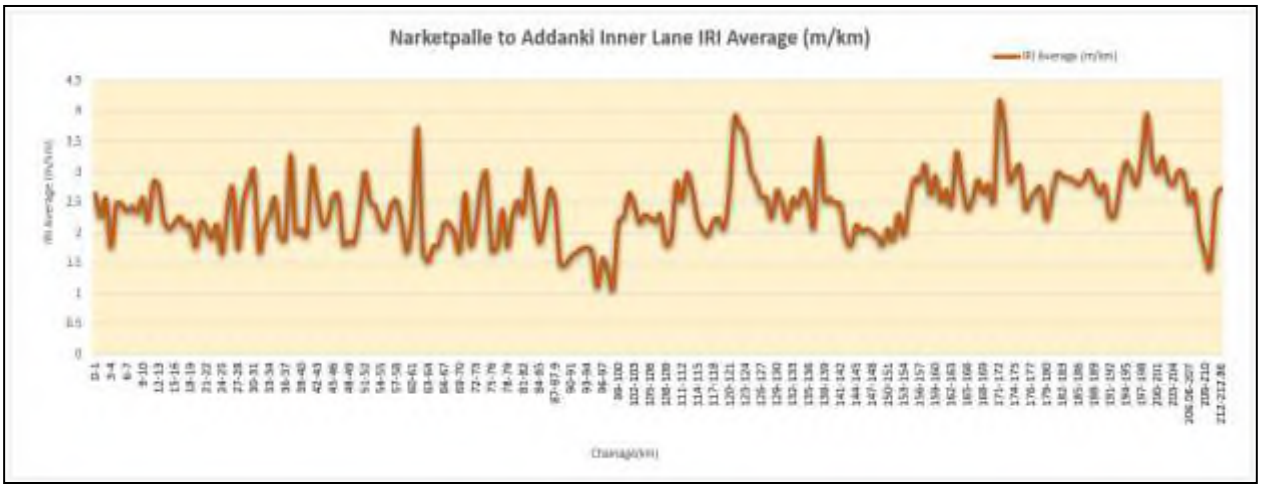
MSA Calculations – Elchuru					
Year	**MSA (LHS)**	**Cumulative MSA (LHS)**	**MSA (RHS)**	**Cumulative MSA (RHS)**	**Remarks**
2025-26	4.16	**4.16**	4.62	**4.62**	
2026-27	4.38	**8.54**	4.86	**9.48**	
2027-28	4.59	**13.13**	5.10	**14.58**	
2028-29	4.59	**17.72**	5.10	**19.68**	
2029-30	4.54	**22.26**	5.05	**24.73**	
2030-31	4.59	**26.85**	5.09	**29.82**	
2031-32	4.83	**31.68**	5.37	**35.19**	
2032-33	5.07	**36.75**	5.64	**40.83**	
2033-34	5.33	**42.08**	5.92	**46.75**	
2034-35	5.59	**47.67**	6.21	**52.96**	End of concession period as per CA
2035-36	5.86	**53.53**	6.52	**59.48**	
2036-37	6.14	**59.67**	6.83	**66.31**	
2037-38	6.44	**66.11**	7.16	**73.47**	
2038-39	6.74	**72.85**	7.51	**80.98**	
2039-40	7.06	**79.91**	7.86	**88.84**	Extended end of concession period

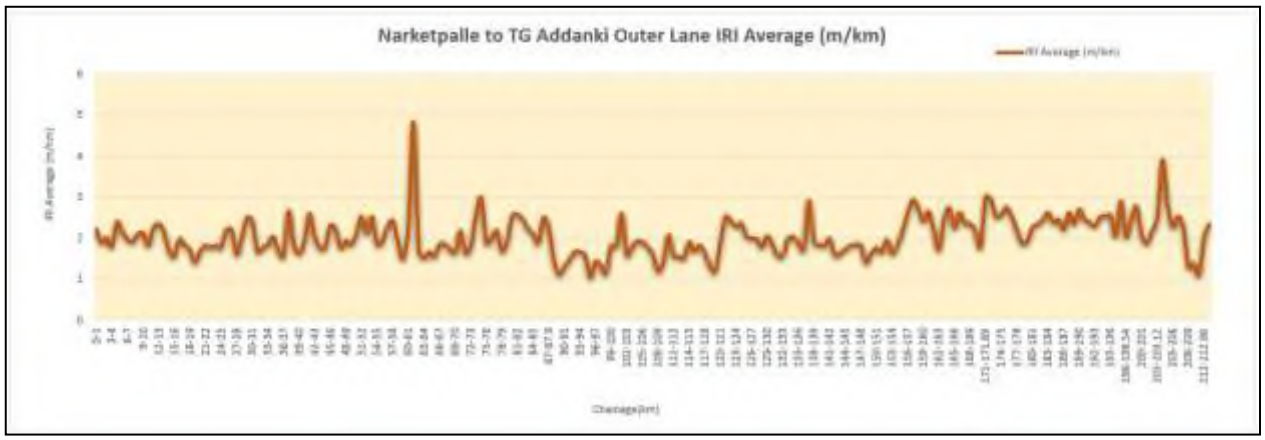
4.5 Network Survey Vehicles (NSV) Survey

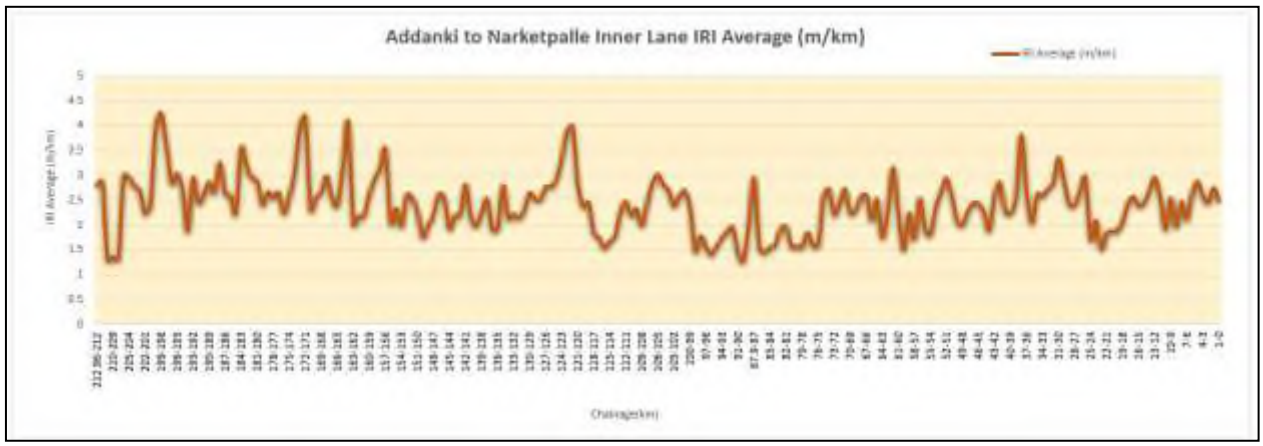
The Concessionaire has provided NSV survey data conducted. The NSV data is used to assess the riding quality and pavement condition of Project Road. The test is carried out in December 2025. The summary of classification of pavement as per CA is given in below table.

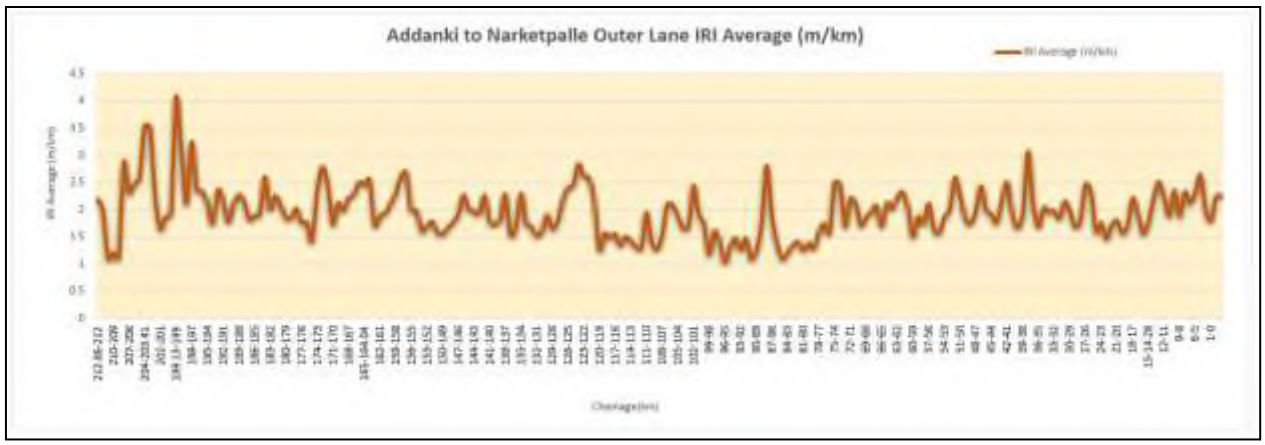
Table 4-3 Result of Roughness Survey

BI (mm/Km)	LHS				RHS			
	Outer		Inner		Outer		Inner	
	Length (Km)	Length (%)	Length (Km)	Length (%)	Length (Km)	Length (%)	Length (Km)	Length (%)
<2750	205.57	98.10	209.80	99.06	205.57	98.10	210.85	99.53
>=2750	4.00	1.90	2.00	0.94	4.00	1.90	1.00	0.47
Total	209.57	100.00	211.80	100.00	209.57	100.00	211.85	100.00









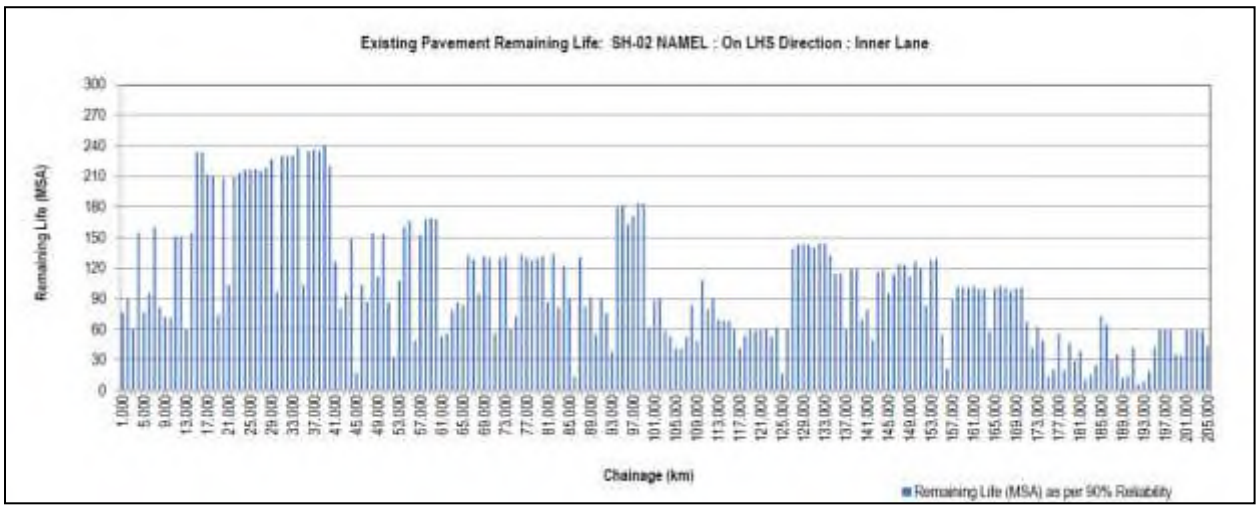
Observation and Conclusion:

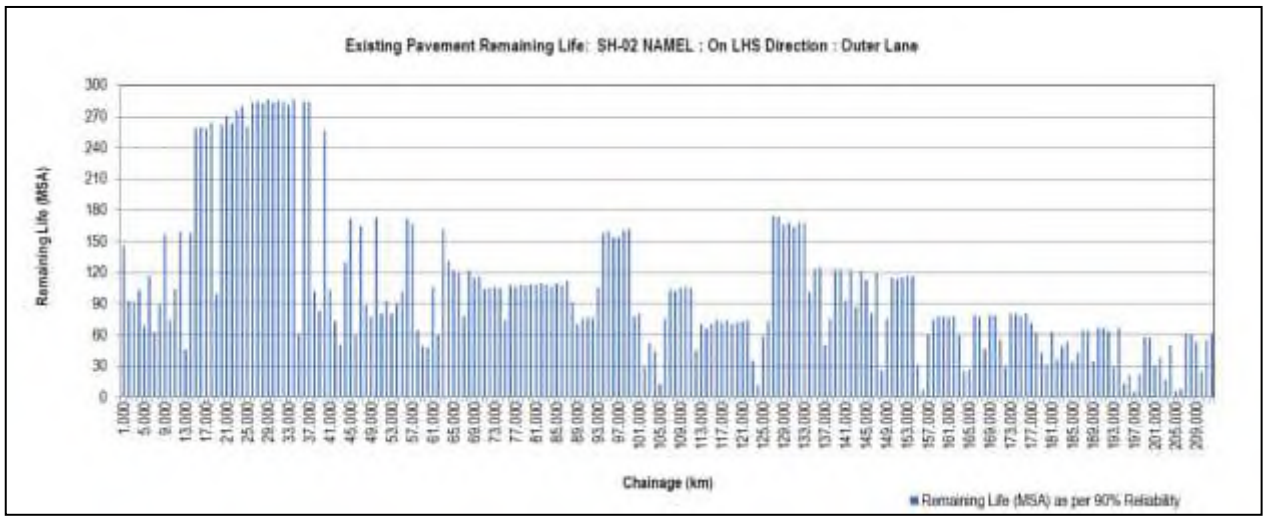
As per the NSV test carried out in the month of December 2025 and the related Roughness results provided by the Concessionaire, it was observed that the overall pavement condition for the Project Road is found to be Good for 98.65% length (208.95 kms) and Poor for 1.35% length (3.48 kms). Poor road surface condition is maintained as part of routine maintenance; hence no additional expense is necessary to be considered when calculating major maintenance costs.

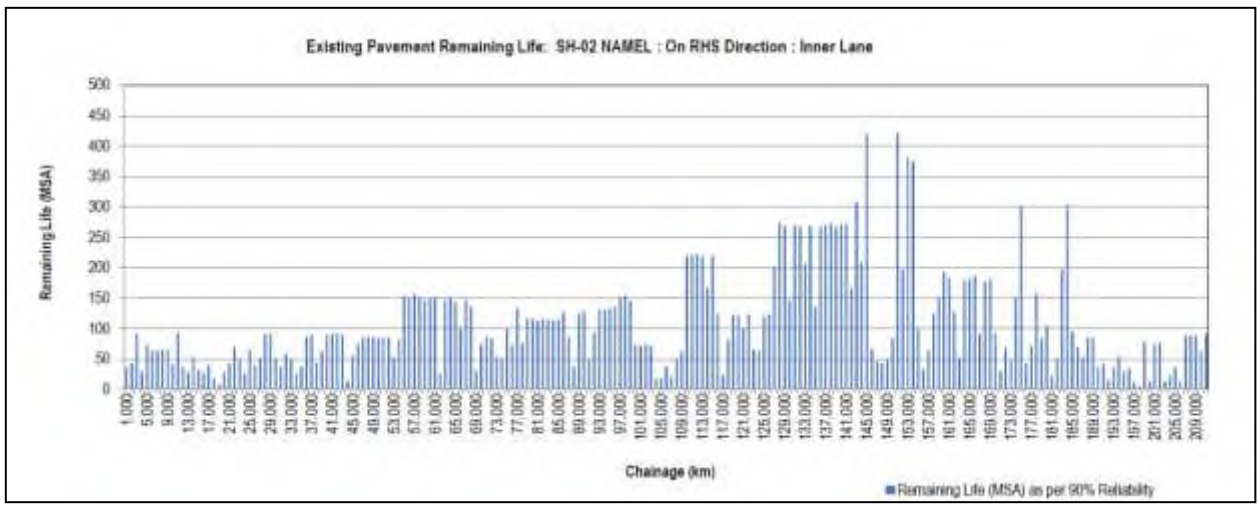
4.6 FWD Survey

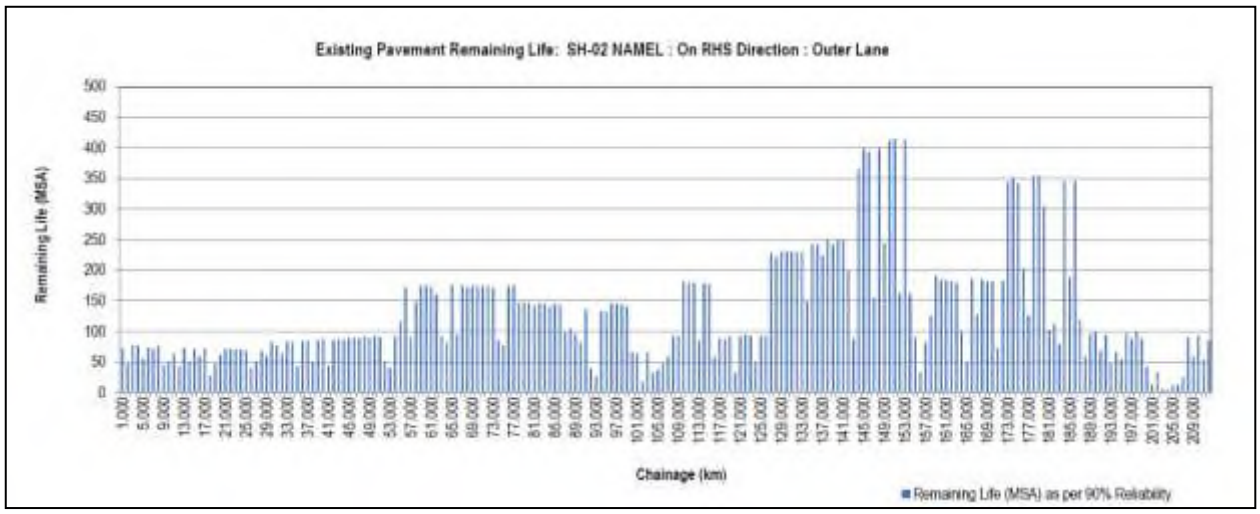
The structural evaluation and analysis of the remaining life of project was carried out in conformity with IRC:115-2014 “Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique”.

The FWD survey was conducted on the Project Road in December 2025. The summary of the same is presented below.









However, the maintenance can be carried out on as and when required basis and to the compliance of Schedule-K requirement to maintain the road in serviceable condition. However, improvement in Riding Quality is expected if the roughness value exceeds 2500 mm/km.

4.7 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full-length periodic maintenance. Schedule-K of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-K requirement to maintain the road in serviceable condition. Only improvement in Riding Quality is expected if the roughness value exceeds 2750 mm/km.

The Provisional Completion Certificate for the project was achieved on 06th March 2014. Hence, the major maintenance cycle is projected accordingly.

Currently Major Maintenance (Cycle-1) work for Section-3 from Km. 155+000 to Km. 212+500 is in progress. For the entire length of the Phase-3, 40 mm BC overlay with PMB-70 will be done and wherever the distresses are observed, those stretches (around 7% of the total Project length) will be rectified with milling & 50 mm DBM (with 35% RAP). Also, there are some stretches in Section-1, where distresses are observed and will be rectified with 35 mm BC (VG-40). Thin White Topping (TWT) of thickness 150 mm will be adopted for Toll Plaza 2 at Km. 110+200, Toll Plaza 3 at Km. 168+200 and Major Junction location at Km. 167+450. As the Service road is in good to fair condition, 30 mm BC Overlay will be done only at distressed locations on the Service road.

The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-4 Major Maintenance Cycle

Sr. No.	Chainage (km)		Length (km)	Length (%)	MM Cycle-1		MM Cycle-2	MM Cycle-3
	From	To			LHS	RHS	BHS	BHS
Sec-1	0	77	77	36.24%	MM completed in FY 2024		FY 2028	FY 2036
	77	87	10	4.71%	MM completed in FY 2024	MM completed in FY 2021	FY 2029	
Sec-2	87	120	33	15.53%	MM completed in FY21			
	120	127	7	3.29%	COS		FY 2031	FY 2038
Sec-3	127	155	28	13.18%	MM completed in FY 2024			
	155	212.5	57.5	27.06%	Work in Progress		FY 2033	

Table 4-5 Major Maintenance Strategy

Cycle	Year	BC Overlay	Micro-surfacing	DBM Rehabilitation	Overlay	Rehabilitation	Service road
Cycle 1 Section 3	FY 26	27.00%	-	7.00%	Work in progress		
Cycle 2	FY 28	36.00%	-	3%	100% 40 mm BC Overlay	-	50% Micro-surfacing + 50% BC 30 mm Overlay
	FY 29	20.00%	-				
	FY 31	16.00%	-				
	FY 33	28.00%	-				
Cycle 3	FY 36	41.00%	15.00%		73% 30 mm BC Overlay 27% Micro-surfacing	5% 50 mm DBM Rehabilitation	50% Micro-surfacing + 50% BC 30 mm Overlay
	FY 38	32.00%	12.00%				

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost (CAPEX)
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1 Unit rates of different items (BC, DBM, Concrete, etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

a) **Manpower and labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

b) **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards. Following rates of bitumen are considered.

Polymer cost and modification costs are provided by client to work out BC rate with PMB.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY2027 (Rs. / MT)	Rate for FY2028 onwards (Rs. / MT)
1	Mathura,	All States	VG10	45,102	35,125
2			VG30	46,402	36,137
3			VG40	48,962	38,131
4	Panipat	All States	VG10	45,102	35,125
5			VG30	46,402	36,137
6			VG40	48,962	38,131
7	Koyali	All States	VG10	47,102	37,125
8			VG30	48,402	38,137
9			VG40	51,082	40,251

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY2027 (Rs. / MT)	Rate for FY2028 onwards (Rs. / MT)
10	Haldia	All States	VG10	46,602	35,683
11			VG30	47,402	36,295
12			VG40	49,962	38,256
13	Barauni	All States	VG10	47,132	36,213
14			VG30	48,432	37,325
15			VG40	50,992	39,286
16	CPCL	Kerala	VG10	47,402	35,519
17			VG30	48,402	36,395
18			VG40	50,762	38,120
19	CPCL	Tamil Nadu	VG10	47,902	36,019
20			VG30	48,402	36,395
21			VG40	50,962	38,320
22	CPCL	Telangana and Andhra Pradesh	VG10	44,602	32,719
23			VG30	45,402	33,395
24			VG40	47,962	35,320
25	CPCL	Karnataka	VG10	44,602	32,719
26			VG30	45,402	33,395
27			VG40	47,962	35,320

c) **Sand and Aggregate:** Market rates are considered from the quarry located nearest to Project Road.

d) **Cement:** Market rates are considered from the nearest local market.

e) **Steel :** Rate of steel is taken from SAIL.

f) **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable PWD SOR.

g) **Rates of items as per Work Order:** The rates of items such as kerb raising, micro-surfacing, milling, road stud etc. are based on the actual rates at which the work to be executed and thus are considered as per the Work Orders shared by the Client which is issued to the Contractors executing these works at the site.

2 Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates
1	PMB 70-10V	Cum	12,289
2	Dense Bituminous Macadam	Cum	9,391
3	Bituminous Concrete	Cum	10,542
4	Milling	Sqm	90
5	Micro-surfacing	Sqm	180
6	Kerb Re-laying	Rmt	268
7	Road Marking	Sqm	545

Sr. No.	Item Description	Unit	Rates
8	Road Studs	Nos.	247

5.3 Balance Work Cost (CAPEX)

As discussed in the earlier chapter, the cost of Balance Work is **Rs. 52.18 Crores**.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance, and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads:

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Toll Security Services
4. Incident Management Services
5. Electricity and Diesel Charges
6. TMS / HTMS / System Expenses
7. Office Operating Expenses
8. Vehicle Running Expenses
9. Professional Fees Expense
10. Community Development
11. Communication Expenses
12. Conveyance Expenses
13. Insurance Expense
14. IE Fees
15. Horticulture & ROW Maintenance
16. Routine Maintenance Cost
17. Contingency

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation Cost is presented as below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027- 40)
1	Salary and Welfare Expenses	4,15,65,600
2	Tolling Operations Services	4,14,41,562
3	Toll Security Services	1,26,50,813
4	Incident Management & Emergency Services	4,87,34,335
5	Electricity and Diesel Charges	1,37,94,013
6	TMS/HTMS/System Expenses	1,00,48,187
7	Office Operating Expenses	1,19,21,250
8	Vehicle Running Expenses	69,60,000
9	Professional Fees Expense	3,50,62,500
10	Community Development	58,43,750
11	Communication Expenses	14,02,500
12	Conveyance Expenses	15,19,375
13	Insurance Expense	3,03,87,500
14	IE Fees	1,98,22,000
15	Routine Maintenance Cost (Project Highway)	9,67,91,805
16	Horticulture & ROW Maintenance	5,89,14,535
17	Miscellaneous including Contingency	1,40,57,669
	Total Cost (Rs.)	**45,09,17,395**
	Total Cost (Cr.)	45.09
	Per km Cost (Lakh)	**21.22**

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2028	99.15	
2	FY 2029	56.02	
3	FY 2031	45.24	
4	FY 2033	77.59	
5	FY 2036	96.73	
6	FY 2038	76.00	
Total Cost (Cr.)		**450.73**	

5.6 Periodic Replacement of TMS /System

Every 7 years, replacement of cost of major TMS system is considered. The same is provided as below.

Sr. No.	Year	TMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2027	1.83	
2	FY 2034	1.83	
Total Cost (Cr.)		**3.66**	

5.7 Escalation Assumption

The following escalation is considered basis discussions with Client and our internal estimates.

Table 5-4 Escalation

Year	Escalation	Year	Escalation
2027	-	**2041**	3.99%
2028	5.25%	**2042**	3.99%
2029	4.86%	**2043**	3.99%
2030	4.44%	**2044**	3.99%
2031	4.24%	**2045**	3.99%
2032	4.13%	**2046**	3.99%
2033	4.08%	**2047**	3.99%
2034	4.01%	**2048**	3.99%
2035	4.00%	**2049**	3.99%
2036	4.03%	**2050**	3.99%
2037	4.01%	**2051**	3.99%
2038	3.98%	**2052**	3.99%
2039	3.98%	**2053**	3.99%
2040	4.00%	**2054**	3.99%
2040	3.99%	**2055**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr.)

Sr. No.	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40
1	Routine O&M Cost														
1.01	Salary and Welfare Expense	4.16	4.37	4.58	4.82	5.06	5.29	5.52	5.75	5.98	6.22	6.47	6.73	7.00	7.28
1.02	Tolling Operations Services	4.14	4.35	4.57	4.80	5.04	5.27	5.50	5.73	5.96	6.20	6.45	6.71	6.98	7.26
1.03	Toll Security Services	1.27	1.33	1.39	1.47	1.54	1.61	1.68	1.75	1.82	1.89	1.97	2.05	2.13	2.22
1.04	Incident Management Services	4.87	5.12	5.37	5.65	5.93	6.20	6.47	6.74	7.01	7.30	7.59	7.89	8.21	8.54
1.05	Electricity and Diesel Charges	1.38	1.45	1.52	1.60	1.68	1.76	1.83	1.91	1.98	2.07	2.15	2.23	2.32	2.42
1.06	TMS/HTMS/System Expenses	-	0.91	0.96	1.01	1.05	1.10	1.15	-	1.25	1.30	1.35	1.40	1.46	1.52
1.07	Office Operating Expenses	1.19	1.25	1.31	1.38	1.45	1.52	1.58	1.65	1.72	1.78	1.86	1.93	2.01	2.09
1.08	Vehicle Running Expenses	0.70	0.73	0.77	0.81	0.85	0.89	0.92	0.96	1.00	1.04	1.08	1.13	1.17	1.22
1.09	Professional Fees Expense	3.51	3.68	3.86	4.06	4.26	4.46	4.65	4.85	5.04	5.25	5.46	5.68	5.90	6.14
1.10	Community Development	0.58	0.61	0.64	0.68	0.71	0.74	0.78	0.81	0.84	0.87	0.91	0.95	0.98	1.02
1.11	Communication Expenses	0.14	0.15	0.15	0.16	0.17	0.18	0.19	0.19	0.20	0.21	0.22	0.23	0.24	0.25
1.12	Conveyance Expenses	0.15	0.16	0.17	0.18	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27
1.13	Insurance Expense	3.04	3.19	3.35	3.52	3.70	3.87	4.03	4.20	4.37	4.55	4.73	4.92	5.12	5.32
1.14	IE Fees	1.98	2.08	2.18	2.30	2.41	2.52	2.63	2.74	2.85	2.97	3.09	3.21	3.34	3.47
1.15	Routine Maintenance Cost	9.68	10.17	10.66	11.22	11.77	12.32	12.85	13.38	13.93	14.49	15.07	15.68	16.30	16.95
1.16	Horticulture & ROW Maintenance	5.89	6.19	6.49	6.83	7.17	7.50	7.82	8.14	8.48	8.82	9.17	9.54	9.92	10.32
1.17	Miscellaneous and Contingency	1.41	1.47	1.54	1.62	1.70	1.78	1.86	1.87	2.01	2.09	2.18	2.27	2.36	2.45
	Subtotal of O&M Cost	44.09	47.21	49.51	52.10	54.67	57.19	59.67	60.87	64.66	67.29	69.98	72.79	75.69	78.72
2	Major Maintenance Cost	-	102.82	60.10	-	51.63	-	94.08	-	-	129.02	-	107.88	-	-
3	Periodic Cost of TMS/HTMS Replacement	1.83	-	-	-	-	-	-	2.53	-	-	-	-	-	-
4	Balance Works Cost	52.18	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**98.10**	**150.03**	**109.61**	**52.10**	**106.30**	**57.19**	**153.75**	**63.41**	**64.66**	**196.31**	**69.98**	**180.67**	**75.69**	**78.72**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Project - Narketpally to Medarametla	
Ordinary Repair Cost for Flexible (with GST)	**9,67,91,805**
(inclusive of GST)	**= 4.55 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD **2,55,147**	**Urban** More than 4500 CVD **2,92,255**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
						Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	390374.00	447151.00	-	-	-	-
		Paved shoulder	1.70	433749.00	496834.00	191.40	-	8,30,19,559	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	510293.00	584511.00	-	-	-	-
		Paved shoulder	2.20	561323.00	642962.00	-	21.42	-	1,37,72,246
					TOTAL	**212.820**		**9,67,91,805**	

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	1.00%
	Volume (cum)			5.00
	Rs/m^3			11004
	Cost in Rupees			55,018
	ii) Patch repair	100 % Patch less	As & when required	1.00%
	Area (sqm)			100
	Rs/m^2			440
	Cost in Rupees			44,014
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	1.00%
	Area (sqm)			100
	Rs/m^2			87
	Cost in Rupees			8,728
	b) Width less than 3 mm	75 % Crack Less	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			58
	Cost in Rupees			4,338
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.50%
	Area (sqm)			112.5
	Rs/m^2			440
	Cost in Rupees			49,516
	v) Road marking	14%	Once in 7th year & @ Repaired location	27679
	SUB TOTAL			**1,89,293**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6322
	ii) Kuccha Drain Maintenance	100%	Twice in a Year	1111
	SUB TOTAL			**7,433**
3	**Maintenance of Cross Drainage works:**			
	i) Repair of floors	100%	Once in a Year	5067
	ii) Repair of parapets	100%	As & when required	2111
	SUB TOTAL			**7,178**
4	**Maintenance of Minor & Major Bridges:**			
	i) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints	100%	As & when required	37,043
	ii) Repair of minor washouts, erosion scour and animal holes			
	iii) Sealing Cracks with Cement/ Epoxy Mortar			
	iv) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**37,043**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometer stone etc.		Once in a Year	3704
	ii) Replacement and providing additional retro reflective signage	25%	Covering Total Network in 4-5 Years	9261
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1235
	iv) Traffic Census		Once in a Year	0
	v) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**14,200**
	GRAND TOTAL (Normal)			**2,55,147**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	7228
	ii)Repairs to footpath	100%	As & when required	4939
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4939
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7655
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9878
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2470
	SUB TOTAL			**37,109**
	GRAND TOTAL (Urban)			**2,92,255**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY - 2028) (From Ch. 0+000 to Ch. 77+000)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						14,37,472	10	1,37,13,487
	For BC	Sqm	2	76,608	8.75		13,40,640	13,40,640		
	For DBM	Sqm	2	2,129	7.00		29,800	29,800		
	For Misc. Location	Sqm	2	3,830	8.75		67,032	67,032		
2	PMB 70-10V with 40 mm	Cum	2	80,438	8.75	0.04	56,307	56,307	12,289	69,19,67,073
3	DBM with 50 mm	Cum	2	2,129	7.00	0.05	1,490	1,490	9,391	1,39,92,137
4	Milling	Sqm	2	2,129	7.00		30,597	30,597	90	27,53,766
5	Earthen Shoulder	Cum	2	71,820	1.50	0.060	12,928	12,928	526	67,93,454
	Service Road									
6	Tack coat	Sqm	1	5,345	5.0		26,828	26,828	10	2,55,944
7	BC with 30 mm	Cum	1	5,345	5.0	0.03	805	805	10,542	84,84,958
8	Micro Surfacing	Sqm	1	5,345	5.0		26,828	26,828	180	48,29,130
	Other Works									
9	Raising of Road Kerb	Rmt	2	36,685			73,370	73,370	268	1,96,63,728
10	Painting of Kerb	Sqm	2	73,370		0.375	55,027	55,027	108	59,42,954
11	Road Marking	Sqm					58,495	58,495	545	3,18,79,973
	MCW									
	a) Median & Edge line	Sqm	4	80,438	0.15		48,263			
	b) Lane line	Sqm	2	26,545	0.10		5,309			
	Service Road									
	a) Edge line	Sqm	2	10,689	0.10		2,138			
	Junction crossing	Sqm					2,785			
12	Miscellaneous	5%								4,00,13,830
Total Major Maintenance Cost (Rs.)										**84,02,90,434**
Total Major Maintenance Cost with 18% GST (Rs.)										**99,15,42,712**
Total Major Maintenance Cost with GST (Cr.)										**99.15**
Per km Cost (lakhs)										**46.58**
Escalation Factor for Major Maintenance Cost (FY - 2028) (From Ch. 0+000 to Ch. 77+000)										**1.05**
Total Escalated Cost for Major Maintenance Cost (FY - 2028) (From Ch. 0+000 to Ch. 77+000) (Cr.)										**102.82**

Major Maintenance Cost (FY - 2029) (From Ch. 77+000 to Ch. 120+000)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						8,11,840	10	77,44,957
	For BC	Sqm	2	42,560	8.75		7,44,800	7,44,800		
	For DBM	Sqm	2	2,129	7.00		29,800	29,800		
	For Misc. Location	Sqm	2	2,128	8.75		37,240	37,240		
2	PMB 70-10V with 40 mm	Cum	2	44,688	8.75	0.04	31,282	31,282	12,289	38,44,26,152
3	DBM with 50 mm	Cum	2	2,129	7.00	0.05	1,490	1,490	9,391	1,39,92,137
4	Milling	Sqm	2	2,129	7.00		30,239	30,239	90	27,21,546
5	Earthen Shoulder	Cum	2	39,900	1.50	0.060	7,182	7,182	526	37,74,141
	Service Road									
6	Tack coat	Sqm	1	2,971	5.0		14,911	14,911	10	1,42,253
7	BC with 30 mm	Cum	1	2,971	5.0	0.03	447	447	10,542	47,15,915
8	Micro Surfacing	Sqm	1	2,971	5.0		14,911	14,911	180	26,84,016
	Other Works									
9	Raising of Road Kerb	Rmt	2	20,381			40,761	40,761	268	1,09,24,293
10	Painting of Kerb	Sqm	2	40,761		0.375	30,571	30,571	108	33,01,641
11	Road Marking	Sqm					32,498	32,498	545	1,77,11,392
	MCW									
	a) Median & Edge line	Sqm	4	44,688	0.15		26,813			
	b) Lane line	Sqm	2	14,747	0.10		2,949			
	Service Road									
	a) Edge line	Sqm	2	5,941	0.10		1,188			
	Junction crossing	Sqm					1,548			
12	Miscellaneous	5%								2,26,06,922
Total Major Maintenance Cost (Rs.)										**47,47,45,366**
Total Major Maintenance Cost with 18% GST (Rs.)										**56,01,99,532**
Total Major Maintenance Cost with GST (Cr.)										**56.02**
Per km Cost (lakhs)										**26.32**
Escalation Factor for Major Maintenance Cost (FY - 2029) (From Ch. 77+000 to Ch. 120+000)										**1.10**
Total Escalated Cost for Major Maintenance Cost (FY - 2029) (From Ch. 77+000 to Ch. 120+000) (Cr.)										**60.10**

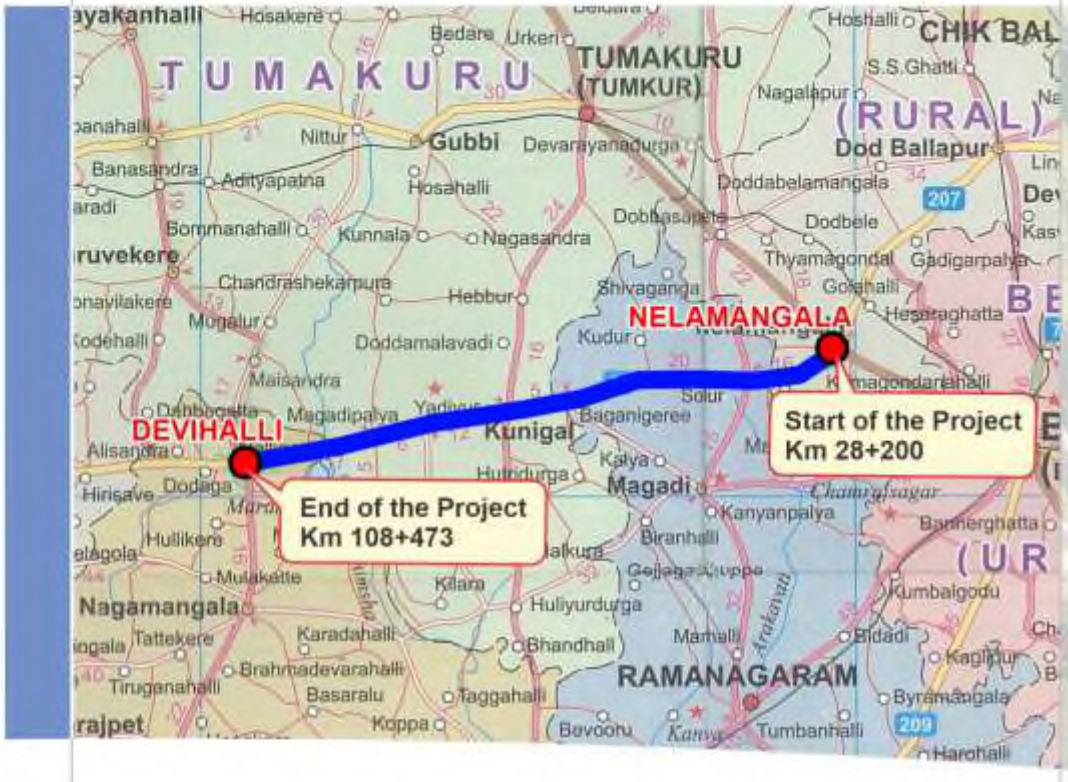
Major Maintenance Cost (FY - 2031) (From Ch. 120+000 to Ch. 155+000)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						6,55,432	10	62,52,825
	For BC	Sqm	2	34,048	8.75		5,95,840	5,95,840		
	For DBM	Sqm	2	2,129	7.00		29,800	29,800		
	For Misc. Location	Sqm	2	1,702	8.75		29,792	29,792		
2	PMB 70-10V with 40 mm	Cum	2	35,750	8.75	0.04	25,025	25,025	12,289	30,75,40,921
3	DBM with 50 mm	Cum	2	2,129	7.00	0.05	1,490	1,490	9,391	1,39,92,137
4	Milling	Sqm	2	2,129	7.00		30,149	30,149	90	27,13,446
5	Earthen Shoulder	Cum	2	31,920	1.50	0.060	5,746	5,746	526	30,19,313
	Service Road									
8	Tack coat	Sqm	1	2,375	5.0		11,924	11,924	10	1,13,753
9	BC with 30 mm	Cum	1	2,375	5.0	0.03	358	358	10,542	37,71,092
10	Micro Surfacing	Sqm	1	2,375	5.0		11,924	11,924	180	21,46,280
	Other Works									
11	Raising of Road Kerb	Rmt	2	16,304			32,609	32,609	268	87,39,435
12	Painting of Kerb	Sqm	2	32,609		0.375	24,457	24,457	108	26,41,313
13	Road Marking	Sqm					25,998	25,998	545	1,41,68,877
	MCW									
	a) Median & Edge line	Sqm	4	35,750	0.15		21,450			
	b) Lane line	Sqm	2	11,798	0.10		2,360			
	Service Road									
	a) Edge line	Sqm	2	4,751	0.10		950			
	Junction crossing	Sqm					1,238			
14	Miscellaneous	5%								1,82,54,970
Total Major Maintenance Cost (Rs.)										**38,33,54,362**
Total Major Maintenance Cost with 18% GST (Rs.)										**45,23,58,147**
Total Major Maintenance Cost with GST (Cr.)										**45.24**
Per km Cost (lakhs)										**21.25**
Escalation Factor for Major Maintenance Cost (FY - 2031) (From Ch. 120+000 to Ch. 155+000)										**1.20**
Total Escalated Cost for Major Maintenance Cost (FY - 2031) (From Ch. 120+000 to Ch. 155+000) (Cr.)										**51.63**

Major Maintenance Cost (FY - 2033) (From Ch. 155+000 to Ch. 212+500)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						11,24,656	10	1,07,29,222
	For BC	Sqm	2	59,584	8.75		10,42,720	10,42,720		
	For DBM	Sqm	2	2,129	7.00		29,800	29,800		
	For Misc. Location	Sqm	2	2,979	8.75		52,136	52,136		
2	PMB 70-10V with 40 mm	Cum	2	62,563	8.75	0.04	43,794	43,794	12,289	53,81,96,612
3	DBM with 50 mm	Cum	2	2,129	7.00	0.05	1,490	1,490	9,391	1,39,92,137
4	Milling	Sqm	2	2,129	7.00		30,418	30,418	90	27,37,656
5	Earthen Shoulder	Cum	2	55,860	1.50	0.060	10,055	10,055	526	52,83,797
	Service Road									
6	Tack coat	Sqm	1	4,157	5.0		20,867	20,867	10	1,99,067
7	BC with 30 mm	Cum	1	4,157	5.0	0.03	626	626	10,542	65,99,412
8	Micro Surfacing	Sqm	1	4,157	5.0		20,867	20,867	180	37,55,990
	Other Works									
9	Raising of Road Kerb	Rmt	1	57,065			57,065	57,065	268	1,52,94,011
10	Painting of Kerb	Sqm	2	57,065		0.375	42,799	42,799	108	46,22,297
11	Road Marking	Sqm					45,496	45,496	545	2,47,95,535
	MCW									
	a) Median & Edge line	Sqm	4	62,563	0.15		37,538			
	b) Lane line	Sqm	2	20,646	0.10		4,129			
	Service Road									
	a) Edge line	Sqm	2	8,314	0.10		1,663			
	Junction crossing	Sqm					2,166			
12	Miscellaneous	5%								3,13,10,287
Total Major Maintenance Cost (Rs.)										**65,75,16,024**
Total Major Maintenance Cost with 18% GST (Rs.)										**77,58,68,908**
Total Major Maintenance Cost with GST (Cr.)										**77.59**
Per km Cost (lakhs)										**36.45**
Escalation Factor for Major Maintenance Cost (FY - 2033) (From Ch. 155+000 to Ch. 212+500)										**1.30**
Total Escalated Cost forMajor Maintenance Cost (FY - 2033) (From Ch. 155+000 to Ch. 212+500) (Cr)										**94.08**

Major Maintenance Cost (FY - 2036) (From Ch. 0+000 to Ch. 120+000)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						16,48,561	10	1,57,27,272
	For BC	Sqm	2	86,993	8.75		15,22,378	15,22,378		
	For DBM	Sqm	2	3,576	7.00		50,065	50,065		
	For Misc. Location	Sqm	2	4,350	8.75		76,119	76,119		
2	BC with 30 mm	Cum	2	91,343	8.75	0.03	47,955	47,955	10,542	50,55,51,014
3	DBM with 50 mm	Cum	2	3,576	7.00	0.05	2,503	2,503	9,391	2,35,06,790
4	Milling	Sqm	2	3,576	7.00		51,301	51,301	90	46,17,060
	Microsurfacing	Sqm	2	33,784	8.75		5,91,216	5,91,216	180	10,64,18,813
5	Earthen Shoulder	Cum	2	1,11,720	1.50	0.060	20,110	20,110	526	1,05,67,595
	Service Road									
6	Tack coat	Sqm	1	8,314	5.0		41,733	41,733	10	3,98,135
7	BC with 30 mm	Cum	1	8,314	5.0	0.03	1,252	1,252	10,542	1,31,98,824
8	Micro Surfacing	Sqm	1	8,314	5.0		41,733	41,733	180	75,11,980
	Other Works									
9	Raising of Road Kerb	Rmt	2	57,065			1,14,131	1,14,131	268	3,05,88,022
10	Painting of Kerb	Sqm	2	1,14,131		0.375	85,598	85,598	108	92,44,595
11	Road Marking on BC	Sqm					68,493	68,493	545	3,73,28,582
	Road Marking on Micro-surfacing	Sqm					22,500	22,500	713	1,60,42,484
	MCW									
	a) Median & Edge line on BC surface	Sqm	4	91,343	0.15		54,806			
	a) Median & Edge line on Micro surfacing	Sqm	4	33,784	0.15		20,270			
	b) Lane line on BC Surface	Sqm	2	30,143	0.10		6,029			
	b) Lane line on Micro surfacing	Sqm	2	11,149	0.10		2,230			
	Service Road									
	a) Edge line	Sqm	2	16,628	0.10		3,326			
	Junction crossing	Sqm					4,333			
12	Miscellaneous	5%								3,90,35,058
Total Major Maintenance Cost (Rs.)										**81,97,36,223**
Total Major Maintenance Cost with 18% GST (Rs.)										**96,72,88,743**
Total Major Maintenance Cost with GST (Cr.)										**96.73**
Per km Cost (lakhs)										**45.44**
Escalation Factor for Major Maintenance Cost (FY - 2036) (From Ch. 0+000 to Ch. 120+000)										**1.47**
Total Escalated Cost for Major Maintenance Cost (FY - 2036) (From Ch. 0+000 to Ch. 120+000) (Cr.)										**129.02**

Major Maintenance Cost (FY - 2038) (From Ch. 120+000 to Ch. 212+500)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						12,95,286	10	1,23,57,030
	For BC	Sqm	2	68,351	8.75		11,96,143	11,96,143		
	For DBM	Sqm	2	2,810	7.00		39,337	39,337		
	For Misc. Location	Sqm	2	3,418	8.75		59,807	59,807		
2	BC with 30 mm	Cum	2	71,769	8.75	0.03	37,678	37,678	10,542	39,72,14,918
3	DBM with 50 mm	Cum	2	2,810	7.00	0.05	1,967	1,967	9,391	1,84,69,621
4	Micro Surfacing	Sqm	2	26,545	8.75		4,64,538	4,64,538	180	8,36,16,908
5	Milling	Sqm	2	2,810	7.00		40,304	40,304	90	36,27,318
6	Earthen Shoulder	Cum	2	87,780	1.50	0.060	15,800	15,800	526	83,03,110
	Service Road									
10	Tack coat	Sqm	1	6,532	5.0		32,790	32,790	10	3,12,820
11	BC with 30 mm	Cum	1	6,532	5.0	0.03	984	984	10,542	1,03,70,504
12	Micro Surfacing	Sqm	1	6,532	5.0		32,790	32,790	180	59,02,270
	Other Works									
13	Raising of Road Kerb	Rmt	2	44,837			89,674	89,674	268	2,40,33,446
14	Painting of Kerb	Sqm	2	89,674		0.375	67,256	67,256	108	72,63,610
15	Road Marking on BC	Sqm					53,815	53,815	545	2,93,29,355
	Road Marking on Microsurfacing	Sqm					17,679	17,679	713	1,26,05,129
	MCW									
	a) Median & Edge line on BC surface	Sqm	4	71,769	0.15		43,061			
	a) Median & Edge line on Micro surfacing	Sqm	4	26,545	0.15		15,927			
	b) Lane line on BC Surface	Sqm	2	23,684	0.10		4,737			
	b) Lane line on Micro surfacing	Sqm	2	8,760	0.10		1,752			
	Service Road									
	a) Edge line	Sqm	2	13,065	0.10		2,613			
	Junction crossing	Sqm					3,404			
16	Miscellaneous	5%								3,06,70,302
Total Major Maintenance Cost (Rs.)										**64,40,76,340**
Total Major Maintenance Cost with 18% GST (Rs.)										**76,00,10,081**
Total Major Maintenance Cost with GST (Cr.)										**76.00**
Per km Cost (lakhs)										**35.70**
Escalation Factor for Major Maintenance Cost (FY - 2038) (From Ch. 120+000 to Ch. 212+500)										**1.58**
Total Escalated Cost for Major Maintenance Cost (FY - 2038) (From Ch. 120+000 to Ch. 212+500) (Cr.)										**107.88**

FP Project Management



Technical Due Diligence Study of Nelamangala - Devihalli Section of NH-75 from km. 28+200 to km. 108+473 in the State of Karnataka under NHDP Phase-IIIA on Design, Build, Operate and Transfer (BOT) Basis

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	VKD / STP	RMW	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location of the Project Road 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 9
3.3 Major / Minor Junctions 10
3.4 Condition Survey of Bridge 10
3.5 Condition Survey of Culverts 41
3.6 Drainage 42
3.7 Slope Protection 42
3.8 Road Furniture 42
3.9 Avenue Plantation and Median Plantation 47
3.10 Toll Plaza 48
3.10.1 Lane Equipment 49
3.10.2 RFID ETC Transceiver 49
3.10.3 Lane Controller with Industrial PC 50
3.10.4 Automatic Vehicle Classification (AVC) Sensors 50
3.10.5 Automatic Lane Barrier 50
3.10.6 Lane Traffic Light (LTL) and User Fare Display (UFD) 51

3.10.7 Incident Capture Camera (AVC Camera) 51
3.10.8 License Plate Image Capture Camera (LPIC) 51
3.10.9 Over Head Lane Signal (OHLS) 51
3.10.10 Toll Booth Equipment 52
3.10.11 Medium Speed Weigh in Motion (MSWIM) 52
3.10.12 Plaza Equipment 53
3.10.13 55" LED screen for CCTV monitoring 53
3.10.14 Workstations in Control Room, POS room 54
3.11 Bus Bays and Passenger Shelters 60
3.12 Truck Lay-bye 60
3.13 Toilet Block 61
3.14 Balance Work Status 62
3.15 COS work at Site 62
3.16 Operation and Maintenance 62
3.16.1 O&M Contract 62
3.16.2 Organization Chart 62
3.16.3 Operation 65
3.16.4 Routine Maintenance 65
4 Pavement Investigation and Assessment 66
4.1 General 66
4.2 Axle Load and VDF 66
4.3 Design Traffic 66
4.4 Network Survey Vehicles (NSV) Survey 67
4.5 Structural Investigations 68
4.6 Test pit and Subgrade Investigation 69
4.7 Periodic Maintenance Strategy 73
5 Cost Estimates 75
5.1 General 75
5.2 Rate Assumption 75
5.3 Balance Work Cost 77
5.4 Routine O&M Cost 77
5.5 Major Maintenance Cost 78
5.6 Periodic Replacement of TMS / System 78
5.7 Escalation Assumption 78
5.8 Summary of Cost 79

Annexures 81
Annexure I - Routine Maintenance Cost 82
Annexure II - Major Maintenance Cost 86

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Details of Summary for Structures 10
Table 3-2 Condition Survey of Major Structure 12
Table 3-3 Details of Lighting on Project Road 42
Table 3-4 Details of Summary for Toll Plaza Items 48
Table 3-5 Details of Summary for Toll Plaza Items 54
Table 3-6 Details of Truck Lay-bye 61
Table 4-1 Vehicle Damage Factor (VDF) 66
Table 4-2 MSA Calculation 66
Table 4-3 Summary of NSV Survey 67
Table 4-4 Summary of FWD Survey 68
Table 4-5 Test Results Summary of Natural Ground Soil Samples 69
Table 4-6 Test Results Summary of Granular Layer Samples 71
Table 4-7 Summary of Pavement Crust Thickness 73
Table 4-8 Major Maintenance Cycle 74
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 75
Table 5-2 Summary of Unit Rates 76
Table 5-3 Summary of Operation Cost 78
Table 5-4 Escalation 78

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start of Project Road 5
Figure 2-3 End of Project Road 5
Figure 3-1 Photographs of Pavement Condition (MCW) 8
Figure 3-2 Photographs of Service Road 9
Figure 3-3 Photographs of Major Junctions 10
Figure 3-4 Photographs of Minor Junctions 10
Figure 3-5 Photographs of Major structures 39
Figure 3-6 Photographs of Culverts 41
Figure 3-7 Photographs of Drainage 42
Figure 3-8 Photographs of Pavement Marking 43
Figure 3-9 Photographs of Road Studs 44
Figure 3-10 Photographs of Sign Boards 44
Figure 3-11 Photographs of Street Light 45
Figure 3-12 Photographs of MBCB / Crash Barrier 46
Figure 3-13 Photographs of Pedestrian Guard Rail 47
Figure 3-14 Photographs of Median Plantation 47
Figure 3-15 Photographs of Toll Plaza-1 49
Figure 3-16 Photographs of Toll Plaza-2 55
Figure 3-17 Photographs of Passenger Shelters 60
Figure 3-18 Photographs of Truck Lay Bye 61

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Nelamangala - Devihalli Section of NH-75 from km. 28+200 to km. 110+000 in the State of Karnataka (hereinafter referred as "Project Road").

Nelamangala - Devihalli Expressway Private Limited (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for widening of Nelamangala - Devihalli Section (from km. 28+200 to km. 110+000) of NH-75 from 2-lane to 4-lane and its Improvement, Operation and Maintenance through a concession on Build, Operate and Transfer (BOT) basis. The project has been taken over by the Client on 11th January 2021 from M/s. Lanco Devihalli Highways Private Limited (LDHPL), with a total concession period of 25 years (commencement of concession period is from 5th January 2008) in concurrence with National Highway Authority of India (NHAI). The length of Project Road is 80.262 kms with first toll plaza at Doddakarenahalli at km. 32+600 and second toll plaza at Karabylu at km. 100+850.

Accordingly, Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and filed investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.
- Formulation of future major maintenance sstrategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS) till the end of concession period
- Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design, and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted.
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyzing the same as per the best engineering / industry practices.

The site visit and inspection are carried out from **07th March 2026** to **09th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features, and overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates:** The chapter summarizes the forecast for O&M and major maintenance cost over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **Nelamangala Devihalli Expressway Private Limited**, is a company promoted by M/s Lanco Devihalli Highways Private Limited (LDHPL) or a Special Purpose Vehicle (SPV) formed for implementing this project on 9th July 2007. The Appointed Date for the Project Road is 5th January 2008. The project has been taken over by the Client on 11th January 2021 from M/s. Lanco Devihalli Highways Private Limited (LDHPL).

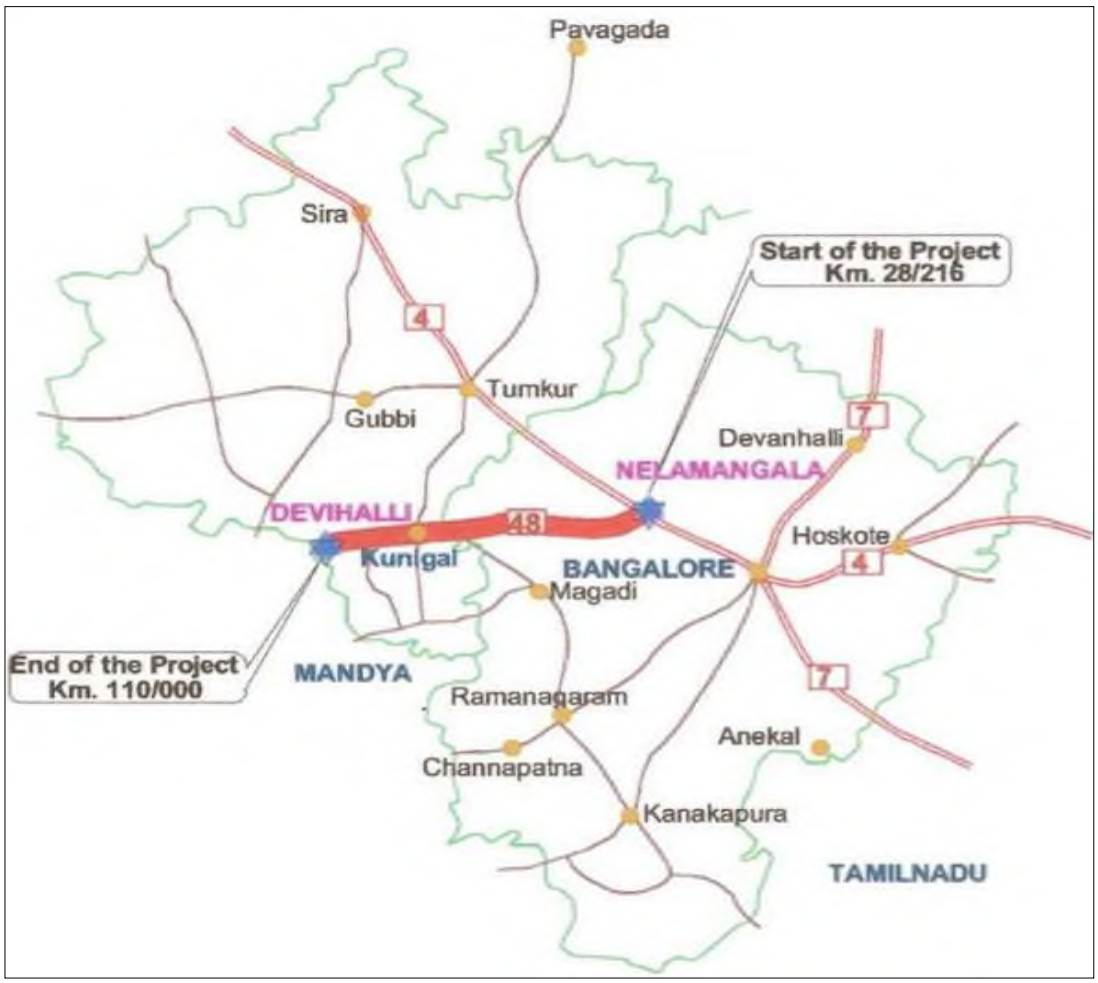
The project has been developed on Build, Operate and Transfer (BOT) basis with concession period of 25 years from the Appointed Date while O&M has started from 23rd June 2012, as PCOD for the project is granted on 23rd June 2012.

2.2 Location of the Project Road

The Project Road is part of National Highway No. 75 of Nelamangala - Devihalli section in the state of Karnataka. The total project length is 80.262 kms.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map



The photographs taken during the site visit are presented below.

Figure 2-2 Start of Project Road

Figure 2-3 End of Project Road

2.3 Climate

The climate of the project area is generally dry except during the South-West monsoon season between June and September / October. The average annual rainfall in the area is around 600 mm. The driest month is January. Most precipitation falls in October. The average annual temperature of the project area is 28.00C, April being the warmest month.

2.4 Terrain

The Project Road traverses through plain / rolling terrain.

2.5 Abutting Land Use

The land use along the highway is predominantly agriculture or barren and rocky.

2.6 Right of Way

The width of the existing Right of Way (RoW) throughout the project stretch is 60.0 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, etc.

2.8 Development as per Schedule-B

The Project Road from Nelamangala (km. 28+200) to Devihalli (km. 110+000) has been developed as a four-lane divided carriageway with a median width of 2 m, service road and other arrangements. The Project Road passes through rural as well as built-up sections.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km.	80.262	From June 2012
2	Construction of Service Road	km.	44.174	Both Side
3	Major Bridges	Nos.	02	
4	Minor Bridges - 03 lane	Nos.	17	
5	Minor Bridges - 06 lane	Nos.	06	
6	Repair & extending of Box Culvert	Nos.	09	
7	Repair & extending of Pipe Culvert	Nos.	73	
8	New Pipe Culvert construction	Nos.	17	
9	Repair of Pipe Culvert	Nos.	04	
10	Pedestrian Underpass	Nos.	06	
11	Vehicular Underpass	Nos.	09	
12	Cattle Underpass	Nos.	08	
13	ROB	No.	01	

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has a paved carriageway of 9.0 m with an earthen shoulder of 1.5 m on either side. The Project Road has a median width of 2.0 m throughout its length.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

Pavement condition survey was carried out from **07th March 2026** to **09th March 2026,** through visual inspection for the entire project length. From the visual inspection, it is found that the average pavement condition of the Project Road is found to be Fair to Good.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (MCW)

km. 38+950

km. 99+007

km. 100+300 - Patch work (LHS)

km. 96+859 - Patch work (RHS)

km. 90+202 - Patch work (LHS)

km. 70+400

km. 38+380 - Patch work (LHS)

km. 28+200 - Patch work (LHS)

km. 73+100-RHS

km. 90+020-LHS

km. 95+020 - Patch work (RHS)

km. 97+030-Patch work (RHS)

3.2 Service Road / Slip Road

The service road with width of 5.5 m is constructed in built-up areas and adjoining underpass locations. The Project Road has total service road length of 48.127 kms and cart track length of 30.580 kms. The photographs taken during the site visit are presented below.

Figure 3-2 Photographs of Service Road

km. 33+800 to km. 34+400 (LHS)

km. 34+430 to km. 35+500 (RHS)

km. 106+100 to km. 105+500 (RHS)

km. 42+260 to km. 42+500 (LHS)

km. 45+200 to km. 44+500 (LHS)

km. 29+900 to km. 30+600 (LHS)

3.3 Major / Minor Junctions

There are 09 nos. of major junctions and 29 nos. of minor junctions on Project Road.

The photographs taken during site visit are presented below.

Figure 3-3 Photographs of Major Junctions

km. 45+890

km. 46+580

Figure 3-4 Photographs of Minor Junctions

Junction at km. 39+950

Junction at km. 49+600

3.4 Condition Survey of Bridge

The inventory of structures including major bridges, minor bridges, ROB's, underpasses and culverts is presented in table as below:

Table 3-1 Details of Summary for Structures

Type of Structure	Number of Structures
Major Structures:	
Road Over Bridge (ROB)	1
Overpasses	Nil
Flyover	Nil

Type of Structure	Number of Structures
Vehicular Underpass (VUP)	9
Pedestrian Underpass (PUP)	3
Cattle Underpass (CUP)	12
Major Bridges (MJB)	2
Minor Bridges (MNB)	24
Culverts:	
Pipe Culverts	114
Box Culverts	14
Total	**179**

The detailed condition survey of structures was carried out by visual inspection. The detailed condition survey of structures was carried out from **07th March 2026** to **09th March 2026**. The observations and findings are presented in table below.

Table 3-2 Condition Survey of Major Structure

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	LHS	RHS	
1	28.250	PUP 7.0 m x 3.5 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition. Not in use.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab	RCC slab	
			Bearing	-	-	
			Slope Protection	-	-	
			Nalla Bed	-	-	
			Parapet / Railing	-	-	
			Expansion Joint	-	-	
			Wearing Coat/ Surface	-	-	
			Approach Slope	-	-	
			Drainage	No issues	No issues.	
2	34.425	CUP 7.5 m x 3.5 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab and Box type, Median covered	RCC slab and Box type	
			Bearing			
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Low level Drain provided	Low level Drain provided	
			Parapet / Railing	RCC parapet	RCC parapet	
			Expansion Joint			
			Wearing Coat/ Surface	BC - No issues	BC - No issues	
			Approach Slope	Turfing is provided and Stable in condition	Turfing is provided and Stable in condition	
			Drainage	No issues	No issues	
3	35.840	Minor Bridge	Age	Old - Low level	New - Low level	The structure is in

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
		15.1 m x 6.5 m	Foundation	RCC footing	RCC footing	sound condition. The nalla bed is to be cleared. Bushes to be removed.
			Sub Structure Abutment / Pier	RCC wall Wall type pier	RCC wall Circular pier	
			Super Structure	RCC solid slab	RCC girder and slab	
			Bearing		4 Nos. - No issues_PTFE	
			Slope Protection	RCC wing wall pitching. Tree growth		
			Nalla Bed	Debris – not clear	Clear	
			Parapet / Railing	RCC railing	RCC parapet	
			Expansion Joint	Need to clean	Need to clean	
			Wearing Coat/ Surface	BC is in good condition	Potholes noticed	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Not seen Proper drainage system is provided	Not seen Grating Provided	
4	37.150	CUP 9.0 m x 3.5 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition. Down take water pipe need to be provided.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab Box Type Median Covered	RCC slab Box Type	
			Bearing			
			Slope Protection	RCC return & pitching Toe wall	RCC return & pitching Toe wall	
			Nalla Bed	Road	Road	
			Parapet / Railing	RCC parapet	RCC parapet	
			Expansion Joint			
			Wearing Coat/ Surface	BC is in good condition	BC is in good condition	
			Approach Slope	Pitching & turfing is provided, and condition is stable	Pitching & turfing is provided, and condition is stable	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	LHS	RHS	
			Drainage	No issues	No issues	
5	43.180	VUP 10.5 m x 5.5 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	Abutment RCC wall	Abutment RCC wall	
			Super Structure	RCC slab Box type	RCC slab Box type	
			Bearing			
			Slope Protection	RCC return & wing wall - full	RCC return & wing wall - full	
			Nalla Bed	Road Service Road	Road Service Road	
			Parapet / Railing	RCC parapet	RCC parapet	
			Expansion Joint			
			Wearing Coat/ Surface	BC - No issues	BC - No issues	
			Approach Slope	Stable	Stable	
			Drainage	Drain pipe provided	Drain pipe provided	
6	43.743	Minor Bridge 8.0 m x 2.2 m	Age	Old - 2 lane Low level	New - 02 lane	The old and new structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC solid slab	RCC slab and Box type	
			Bearing			
			Slope Protection	RCC wing wall is provided for Slope protection	RCC Return Pitching is not in proper condition	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC railing on one side. RCC parapet on other side	RCC parapet	
			Expansion Joint			
			Wearing Coat/ Surface	BC is in good condition	BC is in good condition	
			Approach Slope	Stable in condition	Stable in condition	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	LHS	RHS	
			Drainage	No issues	No issues	
7	46.000	PUP (Subway for Village with staircase)	Age	New - 2 lane	New - 2 lane	Sound in condition. Not in use
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab	RCC slab	
			Bearing	-	-	
			Slope Protection	-	-	
			Nalla Bed	-	-	
			Parapet / Railing	-	-	
			Expansion Joint	-	-	
			Wearing Coat/ Surface	-	-	
			Approach Slope	-	-	
			Drainage	-	-	
8	49.526	Minor Bridge Skew 8.0 m x 3.5 m	Age	Old - 2 lane Low level	New - 2 lane	The old and new structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC solid slab	RCC slab	
			Bearing			
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC Railing is damaged	RCC parapet	
			Expansion Joint			
			Wearing Coat/ Surface	BC is in good condition	BC is in good condition	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Not seen Provided drainage arrangement	Not seen Provided drainage arrangement	
9	53.300	Minor Bridge 10.0 m x 4.60 m	Age	Old - 2 lane Low level	New - 02 lane Low level	
			Foundation	RCC footing	RCC footing	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
			Sub Structure Abutment / Pier	RCC retaining wall. Bottom crack	Abutment RCC wall	The old and new structure is in sound condition.
			Super Structure	RCC girder	RCC solid slab Box type	
			Bearing	PTFE type		
			Slope Protection	RCC return, Tree growth		
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC railing	RCC parapet	
			Expansion Joint			
			Wearing Coat/ Surface	BC - No issues	BC - No issues	
			Approach Slope			
			Drainage	Not seen Provided drainage arrangement	Not seen Provided drainage arrangement	
10	54.120	PUP 7.0 m x 3.5 m	Age	New - 2 lane	New - 2 lane	Structure is in sound condition
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab	RCC slab	
			Bearing	-	-	
			Slope Protection	-	-	
			Nalla Bed	-	-	
			Parapet / Railing	-	-	
			Expansion Joint	-	-	
			Wearing Coat/ Surface	-	-	
			Approach Slope	-	-	
			Drainage	-	-	
11	54.610	Minor Bridge 6.0 m x 3.3 m	Age	Old - 2 lane Low level	New - 02 lane Low level	
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
			Super Structure	Solid slab Minor Honey Combing is observed	Solid slab Minor Honey Combing is observed	The old and new structure is in sound condition.
			Bearing	-	-	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	Right stone parapet Left RCC parapet	RCC parapet	
			Expansion Joint	-	-	
			Wearing Coat/ Surface	BC not done	BC is in good condition.	
			Approach Slope	Stable	Stable	
			Drainage	Not seen	Provided	
12	58.735	Minor Bridge RHS - New 8.6 m x 2.10 m	Age	Old - Low level 2 lane	New - 2 lane	The old and new structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall RCC wall type pier	Abutment RCC wall RCC wall type pier	
			Super Structure	RCC solid slab	RCC solid slab	
			Bearing	-	-	
			Slope Protection	RCC return & pitching Not proper in condition	RCC return & pitching Not proper in condition	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC railing	RCC railing	
			Expansion Joint	-	-	
			Wearing Coat/ Surface	BC - Rough damaged	BC - Rough damaged	
			Approach Slope	Stable	Stable	
			Drainage	Grating provided	Grating provided	
13	61.930	Minor Bridge Skew 7.50 m x 4.0 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab	RCC slab	
			Bearing			

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC – parapet	RCC - parapet	
			Expansion Joint			
			Wearing Coat/ Surface	BC is good in condition	BC is good in condition	
			Approach Slope			
			Drainage	Grating provided	Grating need to be provided	
14	62.350	Minor Bridge 8.0 m x 2.6 m	Age	New - 2 lane	widening - 2 lane	Structure is in sound condition, need to be Repair wearing course.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab	RCC slab	
			Bearing			
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC parapet No issues	RCC parapet No issues	
			Expansion Joint			
			Wearing Coat/ Surface	BC is good in condition	BC is good in condition	
			Approach Slope	Stable	Stable	
			Drainage	Drain to be provided	Drain to be provided	
15	65.400	VUP Super-elevation 9.3 m x 5.5 m	Age	New Two Lane	New Two Lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	Abutment RCC wall Concrete RCC	Abutment RCC wall Concrete RCC	
			Super Structure	RCC slab Median covered Box type	RCC slab Median covered Box type	
			Bearing			
			Slope Protection	Return & pitching. Return tilted at top (RHS)	Return & pitching. Return tilted at top.	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	LHS	RHS	
					Quality not satisfactory	
			Nalla Bed	Road Service Road	Road Service Road	
			Parapet / Railing	RCC parapet No issues	RCC parapet No issues	
			Expansion Joint			
			Wearing Coat/ Surface	BC good in condition	BC good in condition	
			Approach Slope	Slope - Stable Pitching Toe wall	Slope - Stable Pitching Toe wall	
			Drainage	No issues	No issues	
16	66.980	CUP 7.0 m x 3.5 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	Abutment - RCC wall	RCC	
			Super Structure	RCC slab and Box Type Median Covered	RCC slab and Box type Median Covered	
			Bearing			
			Slope Protection	RCC return & pitching. No issues	RCC return & pitching. No issues	
			Nalla Bed	Road	Road	
			Parapet / Railing	RCC parapet No issues	RCC parapet No issues	
			Expansion Joint			
			Wearing Coat/ Surface	BC - No problem	BC - No problem	
			Approach Slope	Stable	Stable	
			Drainage	Not seen Provided drain	Not seen Provided drain	
17	67.330	Minor Bridge Canal 12.0 m x 4.10 m	Age	New – Lane	New - Lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	Abutment RCC Wall	Abutment RCC Wall	
			Super Structure	RCC slab	RCC slab	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	LHS	RHS	
				Box type	Box type	
			Bearing			
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Canal water Both side Service Road	Canal water Both side Service Road	
			Parapet / Railing	RCC parapet	RCC parapet	
			Expansion Joint			
			Wearing Coat/ Surface	BC is in good condition	BC is in good condition	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	No issues	No issues	
18	67.950	Minor Bridge 6.0 m x 3.60 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition.
			Foundation	RCC Footing	RCC Footing	
			Sub Structure Abutment / Pier	Abutment - CC wall	Abutment - CC wall	
			Super Structure	RCC slab and Box type	RCC slab and Box type	
			Bearing			
			Slope Protection	Return & pitching	Return & pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC parapet	RCC parapet	
			Expansion Joint	No issues	No issues	
			Wearing Coat/ Surface	BC is in good condition	BC is in good condition	
			Approach Slope	Stable	Stable	
			Drainage	Grating provided Clean	Grating provided Clean	
19	68.913	Minor Bridge (PUP) + Minor Bridge)	Age	New - 2 lane	New - 2 lane	
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	Abutment - RCC wall RCC	Abutment - RCC Wall	
			Super Structure	RCC slab and Box Type	RCC slab and Box Type	
			Bearing			
			Slope Protection	RCC return & Pitching	RCC return & Pitching	
			Nalla Bed	Clear	Clear	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
			Parapet / Railing	RCC parapet No issues	RCC parapet No issues	
			Expansion Joint			
			Wearing Coat/ Surface	BC is in good condition	BC is in good condition	
			Approach Slope			
			Drainage	Grating provided	Grating provided	
20	69.513	VUP 10.50 m x 5.5 m	Age	New	New	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC Abutment	RCC Abutment	
			Super Structure	RCC slab and Box type Median Covered	RCC slab and Box type Median Covered	
			Bearing			
			Slope Protection	RCC Return Minor Honey is combing observed.	RCC Return Minor Honey combing is observed.	
			Nalla Bed	Road	Road	
			Parapet / Railing	RCC perfect No problem	RCC perfect No problem	
			Expansion Joint			
			Wearing Coat/ Surface	BC is in good condition	BC is in good condition	
			Approach Slope	Pitching - Turfing Chute provided. Stable in condition	Pitching - Turfing Chute provided. Stable in condition	
			Drainage	Grating Provided		
21	70.063	Minor Bridge 1 Box 7.5 m x 8.90 m Skew	Age	New - 2 lane	New - 2 lane	The structure is in sound condition. No major damages observed.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab and Box type	RCC slab and Box type	
			Bearing			
			Slope Protection	RCC Return & pitching	RCC Return & pitching	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC parapet No issues	RCC parapet No issues	
			Expansion Joint			
			Wearing Coat/ Surface	BC is in good condition. No joint	BC is in good condition. No joint	
			Approach Slope	Stable Pitching & chute provided	Stable Pitching & chute provided	
			Drainage	Grating provided	Grating provided	
22	72+052	CUP 7.0 m x 3.5 m	Age	New - 2 lane	New - 2 lane	
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	Abutment - RCC wall	RCC	
			Super Structure	RCC slab and Box Type Median Covered	RCC slab and Box type Median Covered	
			Bearing			
			Slope Protection	RCC return & pitching. No issues	RCC return & pitching. No issues	
			Nalla Bed	Road	Road	
			Parapet / Railing	RCC parapet No issues	RCC parapet No issues	
			Expansion Joint			
			Wearing Coat/ Surface	BC - No problem	BC - No problem	
			Approach Slope	Stable	Stable	
			Drainage	Not seen Provided drain	Not seen Provided drain	
23	72.533	VUP 2 Boxes 9.60 m x 5.50 m Super-elevation	Age	New - 2 lane	New - 2 lane	The structure is sound in condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab and Box Type Median Covered	RCC slab and Box Type Median Covered	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
			Bearing			
			Slope Protection	RCC return + wing wall Honey combing observed. bushes growth observed at joint	RCC return + wing wall.	
			Nalla Bed	Road BC surface	Road BC surface	
			Parapet / Railing			
			Expansion Joint			
			Wearing Coat/ Surface			
			Approach Slope	Pitching & chute Provided - Toe wall. Stable in condition	Pitching & chute Provided - Toe wall. Stable in condition	
			Drainage			
24	73.603	VUP 1 Box 10.5 m x 5.5 m Super-elevation	Age	New	New	The structure is sound in condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab and Box type Median covered	RCC slab and Box type	
			Bearing			
			Slope Protection	RCC return and pitching. Bushes growth observed. Joint of abutment and return open	RCC return and pitching. Joint Abutment and return - Big Crack observed	
			Nalla Bed	Road - BC Low level, Drain provided	Road - BC	
			Parapet / Railing	RCC parapet	RCC parapet Parapet joint cavity	
			Expansion Joint			
			Wearing Coat/ Surface	BC - repaired. Joint crack	BC is in good condition. Joint crack	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
			Approach Slope	Stable Pitching and chute drain	Stable Pitching and chute drain	
			Drainage	Grating - provided		
25	74.413	CUP 7.0 m x 3.5 m 1 Box	Age	New	New	The structure is sound in condition. No major damages observed.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab and Box type Median covered	RCC slab and Box type	
			Bearing			
			Slope Protection	RCC return and pitching	RCC return and pitching	
			Nalla Bed	Road BT surface	Road BT surface	
			Parapet / Railing	RCC parapet No issues	RCC parapet No issues	
			Expansion Joint			
			Wearing Coat/ Surface	BC rough		
			Approach Slope	Stable in condition Turfing is provided	Stable in condition Turfing is provided	
			Drainage	Grating – clean	Grating - clean	
26	75.688	Minor Bridge 5.5 m x 2.7 m 2 Boxes	Age	New - 2 lane	New - 2 lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	Abutment - RCC Wall	Abutment - RCC Wall	
			Super Structure	RCC slab Box type	RCC slab Box type	
			Bearing			
			Slope Protection	RCC return and pitching	RCC return and pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC parapet No issues	RCC parapet No issues	
			Expansion Joint			

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
			Wearing Coat/ Surface	BC - No issues	BC - No issues	
			Approach Slope	Stable in condition Pitching & chute is provided	Stable in condition Pitching & chute in provided	
			Drainage	Grating provided	Grating provided	
27	76.033	Minor Bridge 8.75 m x 7.30 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	Abutment RCC wall Centre RCC wall Minor Honey Combing is observed	Abutment RCC wall Centre RCC wall Honey combing is observed	
			Super Structure	RCC slab and Box type 4 boxes	RCC slab and Box type 4 boxes	
			Bearing			
			Slope Protection	RCC return - Toe wall. Pitching is provided	RCC return - Toe wall Pitching is provided	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC parapet Minor Honey combing	RCC parapet No issues	
			Expansion Joint			
			Wearing Coat/ Surface	BC is in good condition. No joint	BC is in good condition. No joint	
			Approach Slope	Stable in condition Pitching and chute is provided	Stable in condition Pitching and chute is provided	
			Drainage	Grating is provided, which need to be cleaned.	Grating is provided, which need to be cleaned.	
28	76.473	CUP 2 box opening 5.5 m x 5.0 m x 5.9 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall Minor Honey Combing is observed	RCC wall	
			Super Structure	RCC slab and Box type	RCC slab and Box type	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
			Bearing			
			Slope Protection	RCC return, Pitching is provided	RCC return, Pitching is provided	
			Nalla Bed	Road	Road	
			Parapet / Railing	RCC parapet No issues	RCC parapet No issues	
			Expansion Joint			
			Wearing Coat/ Surface	Rutting is observed on BC	BC is in good condition	
			Approach Slope			
			Drainage	Grating is provided. No problem	Grating is provided. No problem	
29	76.957	CUP Skew 1 Box 7.0 m x 3.5 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab and Box Type	RCC slab and Box Type	
			Bearing			
			Slope Protection	RCC return, Pitching is provided	RCC return, Pitching is provided	
			Nalla Bed	Road Service road both sides		
			Parapet / Railing	RCC Parapet No issues	RCC Parapet No issues	
			Expansion Joint			
			Wearing Coat/ Surface			
			Approach Slope	Stable Pitching and chute	Stable Pitching and chute	
			Drainage	Grating provided	Grating is not seen.	
30	77.955	CUP 1 Box 7.0 m x 3.5 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
			Super Structure	RCC slab and Box type	RCC slab and Box type	
			Bearing			
			Slope Protection	RCC return and pitching	RCC return and pitching	
			Nalla Bed	Road	Road	
			Parapet / Railing	RCC parapet No issues	RCC parapet No issues	
			Expansion Joint			
			Wearing Coat/ Surface	BC rough Approach crack	Approach crack is observed	
			Approach Slope	Stable in condition Pitching - chute drain	Stable in condition Pitching - chute drain	
			Drainage	Blocked. Need to be cleaned.	Blocked. Need to be cleaned.	
31	78.250	PUP 1 opening & 1 opening for pipe culvert	Age	New	New	The structure is in sound condition. Repair to approach settlement is required.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab and Box type	RCC slab and Box type	
			Bearing			
			Slope Protection	RCC return and pitching. Toe wall	RCC return and pitching. Toe wall	
			Nalla Bed	Road	Road	
			Parapet / Railing	RCC parapet	RCC parapet	
			Expansion Joint			
			Wearing Coat/ Surface	BC is in good condition	BC is in good condition	
			Approach Slope	Stable in condition Pitching and chute is provided	Stable in condition Pitching and chute	
			Drainage	Blocked	Grating is not seen.	
32	78.707	Minor Bridge	Age	New - 2 lane	New - 2 lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	Abutment RCC wall Centre RCC wall	Abutment RCC wall Centre RCC wall	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	LHS	RHS	
				Minor Honey Combing is observed	Honey combing is observed	
			Super Structure	RCC slab and Box type 4 boxes	RCC slab and Box type 4 boxes	
			Bearing			
			Slope Protection	RCC return - Toe wall. Pitching is provided	RCC return - Toe wall Pitching is provided	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC parapet No problem	RCC parapet No problem	
			Expansion Joint			
			Wearing Coat/ Surface	BC is in good condition. No joint	BC is in good condition. No joint	
			Approach Slope	Stable in condition Pitching and chute is provided	Stable in condition Pitching and chute is provided	
			Drainage	Grating provided & Clean	Grating provided & Clean	
33	78.784	CUP Skew	Age	New	New	The structure is in sound condition. The RCC return wall on Left requires minor repair.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	Abutment RCC wall	Abutment RCC wall	
			Super Structure	RCC slab and Box type	RCC slab and Box type	
			Bearing			
			Slope Protection	RCC return and Pitching is provided	RCC return and Pitching is provided	
			Nalla Bed	Road	Road	
			Parapet / Railing	RCC parapet	RCC parapet	
			Expansion Joint			
			Wearing Coat/ Surface	BC is in good condition	BC is in good condition	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	No issues	No issues	
34	79.313	CUP	Age	New - 2 lane	New - 2 lane	The structure is in

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	LHS	RHS	
		7.0 m x 3.5 m	Foundation	RCC footing		sound condition.
			Sub Structure Abutment / Pier	RCC slab Damaged due to collision of vehicle	RCC slab Damaged due to collision of vehicle	
			Super Structure	RCC slab	RCC slab	
			Bearing			
			Slope Protection	Return and pitching is provided. Minor Honey Combing is observed	Return and pitching is provided	
			Nalla Bed	SR on both side	SR on both side	
			Parapet / Railing	RCC - No issues	RCC - No issues	
			Expansion Joint			
			Wearing Coat/ Surface	BC - No issues	BC - No issues	
			Approach Slope	Stable in condition Pitching and chute drain is provided	Stable in condition Pitching and chute drain is provided	
			Drainage	Drainage pipe need to be provided	Drainage pipe need to be provided	
35	79.703	ROB - Skew 2 Span, 1 span, Railway Track 24 m x 2 m & 1 m x 14 m	Age	New	New 2 lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	Abutment - RCC wall Centre - RCC pier 4 Nos.	Abutment - RCC wall Centre - RCC pier 4 Nos.	
			Super Structure	RCC girder - 4 Nos. RCC slab	RCC girder - 4 Nos. RCC slab	
			Bearing	PTFE Type	PTFE Type	
			Slope Protection	RCC return & pitching	RCC return & pitching	
			Nalla Bed	Rail Track	Rail Track	
			Parapet / Railing	RCC No issues	RCC No issues	
			Expansion Joint	4 Nos. good in condition	4 Nos. good in condition	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
			Wearing Coat/ Surface	BC damaged Approach settlement repaired	BC surface Rough	
			Approach Slope	Stable	Stable	
			Drainage	No issues	No issues	
36	80.138	VUP 9.60 m x 5.50 m	Age	New	New	The structure is in sound condition. No major damage observed.
			Foundation	RCC footing.	RCC footing	
			Sub Structure Abutment / Pier	Abutment RCC wall	Abutment RCC wall	
			Super Structure	RCC Slab wall Bushes growth is observed. Super-elevation Median covered	RCC slab	
			Bearing	-	-	
			Slope Protection	RCC Return wall. Pitching Road	RCC wing wall – sloping top Pitching	
			Nalla Bed	Low level Box Drain provided	Road low level Box Drain provided	
			Parapet / Railing	RCC parapet No issues	RCC parapet No issues	
			Expansion Joint	-	-	
			Wearing Coat/ Surface	BC damaged	BC No Problem	
			Approach Slope	Common with Adjoining Minor Bridge Stable		
			Drainage	No issues	No issues	
37	80.494	Minor Bridge 6.0 m x 9.8 m	Age	New	New	The structure is in sound condition. No major problem observed.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall 1 span	RCC wall 1 span	
			Super Structure	RCC slab and Box type	RCC slab and Box type	
			Bearing			

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
			Slope Protection	RCC Return Pitching - Toe Wall	RCC Return Pitching - Toe wall	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC Parapet No issues	RCC Parapet No issues	
			Expansion Joint	Nil	Nil	
			Wearing Coat/ Surface	BC is in good condition	BC is in good condition	
			Approach Slope	Stable in condition Pitching, turfing and Chute Drain is provided	Stable in condition Pitching, turfing and Chute Drain is provided	
			Drainage	No issues	No issues	
38	85.777	Minor Bridge (8.80 x 4.70)	Age	Old - 2 Lane Low Level	New - 2 Lane	The structure is in sound condition.
			Foundation	RCC Footing	RCC Footing	
			Sub Structure Abutment / Pier	Abutment RCC Wall	Abutment RCC Wall RCC pier	
			Super Structure	Solid Slab Repaired with geniting - Bushes growth observed	RCC Slab and Box Type - 3 Span	
			Bearing	-	-	
			Slope Protection	RCC return - Pitching	RCC return - Pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC Parapet		
			Expansion Joint	Nil	Nil	
			Wearing Coat/ Surface	BC - No issues	BC - No issues	
			Approach Slope	Stable	Stable	
			Drainage	Grating - Clean	Grating - Clean	
39	90.202	Minor Bridge Skew 6.4 m x 3.2 m	Age	New 2 Lane – Span	Old (Low level) 2 Lane (2 Span)	The structure is in sound condition.
			Foundation	RCC Footing	RCC Footing	
			Sub Structure Abutment / Pier	Abutment - RCC Wall Centre Wall Type pier	Abutment - RCC Wall Centre RCC Pier	
			Super Structure	RCC Slab and Box Type	Solid Slab - Fine crack	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	LHS	RHS	
				Minor Honey Combing observed on toe	observed	
			Bearing	No bearing	No bearing	
			Slope Protection	RCC return. Pitching	RCC return. No Pitching	
			Nalla Bed	Not Clean	Not Clean, Debris	
			Parapet / Railing	RCC Parapet	RCC Railing	
			Expansion Joint	Nil	Nil	
			Wearing Coat/ Surface	BC is in good condition	BC - Damaged	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	To be provided	To be provided	
40	90.557	Vehicular Underpass 9.3 m x 5.5 m	Age	New	New	The structure is in sound condition.
			Foundation	RCC Footing	RCC Footing	
			Sub structure Abutment / Pier	RCC Wall & honey combing	RCC Wall	
			Super Structure	RCC Slab median covered	RCC Slab	
			Bearing	Nil	Nil	
			Slope Protection	Wing wall - Joint crack pitching	Wing wall - Joint crack pitching	
			Nalla Bed	Road	Road	
			Parapet / Railing	RCC Parapet	RCC Parapet	
			Expansion Joint	-	-	
			Wearing Coat/ Surface	BC is in good condition. Approach Joint Crack	BC is in good condition	
			Approach Slope	Pitching and Turfing is provided Retaining wall	Pitching and Turfing is provided Retaining wall	
			Drainage			
41	91.892	Major Bridge (River) 16.3 m x 5 m	Age	Old - 2 Lane	New (Height - 3m)	The structure is in sound condition.
			Foundation	RCC Footing	RCC Footing	
			Sub structure Abutment / Pier	Abutment - RCC Wall Wall Type RCC piers	RCC wall Piers	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	LHS	RHS	
				Condition - Satisfactory		
			Super Structure	5 Span Solid Slab Honey Combing noticed	4 girders and slab Footpath both side Condition No problem	
			Bearing	Elastomeric Bearing		
			Slope Protection	RCC Return and Pitching	Slope wall and pitching	
			Nalla Bed	Standing water Not accessible	Standing water Not accessible	
			Parapet / Railing	RCC - Parapet No issues	RCC - Parapet No issues	
			Expansion Joint	Need to clean	Need to clean	
			Wearing Coat/ Surface	BC - Approach Settlement Cracks	BC - No issues	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Not seen To be provided	Water grating clear	
42	92.557	Vehicular Underpass 10.5 m x 5.5 m	Age	Not constructed	New (2 Lane)	The structure is in sound condition.
			Foundation	-	RCC Footing	
			Sub Structure Abutment / Pier	-	RCC Wall Box Type	
			Super Structure	-	RCC Slab Box Type Tilting observed crack	
			Bearing	-	Nil	
			Slope Protection	-	Wing Wall	
			Nalla Bed	-	Road	
			Parapet / Railing	-	RCC Parapet	
			Expansion Joint	-	Joint Crack	
			Wearing Coat/ Surface	-	BC - Approach slab joint crack	
			Approach Slope		Pitching - Toe wall stable	
			Drainage		Gratings provided	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	LHS	RHS	
43	95.487	Minor Bridge 1 x 9.0 m x 3.0 m	Age	Old - (Low Level) 2 Lane	New - 2 Lane	The structure is in sound condition.
			Foundation	RCC Footing	RCC Footing	
			Sub structure / Abutment / Pier	Abutment RCC Wall	Abutment RCC Wall	
			Super Structure	RCC Solid Slab	Slab - Box Type	
			Bearing	No bearing	No bearing	
			Slope Protection	RCC return - Pitching	RCC return - Pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC Parapet/ Railing Damaged	RCC Parapet	
			Expansion Joints	No Joint		
			Wearing Coat Surface	BC is in good condition	BC - Settlement Potholes	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Not seen to be provided		
44	96.859	Minor Bridge 2 x 2.5 x 2.0	Age	Old (Low level) - 2 lane	New - 2 lane	The structural condition is sound.
			Foundation	RCC footing	RCC footing	
			Sub structure/ Abutment / Pier	Abutment - RCC wall RCC Pier	RCC wall - RCC and Pier Solid Slab	
			Super Structure	RCC Solid Slab	RCC Solid Slab	
			Bearing	No bearing	No bearing	
			Slope Protection	RCC return and pitching. No issues	RCC return and pitching. No issues	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	Railing	RCC Parapet	
			Expansion Joints	No Expansion joint	No Expansion joint	
			Wearing Coat Surface	BC is in good condition	BC is in good condition	
			Approach Slope	No issues	No issues	
			Drainage	No issues	No issues	
45	100.121	Minor Bridge Approx. 1x 20’ x 15’	Age	New - 2 lane	New - 2 lane	The structural condition is sound.
			Foundation	RCC footing	RCC footing	
			Sub structure/ Abutment / Pier	RCC wall	RCC wall	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	**LHS**	**RHS**	
			Super Structure	Solid Slab	Solid slab	
			Bearing			
			Slope Protection	RCC Return & pitching	RCC Return & pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC parapet	RCC parapet	
			Expansion Joints	Nil	Nil	
			Wearing Coat Surface	BC - Damaged Approach settlement observed	BC - Damaged Approach settlement observed	
			Approach Slope	No	No	
			Drainage	No issues	No issues	
46	101.300	Minor Bridge 1 x 7.0 m x 2.0 m	Age	Old (Low Level) - 2 lane	New - 2 lane	The structural condition is sound. The pitching is to be provided on LHS.
			Foundation	RCC footing	RCC footing	
			Sub structure/ Abutment / Pier	Abutment RCC Wall	Box Type	
			Super Structure	RCC Solid slab	RCC slab	
			Bearing			
			Slope Protection	RCC return. No pitching Tube provided	RCC return. No pitching No issues	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC parapet No issues	RCC parapet - 2' No issues	
			Expansion Joints	No joint	No joint	
			Wearing Coat Surface	BC No issues	BC No issues	
			Approach Slope	Stable	Stable	
			Drainage			
47	102.222	Minor Bridge RHS - 2 x 3.0 x 2.5 m	Age	Old - 2 lane	New - 2 lane	The structure is in sound condition. No major issue is noticed.
			Foundation	RCC footing	RCC footing	
			Sub structure/ Abutment / Pier	Abutment RCC wall	RCC Box type - 2 Nos.	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	LHS	RHS	
				RCC pier		
			Super Structure	Footpath	Box type - 2 Nos. RCC Slab	
			Bearing	No bearing	No bearing	
			Slope Protection	RCC return - pitching. No problem	RCC return - pitching. No problem	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC Railing	RCC parapet	
			Expansion Joints	Nil	Nil	
			Wearing Coat Surface	BC is in good condition	BC is in good condition	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	No issues	No issues	
48	103.577	Major Bridge LHS - 4 x 16.3 m (Super-elevation)	Age	Old (Low level) - 2 span	New - 2 lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub structure / Abutment / Pier	Abutment - RCC wall RCC pier wall type	Abutment - RCC wall RCC circular pier Cantilever cap	
			Super Structure	Super-elevation RCC girders (3 nos.) & slab Tree growth	4 RCC girders RCC slab	
			Bearing	Elastomeric Type	Elastomeric Type	
			Slope Protection	RCC return and pitching	RCC return and pitching. No problem	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC railing	RCC parapet	
			Expansion Joints	Good	Good	
			Wearing Coat Surface			
			Approach Slope	Pitching and Turfing are provided. Stable in condition	Pitching and Turfing are provided. Stable in condition	
			Drainage	Provided	Provided	
49	104.077	Vehicular	Age	New	New	The structure is in

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	LHS	RHS	
		Underpass (2 x 5.0 m x 4.5 m)		Service Road - Both side	Service Road - Both side	sound condition.
			Foundation	RCC footing	RCC footing	
			Sub structure / Abutment / Pier	Abutment - RCC Wall Centre - RCC Wall	Abutment - RCC Wall Centre - RCC Wall	Minor honeycomb seen on the wall surface need to be repaired.
			Super Structure	RCC slab Median open	RCC slab Median open	
			Bearing			
			Slope Protection	RCC wing wall	RCC wing wall	
			Nalla Bed	Road	Road	
			Parapet / Railing	RCC Parapet	RCC Parapet	
			Expansion Joints	Nil	Nil	
			Wearing Coat Surface	BC is in good condition	BC is in good condition	
			Approach Slope	Pitching and Turfing are provided. Toe wall Stable in condition	Pitching and Turfing is provided. Toe wall - fitting Stable in condition	
			Drainage	Grating provided No defects are seen.	Grating provided No issues observed	
50	106.067	CUP 1 Box 7.0 m x 3.5 m	Age	New - 2 lane	New - 2 lane	The structure is in sound condition.
			Foundation	RCC footing	RCC footing	
			Sub Structure Abutment / Pier	RCC wall	RCC wall	
			Super Structure	RCC slab and Box type	RCC slab and Box type	
			Bearing			
			Slope Protection	RCC return and pitching	RCC return and pitching	
			Nalla Bed	Road	Road	
			Parapet / Railing	RCC parapet No issues	RCC parapet No issues	
			Expansion Joint			
			Wearing Coat/ Surface	BC rough Approach crack	No issues	
			Approach Slope	Stable in condition	Stable in condition	

Sr. No.	Chainage (km)	Type of Bridge / Spans	Features and Observations			General Comments
			Component	LHS	RHS	
				Pitching - chute drain	Pitching - chute drain	
			Drainage			
51	108.133	Minor Bridge 1 x 10.0 m x 3.0 m	Age	New - 2 Lane	Old - (Low Level) 2 Lane	The structure is in sound condition.
			Foundation	RCC Footing	RCC Footing	
			Sub structure / Abutment / Pier	RCC retaining wall	RCC retaining wall	
			Super Structure	RCC Solid Slab	RCC Solid Slab Bushes growth observed	
			Bearing	No bearing	No bearing	
			Slope Protection	RCC return and pitching	RCC return and pitching	
			Nalla Bed	Clear	Clear	
			Parapet / Railing	RCC Parapet Honey Combing is observed	RCC railing damaged	
			Expansion Joints	Nil	Nil	
			Wearing Coat Surface	BC is in good condition. Crack observed in approach Joint.	BC – No issues	
			Approach Slope	Stable in condition	Stable in condition	
			Drainage	Drain provided	Drain provided	

Figure 3-5 Photographs of Major structures

View of CUP at km. 34+425

View of VUP at km. 43+180

View of MNB at km. 49+526

View of MNB at km. 53+300

Side View of MNB at km. 58+735

View of VUP at km. 65+400

View of CUP at km. 66+980

View of MNB/PUP at km. 68+913

View of VUP at km. 73+603

View of CUP at km. 78+784

View of ROB at km. 79+703

View of MJB at km. 91+892

View of MJB at km. 103+577

View of VUP at km. 104+077

View of ROB at km. 92+557

View of MNB at km. 35+840

3.5 Condition Survey of Culverts

The cross-drainage structure includes hume pipe culverts and box culverts at various locations. There are 23 Nos. of pipe culverts, 66 Nos. of box culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts is satisfactory. The RCC parapet, crash barrier or RCC railing has been provided at culvert locations, which is maintained properly.

In most of culverts, the waterway is clear. However, near to urban area and some location is found blocked due to debris, drainage water or bushes, tree growth, which will be removed by the Concessionaire. The cement concrete pitching or stone pitching has been provided for slope protection.

The culverts are maintained by the Concessionaire during O&M period. However, in case of some culverts, cement concrete pitching has been damaged which required to be addressed under routine repair work by the Concessionaire.

Figure 3-6 Photographs of Culverts

Pipe culvert at km. 70+383

Box culvert at km. 75+373

3.6 Drainage

There are RCC box drains at the built-up areas and earthen drain at rural areas provided for the Project Road. Lined median longitudinal drain is provided at super-elevated sections. Some of the photographs of the drains provided are presented as below.

Figure 3-7 Photographs of Drainage

km. 29+900 (LHS)

km. 33+800 (LHS)

km. 91+010 (LHS)

3.7 Slope Protection

Slope protection and chute drains are found on Project Road at required locations.

3.8 Road Furniture

The Concessionaire has provided additional road furniture along the Project Road as per the standards and specifications mentioned in Schedule-C. Details of the items are provided below.

a) Lighting Along the Project Road

Lighting including fixing of poles and LED lights are provided at following locations on the Project Road in accordance with Clause 12.3 of IRC:SP:84-2014.

Table 3-3 Details of Lighting on Project Road

Sr. No.	Side	Installed/fitted at	No. of (LED) lights
1	Both Side	Highway lighting at 18 no. of locations	540
2	Both Side	Toll Plaza - 02 nos.	163
3	Both Side	Underpasses-12 nos.	72
		Total in (Nos.)	**775**

b) Transverse / Thermoplastic Bar Marking Locations

Transverse / thermoplastic bar markings on either side of carriageway on proposed service road / VUP / VUP approach locations are provided as per Section 11.2 of IRC:35-2015.

Pavement Marking

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D.

Some of the photographs of the pavement marking provided are presented as below.

Figure 3-8 Photographs of Pavement Marking

km. 39+950 (LHS)

km. 88+390 (RHS)

km. 105+050 (LHS)

km. 42+250 (LHS)

Road Studs

Road studs / Cat's eye for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Road studs / Cat's eye has been fixed at junction and zebra crossings.

Some of the photographs of the road studs provided are presented as below.

Figure 3-9 Photographs of Road Studs

km. 30+600

km. 92+300

Traffic Signage / Median Kerb painting / KM Stone

Traffic signs includes roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Some of the photographs of sign boards are presented below.

Figure 3-10 Photographs of Sign Boards

km. 92+000

km. 49+500

km. 40+700

km. 43+970

km. 28+300

km. 39+100

km. 49+500

km. 70+400

km.43+970

Highway Lighting

Highway lighting is provided at underpasses, toll plaza, and built-up locations. High mast lighting is provided at toll plaza location. Highway lighting is also provided at approaches of underpasses.

Some of the photographs of highway lighting are presented below.

Figure 3-11 Photographs of Street Light

km.30+600

km. 79+900

Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site.

Some of the photographs of metal beam crash barriers are presented below.

Figure 3-12 Photographs of MBCB / Crash Barrier

km. 49+540 (LHS)

km.100+410(LHS)

km. 98+850 (LHS)

km. 53+300 (RHS)

Delineators

816 No. of traffic delineators are provided by Concessionaire for the safety of road users along the Project Road.

Pedestrian Guard Rail

The pedestrian guard rails are provided between service road and main carriageway.

Some of the photographs of pedestrian guard rails are presented below.

Figure 3-13 Photographs of Pedestrian Guard Rail

km.29+900 - Besides Service Road (RHS)

km 92+300 - Besides Service Road (LHS)

Road Land Boundary

Road land boundary pillar is not found / available on Project Road.

3.9 Avenue Plantation and Median Plantation

Avenue plantations is observed at some locations. Median plantation has been provided in the project length as per IRC specification.

The photographs taken during the site visit are presented below.

Figure 3-14 Photographs of Median Plantation

Median Plantation at km. 40+700

Median Plantation at km. 43+970

Median Plantation at km. 70+400

Median Plantation at km. 98+800

Avenue Plantation at km. 42+250.

Avenue Plantation at km. 44+830

3.10 Toll Plaza

I. Toll Plaza-1 at km. 32+600

The construction of toll plaza is completed and is in operation. 10 (5+5) Nos. of lanes has been constructed and all are under operation. The Concessionaire has constructed administration, operation and maintenance facility at base camp. All required facilities are available at the toll plaza. Some of the photographs of toll plaza-1 are presented below.

Table 3-4 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 32+600
2	Number of Tolling Lanes	8 lanes for toll operation plus 2 lanes for over-dimensional vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	in each direction
5	Number of Toll Booths	9 singles
6	Canopy	Present
7	Administrative Building	Present
8	Parking cum Toilet Block	Present

Sr. No.	Particulars	Details
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	Tunnel / no
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	No
12	Storage facility for Overloaded Material	No
13	High mast Light	Yes
14	Streetlight	Yes
15	Low mast Light	No
16	User Fee Boards	6
17	Cantilever/Gantry Boards	Yes
18	Automatic boom barrier	Yes

Figure 3-15 Photographs of Toll Plaza-1

Toll Plaza-1 at km. 32+600

Toll Plaza-1 at km. 32+600

3.10.1 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.10.2 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

3.10.3 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which is connected to the common server and are capable of independent storage of data.

3.10.4 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of camera based, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicles is detected by inductive loops. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVCC at TP

3.10.5 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. Torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

3.10.6 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at Toll Plaza

3.10.7 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

3.10.8 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

3.10.9 Over Head Lane Signal (OHLS)

The Overhead Lane Signal (OHLS) for lane “Open” and “Close” sign consists of a pair of “GREEN” (arrow) and “RED” (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

3.10.10 Toll Booth Equipment

- Toll Booth Hardware / Equipment provided are:
- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

The violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.10.11 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

3.10.12 Plaza Equipment

TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio Wi-Fi module. Firewalls with Sophos antivirus is provided.

3.10.13 55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides a view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.10.14 Workstations in Control Room, POS room

Workstations are available in the control room (lane monitoring, administration, and audit), cash room and PoS.

I. Toll Plaza-2 at km. 101+250

The construction of toll plaza is completed and is in operation. 10 (5+5) Nos. of lanes has been constructed and all are under operation. Concessionaire has constructed administration, operation and maintenance facility at base camp. All required facilities are available at the toll plaza. Some of the photographs of toll plaza - 2 are presented below.

Table 3-5 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 101+250
2	Number of Tolling Lanes	8 lanes for toll operation plus 2 lanes for over dimensional vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	in each direction
5	Number of Toll Booths	9 singles
6	Canopy	Present
7	Administrative Building	Present
8	Parking cum Toilet Block	Present
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	Tunnel/no
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	No
12	Storage facility for Overloaded Material	No
13	High mast Light	Yes
14	Streetlight	Yes
15	Low mast Light	No
16	User Fee Boards	6

Sr. No.	Particulars	Details
17	Cantilever/Gantry Boards	Yes
18	Automatic boom barrier	Yes

Figure 3-16 Photographs of Toll Plaza-2

Lane Equipment

The following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data.

Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of camera based, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVCC at Toll Plaza

Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at Toll Plaza

Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at Toll Plaza

Incident Capture Camera (AVC Camera)

The incident capture camera is installed on island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

LPIC at Toll Plaza

Over Head Lane Signal (OHLS)

The Overhead Lane Signal (OHLS) for lane “Open” and “Close” sign consists of a pair of “GREEN” (arrow) and “RED” (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at Toll Plaza

Toll Booth Equipment

- Toll Booth Hardware / Equipment provided are:
- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

The violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

Plaza Equipment

TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio Wi-Fi module. Firewalls with Sophos antivirus is provided.

55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

Workstations in Control Room, POS room

Workstations are available in the control room (lane monitoring, administration, and audit), cash room and PoS.

3.11 Bus Bays and Passenger Shelters

There are 64 Nos. of bus bays / shelter along Project Road. Some of the photographs of the bus bays are presented below.

Figure 3-17 Photographs of Passenger Shelters

km. 44+830

km. 91+090

3.12 Truck Lay-bye

The truck lay-bye are provided at the following locations on Project Road.

Table 3-6 Details of Truck Lay-bye

Sr. No.	Chainage (km)	Remarks
1	32+150 (LHS)	Good condition. No toilet block.
2	32+500 (RHS)	Good condition. No toilet block.
3	64+500 (LHS)	Good condition. No toilet block.
4	64+600 (RHS)	Good condition. No toilet block.
5	88+240 (LHS)	Good condition. No toilet block.
6	88+540 (RHS)	Good condition. No toilet block.

Some of the photographs of the truck lay bye are presented below.

Figure 3-18 Photographs of Truck Lay Bye

km. 32+500

km. 64+500

3.13 Toilet Block

Toilet blocks are provided at the Toll Plaza locations on the Project Road.

Toilet block at Toll Plaza

3.14 Balance Work Status

The Project Road has received Final Completion Certificate on 23rd June 2012 by completing all the works as mentioned in the Technical Schedules of Concession Agreement. There are no balance works to be executed as per Concession Agreement.

3.15 COS work at Site

At present, NHAI has assigned Change of Scope (COS) works to a third party at four locations along the project corridor. Out of these, underpass and approach construction activities are currently in progress at three locations. Consequently, out of the total project length of 80.273 km, a length of 4.778 km under COS work is not considered within the maintenance scope of the Concessionaire.

3.16 Operation and Maintenance

3.16.1 O&M Contract

As per Clause 15.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall conform to all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement.

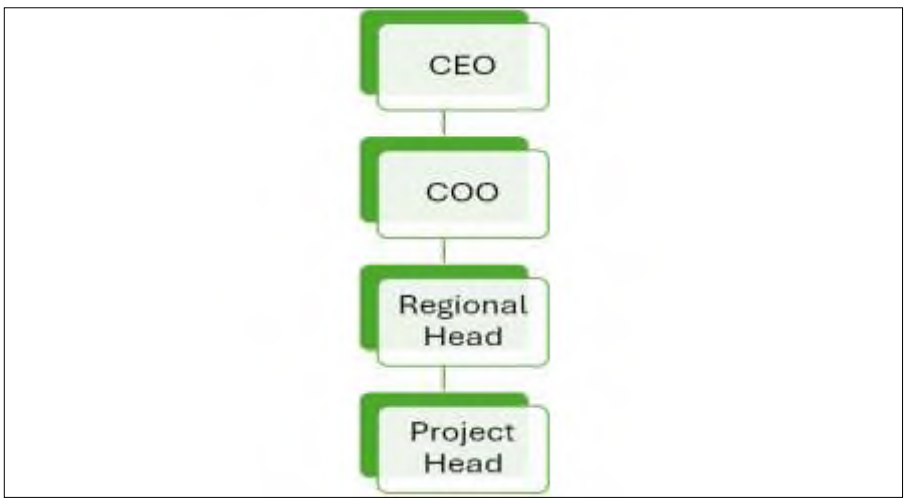
The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

3.16.2 Organization Chart

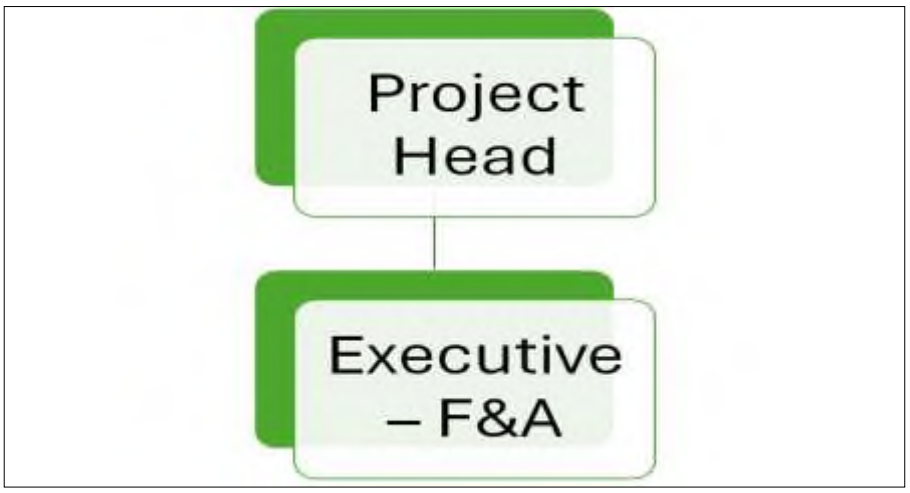
The Concessionaire has given the Organization Chart at site for Operation and maintenance. Accordingly, there is 01 Project Head, 01 Senior Executive (HR), 01 Assistant Manager (TMS / IT), 01 Executive (TMS / IT), 01 Plaza Manager, 01 Assistant Plaza Manager, 04 Cashiers and 04 validators to carry out O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent subcontractors.

.

Organization Chart

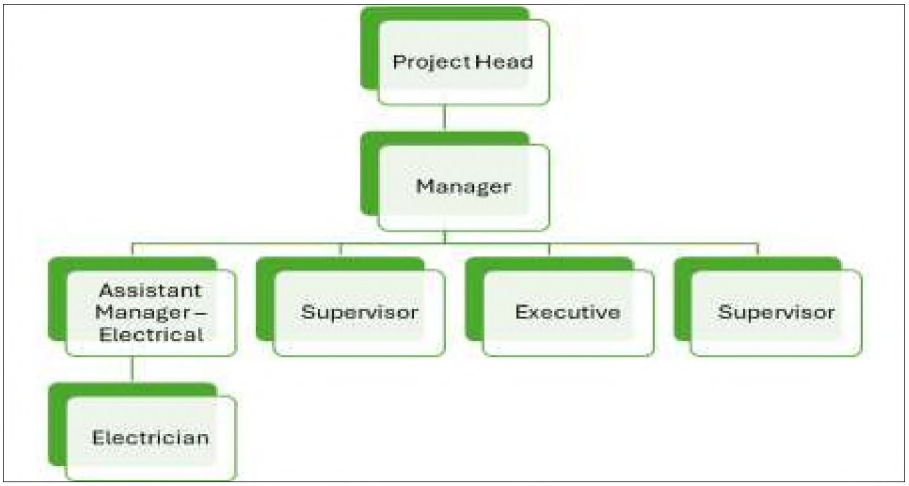


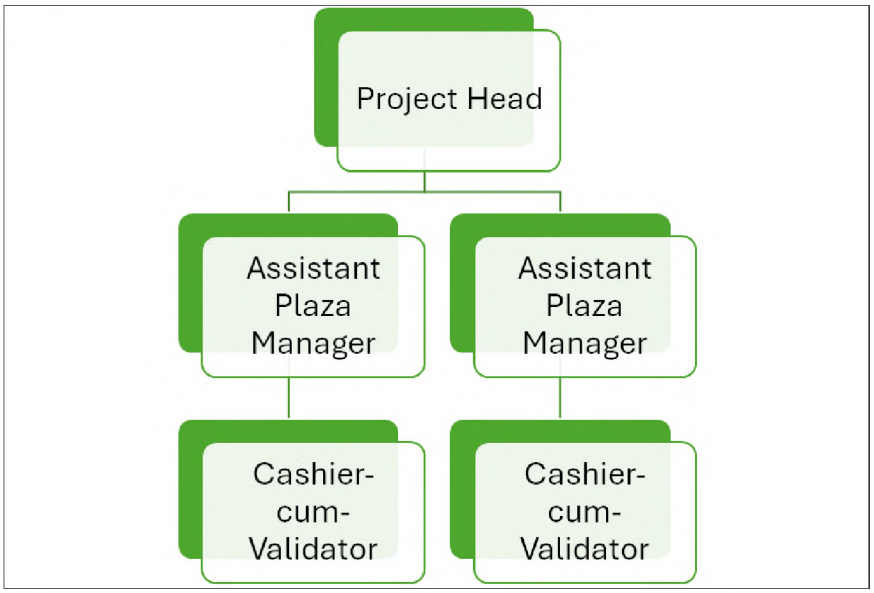
Finance & Accounts



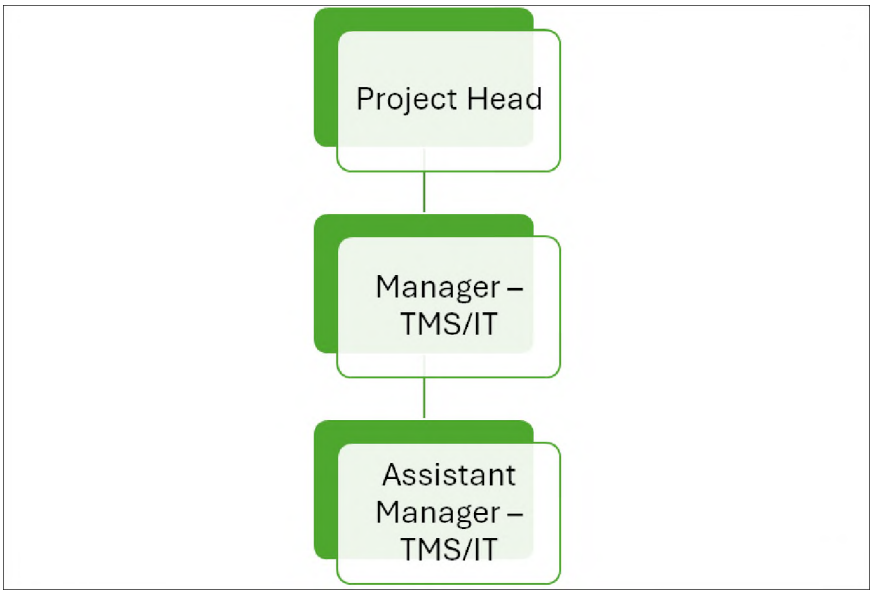
Human Resource

Maintenance





Operation Systems



Traffic & Road study

3.16.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have been made from the expenses of similar types of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.16.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Concessionaire as per Scope of Work. The Concessionaire received the Completion Certificate on 23rd June 2012.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 25 years from the Appointed Date including construction period of 30 months.

4.2 Axle Load and VDF

The Concessionaire has conducted the axle load survey on Project Road at km. 32+500 (near Doddakarenahalli Toll Plaza) and at km. 100+950 (near Karabylu Toll Plaza) from 29-Mar-2021 to 02-Apr-2021. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor (VDF)

Vehicle Category	Vehicle Damage Factor			
	At TP-1 (km. 32+500)		At TP-2 (km. 100+950)	
	LHS	RHS	LHS	RHS
Bus	1.049	1.036	1.034	1.051
LCV	0.738	1.238	0.874	1.231
2-Axle	2.533	4.52	3.281	3.133
3-Axle	4.932	15.218	7.076	8.977
MAV	7.471	11.848	15.92	18.081

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

MSA Calculation At TP-01					
Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
2024-25	1.72	**1.72**	3.11	**3.11**	
2025-26	1.81	**3.53**	3.11	**6.22**	
2026-27	1.85	**5.38**	3.17	**9.39**	
2027-28	1.89	**7.27**	3.22	**12.61**	
2028-29	1.95	**9.22**	3.33	**15.94**	
2029-30	2.02	**11.24**	3.43	**19.37**	
2030-31	2.09	**13.33**	3.54	**22.91**	
2031-32	2.16	**15.49**	3.65	**26.56**	

MSA Calculation At TP-01					
Year	**MSA (LHS)**	**Cumulative MSA (LHS)**	**MSA (RHS)**	**Cumulative MSA (RHS)**	**Remarks**
2032-33	2.23	**17.72**	3.77	**30.33**	**End of Concession Period**

MSA Calculations at TP-02					
Year	**MSA (LHS)**	**Cumulative MSA (LHS)**	**MSA (RHS)**	**Cumulative MSA (RHS)**	**Remarks**
2024-25	2.55	**2.55**	2.90	**2.90**	
2025-26	2.70	**5.25**	3.05	**5.95**	
2026-27	2.81	**8.06**	3.17	**9.12**	
2027-28	2.91	**10.97**	3.29	**12.41**	
2028-29	3.02	**13.99**	3.40	**15.81**	
2029-30	3.13	**17.12**	3.53	**19.34**	
2030-31	3.24	**20.36**	3.65	**22.99**	
2031-32	3.35	**23.71**	3.78	**26.77**	
2032-33	3.48	**27.19**	3.91	**30.68**	**End of Concession Period**

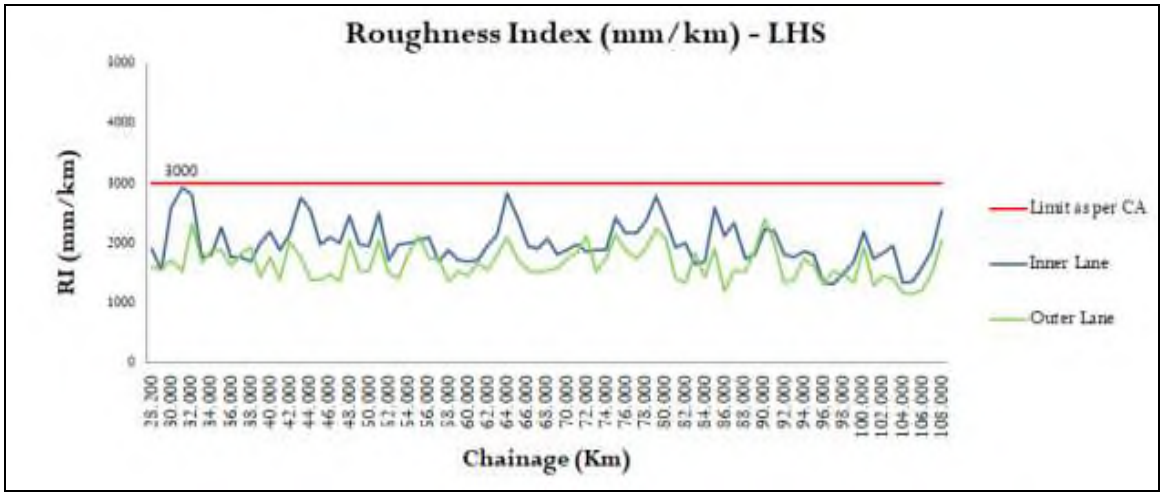
4.4 Network Survey Vehicles (NSV) Survey

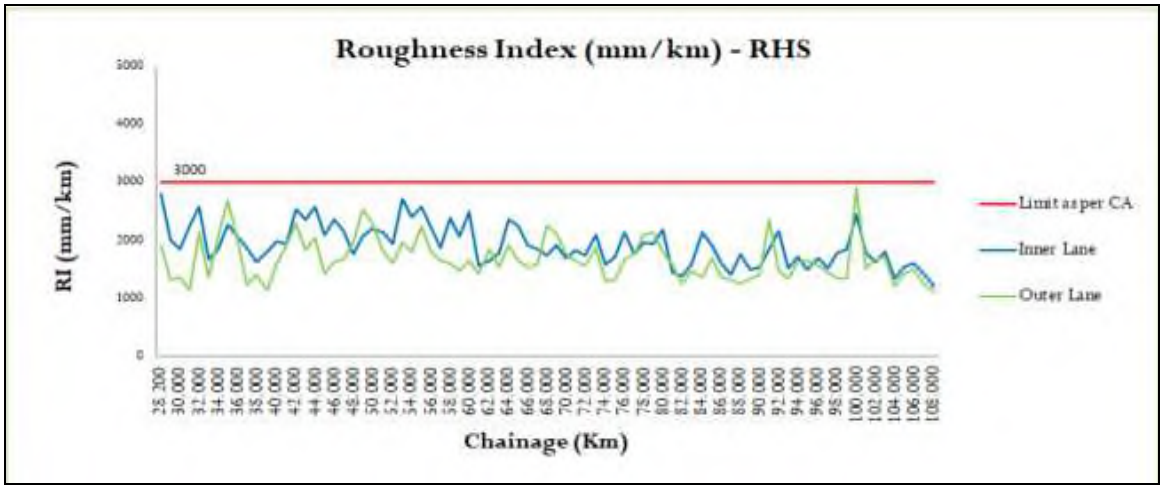
The Concessionaire has provided NSV survey data conducted in November 2024. The NSV data is used to assess the riding quality and pavement condition of Project Road. The summary of classification of pavement as per Schedule-L is given in the table below:

Table 4-3 Summary of NSV Survey

Riding Condition	Roughness Index (mm/km)	Length (km)			
		LHS		RHS	
		Inner	Outer	Inner	Outer
Good	<2000	46.80	68.80	50.40	65.20
Fair	2000-3000	33.40	11.40	29.80	15.00
Poor	>3000	0.00	0.00	0.00	0.00

From the above table it is observed that the overall condition of pavement is Good to Fair.





4.5 Structural Investigations

An evaluation of existing pavement using Falling Weight Deflectometer (FWD) survey was carried out from 10-Oct-2024 to 13-Oct-2024. Summary of FWD Survey report is presented in the table below:

Table 4-4 Summary of FWD Survey

Description	Length (km)			
	LHS		RHS	
	Inner Lane	Outer Lane	Inner Lane	Outer Lane
Less than 10 MSA	-	-	-	-
10-50 MSA	20.00	24.00	35.00	35.85
Above 50 MSA	61.47	57.47	46.47	48.62
Total Length Tested	**81.47**	**81.47**	**81.47**	**81.47**

From the above table, it is concluded that the residual life of the pavement is more than the design life of the Project Road. Hence, immediate major maintenance of the pavement is not required.

The strengthening/ overlay of pavement for Project Road are derived from 15th percentile of corrected E moduli of existing pavement, existing crust thickness etc. The combination of existing pavement and overlay will be analyzed as a four-layer system to ensure that fatigue and rutting criteria are satisfied for the calculated design traffic in terms of MSA. IITPAVE program is used to compute strain value at bottom of bituminous layer and top of subgrade in order to calculate design life of the proposed overlay. Poisson's ratio values used in overlay analysis from top to bottom of existing pavement layers are 0.5, 0.4 and 0.4 for existing bituminous, existing granular and existing subgrade layers respectively. Elastic modulus of 3000 MPa (VG-40) is used for the new bituminous layer.

4.6 Test pit and Subgrade Investigation

The Concessionaire has carried out the subgrade investigation for Project Road. The results of the same as provided by the Concessionaire are tabulated as below:

Table 4-5 Test Results Summary of Natural Ground Soil Samples

Sr. No.	Existing Road	Location (km)	Side (LHS/RHS)	Soil Classification as per IS: 1498	Gradation: Percent by weight passing through the Sieve (IS:2720-IV)						Clay & silt content %	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR (%)	Free Swell Index (%)	Degree of Compaction (%)
					19.0 mm	10.0 mm	4.75 mm	2.0 mm	425 micron	75 micron		Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density gm/cc.	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	NH-75	28+600	RHS	SM-SC	100.0	98.3	93.6	80.4	59.7	41.8	41.8	26	20	6	1.93	10.3	1.86	9.0	10.3	10.0	96.4
2	NH-75	31+000	LHS	SM	100.0	99.4	95.7	87.8	64.8	35.7	35.7	24	NP	NP	2.04	8.3	1.89	8.0	12.8	0.0	92.6
3	NH-75	33+400	RHS	SC	93.4	91.5	84.4	70.2	58.2	43.2	43.2	31	20	11	1.94	10.8	1.88	12.0	9.7	20.0	96.9
4	NH-75	36+000	LHS	SM-SC	99.3	98.3	94.2	78.0	49.5	29.3	29.3	25	19	6	2.06	8.4	1.88	10.0	11.9	11.1	91.3
5	NH-75	38+450	RHS	SM	97.1	96.1	92.0	74.4	40.8	23.3	23.3	26	NP	NP	2.04	8.3	1.82	8.0	15.3	12.5	89.2
6	NH-75	41+030	LHS	SM	100.0	100.0	96.5	80.8	50.1	26.1	26.1	24	NP	NP	1.99	9.2	1.81	10.0	14.5	0.0	91.0
7	NH-75	42+500	RHS	SM-SC	100.0	98.1	94.3	79.0	51.3	32.8	32.8	28	21	7	1.97	9.7	1.84	9.0	13.2	11.1	93.4
8	NH-75	46+050	LHS	SC	100.0	95.3	92.9	81.6	54.9	38.5	38.5	28	20	8	1.96	9.5	1.89	11.0	9.2	22.2	96.4
9	NH-75	48+300	RHS	SM	98.4	96.5	87.4	68.0	40.6	24.5	24.5	19	NP	NP	2.05	7.9	1.93	10.0	18.1	0.0	94.1
10	NH-75	51+000	LHS	SM	100.0	96.4	92.9	77.7	53.2	38.5	38.5	25	NP	NP	2.01	8.3	1.93	9.0	10.4	7.3	96.0
11	NH-75	53+550	RHS	GM	82.6	71.4	63.5	55.7	46.9	29.3	29.3	26	NP	NP	2.13	8.8	1.95	13.0	9.2	11.1	91.5
12	NH-75	56+000	LHS	SM	94.4	91.6	86.4	78.7	50.9	30.0	30.0	25	NP	NP	2.02	9.1	1.96	12.0	9.6	0.0	97.0
13	NH-75	58+360	RHS	SC	100.0	100.0	99.5	96.0	68.4	42.7	42.7	33	21	12	1.97	9.8	1.80	9.0	7.3	22.2	91.4
14	NH-75	61+100	LHS	SM	100.0	99.0	95.4	87.3	70.9	40.9	40.9	27	NP	NP	2.02	8.8	1.87	12.0	8.8	7.3	92.6
15	NH-75	63+35	RHS	SC	100.0	98.9	96.6	93.0	74.6	47.3	47.3	33	20	13	2.01	11.3	1.96	8.0	7.6	20.0	97.5

Sr. No.	Existing Road	Location (km)	Side (LHS/RHS)	Soil Classification as per IS: 1498	Gradation: Percent by weight passing through the Sieve (IS:2720-IV)						Clay & silt content %	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		Field Density		4-Days Soaked CBR (%)	Free Swell Index (%)	Degree of Compaction (%)
					19.0 mm	10.0 mm	4.75 mm	2.0 mm	425 micron	75 micron		Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density gm/cc.	OMC (%)	Field Dry Density (gm/cc)	FMC (%)			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
16	NH-75	66+08	LHS	SM	98.3	98.1	96.2	94.4	49.3	24.7	24.7	21	NP	NP	2.06	8.5	1.90	8.0	18.1	0.0	92.2
17	NH-75	68+23	RHS	SM	100.0	99.1	97.8	96.3	63.3	27.5	27.5	21	NP	NP	2.11	9.0	1.86	6.0	14.5	0.0	88.2
18	NH-75	71+000	LHS	SM	99.1	95.2	90.0	86.6	55.3	34.4	34.4	24	NP	NP	1.99	9.2	1.83	10.0	13.7	0.0	92.0
19	NH-75	73+200	RHS	SM	100.0	91.9	81.3	74.8	50.3	36.7	36.7	24	NP	NP	1.95	8.7	1.89	10.0	13.8	0.0	96.9
20	NH-75	76+500	LHS	SM-SC	89.1	86.4	82.6	80.4	61.1	40.8	40.8	24	18	6	2.05	9.3	1.88	12.0	9.5	5.3	91.7
21	NH-75	78+850	RHS	SM	100.0	97.9	95.5	93.7	71.9	38.3	38.3	24	NP	NP	2.04	8.6	1.90	11	9.8	0.0	93.1
22	NH-75	81+370	LHS	SM	100.0	92.6	84.7	79.4	51.1	25.3	25.3	19	NP	NP	2.14	8.1	1.94	13.0	14.3	0.0	90.7
23	NH-75	83+500	RHS	SM	96.1	96.1	93.9	92.0	72.1	39.6	39.6	23	NP	NP	2.03	8.5	1.93	8.0	14.7	0.0	95.1
24	NH-75	86+000	LHS	SM-SC	100.0	98.9	89.6	83.1	62.3	48.8	48.8	25	19	6	1.92	10.5	1.92	10.0	10.3	11.1	100.0
25	NH-75	88+500	RHS	ML	100.0	97.2	92.7	90.5	66.0	51.9	51.9	23	NP	NP	1.91	9.6	1.84	11.0	8.1	0.0	96.3
26	NH-75	91+075	LHS	SM	100.0	93.2	89.5	87.8	65.8	35.0	35.0	24	NP	NP	1.96	8.3	1.88	8.0	10.6	0.0	95.9
27	NH-75	93+530	RHS	SM-SC	96.6	87.0	77.9	71.9	46.9	30.3	30.3	25	18	7	2.10	8.7	1.91	7.0	12.4	11.1	91.0
28	NH-75	96+030	LHS	SM	100.0	92.2	74.6	64.7	45.1	21.7	21.7	20	NP	NP	2.17	7.7	1.97	8.0	17.6	0.0	90.8
29	NH-75	98+500	RHS	SM	100.0	94.4	88.4	83.9	61.3	35.9	35.9	26	NP	NP	2.01	10.0	1.96	8.0	10.4	0.0	97.5
30	NH-75	101+400	LHS	SM	100.0	95.5	87.2	82.9	49.1	25.5	25.5	24	NP	NP	2.07	7.6	1.91	11.0	12.4	0.0	92.3
31	NH-75	103+400	RHS	SM	97.3	85.6	72.8	67.6	46.7	25.5	25.5	21	NP	NP	2.15	7.9	1.93	12.0	14.9	0.0	89.8
32	NH-75	106+000	LHS	SM	96.3	91.8	83.1	79.0	44.6	25.7	25.7	25	NP	NP	2.06	8.0	1.84	9.0	16.3	0.0	89.3
33	NH-75	108+550	RHS	SM	100.0	99.3	98.5	98.0	83.2	40.7	40.7	24	NP	NP	1.99	9.8	1.92	10.0	10.1	0.0	96.5

Table 4-6 Test Results Summary of Granular Layer Samples

Sr. No.	Location (km)	Side (LHS/ RHS)	Type of Material	Gradation Conforming to Specifications (as per MORTH 5th Revision)	Atterberg Limits			Specific Gravity	Water Absorption (%)	Aggregate Impact Value (%)
					Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)			
1	28+600	RHS	WMM	Confirming to WMM Gradation	20	NP	NP	2.68	0.25	37.51
2	31+000	LHS	WMM	4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	23	NP	NP	2.67	0.20	36.01
3	33+400	RHS	GSB	Not Confirming to any Gradation	20	NP	NP	2.67	0.47	32.52
4	36+000	LHS	GSB	4.75mm IS Sieve Material Slightly Coarser side in GSB-IV	22	NP	NP	2.70	0.41	27.96
5	38+450	RHS	WMM	4.75mm,2.36mm,600µ IS Sieve Material Slightly Finer side in WMM Gradation	20	NP	NP	2.67	0.20	34.68
6	41+030	LHS	WMM	Confirming to WMM Gradation	21	NP	NP	2.67	0.26	37.47
7	42+500	RHS	GSB	26.5mm,4.75mm IS Sieve Material Slightly Finer side in GSB-III, IV	23	NP	NP	2.68	0.32	38.86
8	46+050	LHS	GSB	53mm IS Sieve Material Slightly Coarser side in GSB-IV	22	NP	NP	2.69	0.49	29.96
9	48+300	RHS	WMM	Confirming to WMM Gradation	19	NP	NP	2.69	0.37	34.24
10	51+000	LHS	WMM	Confirming to WMM Gradation	20	NP	NP	2.68	0.32	36.21
11	53+550	RHS	GSB	Confirming to GSB-III&IV	22	NP	NP	2.73	0.36	35.51
12	56+000	LHS	GSB	26.5mm IS Sieve Material Slightly Finer side in GSB-III &IV	21	NP	NP	2.71	0.32	32.16
13	58+360	RHS	WMM	22.4mm,11.2mm,4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	22	NP	NP	2.66	0.38	33.39
14	61+100	LHS	WMM	Not Confirming to any Gradation	20	NP	NP	2.68	0.32	35.09
15	63+350	RHS	GSB	26.5mm IS Sieve Material Slightly Finer side in GSB-IV	19	NP	NP	2.68	0.38	34.32
16	66+080	LHS	GSB	Confirming to GSB-III&IV	21	NP	NP	2.68	0.49	32.56
17	68+230	RHS	WMM	4.75mm,2.36mm IS Sieve Material Slightly Coarser side in WMM	22	NP	NP	2.66	0.26	32.98

Sr. No.	Location (km)	Side (LHS/ RHS)	Type of Material	Gradation Conforming to Specifications (as per MORTH 5th Revision)	Atterberg Limits			Specific Gravity	Water Absorption (%)	Aggregate Impact Value (%)
					Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)			
				Gradation						
18	71+000	LHS	WMM	22.4mm,11.2mm,4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	19	NP	NP	2.65	0.31	36.70
19	73+200	RHS	GSB	26.5mm,4.75mm IS Sieve Material Slightly Finer side in GSB-III,IV	23	NP	NP	2.65	0.27	32.18
20	76+500	LHS	GSB	53mm,26.5mm IS Sieve Material Slightly Coarser side in GSB-III&IV	22	NP	NP	2.65	0.21	33.15
21	78+850	RHS	WMM	Not Confirming to any Gradation	20	NP	NP	2.67	0.37	32.67
22	81+370	LHS	WMM	11.2mm,4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	20	NP	NP	2.63	0.31	34.19
23	83+500	RHS	GSB	53mm IS Sieve Material Slightly Coarser side in GSB-IV	20	NP	NP	2.67	0.34	35.78
24	86+000	LHS	GSB	Confirming to GSB-III&IV	19	NP	NP	2.66	0.49	33.41
25	88+500	RHS	WMM	4.75mm, 2.36mm IS Sieve Material Slightly Coarser side in WMM Gradation	19	NP	NP	2.67	0.26	32.31
26	91+075	LHS	WMM	Confirming to WMM Gradation	20	NP	NP	2.68	0.42	34.21
27	93+530	RHS	GSB	53mm IS Sieve Material Slightly Coarser side in GSB-IV	23	NP	NP	2.63	0.32	36.61
28	96+030	LHS	GSB	53mm IS Sieve Material Slightly Coarser side in GSB-IV	21	NP	NP	2.67	0.45	36.41
29	98+500	RHS	WMM	4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	18	NP	NP	2.69	0.35	33.20
30	101+400	LHS	WMM	Confirming to WMM Gradation	24	NP	NP	2.62	0.24	34.93
31	103+400	RHS	GSB	Confirming to GSB-III&IV	22	NP	NP	2.64	0.24	35.06
32	106+000	LHS	GSB	53mm IS Sieve Material Slightly Coarser side in GSB-III	22	NP	NP	2.65	0.30	33.64
33	108+550	RHS	WMM	Confirming to WMM Gradation	22	NP	NP	2.71	0.43	32.45

Table 4-7 Summary of Pavement Crust Thickness

Sr. No.	Location (km)	Side (RHS / LHS)	Pavement Composition (mm)		
			Bituminous Layer (mm)	Granular Layer(mm)	Total Thickness (mm)
1	28+600	RHS	210	440	650
2	31+000	LHS	200	440	640
3	33+400	RHS	200	460	660
4	36+000	LHS	220	410	630
5	38+450	RHS	260	400	660
6	41+030	LHS	190	420	610
7	42+500	RHS	230	440	670
8	46+050	LHS	210	430	640
9	48+300	RHS	250	470	720
10	51+000	LHS	175	470	645
11	53+550	RHS	200	460	660
12	56+000	LHS	225	390	615
13	58+360	RHS	220	420	640
14	61+100	LHS	170	430	600
15	63+350	RHS	200	400	600
16	66+080	LHS	215	410	625
17	68+230	RHS	230	400	630
18	71+000	LHS	200	390	590
19	73+200	RHS	240	450	690
20	76+500	LHS	280	440	720
21	78+850	RHS	290	420	710
22	81+370	LHS	230	610	840
23	83+500	RHS	200	460	660
24	86+000	LHS	250	420	670
25	88+500	RHS	230	380	610
26	91+075	LHS	250	420	670
27	93+530	RHS	260	480	740
28	96+030	LHS	230	540	770
29	98+500	RHS	220	410	630
30	101+400	LHS	240	410	650
31	103+400	RHS	210	390	600
32	106+000	LHS	240	380	620
33	108+550	RHS	135	450	585

4.7 Periodic Maintenance Strategy

Major Maintenance is required in order to comply requirement of Concession Agreement and to maintain performance level as defined in Schedule-L. As per schedule-L of Concession Agreement, periodic maintenance shall be carried out at least once every 5th year from COD and in the last year of concession period.

It is noted that Concessionaire has carried major maintenance in Year 2022-23. The table below shows the major / periodic maintenance cycle throughout the balance concession period for the Project Road. As per Concession Agreement, periodic maintenance shall be carried out in the last year of concession period. Hence, major maintenance is proposed in FY 2033 for the entire length. Before carrying out major maintenance, structural evaluation shall be done through surveys and investigation to determine the overlay requirement.

Table 4-8 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road	Cart Track
1	FY 2026 to FY 2027	-	-	-
2	FY 2028	30 mm BC (PMB) overlay in 50%, 50 mm DBM (VG-40) in 5% and Micro-surfacing in 50% length	30 mm BC overlay in 50% and Micro-surfacing in 50% length	30 mm BC overlay in 50% and Micro-surfacing in 50% length
3	FY 2029 to FY 2032	-	-	-
3	FY 2033	30mm BC (VG-40) overlay in 100% length, 50 mm DBM (VG-40) in 5%	30 mm BC overlay in 50% and Micro-surfacing in 50% length	30 mm BC overlay in 50% and Micro-surfacing in 50% length

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Work Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

   a. **Manpower and labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

   b. **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

      Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards.

      Polymer and modification cost are provided by the Client to workout BC rate with PMB.

      Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for 2027 (Rs. / MT)	Rate for 2028 onwards (Rs. / MT)
1	Mathura	All States	VG10	45,102	35,125
2			VG30	46,402	36,137
3			VG40	48,962	38,131
4	Panipat	All States	VG10	45,102	35,125
5			VG30	46,402	36,137
6			VG40	48,962	38,131
7	Koyali	All States	VG10	47,102	37,125

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for 2027 (Rs. / MT)	Rate for 2028 onwards (Rs. / MT)
8			VG30	48,402	38,137
9			VG40	51,082	40,251
10	Haldia	All States	VG10	46,602	35,683
11			VG30	47,402	36,295
12			VG40	49,962	38,256
13	Barauni	All States	VG10	47,132	36,213
14			VG30	48,432	37,325
15			VG40	50,992	39,286
16	CPCL	Kerala	VG10	47,402	35,519
17			VG30	48,402	36,395
18			VG40	50,762	38,120
19	CPCL	Tamil Nadu	VG10	47,902	36,019
20			VG30	48,402	36,395
21			VG40	50,962	38,320
22	CPCL	Telangana and Andhra Pradesh	VG10	44,602	32,719
23			VG30	45,402	33,395
24			VG40	47,962	35,320
25	CPCL	Karnataka	VG10	44,602	32,719
26			VG30	45,402	33,395
27			VG40	47,962	35,320

c. Sand and Aggregate: Market rates are considered from the quarry located nearest to Project Road.

d. Cement: Market rates are considered from the nearest local market.

e. Steel : Rate of steel is taken Tata Tiscon website.

f. Machinery Hire charges: Hire charges for the machinery are considered in accordance with applicable PWD SOR.

g. Actual Rates of items as per work order: The rates of road stud, kerb raising, micro surfacing, milling, aggregate rates etc. are considered as per the work order shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.) (FY 26 onwards)
1	Dense Bituminous Macadam (VG-40)	Cum	10,175
2	Bituminous Concrete (PMB)	Cum	13,386
3	Bituminous Concrete (VG-40)	Cum	11,598
4	Bituminous Concrete (VG-30)	Cum	11,276
5	Milling	Sqm	95

Sr. No.	Item Description	Unit	Rates (Rs.) (FY 26 onwards)
6	Micro-surfacing	Sqm	180
7	Kerb Re-laying	Rmt	310
8	Road Marking	Sqm	557
9	Road Studs	Nos.	255

5.3 Balance Work Cost

As discussed in the previous chapter, there are no balance works to be executed as per CA. Hence, balance work cost is **NIL**.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance, and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads:

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Incident Management Services
4. Electricity and Diesel Charges
5. TMS / System Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Insurance Expense
10. IE Fees
11. Horticulture & ROW Maintenance
12. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation Cost is presented as below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount from FY 2027 to FY 2033
1	Salary and Welfare Expenses	2,07,00,000
2	Tolling Operations Services	4,88,86,746
3	Toll Security Services	93,80,377
4	Incident Management & Emergency Services	2,94,06,739
5	Electricity and Diesel Charges	1,09,96,854
6	TMS/System Expenses	32,00,750
7	Office Operating Expenses	23,17,883
8	Vehicle Running Expenses	44,40,000
9	Professional Fees Expenses	83,90,736
10	Community Development	12,98,014
11	Communication Expenses	7,41,723
12	Conveyance Expenses	4,17,219
13	Insurance Expenses	92,55,487
14	IE Fees	92,71,532
15	Routine Maintenance Cost (Project Highway)	4,72,23,141
16	Horticulture & ROW Maintenance	3,31,31,280
17	Miscellaneous including Contingency	47,61,122
	Total Cost (Rs)	**24,38,19,602**
	Total Cost (Cr)	24.38
	Per km Cost (Lakh)	**30.37**

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2028	91.85	
2	FY 2033	103.76	
Total Cost (Cr.)		**195.60**	

5.6 Periodic Replacement of TMS / System

Every 7 years, replacement of cost of major TMS / system is considered. The same is provided as below.

Sr. No.	Year	TMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2030	1.29	
Total Cost (Cr.)		**1.29**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-4 Escalation

Year	Escalation	Year	Escalation
2027	-	**2042**	3.99%
2028	5.25%	**2043**	3.99%
2029	4.86%	**2044**	3.99%

Year	Escalation	Year	Escalation
2030	4.44%	**2045**	3.99%
2031	4.24%	**2046**	3.99%
2032	4.13%	**2047**	3.99%
2033	4.08%	**2048**	3.99%
2034	4.01%	**2049**	3.99%
2035	4.00%	**2050**	3.99%
2036	4.03%	**2051**	3.99%
2037	4.01%	**2052**	3.99%
2038	3.98%	**2053**	3.99%
2039	3.98%	**2054**	3.99%
2040	4.00%	**2055**	3.99%
2041	3.99%	**2056**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summarised yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr.)

Sr. No.	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33
1	Routine O&M Cost							
1.01	Salary and Welfare Expense	2.07	2.18	2.30	2.41	2.52	2.62	2.73
1.02	Tolling Operations Services	4.89	5.16	5.43	5.69	5.95	6.20	6.45
1.03	Toll Security Services	0.94	0.99	1.04	1.09	1.14	1.19	1.24
1.04	Incident Management Services	2.94	3.10	3.27	3.42	3.58	3.73	3.88
1.05	Electricity and Diesel Charges	1.10	1.16	1.22	1.28	1.34	1.39	1.45
1.06	TMS/System Expenses	0.37	0.39	0.41	0.43	0.44	0.46	0.48
1.07	Office Operating Expenses	0.23	0.24	0.26	0.27	0.28	0.29	0.31
1.08	Vehicle Running Expenses	0.44	0.47	0.49	0.52	0.54	0.56	0.59
1.09	Professional Fees Expense	0.84	0.89	0.93	0.98	1.02	1.06	1.11
1.10	Community Development	0.13	0.14	0.14	0.15	0.16	0.16	0.17
1.11	Communication Expenses	0.07	0.08	0.08	0.09	0.09	0.09	0.10
1.12	Conveyance Expenses	0.04	0.04	0.05	0.05	0.05	0.05	0.06
1.13	Insurance Expense	0.93	0.98	1.03	1.08	1.13	1.17	1.22
1.14	IE Fees	0.93	0.98	1.03	1.08	1.13	1.18	1.22
1.15	Routine Maintenance Cost	4.72	4.98	5.24	5.50	5.74	5.99	6.23
1.16	Horticulture & ROW Maintenance	3.31	3.50	3.68	3.86	4.03	4.20	4.37
1.17	Miscellaneous and Contingency	0.48	0.50	0.53	0.55	0.58	0.60	0.63
	Subtotal of O&M Cost	24.43	25.78	27.13	28.45	29.71	30.97	32.25
2	Major Maintenance Cost		95.70					125.76
3	Periodic Cost of TMS/HTMS Replacement	-	-	-	1.50	-	-	-
4	Balance Works Cost	-	-	-	-	-	-	-
	Total Cost	**24.43**	**121.47**	**27.13**	**29.95**	**29.71**	**30.97**	**158.00**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Ordinary Repair Cost for Flexible (with GST)	**4,72,23,141**
(Inclusive of GST)	= 5.88 lakhs per km

CONVERSION FACTORS										
National Highways / State Highways										
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders										
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)										
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD **3,07,600**	**Urban** More than 4500 CVD **3,46,710**	**Hilly** More than 4500 CVD **3,51,804**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
							Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	470628.00	530466.00	538260.00	-	-	-	-
		Paved shoulder	1.70	522920.00	589407.00	598067.00	58.40	-	3,05,36,959	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	615200.00	693420.00	703608.00	-	-	-	-
		Paved shoulder	2.20	676721.00	762762.00	773969.00	-	21.88	-	1,66,86,182
						TOTAL		**80.273**		**4,72,23,141**

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	1.00%
	Volume (cum)			5.00
	Rs/m^3			11830
	Cost in Rupees			59,148
	ii) Patch repair	100 % Patch less	As & when required	1.50%
	Area (sqm)			150
	Rs/m^2			473
	Cost in Rupees			70,977
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.00%
	Area (sqm)			200
	Rs/m^2			70
	Cost in Rupees			13,924
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.00%
	Area (sqm)			150
	Rs/m^2			46
	Cost in Rupees			6,967
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	2.00%
	Area (sqm)			150
	Rs/m^2			473
	Cost in Rupees			70,977
	v) Road marking	14%	Once in 7th year & @	10558

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
			Repaired location	
	SUB TOTAL			**2,32,551**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6322
	ii) Jungle Clearance	100%	Twice in a Year	2074
	iii) Kuccha Drain Maintenance	100%	Twice in a Year	1111
	SUB TOTAL			**9,507**
3	**Maintenance of Cross Drainage works:**			
	i) Cleaning of culvert bed	100%	Once in a Year	2800
	ii) Repair of floors	100%	Once in a Year	5067
	iii) Repair of parapets	100%	As & when required	2111
	SUB TOTAL			**9,978**
4	**Maintenance of Minor & Major Bridges:**			
	i) Cleaning and removal of dirt & vegetation from pier caps, Bearings, Expansion Joints, Superstructure, Substructure and Retaining wall etc.	100%	As & when required	37,043
	ii) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints			
	iii) Repair of minor washouts, erosion scour and animal holes			
	iv) Sealing Cracks with Cement/ Epoxy Mortar			
	v) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**37,043**
5	**Miscellaneous Items:**			
	i) Turfing and Arboriculture		Once in a Year	2470
	ii) Maintenance of gang hut store, sheds, animal & debris removal		Once in a Year	3704
	iii) Lettering, Painting of Km stones & kerbs, sign boards,		Once in a Year	3704

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity** **More than 4500 CVD** **BT Surface**
1	**2**	**3**	**4**	**5**
	hectometer stone etc.			
	iv) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7409
	v) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1235
	vi) Traffic Census		Once in a Year	0
	vii) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**18,522**
	GRAND TOTAL (Normal)			**3,07,600**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	9229
	ii)Repairs to footpath	100%	As & when required	4939
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4939
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7655
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9878
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2470
	SUB TOTAL			**39,110**
	GRAND TOTAL (Urban)			**3,46,710**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY 2028)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						7,77,956	13	1,00,20,069
	For BC	Sqm	2	39,280	8.75		6,87,402	6,87,402		
	For DBM	Sqm	2	4,013	7.00		56,183	56,183		
	For Misc. Location	Sqm	2	1,964	8.75		34,370	34,370		
2	BC with PMB-70	Cum	2	39,280	8.75	0.03	20,622	21,653	13,386	28,98,53,866
3	Micro Surfacing	Sqm	2	39,280	8.75		6,87,402	7,21,772	180	12,99,19,013
4	DBM with VG-40	Cum	2	4,013	7.00	0.05	2,809	2,809	10,175	2,85,81,956
5	Milling	Sqm	2	4,013	7.00		56,183	56,183	95	53,37,423
	Main Carriageway - Rigid Pavement									
6	Joint Sealant Replacement @ 10% length	Rmt	10%	3,338	3.50	4.50	2,670	2,670	123	3,28,420
7	Dismantling of CC Panels @ 5% area	Cum	5%		52,567	0.30	789	789	1,107	8,73,194
8	Replacement of Panels - PQC @ 5% area	Cum	5%		52,567	0.30	789	789	10,521	82,95,727
	Service Road									
9	Tack coat	Sqm	1	24,064	7.00		1,68,445	1,85,290	13	23,86,532
10	BC with 30 mm	Cum	1	24,064	7.00	0.03	5,053	5,559	11,598	6,44,67,593
11	Micro Surfacing	Sqm	1	24,064	7.00		1,68,445	1,68,445	180	3,03,20,136
	Cart Track									
12	Tack coat	Sqm	1	15,290	5.50		84,095	84,095	13	10,83,144
13	BC with 30 mm	Cum	1	15,290	5.50	0.03	2,523	2,523	11,598	2,92,59,056
14	Micro Surfacing	Sqm	1	15,290	5.50		84,095	84,095	180	1,51,37,100
	Structures									
15	Tack coat	Sqm	1	850	20.5		17,462	17,462	13	2,24,905
16	Wearing coat PMB-70	Cum	1	850	20.5	0.03	524	524	13,386	70,12,323
17	Milling of Ex. Wearing Coat	Sqm	1	850	20.5		17,462	17,462	95	16,58,848
18	Painting of Crash Barrier	Sqm	4	850		1.12	3,790	3,790	130	4,92,685
	Other Works									
19	Raising of Road Kerb	Rmt	2	63,344			1,26,687	1,26,687	310	3,92,73,110
20	Replacement of Road Stud									

Major Maintenance Cost (FY 2028)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	Normal Road Stud	Nos.	2	9,811			19,622	19,622	255	50,03,610
	Solar Road Stud	Nos.	1	-			-	-	1,815	-
21	Painting of Kerb	Sqm	2	1,26,739		0.375	95,055	95,055	130	1,23,57,096
22	Road Marking	Sqm					71,767	71,767	557	3,99,74,494
	on BC							35,884		
	on Micro							35,884		
	MCW									
	a) Median & Edge line	Sqm	4	84,275	0.15		50,565			
	b) Lane line	Sqm	2	27,811	0.10		5,562			
	Service Road									
	a) Edge line	Sqm	2	48,127	0.10		9,625			
	b) Lane line	Sqm	1	25,973	0.10		2,597			
	Junction crossing	Sqm					3,417			
23	Filling of Earthen shoulder	Cum					25,012	25,012	777	1,94,29,237
	MCW		2	78,560	2.50	0.06	23,568			
	Service Road		1	24,064	1.00	0.06	1,444			
24	Miscellaneous	5%								3,70,64,477
Total Major Maintenance Cost (Rs)										**77,83,54,014**
Total Major Maintenance Cost with GST (Rs)										**91,84,57,736**
Total Major Maintenance Cost with GST (Cr)										**91.85**
Per km Cost (lakh)										**114.43**
Escalation Factor for (FY 2028)										**1.05**
Total Escalated Cost for (FY 2028) (Cr)										**95.70**

Major Maintenance Cost (FY 2033)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						14,99,728	13	1,93,16,497
	For BC	Sqm	2	78,560	8.75		13,74,804	13,74,804		
	For DBM	Sqm	2	4,013	7.00		56,183	56,183		
	For Misc. Location	Sqm	2	3,928	8.75		68,740	68,740		
2	BC with 30 mm	Cum	2	82,488	8.75	0.03	43,306	43,306	11,598	50,22,50,450
3	Micro Surfacing	Sqm	2	-	8.75		-	-	180	-
4	DBM with 50 mm	Cum	2	4,013	7.00	0.05	2,809	2,809	10,175	2,85,81,956
5	Milling	Sqm	2	4,013	7.00		56,183	56,183	95	53,37,423
	Main Carriageway - Rigid Pavement									
6	Joint Sealant Replacement @ 10% length	Rmt	10%	3,338	3.50	4.50	2,670	2,670	123	3,28,420
7	Dismantling of CC Panels @ 5% area	Cum	5%		52,567	0.30	789	789	1,107	8,73,194
8	Replacement of Panels - PQC @ 5% area	Cum	5%		52,567	0.30	789	789	10,521	82,95,727
	Service Road									
9	Tack coat	Sqm	1	24,064	7.00		1,85,290	1,85,290	13	23,86,532
10	BC with 30 mm	Cum	1	24,064	7.00	0.03	5,559	5,559	11,598	6,44,67,593
11	Micro Surfacing	Sqm	1	24,064	7.00		1,85,290	1,85,290	180	3,33,52,150
	Cart Track									
12	Tack coat	Sqm	1	15,290	5.50		88,300	88,300	13	11,37,301
13	BC with 30 mm	Cum	1	15,290	5.50	0.03	2,649	2,649	11,598	3,07,22,008
14	Micro Surfacing	Sqm	1	15,290	5.50		88,300	88,300	180	1,58,93,955
	Structures									
15	Tack coat	Sqm	1	850	20.5		17,462	17,462	13	2,24,905
16	Wearing Coat BC with 30 mm	Cum	1	850	20.5	0.03	524	524	11,598	60,75,376
17	Milling of Ex. Wearing Coat	Sqm	1	850	20.5		17,462	17,462	95	16,58,848
18	Painting of Crash Barrier	Sqm	4	850		1.12	3,790	3,790	130	4,92,685
	Other Works									
19	Raising of Road Kerb	Rmt	2	63,344			1,26,687	1,26,687	310	3,92,73,110
20	Replacement of Road Stud									
	Normal Road Stud	Nos.	2	9,811			19,622	19,622	255	50,03,610
	Solar Road Stud	Nos.	1	-			-	-	1,815	-

Major Maintenance Cost (FY 2033)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate**	**Amount**
21	Painting of Kerb	Sqm	2	1,26,739		0.375	95,055	95,055	130	1,23,57,096
22	Road Marking	Sqm					71,767	71,767	557	3,99,74,494
	ON BC						65,656	65,656		-
	ON MICRO						6,111	6,111		-
	MCW									
	a) Median & Edge line	Sqm	4	84,275	0.15		50,565			
	b) Lane line	Sqm	2	27,811	0.10		5,562			
	Service Road									
	a) Edge line	Sqm	2	48,127	0.10		9,625			
	b) Lane line	Sqm	1	25,973	0.10		2,597			
	Junction crossing	Sqm					3,417			
23	Filling of Earthen shoulder	Cum					25,012	25,012	777	1,94,29,237
	MCW		2	78,560	2.50	0.06	23,568			
	Service Road		1	24,064	1.00	0.06	1,444			
24	Miscellaneous	5%								4,18,71,628
Total Major Maintenance Cost (Rs)										**87,93,04,194**
Total Major Maintenance Cost with GST (Rs)										**1,03,75,78,949**
Total Major Maintenance Cost with GST (Cr)										**103.76**
Per km Cost (lakh)										**129.27**
Escalation Factor for (FY 2033)										**1.30**
Total Escalated Cost for (FY 2033) (Cr)										**125.76**

FP Project Management

Technical Due Diligence of Madurai - Kanyakumari (Package 4) of NH-44 from km. 180+000 to km. 243+470 in the state of Tamil Nadu

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	VKD / VMK	CSB	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 5
2.7 Existing Utilities 5
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 8
3.3 Major / Minor Junctions 9
3.4 Condition Survey of Bridge 9
3.5 Condition Survey of Culverts 15
3.6 Drainage 15
3.7 Slope Protection 16
3.8 Road Furniture 16
3.9 Avenue Plantation and Median Plantation 20
3.10 Toll Plaza 21
3.11 Lane Equipment 22
3.11.1 RFID ETC Transceiver 22
3.11.2 Lane Controller with Industrial PC 22
3.11.3 Automatic Vehicle Classification (AVC) Sensors 22
3.11.4 Automatic Lane Barrier 22
3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 23

3.11.6 Incident Capture Camera (AVC Camera) 23
3.11.7 License Plate Image Capture Camera (LPIC) 23
3.11.8 Over Head Lane Signal (OHLS) 24
3.11.9 Toll Booth Equipment 24
3.11.10 Medium Speed Weigh in Motion (MSWIM) 25
3.12 Plaza Equipment 25
3.12.1 TMS Server 25
3.12.2 55" LED screen for CCTV monitoring 26
3.12.3 Workstations in Control Room, POS room 26
3.13 Advanced Traffic Management System (ATMS) 26
3.13.1 Automatic Traffic Counter cum classifier (ATCC) 27
3.13.2 Mobile Radio communication System (MRCS) 27
3.13.3 Emergency Call Boxes (ECB) 27
3.13.4 Portable Weigh in Motion (PWIM) 27
3.13.5 MET System 27
3.13.6 Variable Message Signboards (VMS) 27
3.13.7 CCTV Surveillance Cameras 28
3.13.8 Video Incident Detection System 28
3.13.9 Vehicle Actuated Speed Display (VASD) 28
3.13.10 Adequacy of Toll Collection System and ATMS 29
3.14 Traffic Aid Post and Medical Aid Post 29
3.15 Toilet Block 29
3.16 Bus Bays and Passenger Shelters 29
3.17 Balance Work Status 30
3.18 Operation and Maintenance 30
3.18.1 O&M Contract 30
3.18.2 Organization Chart 30
3.18.3 Operation 32
3.18.4 Routine Maintenance 32
4 Pavement Investigation and Assessment 33
4.1 General 33
4.2 Axle Load and VDF 33
4.3 Design Traffic 33
4.4 Network Survey Vehicles (NSV) Survey 34
4.5 FWD Survey 35
4.6 Test pit and Subgrade Investigation 36
4.7 Periodic Maintenance Strategy 41

5 Cost Estimates 42
5.1 General 42
5.2 Rate Assumption 42
5.3 Balance Work Cost 44
5.4 Routine O&M Cost 44
5.5 Major Maintenance Cost 46
5.6 Periodic Replacement of TMS / ATMS System 46
5.7 Escalation Assumption 46
5.8 Summary of Cost 47
Annexures 49
Annexure I - Routine Maintenance Cost 50
Annexure II - Major Maintenance Cost 55

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Details of Summary for Structures 9
Table 3-2 Condition Survey of Major Structure 10
Table 3-3 Details of Summary for Toll Plaza Items 21
Table 3-4 Details of Toilet Block 29
Table 4-1 Vehicle Damage Factor (VDF) 33
Table 4-2 MSA Calculation 33
Table 4-3 Summary of Roughness Index 34
Table 4-4 Test Results Summary of Natural Ground Soil Samples 38
Table 4-5 Granular Layer's Test Results Summary 38
Table 4-6 Major Maintenance Cycle 41
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 42
Table 5-2 Summary of Unit Rates 43
Table 5-3 Summary of Operation Cost 45
Table 5-4 Escalation 46

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start and End of Project Road 5
Figure 3-1 Photographs of Pavement Condition (MCW) 7
Figure 3-2 Photographs of Service Road 8
Figure 3-3 Photographs of Junctions 9
Figure 3-4 Photographs of Major Structures 13
Figure 3-5 Photographs of Culverts 15
Figure 3-6 Photograph of RCC Drain 16
Figure 3-7 Photographs of Pavement Marking 16
Figure 3-8 Photographs of Road Studs 17
Figure 3-9 Photographs of Road Signages 18
Figure 3-10 Photograph of Street Light 18
Figure 3-11 Photographs of MBCB / Crash Barrier 19
Figure 3-12 Photograph of Delineator 19
Figure 3-13 Photographs of Pedestrian Guard Rail 20
Figure 3-14 Photographs of Median and Avenue Plantation 20
Figure 3-15 Photographs of Toll Plaza 21
Figure 3-16 Photographs of Bus Bay / Passenger Shelter 30
Figure 5-1 Photographs of VUP approach (Work in progress) 44

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Nanguneri to Kanyakumari Section of NH-44 from km. 180+000 to km. 243+470 in the State of Tamil Nadu (hereinafter referred as "Project Road").

Nanguneri Kanyakumari Tollway Private Limited (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance, and transfer of Nanguneri to Kanyakumari Section (km. 180+000 to km. 243+470) of NH-44 or Project Road under TOT Bundle-3. The project was awarded to Concessionaire on 20th October 2020. The length of Project Road is 63.47 kms with one toll plaza at Nanguneri Village at km. 185+860.

Accordingly, Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and filed investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, aaxle load, material investigations etc.
- Formulation of future major maintenance strategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period
- Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyzing the same as per the best engineering / industry practices.

The site visit and inspection were carried out from **18th March 2026 to 19th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features, overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates**: The chapter summarizes the forecasting of O&M and major maintenance cost over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **Nanguneri Kanyakumari Tollway Private Limited**, is a company promoted by Cube Highways or a Special Purpose Vehicle (SPV) formed for implementing this project on 27th December 2019. The Appointed Date for the Project Road is 20th October 2020.

The project is being developed under TOT (Toll Operate Transfer) Bundle-3 with concession period of 30 years from the Appointed Date. The end of the concession period is in the year 2050.

2.2 Location

The Project Road is part of National Highway No. 44 (old NH-7) of Madurai-Kanyakumari section in the State of Tamil Nadu. The total project length is 63.47 kms.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map

The photographs taken during the site visit are presented below.

Figure 2-2 Start and End of Project Road

Start of the Project Road

End of the Project Road

2.3 Climate

The project being in the region southeast of the western ghats, the area is hot and dry. Temperatures range between a maximum of 37 °C and a minimum of 22 °C. April to June are the hottest months and December and January are the coldest with temperatures rising towards the end of February. Rainfall occurs mostly during the north-east monsoon in the months of October to December. However, the project stretch receives little rainfall, averaging 840 mm. Annual rainfall has ranged from 964 mm to 228 mm during past decades.

2.4 Terrain

This section of National Highway traverses through plain terrain.

2.5 Abutting Land Use

The land use along the Project Road is predominantly agriculture or barren with intermittent built-up area.

2.6 Right of Way

The width of existing Right of Way (RoW) throughout the project stretch is 60.0 m.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC Cables, etc.

2.8 Development as per Schedule-B

The Project Road from Nanguneri village (km. 180+000) to Kanyakumari (km. 243+470) has been developed as a four-lane divided carriageway with a median width of 2 m, service road and other arrangements. The Project Road passes through rural as well as built-up sections.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	Km.	63.47	
2	Construction of Service Road	Km.	2.74	(LHS+RHS)
3	Reconstruction of Pipe Culvert	Nos.	03	
4	Widening of existing Pipe Culvert	Nos.	02	
5	Widening of existing Slab Culvert	Nos.	01	
6	Repair & rehabilitation of Major Bridges	Nos.	02	
7	Repair & rehabilitation of Minor Bridges	Nos.	31	
8	Repair & rehabilitation of Box Culvert	Nos.	44	
9	Repair & rehabilitation of Pipe Culvert	Nos.	104	
10	Repair & rehabilitation of ROB	Nos.	02	
11	Repair & rehabilitation Vehicular Underpass (VUP)	Nos.	06	
12	Improvement of Major Junction	Nos.	05	
13	Improvement of Minor Junction	Nos.	15	
14	Provision of Drain	km	2.74	(LHS+RHS)

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 9.0 m with earthen shoulder of 1.5 m on either side. The Project Road has a median width of 2.0 m throughout its length.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

The pavement condition survey was carried out from **18th March 2026 to 19th March 2026.** through visual inspection for the entire project length. From the visual inspection, it is found that the pavement condition of the Project Road is found to be Good.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (MCW)

km. 181+950

km. 183+410

km. 243+100

km. 195+590

km. 197+270

km. 241+380

3.2 Service Road / Slip Road

The service road with width varies from 5.5 m to 7.0 m and is constructed in built-up area and adjoining underpass locations. The Project Road has total service road length of 62.28 kms. The photographs taken during the site visit are presented below.

Figure 3-2 Photographs of Service Road

km. 182+000

km. 200+990

3.3 Major / Minor Junctions

There are 12 nos. of major junctions and 50 nos. of minor junctions along Project Road.

The photographs taken during site visit is presented as below:

Figure 3-3 Photographs of Junctions

Junction at km. 221+800

Junction at km. 181+950

3.4 Condition Survey of Bridge

The inventory of structures including major bridges, minor bridges, ROB's, underpasses and culverts is presented in table as below:

Table 3-1 Details of Summary for Structures

Type of Structure	Total Number of Structures
Major Structures:	
Major Bridges (MJB)	02
Minor Bridges (MNB)	31
Slab Culverts / Box Culverts	44
Pipe Culverts	104
Road over Bridges (ROB)	02
Vehicle / Cattle Underpass	06
Total	**189**

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-2 Condition Survey of Major Structure

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
Major Bridge								
1	197+330	LHS	3 x 21.4	9	10.25	RCC	Open	Structure is in sound condition.
		RHS	3 x 21.4	9	10.25	RCC	Open	
2	239+800	LHS	6 x 17	9.5	12.5	RCC	Open	Structure is in sound condition.
		RHS	6 x 17	9.5	12.5	RCC	Open	

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway (m)	Deck Width (m)	Type of Structure	Type of foundation	Remarks
Minor Bridges								
1	182+330	SR(LHS)	1 x 7.3	7.5	8.5	RCC	Open	Structure is in sound condition.
		LHS+RHS	1 x 7.3	9.5+9.5	10.5	RCC	Open	
2	184+697	LHS	1 x 6.3	9	12	RCC	Open	Structure is in sound condition.
		RHS	1 x 6.3	9	12	RCC	Open	
3	189+490	LHS	2 x 6.5	7.5	10	RCC	Open	Structure is in sound condition. Silt needs to be removed.
		RHS	2 x 6.5	7.5	10	RCC	Open	
4	189+075	SR+LHS	1 x 6.1	8.5+7.5	10+9.0	RCC	Open	Structure is in sound condition.
		SR+RHS	1 x 6.1	7.5+7.5	10+9.0	RCC	Open	
5	193+150	LHS	1 x 6.8	9	12	RCC	Open	Structure is in sound condition.
		RHS	1 x 6.8	9	12	RCC	Open	
6	193+850	LHS	2 x 6.5	7.5	9	RCC	Open	Structure is in sound condition.
		RHS	2 x 6.5	9	15	RCC	Open	
7	203+023	LHS	1 x 8	9	10	RCC	Open	Structure is in sound condition.
		RHS	1 x 8	9	10	RCC	Open	
8	204+016	SR+LHS	2 x 5	7+8.75	8+9.75	RCC	Open	Structure is in sound condition.
		RHS+SR	2 x 5	8.75+7	9.75+8	RCC	Open	
9	204+611	LHS	2 x 6	7.5	10	RCC	Open	Structure is in sound condition.
		RHS	2 x 6	7.5	10	RCC	Open	
10	206+700	SR+LHS	1 x 10	7.5+8	9+10	RCC	Open	Structure is in sound condition. Vegetation & Silt needs to be removed.
		RHS+SR	1 x 10	8+7.5	10+9	RCC	Open	

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway (m)	Deck Width (m)	Type of Structure	Type of foundation	Remarks
11	209+124	SR(LHS)	1 x 6.5	8	9	RCC	Open	Structure is in sound condition.
		Main+ SR	1 x 6.5	9+8+9	29	RCC	Open	Vegetation & Silt needs to be removed
12	213+173	LHS	2 x 8.9	9	10.5	RCC	Open	Structure is in sound condition.
		RHS	2 x 8.9	9	10.5	RCC	Open	
13	216+087	LHS	1 x 8.5	9	10.5	RCC	Open	Structure is in sound condition.
		RHS	1 x 8.5	9	10.5	RCC	Open	Scouring observed in bed on LHS.
14	217+035	LHS	1 x 8	9	10	RCC	Open	Structure is in sound condition.
		RHS	1 x 8	9	10	RCC	Open	
15	226+335	LHS	1 x 10	8.75	10.25	RCC	Open	Structure is in sound condition.
		RHS	1 x 10	8.75	10.25	RCC	Open	
16	226+500	LHS	1 x 10	8.75	10.25	RCC	Open	Structure is in sound condition.
		RHS	1 x 10	8.75	10.25	RCC	Open	
17	226+910	LHS	1 x 10.2	9	11.5	RCC	Open	Structure is in sound condition.
		RHS	1 x 10.2	9	11.5	RCC	Open	Silt needs to be removed.
18	227+343	LHS	1 x 6.8	9.25	10.5	RCC	Open	Structure is in sound condition.
		RHS	1 x 6.8	9.25	10.5	RCC	Open	
19	229+962	LHS	1 x 10	8.75	10.25	RCC	Open	Structure is in sound condition.
		RHS	1 x 10	8.75	10.25	RCC	Open	
20	232+107	LHS	1 x 6.6	9.25	10.5	RCC	Open	Structure is in sound condition.
		RHS	1 x 6.6	9.25	10.5	RCC	Open	Vegetation & Silt needs to be removed
21	232+620	LHS	1 x 6.6	9	10.5	RCC	Open	Structure is in sound condition.
		RHS	1 x 6.6	9	10.5	RCC	Open	Vegetation needs to be removed.
22	232+984	LHS	1 x 10	8.75	10.25	RCC	Open	Structure is in sound condition.
		RHS	1 x 10	8.75	10.2	RCC	Open	
23	233+134	LHS	1 x 10	7.5	10	RCC	Open	Structure is in sound condition.
		RHS	1 x 10	7.5	10	RCC	Open	Vegetation & Silt needs to be removed
24	234+194	LHS	1 x 6.6	9	10.25	RCC	Open	Structure is in sound condition.
		RHS	1 x 6.6	9	10.25	RCC	Open	Vegetation & Silt needs to be removed
25	235+236	LHS	1 x 6.6	9	11.75	RCC	Open	Structure is in sound condition.
		RHS	1 x 6.6	9	11.75	RCC	Open	Vegetation needs to be removed.
26	237+412	LHS	1 x 6.8	9	10	RCC	Open	Structure is in sound condition.

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway (m)	Deck Width (m)	Type of Structure	Type of foundation	Remarks
		RHS	1 x 6.8	9	10	RCC	Open	
27	237+945	LHS	1 x 6.6	9.25	12	RCC	Open	Structure is in sound condition.
		RHS	1 x 6.6	9.25	12	RCC	Open	
28	238+309	LHS	1 x 8	9	10	RCC	Open	Structure is in sound condition.
		RHS	1 x 8	9	10	RCC	Open	Vegetation & Silt needs to be removed
29	238+981	LHS	1 x 6.8	9.25	12	RCC	Open	Structure is in sound condition.
		RHS	1 x 6.8	9.25	12	RCC	Open	Silt needs to be removed.
30	239+695	LHS	1 x 10	9	12.5	RCC	Open	Structure is in sound condition.
		RHS	1 x 10	9	12.5	RCC	Open	
31	239+952	LHS	1 x 10	9.5	12.5	RCC	Open	Structure is in sound condition.
		RHS	1 x 10	9.5	12.5	RCC	Open	

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Total Length of Bridge (m)	Carriageway (m)	Deck Width (m)	Type of Structure	Type of foundation	Condition of Structure
ROB									
1	219+170	LHS	1 x 25	25	7.5	11	RCC	Open	Structure is in sound condition.
		RHS	1 x 25	25	7.5	11	RCC	Open	
2	242+750	LHS	2 x 20 + 23 + 2 x 20	103	9.5	12.5	RCC	Open	Structure is in sound condition.
		RHS	2 x 20 + 23 + 2 x 21	103	9.5	12.5	RCC	Open	

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Total Length of Bridge (m)	Carriageway (m)	Deck Width (m)	Type of structure	Remarks
VUP								
1	190+335	LHS	2 x 10	20	9	20.5	RCC	Structure is in sound condition.
		RHS	2 x 10	20	9		RCC	
2	192+352	LHS	1 x 10	10	9	23	RCC	Structure is in sound condition.
		RHS	1 x 10	10	9		RCC	
3	200+980	LHS	2 x 10	20	9	23.5	RCC	Structure is in sound condition.
		RHS	2 x 10	20	9		RCC	
4	202+710	LHS	1 x 11.5	11.5	9	23.5	RCC	Structure is in sound condition.

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Total Length of Bridge (m)	Carriageway (m)	Deck Width (m)	Type of structure	Remarks
		RHS	1 x 11.5	11.5	9		RCC	
5	206+880	LHS	2 x 10	20	9	23	RCC	Structure is in sound condition.
		RHS	2 x 10	20	9		RCC	
6	218+361	LHS	2 x 10	20	9.25	21.67	RCC	Structure is in sound condition.
		RHS	2 x 10	20	10.5		RCC	

Figure 3-4 Photographs of Major Structures

Minor Bridge at km. 189+490

Major Bridge at km. 197+270

Minor Bridge at km. 206+700

Vehicular Underpass-km. 192+352

View of ROB at km. 219+170

Minor Bridge at km. 239+695

Major Bridge at km. 239+800

View of ROB at km. 242+750

Minor Bridge at km. 234+194

Minor Bridge at km. 213+173

Minor Bridge at km. 216+087

Minor Bridge at km. 232+620

3.5 Condition Survey of Culverts

The cross-drainage structure includes hume pipe culverts and box culverts at various locations. There are 104 Nos. of pipe culverts and 44 Nos. of box culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts is satisfactory. The RCC parapet, crash barrier or RCC railing has been provided at culvert locations which is maintained properly.

In most of culverts, the waterway is clear. However, near to urban area and some location is found blocked due to debris, drainage water or bushes, tree growth, The cement concrete pitching or stone pitching has been provided for slope protection.

The photographs taken during site visit are presented below.

Figure 3-5 Photographs of Culverts

Pipe culvert at km. 181+950

Box culvert at km. 187+350

3.6 Drainage

A total length of 4.51 kms of pucca / concrete drain (which includes drain on both sides) is constructed along the Project Road. The photographs taken during site visit is presented as below.

Figure 3-6 Photograph of RCC Drain

km. 181+600

km. 201+500

3.7 Slope Protection

Slope protection and chute drains are found on Project Road at required locations.

3.8 Road Furniture

The Concessionaire has provided additional road furniture along the Project Road as per the standards and specifications mentioned in Schedule-C. Details of the items are provided below.

Pavement Marking

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Some of the photographs of road marking are presented below.

Figure 3-7 Photographs of Pavement Marking

km. 182+330

km. 192+820

km. 181+950

km. 238+981

Road Studs

Road stud / cat's eye for the project Road is done as per the design standards indicated in section 12 of Schedule-D. Road studs / cat's eye has been fixed at junction and zebra crossings. Some of the photographs of road studs are presented below.

Figure 3-8 Photographs of Road Studs

km. 181+200

km. 221+800

Traffic Signage / Median Kerb painting / KM Stone

Traffic signs includes roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards and median kerb paint are faded at few locations which will be rectified by the Concessionaire.

Some of the photographs of sign boards are presented below.

Figure 3-9 Photographs of Road Signages

km. 182+000

km. 239+710

km. 192+800

km. 238+970

km. 183+400

km. 182+500

Highway Lighting

Highway lighting is provided at underpasses, flyovers, toll plaza, ROBs and built-up locations. High mast lighting is provided at toll plaza location. Highway lighting is also provided at approaches of underpass and flyovers. Some of the photographs of highway lighting are presented below.

Figure 3-10 Photograph of Street Light

km. 201+100

Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site. Some of the photographs of metal beam crash barriers are presented below.

Figure 3-11 Photographs of MBCB / Crash Barrier

km. 193+850

km. 239+695

Delineators

The traffic delineators are provided by Concessionaire for road users in abnormal condition of weather for the Project Road. The same is maintained by the Concessionaire. Some of the photographs of delineators are presented below.

Figure 3-12 Photograph of Delineator

km. 195+590

Pedestrian Guard Rail

The pedestrian guard rails are provided in the median. It is maintained by the Concessionaire. Some of the photographs of pedestrian guard rails are presented below.

Figure 3-13 Photographs of Pedestrian Guard Rail

km. 195+590

Road Land Boundary

Road land boundary pillars are available on Project Road.

3.9 Avenue Plantation and Median Plantation

Avenue plantations are done only in forest land due to ROW issues and median plantation has been provided along the project length as per IRC specification.

Figure 3-14 Photographs of Median and Avenue Plantation

km. 183+410

km. 180+150

3.10 Toll Plaza

As per the Concession Agreement, there is one existing toll plaza at km. 185.860 near Nanguneri village, with the following infrastructure.

Table 3-3 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 185+860
2	Number of Tolling Lanes	10 lanes for toll operation plus 2 lanes for over dimensional vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	in each direction
5	Number of Toll Booths	9 singles
6	Canopy	Present
7	Administrative Building	Present
8	Parking cum Toilet Block	Present
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	Tunnel/No
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	No
12	Storage facility for Overloaded Material	No
13	High mast Light	Yes
14	Streetlight	Yes
15	Low mast Light	No
16	User Fee Boards	4
17	Cantilever/Gantry Boards	Yes
18	Automatic boom barrier	Yes

Figure 3-15 Photographs of Toll Plaza

Toll Plaza at km. 243+200

3.11 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.11.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

3.11.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data.

3.11.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a camara based sensors, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

3.11.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at Toll Plaza

3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at Toll Plaza

3.11.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

3.11.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

LPIC at Toll Plaza

3.11.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane "Open" and "Close" sign consists of a pair of "GREEN" (arrow) and "RED" (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at Toll Plaza

3.11.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and type of ticket.

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.11.10 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

MSWIM at Toll Plaza

3.12 Plaza Equipment

3.12.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio WiFi module. Firewall with Sophos antivirus is provided.

3.12.2 55” LED screen for CCTV monitoring

55” LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.12.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.

3.13 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) installed for the Project Road is controlled by the ATMS center at the toll plaza location (km. 185.860). As per Concession Agreement, ATMS shall conform to ATMS Policy guidelines (2016) which comprises of the following:

- Automatic Traffic Counter cum Classifier (ATCC)
- Mobile Radio communication system
- Emergency Call Box

- Portable Weigh in Motion
- Meteorological Data system
- Variable Message Signboards (VMS)
- CCTV system
- Video Incident Detection System (VIDS)
- Vehicle actuated Speed Display (VASD)

Status of these systems at site is described below:

3.13.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is installed at Toll Plaza (km. 185+860).

3.13.2 Mobile Radio communication System (MRCS)

Mobile Radio communication System (MRCS) is not yet installed. Application for MRCS UHF band has been sought from WPC, DoT, Ministry of Communications which is not yet allocated.

3.13.3 Emergency Call Boxes (ECB)

ECB's are not installed at site.

3.13.4 Portable Weigh in Motion (PWIM)

PWIM is provided at site.

3.13.5 MET System

Meteorological sensors comprise of sensors to measure the atmospheric temperature, humidity, pavement surface temperature, visibility and equipment for measuring wind speed and direction and installed at Toll Plaza km 185+860.

3.13.6 Variable Message Signboards (VMS)

Variable message sign boards are installed at 13 locations. These display specific messages to the users based on the prevailing conditions on the highway. The message can be changed at any point of time from the HTMS centre. About 250 customised messages can be stored on the system.

3.13.7 CCTV Surveillance Cameras

Surveillance cameras are installed at 50 locations along the Project Road. The ATMS control room has video wall to monitor these locations through the cameras installed.

3.13.8 Video Incident Detection System

73 Nos. fixed CCTV cameras are installed as part of Video incident detection system.

3.13.9 Vehicle Actuated Speed Display (VASD)

VASD is installed at 8 locations each on LHS and RHS.

3.13.10 Adequacy of Toll Collection System and ATMS

- Adequacy-All lanes are hybrid ETC system as stipulated by NHAI in Technical Specifications of Hybrid ETC system. NHAI has approved maintenance costs for TMS. TMS shall be upgraded every 5 years at the cost of the Authority.

- Advanced Traffic Management System (ATMS) installed is as per specifications required by the Authority and in working condition.

3.14 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Post are provided at Toll Plaza.

3.15 Toilet Block

There is 01 no. of Toilet Block constructed at site and the same is maintained by the Concessionaire. The details of the same are presented below.

Table 3-4 Details of Toilet Block

Sr. No.	Chainage (km)	Side		Remarks
		LHS	RHS	
1	185+860	Yes	-	

3.16 Bus Bays and Passenger Shelters

There are 30 Nos. of bus bays / shelter along the Project Road. Some of the photographs of the bus bays are presented below.

Figure 3-16 Photographs of Bus Bay / Passenger Shelter

km. 192+820 (LHS)

3.17 Balance Work Status

During site visit it has been observed that construction work of 01 No. of VUP at km. 235+550 is in progress. The cost of Balance Work is presented in the subsequent chapter.

3.18 Operation and Maintenance

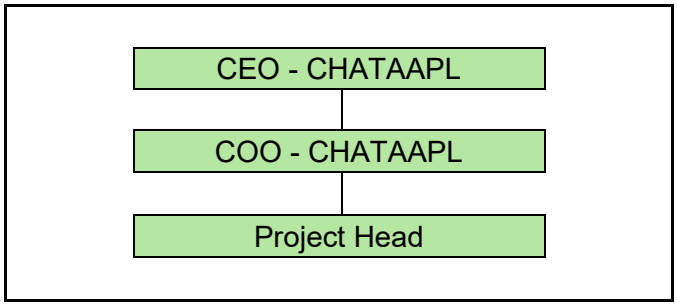
3.18.1 O&M Contract

As per Clause 15.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall conform to all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement. The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

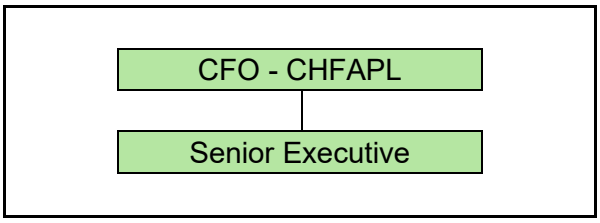
3.18.2 Organization Chart

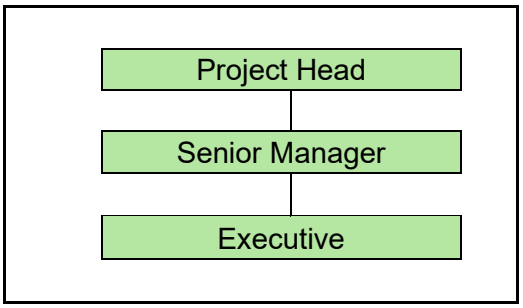
The Concessionaire has given the Organization Chart at site for Operation and maintenance. Accordingly, there is 01 Project Head, 01 Senior Executive (HR), 01 Manager (TMS / IT), 01 Executive (TMS / IT), 01 supervisor, 01 executive, 01 electrician 01 Plaza Manager, 01 Assistant Plaza Manager, 03 Cashiers and 04 validators to carry out O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent subcontractors.

Organization Chart

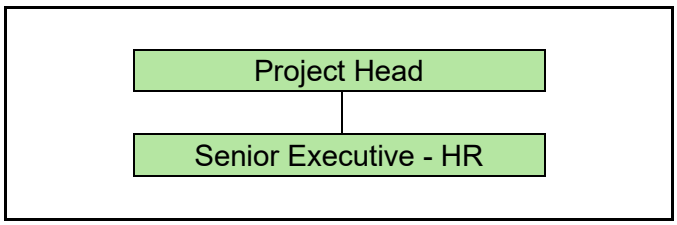


Finance & Accounts

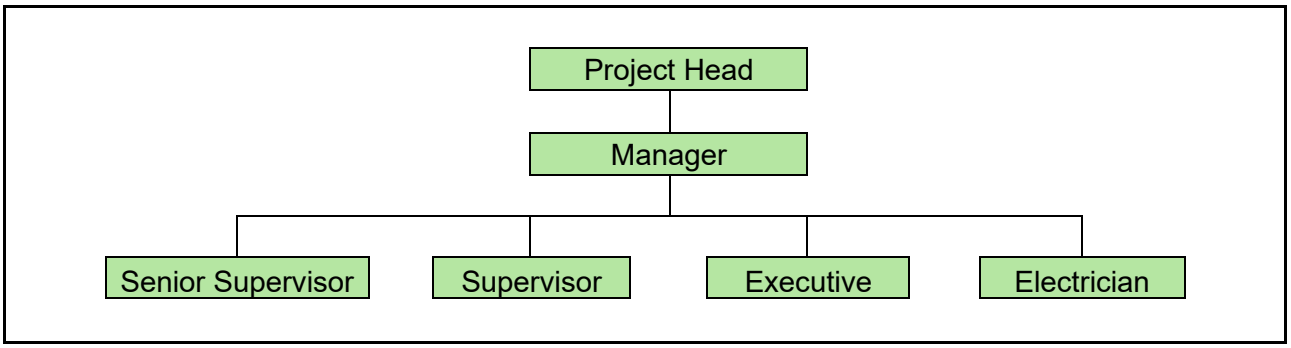




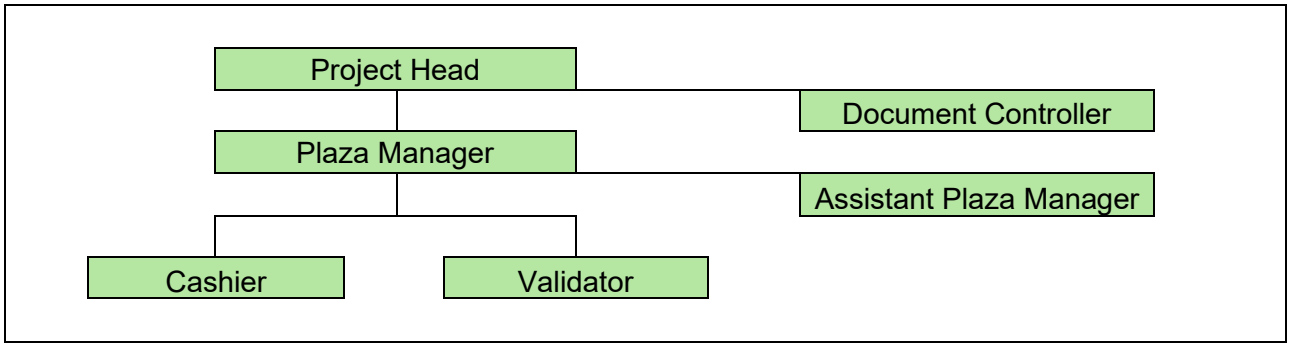
Human Resource



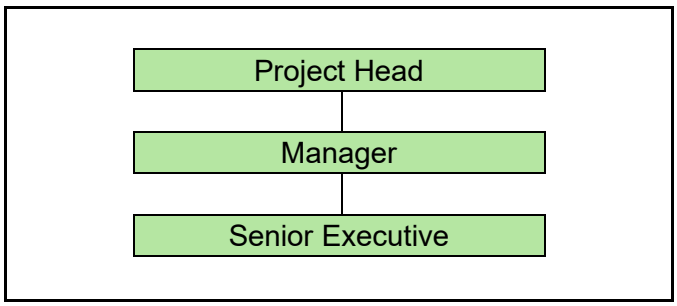
Operation & Maintenance



Operations System



Traffic and safety



3.18.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.18.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Article 15 and Schedule-F of the Concession Agreement defines the Operation and Maintenance requirement during the concession period.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 30 years from the Appointed Date (as TOT Package i.e., 20th October 2020) including construction period.

4.2 Axle Load and VDF

The Concessionaire has conducted the Axle Load Survey on Project Road at km. 185+860 (near Toll Plaza) from 19th March 2020 to 21st March 2020. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor (VDF)

Sr. No.	Vehicle Type	Direction	
		Madurai - Kanyakumari	Kanyakumari - Madurai
1	BUS	0.725	0.869
2	LCV	0.800	0.570
3	2-Axle	2.850	2.599
4	3-Axle	7.108	3.805
5	MAV	14.429	6.201

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data as provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

MSA Calculations					
Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
FY27	2.22	**2.22**	1.25	**1.25**	
FY28	2.33	**4.55**	1.31	**2.56**	
FY29	2.47	**7.02**	1.38	**3.94**	1st MM Cycle
FY30	2.56	**9.58**	1.43	**5.37**	1st MM Cycle
FY31	2.64	**12.22**	1.47	**6.84**	
FY32	2.73	**14.95**	1.52	**8.36**	
FY33	2.82	**17.77**	1.57	**9.93**	
FY34	2.91	**20.68**	1.62	**11.55**	
FY35	3.01	**23.69**	1.67	**13.22**	
FY36	3.11	**26.80**	1.72	**14.94**	2nd MM Cycle
FY37	3.21	**30.01**	1.78	**16.72**	2nd MM Cycle

MSA Calculations					
Year	**MSA**	**Cumulative**	**MSA**	**Cumulative**	**Remarks**
FY38	3.31	**33.32**	1.83	**18.55**	
FY39	3.41	**36.73**	1.88	**20.43**	Crossing 40000 PCU's limit
FY40	3.52	**40.25**	1.94	**22.37**	Crossing 40000 PCU's limit
FY41	3.62	**43.87**	2.00	**24.37**	Crossing 40000 PCU's limit
FY42	3.73	**47.60**	2.05	**26.42**	DPR Preparation
FY43	3.85	**51.45**	2.11	**28.53**	DPR & 3rd MM cycle
FY44	3.96	**55.41**	2.17	**30.70**	3rd MM cycle and Augmentation 6-Laning (Assuming 3 years Construction Period)
FY45	4.08	**59.49**	2.23	**32.93**	Augmentation 6-Laning (Assuming 3 years Construction Period)
FY46	4.19	**63.68**	2.30	**35.23**	
FY47	3.47	**67.15**	1.90	**37.13**	
FY48	3.57	**70.72**	1.95	**39.08**	
FY49	3.67	**74.39**	2.00	**41.08**	
FY50	3.77	**78.16**	2.06	**43.14**	
FY51	3.87	**82.03**	2.11	**45.25**	
FY52	3.97	**86.00**	2.16	**47.41**	End of concession period

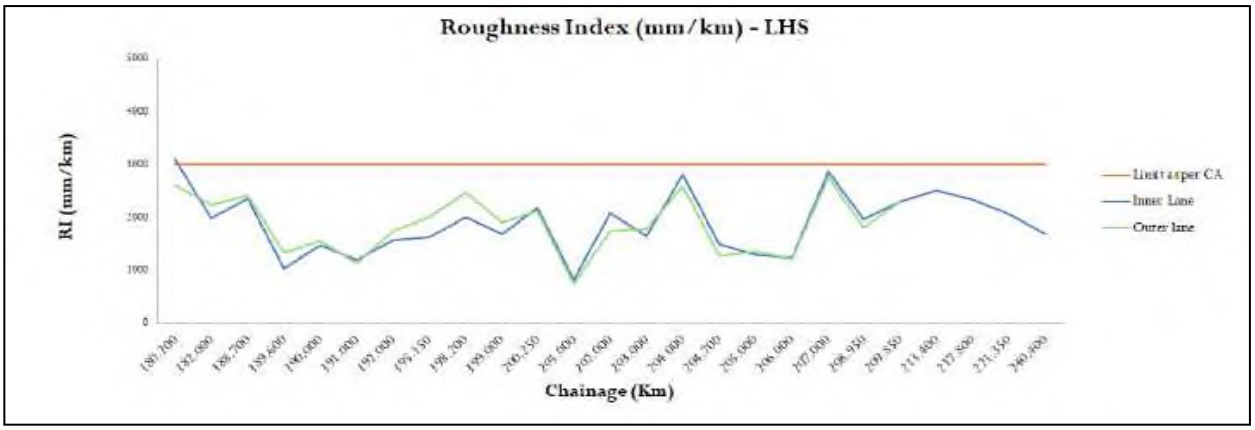
4.4 Network Survey Vehicles (NSV) Survey

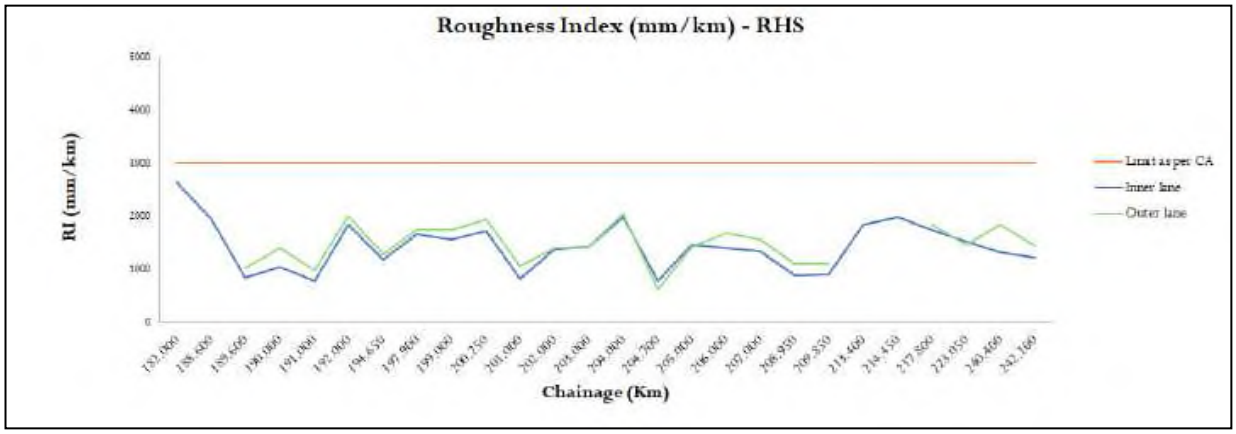
Roughness Index

The Concessionaire has conducted pavement condition survey on each lane of carriageway through NSV. The NSV survey was conducted on the Project Road in March 2026. The summary of the same is presented below.

Table 4-3 Summary of Roughness Index

Roughness Summary % as per Schedule F of CA (mm/km) - MCW					
Condition	Limit as per Schedule F of Concession Agreement (mm/km)	LHS		RHS	
		Inner Lane	Outer Lane	Inner Lane	Outer Lane
Good	<3000	100.00%	100.00%	100.00%	100.00%
Poor	>3000	0.00%	0.00%	0.00%	0.00%

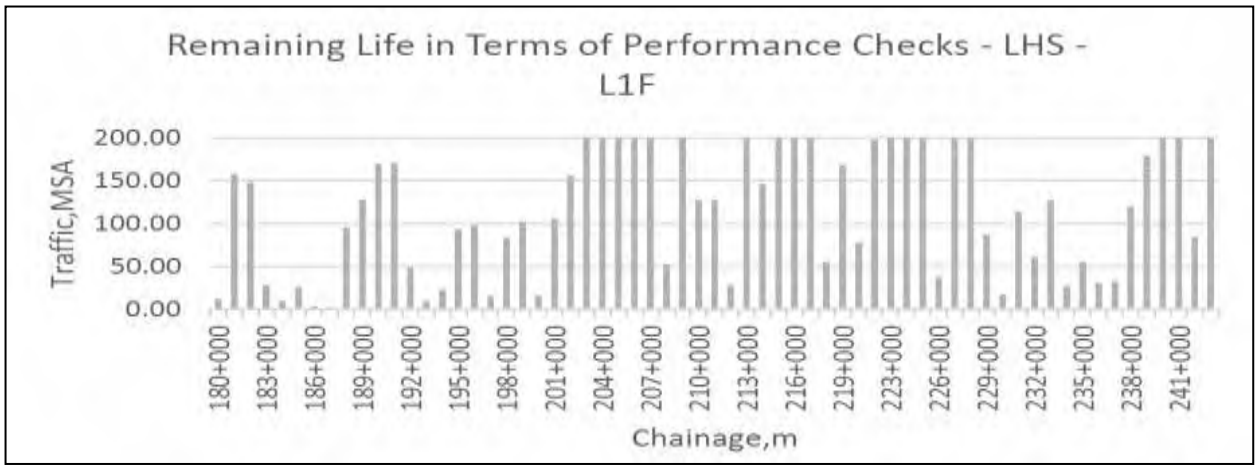


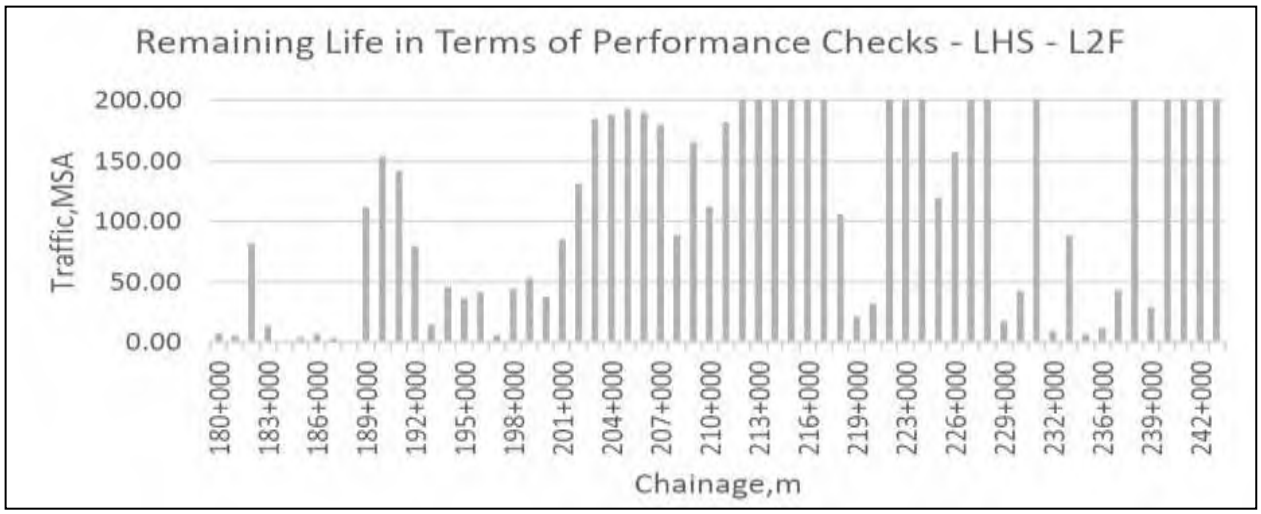


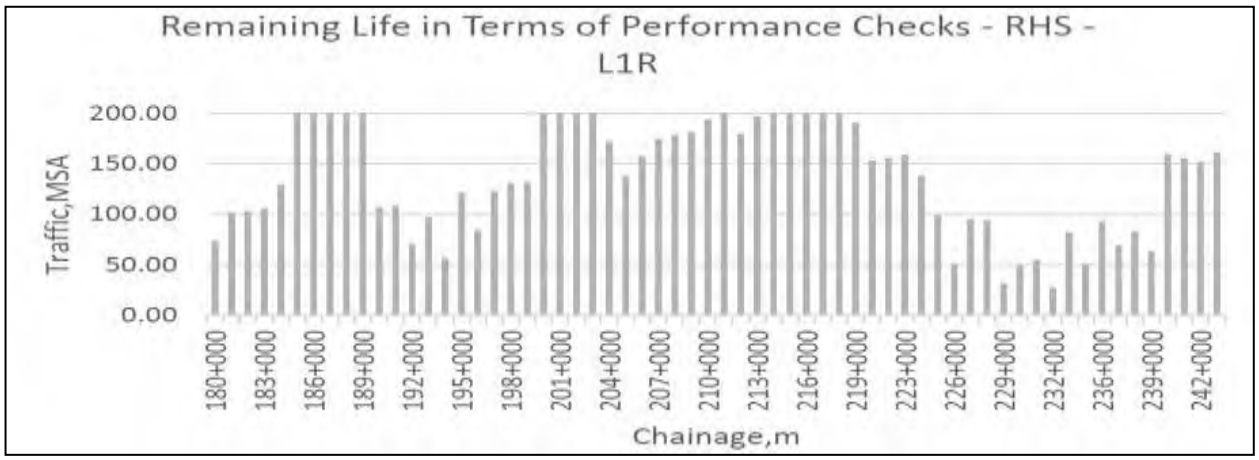
4.5 FWD Survey

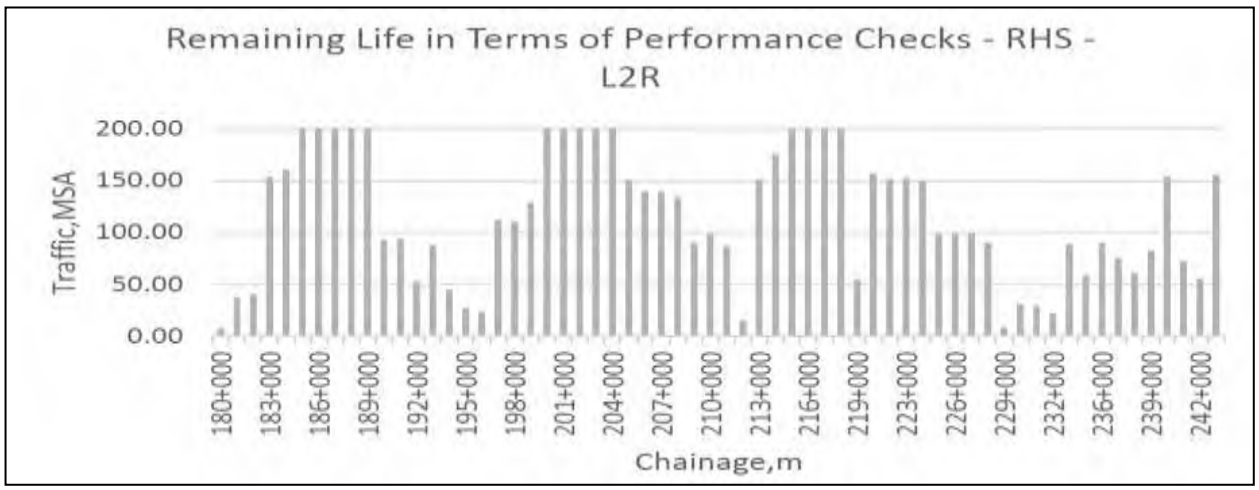
The structural evaluation and analysis of the remaining life of project was carried out in conformity with IRC:115-2014"Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique".

The FWD survey was conducted on the Project Road on 07th March 2026 to 13th March 2026. The summary of the same is presented below.









However, the maintenance can be carried out on as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. However, improvement in Riding Quality is expected if the roughness value exceeds 3000 mm/km.

4.6 Test pit and Subgrade Investigation

The Concessionaire has carried out the subgrade investigation for Project Road. The results of the same as provided by the Concessionaire are tabulated as below.

Sr. No.	Road Name	Existing Chainage (km)	Side	DCP-CBR
1	NH-7	182+200	RHS	13.0
2	NH-7	184+800	LHS	10.6
3	NH-7	187+500	RHS	12.4
4	NH-7	192+400	LHS	28.0
5	NH-7	192+400	RHS	14.6
6	NH-7	194+800	LHS	13.8
7	NH-7	197+300	RHS	11.4
8	NH-7	199+750	LHS	20.6
9	NH-7	202+600	RHS	16.4
10	NH-7	205+000	LHS	15.4
11	NH-7	207+500	RHS	17.8
12	NH-7	210+000	LHS	16.0

Sr. No.	Road Name	Existing Chainage (km)	Side	DCP-CBR
13	NH-7	212+500	RHS	14.4
14	NH-7	215+000	LHS	13.0
15	NH-7	217+150	RHS	17.2
16	NH-7	220+000	LHS	19.8
17	NH-7	222+200	RHS	12.9
18	NH-7	225+000	LHS	12.1
19	NH-7	227+500	RHS	14.0
20	NH-7	230+000	LHS	17.8
21	NH-7	235+000	LHS	12.8
22	NH-7	237+400	RHS	9.1
23	NH-7	241+000	LHS	16.5
24	NH-7	242+600	RHS	14.0

Table 4-4 Test Results Summary of Natural Ground Soil Samples

Sr. No.	Location (km)	Side (LHS / RHS)	Soil Classification as per IS: 1498	Gradation: Percent by weight passing through the Sieve (IS:2720-IV)						Clay & silt content %	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		4-Days Soaked CBR (%)	Free Swell Index (%)
				19.0 mm	10.0 mm	4.75 mm	2.0 mm	425 microns	75 microns		Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density (gm/cc)	OMC (%)		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	212+600	LHS	SM-SC	100.0	98.5	85.2	66.8	51.2	45.2	45.2	25	20	5	2.02	9.2	11.1	10.0
2	214+900	LHS	SC	100.0	100.0	98.5	90.2	78.5	62.1	40.1	32	22	10	1.98	10.8	10.3	25.0
3	235+450	LHS	MI	100.0	100.0	99.5	80.2	60.5	55.1	55.1	36	25	11	1.92	10.1	7.4	25.0
4	235+500	RHS	CL	100.0	100.0	90.5	88.1	78.5	66.2	60.2	30	22	8	1.88	10.7	6.3	20.0

Table 4-5 Granular Layer's Test Results Summary

Sr. No.	Chainage (km)	Side (LHS/RHS)	Type of Sample	Cumulative Percentage of Passing through IS Sieve (mm)												MoRTH 5th Revision	MoRTH 4th Revision	Atterberg Limits			Specific Gravity	W.A (%)	AIV (%)
				75	53.0	45.0	26.5	22.4	11.2	9.5	4.75	2.36	0.600	0.425	0.075			Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)			
1	182+200	RHS	GSB	100.0	96.5	87.0	52.6	41.5	38.0	30.7	28.6	21.1	14.9	11.2	0.6	26.5mm,9.5mm IS Sieve Material is Slightly Coarser Side in GSB-I	26.5mm,9.5mm IS Sieve Material is Slightly Coarser Side in GSB-I	23	NP	NP	2.83	0.41	35.58
2	184+800	LHS	WMM	100.0	100.0	100.0	78.3	69.3	43.5	36.4	28.2	21.2	11.6	8.6	0.8	Conforming to WMM Gradation	Conforming to WMM Gradation	20	NP	NP	2.82	0.37	31.79
3	187+500	RHS	WMM	100.0	100.0	95.2	65.3	62.3	48.2	34.3	30.2	23.6	16.8	16.2	1.1	Conforming to WMM Gradation	Conforming to WMM Gradation	21	NP	NP	2.84	0.32	30.16
4	192+400	LHS	GSB	100.0	100.0	86.7	41.9	32.2	9.8	6.4	3.4	2.4	1.6	1.5	0.4	26.5mm &4.75mm IS Sieve Material is Slightly Coarser side in GSB III&IV	26.5mm &4.75mm IS Sieve Material is Slightly Coarser side in GSB IV&V	22	NP	NP	2.83	0.35	32.14
5	192+400	RHS	GSB	100.0	100.0	100.0	48.9	36.5	28.0	24.2	18.5	16.9	10.5	8.5	1.9	26.5mm IS Sieve Material is Slightly Coarser Side in GSB-III&IV	26.5mm IS Sieve Material is Slightly Coarser Side in GSB-IV&V	20	NP	NP	2.75	0.33	35.82
6	194+800	LHS	WMM	100.0	100.0	100.0	52.8	40.9	23.4	20.5	16.6	14.4	8.2	6.6	1.3	Not Confirming to any Gradation	Not Confirming to any Gradation	20	NP	NP	2.73	0.37	34.27

Sr. No.	Chainage (km)	Side (LHS/RHS)	Type of Sample	Cumulative Percentage of Passing through IS Sieve (mm)												MoRTH 5th Revision	MoRTH 4th Revision	Atterberg Limits			Specific Gravity	W.A (%)	AIV (%)
				75	53.0	45.0	26.5	22.4	11.2	9.5	4.75	2.36	0.600	0.425	0.075			Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)			
7	197+300	RHS	WMM	100.0	100.0	100.0	84.3	74.6	48.2	44.4	39.8	34.9	21.8	17.0	1.3	Not Conforming to any Gradation	Not Conforming to any Gradation	20	NP	NP	2.76	0.51	35.13
8	199+750	LHS	GSB	100.0	100.0	100.0	70.7	57.0	38.7	34.1	30.0	25.8	16.7	13.2	0.7	Conforming to GSB-IV	Conforming to GSB-IV	21	NP	NP	2.75	0.32	37.53
9	202+600	RHS	GSB	100.0	100.0	98.2	56.5	47.2	16.1	13.4	11.3	9.6	6.6	5.2	0.7	Conforming to GSB-III	Conforming to GSB-IV	21	NP	NP	2.71	0.36	39.43
10	205+000	LHS	GSB	100.0	100.0	100.0	68.0	56.1	24.8	21.5	18.9	16.2	10.5	8.4	0.9	Conforming to GSB-III & IV	Conforming to GSB-IV & V	22	NP	NP	2.74	0.27	33.48
11	207+500	RHS	WMM	100.0	100.0	100.0	79.8	72.8	44.8	34.6	25.8	22.7	13.5	10.7	1.3	Conforming to WMM Gradation	Conforming to WMM Gradation	22	NP	NP	2.74	0.34	35.82
12	210+000	LHS	GSB	100.0	100.0	100.0	71.0	56.6	32.5	28.3	24.2	20.3	13.3	9.7	0.4	Conforming to GSB-III & IV	Conforming to GSB-IV & V	22	NP	NP	2.74	0.39	37.63
13	212+500	RHS	GSB	100.0	100.0	97.8	56.5	51.5	28.5	22.5	15.8	11.4	7.9	7.2	0.2	Conforming to GSB-III&IV	Conforming to GSB-IV&V	23	NP	NP	2.68	0.30	27.97
14	215+000	LHS	WMM	100.0	100.0	100.0	56.5	46.2	35.0	31.9	28.0	23.3	16.3	13.1	1.0	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	24	NP	NP	2.73	0.32	33.09
15	217+150	RHS	WMM	100.0	100.0	100.0	59.6	52.3	38.1	32.5	28.3	22.8	12.3	8.2	1.2	22.4mm,11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	22.4mm,11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	23	18	5	2.74	0.39	35.83
16	220+000	LHS	GSB	100.0	91.8	89.7	68.7	59.8	31.0	25.1	21.0	15.7	8.4	6.9	0.4	53mm, IS Sieve Material is Slightly Coarder Side in GSB-IV	Conforming to GSB-IV & V	25	NP	NP	2.70	0.45	37.53

Sr. No.		17	18	19	20	21	22	23	24
Chainage (km)		222+200	225+000	227+500	230+000	235+000	237+400	241+000	242+600
Side (LHS/RHS)		RHS	LHS	RHS	LHS	LHS	RHS	LHS	RHS
Type of Sample		GSB	WMM	WMM	GSB	WMM	WMM	GSB	GSB
Cumulative Percentage of Passing through IS Sieve (mm)	75	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	53.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	45.0	90.4	96.6	100.0	100.0	100.0	97.3	70.6	59.4
	26.5	56.2	62.9	74.2	65.2	92.3	78.2	34.3	45.2
	22.4	47.0	56.2	66.8	49.0	76.5	63.2	26.5	26.9
	11.2	23.2	38.5	45.5	26.3	45.6	38.2	21.3	12.5
	9.5	21.4	32.4	39.0	20.5	34.2	20.2	18.3	11.2
	4.75	19.4	31.8	30.6	18.6	29.1	18.5	8.2	10.5
	2.36	16.3	24.1	26.9	15.4	19.2	15.0	12.8	6.8
	0.600	10.1	18.2	14.6	12.3	14.3	11.7	7.2	2.9
	0.425	8.1	14.5	10.3	8.4	8.5	6.5	6.5	0.8
	0.075	0.5	1.3	0.9	0.7	1.6	5.0	1.0	0.2
MoRTH 5th Revision		Conforming to GSB-III&IV	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	Conforming to WMM Gradation	Confirming to GSB-III&IV	Confirming to WMM Gradation	11.2mm,4.75mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	26.5mm,4.75mm IS Sieve Material Slightly Coarser side in GSB-III & IV	26.5mm IS Sieve Material is Slightly Coarser Side in GSB-III
MoRTH 4th Revision		Conforming to GSB-IV & V	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	Conforming to WMM Gradation	Confirming to GSB-IV&V	Confirming to WMM Gradation	11.2mm,4.75mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	26.5mm,4.75mm IS Sieve Material Slightly Coarser side in GSB-IV & V	26.5mm IS Sieve Material is Slightly Coarser Side in GSB-IV
Atterberg Limits	Liquid Limit (LL) %	21	22	22	19	19	20	22	20
	Plastic Limit (PL) %	NP	NP	NP	NP	NP	NP	NP	NP
	Plasticity Index (PI)	NP	NP	NP	NP	NP	NP	NP	NP
Specific Gravity		2.71	2.72	2.74	2.72	2.74	2.72	2.73	2.74
W.A (%)		0.34	0.25	2.27	0.29	0.32	0.33	0.33	0.35
AIV (%)		34.97	32.98	32.34	30.69	30.27	34.23	34.12	32.42

4.7 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full-length periodic maintenance. Schedule-F of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. Only improvement to Riding Quality is expected if the roughness value exceeds 3000 mm/km.

Overlay work is completed at site on both side of the carriageway in the month of October 2021 i.e., FY 2022. Thus, next cycle of the overlay is proposed in FY 2029 after 7 years from previous MM cycle.

As per Article 14 of CA, the Authority shall carry out capacity augmentation under EPC contract if traffic exceeds 40,000 PCU for three consecutive accounting years. As per the traffic study report submitted by the Company it is observed that, the project traffic crosses 40,000 PCU in FY 2039, FY 2040, FY 2041. Assumption has made that execution of 6-laning of Project Road will start in the year 2044 or 2045. It is also assumed that during 6-laning of Project Road, overlay of existing four lane road will be the part of the capacity augmentation. Hence, the major maintenance cycle is adjusted accordingly.

The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-6 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2027 to FY 2028	-	
2	FY 2029	Major maintenance with 30 mm BC with PMB (100%) + Milling & 50 mm DBM (7%)	Major Maintenance with 30 mm BC with VG-40 (50%) + Micro-surfacing (50%)
3	FY 2030 to FY 2035	-	
4	FY 2036	Major maintenance with 30 mm BC with PMB (100%) + Milling & 50 mm DBM (6%)	Major Maintenance with 30 mm BC with VG-40 (50%) + Micro-surfacing (50%)
5	FY 2037 to FY 2042	-	
6	FY 2043	Major maintenance with 30 mm BC with PMB (100%) + Milling & 50 mm DBM (5%)	Major Maintenance with 30 mm BC with VG-40 (50%) + Micro-surfacing (50%)
7	FY 2044 to FY 2046	Assumption of Capacity Augmentation to Six Lane Configuration	
8	FY 2047 to FY 2051	-	
9	FY 2052	End of Concession Period	

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

   a. **Manpower and Labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

   b. **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

   Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards, since bitumen prices have been range bound over the last five-six years. Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg last 10 years)
Mathura	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Panipat	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Koyali	All States	VG-10	47,102	37,125
		VG-30	48,402	38,137
		VG-40	51,082	40,251
Haldia	All States	VG-10	46,602	35,683

Supply Location	Applicability of Rates	Product	Current Published Price (16th Feb 26)	Long term price (Avg last 10 years)
		VG-30	47,402	36,295
		VG-40	49,962	38,256
Barauni	All States	VG-10	47,132	36,213
		VG-30	48,432	37,325
		VG-40	50,992	39,286
CPCL	Kerala	VG-10	47,402	35,519
		VG-30	48,402	36,395
		VG-40	50,762	38,120
CPCL	Tamil Nadu	VG-10	47,902	36,019
		VG-30	48,402	36,395
		VG-40	50,962	38,320
CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320
CPCL	Karnataka	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320

c. **Sand and Aggregate:** Rates are taken from Public works Department Tamilnadu SOR FY 2025-26.

d. **Cement:** Rates are taken from Public works Department Tamilnadu SOR FY 2025-26.

e. **Steel :** Rates are taken from Public works Department Tamilnadu SOR FY 2025-26.

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable PWD SOR.

g. **Actual Rates of items as per work order:** The rates of road marking, road stud, kerb raising, micro surfacing, milling, median filling rates etc. are considered as per the work order shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam	Cum	9,267
2	Bituminous Concrete (VG40)	Cum	10,419
3	Bituminous Concrete (PMB)	Cum	12.262
4	Milling	Sqm	90
5	Micro-surfacing	Sqm	162

Sr. No.	Item Description	Unit	Rates (Rs.)
6	Kerb Re-laying	Rmt	330
7	Road Marking on BC surface	Sqm	573
8	Road Marking on micro surface	Sqm	713
9	Road Studs	Nos.	202

5.3 Balance Work Cost

As discussed in previous chapters, construction work of 01 Nos. of VUP at km. 235+550 is in progress. The Concessionaire has issued work order to PVC Infrastructure Pvt Ltd. for construction of VUP at km. 235+550. The cost of construction of VUP as per work order is Rs. 26.69 Cr. (including GST). The construction period is 15 months from the issued of work order.

Figure 5-1 Photographs of VUP approach (Work in progress)

Construction of VUP approach in progress

It is to be noted that at present, at one location along the Project Road, NHAI has allotted COS work to third party on stand-alone basis. In the said location along the project length, underpass & approach construction is being carried out by the third party. Thus, a total length of 1.60 km of project length (where COS / new construction works are in progress), out of total project length of 63.470 km, is not under the maintenance scope of the concessionaire at present.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Incident Management Services
4. Electricity and Diesel Charges

5. TMS / HTMS / System Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Insurance Expense
10. IE Fees
11. Horticulture & ROW Maintenance
12. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or "wear-and-tear". Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.
The Routine Operation Cost is presented as below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I.**

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027 to FY 2047)	Amount FY 2048 to onwards
1	Salary and Welfare Expenses	1,40,11,290	1,40,11,290
2	Tolling Operations Services	2,29,57,775	2,29,57,775
3	Toll Security Services	53,12,874	53,12,874
4	Incident Management & Emergency Services	3,13,15,320	3,13,15,320
5	Electricity and Diesel Charges	39,79,944	39,79,944
6	TMS/HTMS/System Expenses	59,66,843	46,93,241
7	Office Operating Expenses	35,20,703	35,20,703
8	Vehicle Running Expenses	27,60,000	27,60,000
9	Professional Fees Expense	68,82,488	1,03,62,511
10	Community Development	11,50,000	11,50,000
11	Communication Expenses	3,47,156	3,47,156
12	Conveyance Expenses	3,78,716	3,78,716
13	Insurance Expense	62,47,418	62,47,418
14	IE Fees	79,45,711	79,45,711
15	Routine Maintenance Cost	3,34,87,696	4,35,04,952
16	Horticulture & ROW Maintenance	2,12,91,037	2,12,91,037
17	Miscellaneous including Contingency	45,11,049	45,99,306
	Total Cost (Rs.)	**17,20,66,019**	**18,43,77,954**
	Total Cost (Cr.)	**17.21**	**18.44**
	Per km Cost (Lakhs)	27.11	29.05

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

The summary of Major Maintenance Cost is provided as below.

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2027 to FY 2028	-	
2	FY 2029	76.79	
3	FY 2030 to FY 2035	-	
4	FY 2036	84.51	
5	FY 2037 to FY 2042	-	
6	FY 2043	75.53	
7	FY 2044 to FY 2052	-	End of concession period
Total Cost (Cr.)		**236.82**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2027	7.54	
2	FY 2034	7.54	
3	FY 2041	7.54	
4	FY 2048	7.54	
Total Cost (Cr.)		**30.18**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-4 Escalation

Year	Escalation	Year	Escalation
2025	-	**2041**	3.99%
2026	-	**2042**	3.99%
2027	5.25%	**2043**	3.99%
2028	4.86%	**2044**	3.99%
2029	4.44%	**2045**	3.99%
2030	4.24%	**2046**	3.99%
2031	4.13%	**2047**	3.99%
2032	4.08%	**2048**	3.99%
2033	4.01%	**2049**	3.99%
2034	4.00%	**2050**	3.99%
2035	4.03%	**2051**	3.99%
2036	4.01%	**2052**	3.99%
2037	3.98%	**2053**	3.99%
2038	3.98%	**2054**	3.99%
2039	4.00%	**2055**	3.99%
2040	3.99%	**2056**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr.)

Sr. No.	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41	FY42	FY43	FY44	FY45	FY46	FY47	FY48	FY49	FY50	FY51	FY52
1	Routine O&M Cost																										
1.01	Salary and Welfare Expense	1.40	1.47	1.53	1.60	1.67	1.73	1.80	1.88	1.95	2.03	2.11	2.19	2.28	2.37	2.47	2.57	2.67	2.77	2.89	3.00	3.12	3.24	3.37	3.51	3.65	3.79
1.02	Tolling Operations Services	2.30	2.41	2.51	2.62	2.73	2.84	2.95	3.07	3.20	3.32	3.46	3.59	3.74	3.89	4.04	4.20	4.37	4.55	4.73	4.92	5.11	5.32	5.53	5.75	5.98	6.22
1.03	Toll Security Services	0.53	0.56	0.58	0.61	0.63	0.66	0.68	0.71	0.74	0.77	0.80	0.83	0.87	0.90	0.94	0.97	1.01	1.05	1.09	1.14	1.18	1.23	1.28	1.33	1.38	1.44
1.04	Incident Management Services	3.13	3.28	3.43	3.57	3.72	3.87	4.03	4.19	4.36	4.53	4.72	4.90	5.10	5.30	5.51	5.73	5.96	6.20	6.45	6.71	6.97	7.25	7.54	7.84	8.15	8.48
1.05	Electricity and Diesel Charges	0.40	0.42	0.44	0.45	0.47	0.49	0.51	0.53	0.55	0.58	0.60	0.62	0.65	0.67	0.70	0.73	0.76	0.79	0.82	0.85	0.89	0.92	0.96	1.00	1.04	1.08
1.06	TMS/HTMS/System Expenses	0.33	0.44	0.57	0.70	0.73	0.99	1.40	0.44	0.59	0.75	0.92	0.96	1.30	1.84	0.58	0.77	0.98	1.21	1.26	1.31	2.42	0.76	1.02	1.29	1.59	1.66
1.07	Office Operating Expenses	0.35	0.37	0.39	0.40	0.42	0.44	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.60	0.62	0.64	0.67	0.70	0.72	0.75	0.78	0.82	0.85	0.88	0.92	0.95
1.08	Vehicle Running Expenses	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.37	0.38	0.40	0.42	0.43	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.59	0.61	0.64	0.66	0.69	0.72	0.75
1.09	Professional Fees Expense	0.69	0.72	0.75	0.79	0.82	0.85	0.89	0.92	0.96	1.00	1.04	1.08	1.12	1.17	1.21	1.26	1.31	1.36	1.42	1.47	1.53	2.40	2.50	2.59	2.70	2.81
1.10	Community Development	0.12	0.12	0.13	0.13	0.14	0.14	0.15	0.15	0.16	0.17	0.17	0.18	0.19	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31
1.11	Communication Expenses	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09	0.09
1.12	Conveyance Expenses	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09	0.09	0.10	0.10
1.13	Insurance Expense	0.62	0.66	0.68	0.71	0.74	0.77	0.80	0.84	0.87	0.90	0.94	0.98	1.02	1.06	1.10	1.14	1.19	1.24	1.29	1.34	1.39	1.45	1.50	1.56	1.63	1.69
1.14	IE Fees	0.79	0.83	0.87	0.91	0.94	0.98	1.02	1.06	1.11	1.15	1.20	1.24	1.29	1.35	1.40	1.45	1.51	1.57	1.64	1.70	1.77	1.84	1.91	1.99	2.07	2.15
1.15	Routine Maintenance Cost	3.35	3.51	3.67	3.82	3.98	4.14	4.31	4.48	4.66	4.85	5.04	5.24	5.45	5.67	5.90	6.13	6.38	6.63	6.90	7.17	7.46	10.07	10.48	10.89	11.33	11.78
1.16	Horticulture & ROW Maintenance	2.13	2.23	2.33	2.43	2.53	2.63	2.74	2.85	2.96	3.08	3.21	3.33	3.47	3.61	3.75	3.90	4.05	4.22	4.38	4.56	4.74	4.93	5.13	5.33	5.54	5.77
1.17	Miscellaneous and Contingency	0.45	0.47	0.49	0.51	0.54	0.56	0.58	0.60	0.63	0.65	0.68	0.71	0.73	0.76	0.79	0.83	0.86	0.89	0.93	0.97	1.00	1.06	1.11	1.15	1.20	1.25
	Subtotal of O&M Cost	16.94	17.86	18.76	19.66	20.47	21.54	22.77	22.67	23.71	24.80	25.93	26.96	28.35	29.96	29.82	31.19	32.61	34.10	35.46	36.88	39.40	42.36	44.28	46.29	48.38	50.31
2	Major Maintenance Cost	-	-	82.02	-	-	-	-	-	-	112.68	-	-	-	-	-	-	124.43	-	-	-	-	-	-	-	-	-
3	Periodic Cost of TMS/HTMS Replacement	7.54	-	-	-	-	-	-	10.10	-	-	-	-	-	-	13.28	-	-	-	-	-	-	17.47	-	-	-	-
4	Balance Works Cost	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**24.48**	**17.86**	**100.78**	**19.66**	**20.47**	**21.54**	**22.77**	**32.76**	**23.71**	**137.48**	**25.93**	**26.96**	**28.35**	**29.96**	**43.11**	**31.19**	**157.04**	**34.10**	**35.46**	**36.88**	**39.40**	**59.83**	**44.28**	**46.29**	**48.38**	**50.31**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost (4-Lane)	
Ordinary Repair Cost for Flexible (with GST)	**3,34,87,696**
(inclusive of GST)	**= 5.28 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal**	**Urban**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				More than 4500 CVD	**More than 4500 CVD**				
				2,66,713	**3,15,963**				
						Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	408070.00	483424.00	-	-	-	-
		Paved shoulder	1.70	453411.00	537138.00	43.98	-	1,99,43,283	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	533425.00	631927.00	-	-	-	-
		Paved shoulder	2.20	586768.00	695120.00	-	19.49	-	1,35,44,413
					TOTAL		**63.470**		**3,34,87,696**

Routine Maintenance Cost (6-Lane)	
Ordinary Repair Cost for Flexible (with GST)	**4,35,04,952**
(inclusive of GST)	**= 6.85 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal**	**Urban**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				More than 4500 CVD	More than 4500 CVD				
				2,66,713	**3,15,963**				
						Normal	**Urban**	**Normal**	**Urban**
1	Six lane with divided carriageway	without Paved shoulder	2.09	557429.00	660364.00	-	-	-	-
		with Paved shoulder	2.26	602771.00	714078.00	43.98	-	2,65,12,882	-
2	Six lane with divided carriageway and service lane on either side	without Paved shoulder	2.56	682784.00	808867.00	-	-	-	-
		with Paved shoulder	2.76	736127.00	872059.00	-	19.49	-	1,69,92,070
					TOTAL		**63.470**		**4,35,04,952**

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Potholes repair (50 mm deep)	100 % Pothole free	As & when required	1.00%
	Volume (cum)			5.00
	Rs/m^3			11505
	Cost in Rupees			57,525
	ii) Patch repair	100 % Patch less	As & when required	1.00%
	Area (sqm)			100
	Rs/m^2			460
	Cost in Rupees			46,020
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			81
	Cost in Rupees			20,243
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.50%
	Area (sqm)			187.5
	Rs/m^2			54
	Cost in Rupees			10,135
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			460
	Cost in Rupees			34,515
	v) Road marking	14%	Once in 7th year &	15928

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
			@ Repaired location	
	SUB TOTAL			**1,84,366**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6937
	ii) Jungle Clearance	100%	Twice in a Year	2276
	iii) Kuccha Drain Maintenance	100%	Twice in a Year	1219
	SUB TOTAL			**10,432**
3	**Maintenance of Cross Drainage works:**			
	i) Cleaning of culvert bed	100%	Once in a Year	3072
	ii) Repair of floors	100%	Once in a Year	5560
	iii) Repair of parapets	100%	As & when required	2317
	SUB TOTAL			**10,949**
4	**Maintenance of Minor & Major Bridges:**			
	i) Cleaning and removal of dirt & vegetation from pier caps, Bearings, Expansion Joints, Superstructure, Substructure and Retaining wall etc.	100%	As & when required	40,644
	ii) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints			
	iii) Repair of minor washouts, erosion scour and animal holes			
	iv) Sealing Cracks with Cement/ Epoxy Mortar			
	v) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**40,644**
5	**Miscellaneous Items:**			
	i) Turfing and Arboriculture		Once in a Year	2710

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	ii) Maintenance of gang hut store, sheds, animal & debris removal		Once in a Year	4064
	iii) Lettering, Painting of Km stones & kerbs, sign boards, hectometre stone etc.		Once in a Year	4064
	iv) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	8129
	v) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1355
	vi) Traffic Census		Once in a Year	0
	vii) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**20,322**
	GRAND TOTAL (Normal)			**2,66,713**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Centre Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	16464
	ii)Repairs to footpath	100%	As & when required	5419
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	5419
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	8400
	vi) Repair of divider/ Railing in City portion	100%	As & when required	10839
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2710
	SUB TOTAL			**49,251**
	GRAND TOTAL (Urban)			**3,15,963**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						12,18,787	18	2,19,99,098
	For BC	Sqm	1	1	10,82,484.22		10,82,484	10,82,484		
	For DBM	Sqm	1	1	62,445.20		62,445	62,445		
	For Misc. Location	Sqm	1	1	73,857.20		73,857	73,857		
2	BC with 30 mm	Cum	1	1	11,56,341.42	0.03	34,690	34,690	12,262	42,53,88,753
3	DBM with 50 mm	Cum	1	1	62,445.20	0.05	3,122	3,122	9,267	2,89,34,044
4	Milling	Sqm	1	1	62,445.20		62,445	62,445	90	56,20,068
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,402	3.50	4.50	561	561	83	46,702
6	Dismantling of CC Panels @ 2% area	Cum	2%		22,076	0.30	132	132	977	1,29,420
7	Replacement of Panels - PQC @ 2% area	Cum	2%		22,076	0.30	132	132	9,579	12,68,826
	Service Road									
8	Tack coat	Sqm	1	19,485	6.85		1,33,530	1,46,883	18	26,51,238
9	BC with 30 mm	Cum	1	19,485	6.85	0.03	4,006	4,406	10,419	4,59,10,250
10	Micro Surfacing	Sqm	1	19,485	6.85		1,33,530	1,46,883	162	2,37,95,046
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	1	31,140.8		31,141	31,141	18	5,62,091
12	Wearing Coat BC with 30 mm	Cum	1	1	31,140.8	0.03	934	934	12,262	1,14,55,905
13	Milling of Ex. Wearing Coat	Sqm	1	1	31,140.8		31,141	31,141	90	28,02,670
14	Painting of Crash Barrier	Sqm	4	1,638		1.12	7,305	7,305	109	7,96,273
	Other Works									
15	Raising of Road Kerb	Rmt	-	1,02,094			-	-	330	-
15	Replacement of Road Stud									
	Normal Road Stud	Nos	2	7,758			15,516	15,516	202	31,28,026
	Solar Road Stud	Nos	-	490			-	-	713	-
16	Painting of Kerb	Sqm	2	1,02,094		0.375	76,571	76,571	109	83,46,185
17	Road Marking on BC	Sqm					51,598	51,598	573	2,95,65,542
18	Road Marking on Micro	Sqm					4,540	4,540	713	32,38,329
	MCW									
	a) Median & Edge line	Sqm	4	66,644	0.15		39,986			

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	b) Lane line	Sqm	2	21,992	0.10		4,398			
	Service Road									
	a) Edge line	Sqm	2	38,970	0.10		7,794			
	b) Lane line	Sqm	1	12,860	0.10		1,286			
	Junction crossing	Sqm					2,673			
19	Filling of Earthen shoulder	Cum					9,314	9,314	444	41,34,413
	MCW		2	42,001	1.50	0.06	7,560			
	Service Road		1	19,485	1.50	0.06	1,754			
20	Median Filling	Cum	-	61,054	4.17	0.10	-	-	444	-
20	Miscellaneous	5%								3,09,88,644
21	PMC Cost for Overlay	Month	8	-			-		20,00,000	-
									Total Major Maintenance Cost (Rs.)	**65,07,61,523**
									Total Major Maintenance Cost with GST (Rs.)	**76,78,98,597**
									Total Major Maintenance Cost with GST (Cr.)	**76.79**
									Per km Cost (lakh)	**120.99**
									Escalation Factor for FY 2029	**1.10**
									Total Escalated Cost for Major Maintenance (FY 2029) (Cr.)	**82.02**

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						12,09,866	18	2,18,38,079
	For BC	Sqm	1	1	10,82,484.22		10,82,484	10,82,484		
	For DBM	Sqm	1	1	53,524.45		53,524	53,524		
	For Misc. Location	Sqm	1	1	73,857.20		73,857	73,857		
2	BC with 30 mm	Cum	1	1	11,56,341.42	0.03	34,690	34,690	12,262	42,53,88,753
3	DBM with 50 mm	Cum	1	1	53,524.45	0.05	2,676	2,676	9,267	2,48,00,609
4	Milling	Sqm	1	1	53,524.45		53,524	53,524	90	48,17,201
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,402	3.50	4.50	561	561	83	46,702
6	Dismantling of CC Panels @ 2% area	Cum	2%		22,076	0.30	132	132	977	1,29,420
7	Replacement of Panels - PQC @ 2% area	Cum	2%		22,076	0.30	132	132	9,579	12,68,826
	Service Road									
8	Tack coat	Sqm	1	19,485	6.85		1,33,530	1,46,883	18	26,51,238
9	BC with 30 mm	Cum	1	19,485	6.85	0.03	4,006	4,406	10,419	4,59,10,250
10	Micro Surfacing	Sqm	1	19,485	6.85		1,33,530	1,46,883	162	2,37,95,046
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	1	31,140.8		31,141	31,141	18	5,62,091
12	Wearing Coat BC with 30 mm	Cum	1	1	31,140.8	0.03	934	934	12,262	1,14,55,905
13	Milling of Ex. Wearing Coat	Sqm	1	1	31,140.8		31,141	31,141	90	28,02,670
14	Painting of Crash Barrier	Sqm	4	1,638		1.12	7,305	7,305	109	7,96,273
	Other Works									
15	Raising of Road Kerb	Rmt	2	1,02,094			2,04,188	2,04,188	330	6,73,82,040
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	7,758			15,516	15,516	202	31,28,026
17	Painting of Kerb	Sqm	2	1,02,094.00		0.375	76,571	76,571	109	83,46,185
18	Road Marking on BC	Sqm					51,598	51,598	573	2,95,65,542
19	Road Marking on Micro	Sqm					4,540	4,540	713	32,38,329
	MCW									
	a) Median & Edge line	Sqm	4	66,644	0.15		39,986			
	b) Lane line	Sqm	2	21,992	0.10		4,398			
	Service Road									
	a) Edge line	Sqm	2	38,970	0.10		7,794			

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	b) Lane line	Sqm	1	12,860	0.10		1,286			
	Junction crossing	Sqm					2,673			
20	Filling of Earthen shoulder	Cum					9,314	9,314	444	41,34,413
	MCW		2	42,001	1.50	0.06	7,560			
	Service Road		1	19,485	1.50	0.06	1,754			
21	Miscellaneous	5%								3,41,02,880
Total Major Maintenance Cost (Rs.)										**71,61,60,478**
Total Major Maintenance Cost with GST (Rs.)										**84,50,69,364**
Total Major Maintenance Cost with GST (Cr.)										**84.51**
Per km Cost (lakh)										**133.14**
Escalation Factor for FY 2036										**1.45**
Total Escalated Cost for Major Maintenance (FY 2036) (Cr.)										**112.68**

Major Maintenance Cost (FY 2043)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						12,00,945	18	2,16,77,060
	For BC	Sqm	1	1	10,82,484.22		10,82,484	10,82,484		
	For DBM	Sqm	1	1	44,603.71		44,604	44,604		
	For Misc. Location	Sqm	1	1	73,857.20		73,857	73,857		
2	BC with 30 mm	Cum	1	1	11,56,341.42	0.03	34,690	34,690	12,262	42,53,88,753
3	DBM with 50 mm	Cum	1	1	44,603.71	0.05	2,230	2,230	9,267	2,06,67,174
4	Milling	Sqm	1	1	44,603.71		44,604	44,604	90	40,14,334
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,402	3.50	4.50	561	561	83	46,702
6	Dismantling of CC Panels @ 2% area	Cum	2%		22,076	0.30	132	132	977	1,29,420
7	Replacement of Panels - PQC @ 2% area	Cum	2%		22,076	0.30	132	132	9,579	12,68,826
	Service Road									
8	Tack coat	Sqm	1	19,485	6.85		1,33,530	1,46,883	18	26,51,238
9	BC with 30 mm	Cum	1	19,485	6.85	0.03	4,006	4,406	10,419	4,59,10,250
10	Micro Surfacing	Sqm	1	19,485	6.85		1,33,530	1,46,883	162	2,37,95,046
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	1	31,140.8		31,141	31,141	18	5,62,091
12	Wearing Coat BC with 30 mm	Cum	1	1	31,140.8	0.03	934	934	12,262	1,14,55,905
13	Milling of Ex. Wearing Coat	Sqm	1	1	31,140.8		31,141	31,141	90	28,02,670
14	Painting of Crash Barrier	Sqm	4	1,638		1.12	7,305	7,305	109	7,96,273
	Other Works									
15	Replacement of Road Stud									
	Normal Road Stud	Nos	2	7,758			15,516	15,516	202	31,28,026
16	Painting of Kerb	Sqm	2	1,02,094.00		0.375	76,571	76,571	109	83,46,185
17	Road Marking on BC	Sqm					51,598	51,598	573	2,95,65,542
18	Road Marking on Micro	Sqm					4,540	4,540	713	32,38,329
	MCW									
	a) Median & Edge line	Sqm	4	66,644	0.15		39,986			
	b) Lane line	Sqm	2	21,992	0.10		4,398			
	Service Road									
	a) Edge line	Sqm	2	38,970	0.10		7,794			
	b) Lane line	Sqm	1	12,860	0.10		1,286			

Major Maintenance Cost (FY 2043)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Junction crossing	Sqm					2,673			
19	Filling of Earthen shoulder	Cum					9,314	9,314	444	41,34,413
	MCW		2	42,001	1.50	0.06	7,560			
	Service Road		1	19,485	1.50	0.06	1,754			
20	Miscellaneous	5%								3,04,78,912
Total Major Maintenance Cost (Rs.)										**64,00,57,149**
Total Major Maintenance Cost with GST (Rs.)										**75,52,67,436**
Total Major Maintenance Cost with GST (Cr.)										**75.53**
Per km Cost (lakh)										**119.00**
Escalation Factor for FY 2043										**1.90**
Total Escalated Cost for Major Maintenance (FY 2043) (Cr.)										**124.43**

TECHNICAL DUE DILIGENCE REPORT

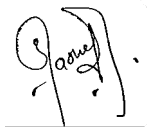
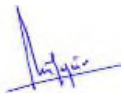
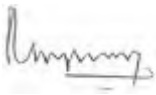
QUAZIGUND TO BANIHAL SECTION OF NH-1A INCLUDING TUNNEL OF 8.45KM IN THE UNION TERRITORY OF J&K

PREPARED FOR

CUBE HIGHWAYS TRUST

PREPARED BY

Knight Frank

Rev. No.	Effective Date	Revision Description	Checked and Approval Record		
			Activity	**Name**	**Signature**
R0	**31.03.2026**	Draft DD Report of Quazigud Banihal Section	Prepared By	Aashif Ahmed	
R1	**28.04.2026**		Reviewed by	Maj Gen K T Gajria	
R2	**11.05.2026**	Final DD Report of Quazigud Banihal Section	Approved By	Rajeev Vijay	

Disclaimer

This report has been prepared, based on the inputs provided by the Client. Every effort is made to submit realistic details as available, statistics and information obtained/furnished at site by Client during our interaction at various levels.

In preparing this report, Knight Frank relied, in whole or in part, on data and information provided by the Client which information has not been independently verified by Knight Frank and which Knight Frank has assumed to be accurate, complete, reliable, and current. Therefore, while Knight Frank has utilized its best efforts in preparing this report, Knight Frank does not warrant or guarantee the conclusions set forth in this report which are dependent or based upon data, information, or statements supplied by third parties or the client.

This report is intended for the client's sole and exclusive use and is not for the benefit of any third party and may not be distributed to, disclosed in any form to, used by, or relied upon by, any third party without prior written consent of Knight Frank, which consent may be withheld in its sole discretion.

Use of this report or any information contained herein, if by any party other than the client, shall be at the sole risk of such party and shall constitute a release and agreement by such party to defend and indemnify Knight Frank and its affiliates, officers, employees and subcontractors from and against any liability for direct, indirect, incidental, consequential or special loss or damage or other liability of any nature arising from its use of the report or reliance upon any of its content. To the maximum extent permitted by law, such release from and indemnification against liability shall apply in contract, tort (including negligence), strict liability, or any other theory of liability.

TABLE OF CONTENTS

CHAPTER 1. INTRODUCTION 11

1.1 BACKGROUND 11
1.2 SCOPE OF WORK 11
1.3 APPROACH 12
1.4 METHODOLOGY 12
1.5 STUDY 12
1.6 STRUCTURE OF THE REPORT 13

CHAPTER 2. PROJECT DESCRIPTION 15

2.1 LOCATION OF PROJECT ROAD 15
2.2 TERRAIN 16
2.3 CLIMATE 18
2.4 DEVELOPMENT AS PER SCHEDULE B 18
2.5 ADMINISTRATIVE DETAILS OF THE PROJECT 20
2.6 SALIENT FEATURES OF PROJECT 22
2.7 PROJECT COMPLETION CERTIFICATE AND PCOD & FCOD 28
2.8 ANNUITY DETAILS 28
2.9 EXTENSION OF TIME 29
2.10 PENALTY 29
2.11 APPROVALS & PERMITS 29
2.12 CHANGE OF SCOPE 29
2.13 POWER AVAILABILITY OF PROJECT 30
2.14 SPECIAL FEATURES OF PROJECT 31
2.15 TUNNEL SAFETY AND OPERATIONS SYSTEMS OVERVIEW 31

CHAPTER 3. REVIEW OF PROJECT AGREEMENTS 35

3.1 REVIEW OF CONCESSION AGREEMENT 35
3.2 REVIEW OF SUPPLEMENTARY AGREEMENTS 42
3.3 REVIEW OF STATE SUPPORT AGREEMENT 45
3.4 REVIEW OF SETTLEMENT AGREEMENTS 47
3.5 REVIEW OF MAJOR O&M CONTRACTS 51

CHAPTER 4. CONDITION ASSESSMENT OF PROJECT ROAD 64

4.1 GENERAL 64
4.2 PAVEMENT 66
4.3 ASSESSMENT OF HIGHWAY 67
4.4 ASSESSMENT OF STRUCTURES 70
4.5 ASSESSMENT OF ROAD FURNITURE & PROJECT FACILITIES 72

4.6 Assessment of Tunnels 75
4.7 Assessment of Tunnel FIREFIGHTING SYSTEM 79
4.8 Assessment of TUNNEL VENTILATION SYSTEM 81
83
4.9 Assessment of INTEGRATED TUNNEL MANAGEMENT SYSTEM (ITMS) 84
4.10 Assessment of Toll Plaza 85
4.11 Assessment of Toll Management System (TMS) 87

CHAPTER 5. PAVEMENT INVESTIGATION & ASSESSMENT 90

5.1 General 90
5.2 Objectives 91
5.3 Review of Pavement Design 91
5.4 Test Pits & Subgrade Investigations 93
5.5 Network Survey Vehicles (NSV) Survey 93
5.6 Falling Weight Deflectometer (FWD) Survey 94
5.7 Structural Investigations 96
5.8 Major Maintenance of Pavement 100

CHAPTER 6. COST ESTIMATES 102

6.1 General 102
6.2 Rate Assumption 102
6.3 Routine Operation & Maintenance (O& M) Cost 105
6.4 O & M Strategy 107
6.5 Manpower cost 107
6.6 Vehicle Maintenance Cost 109
6.7 Civil work cost 110
6.8 Electrical and Mechanical (E & M) Cost 112
6.9 Toll Plaza TMS Cost 114
6.10 Major Maintenance Cost 115
6.11 Major Maintenance items 115
6.12 Major Maintenance items 116
6.13 Summary of Cost 118
120

CHAPTER 7. PROJECT PHOTOGRAPHS 121

LIST OF EXHIBITS

EXHIBIT 1 SCOPE OF TDD SERVICES 11
EXHIBIT 2 STRUCTURE OF THE REPORT 13
EXHIBIT 3 PROJECT LOCATION MAP 16
EXHIBIT 4 ROADWAY AND GEOMETRIC 19
EXHIBIT 5 ADMINISTRATIVE DETAILS OF PROJECT 20
EXHIBIT 6 SALIENT FEATURES OF PROJECT 22
EXHIBIT 7 TUNNEL LAYOUT 25
EXHIBIT 8 VEHICULAR CROSS PASSAGE DETAILS 26
EXHIBIT 9 ELECTRICAL CROSS PASSAGE DETAILS 27
EXHIBIT 10 DETAILS OF ANNUITY PAYMENTS 28
EXHIBIT 11 POWER DETAILS OF PROJECT 30
EXHIBIT 12 KEY TERMS OF CONCESSION AGREEMENT 35
EXHIBIT 13: KEY OBLIGATIONS OF PARTIES 37
EXHIBIT 14: KEY FINANCIAL COVENANTS DETAIL 38
EXHIBIT 15: KEY TERMS OF DAMAGES/ PENALTY 40
EXHIBIT 16: SUMMARY OF SUPPLEMENTARY AGREEMENTS 43
EXHIBIT 17: KEY TERMS OF THE STATE SUPPORT AGREEMENT 45
EXHIBIT 18: KEY ASPECTS OF THE 2018 SETTLEMENT AGREEMENT 47
EXHIBIT 19: KEY ASPECTS OF THE 2022 SETTLEMENT AGREEMENT 49
EXHIBIT 20: KEY TERMS OF ITMS ANNUAL MAINTENANCE CONTRACT (AMC) AGREEMENT 51
EXHIBIT 21: KEY TERMS OF SUBSTATION AMC AGREEMENT 54
EXHIBIT 22: KEY TERMS OF ELECTRICAL SUBSTATION SYSTEM 57
EXHIBIT 23: KEY TERMS OF TOLL MANAGEMENT SYSTEM AMC AGREEMENT 60
EXHIBIT 24 EXISTING VS SCHEDULE B 65
EXHIBIT 25 MAIN CARRIAGEWAY (FLEXIBLE PAVEMENT) 66
EXHIBIT 26 SERVICE ROAD PAVEMENT 66
EXHIBIT 27 RIGID PAVEMENT (TOLL PLAZA / TUNNEL SECTION) 66
EXHIBIT 28 DETAILS OF STRUCTURES 70
EXHIBIT 29 DETAILS OF ROAD FURNITURE'S ITEMS 72
EXHIBIT 30 DETAILS OF PROJECT FACILITIES 73
EXHIBIT 31: DETAILS OF TUNNEL 75
EXHIBIT 32: SUMMARY OF TUNNEL SYSTEMS 78
EXHIBIT 33 DETAILS OF TOLL PLAZA 85

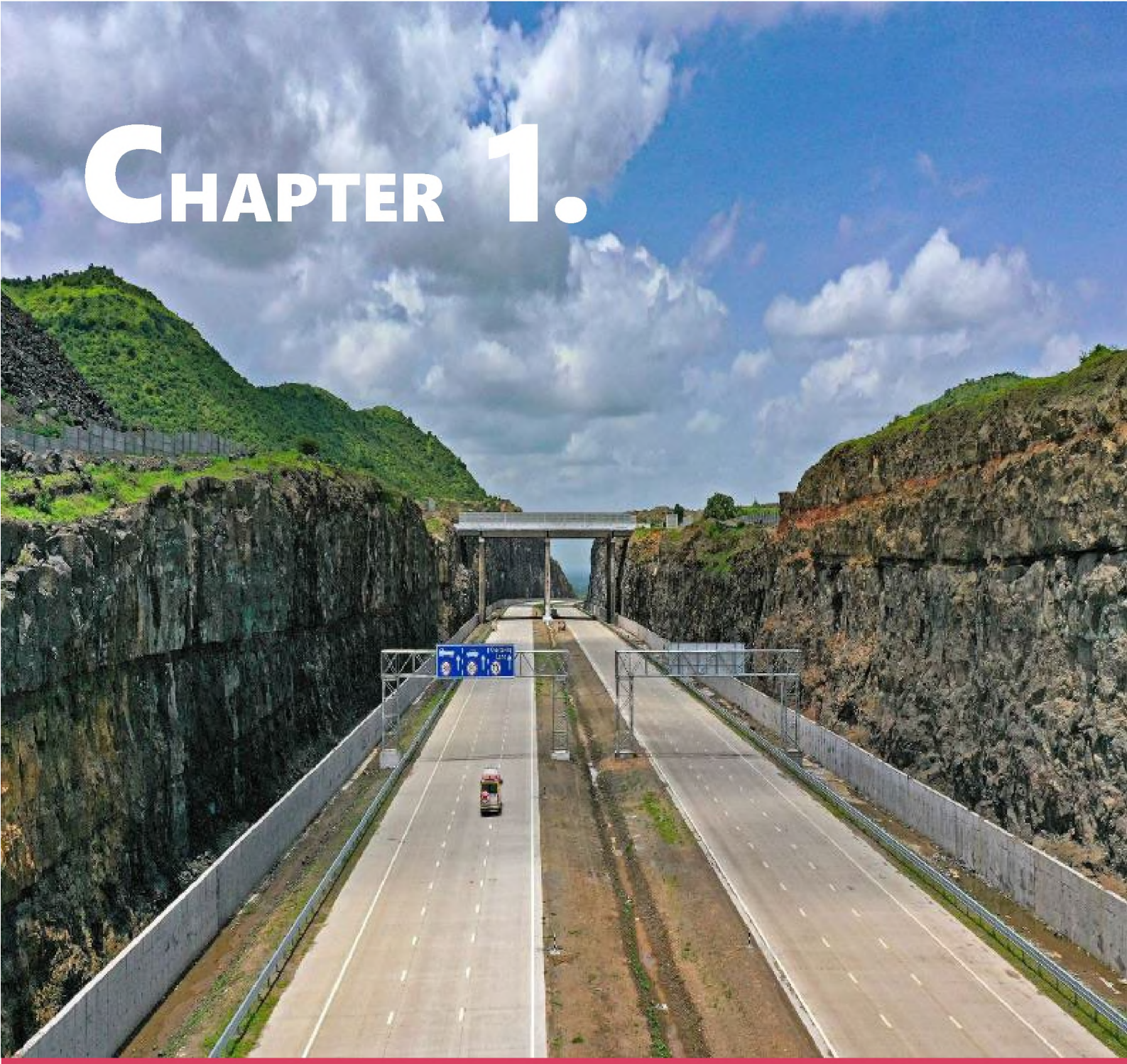
EXHIBIT 34 ADOPTED COMPOSITION – MAIN CARRIAGEWAY:....92
EXHIBIT 35 ADOPTED COMPOSITION – SERVICE ROADS: 92
EXHIBIT 36 ADOPTED COMPOSITION - TUNNEL AND TOLL PLAZA:....93
EXHIBIT 37 LIST OF BRIDGE INSPECTED....96
EXHIBIT 38 INSPECTION REPORTS OF BRIDGES NH-44, SECTION: BANIHAL TO QUAZIGUND 97
EXHIBIT 39 BITUMEN RATES (IN INR/MT) - EX-MI SUPPLY EXCLUDING DISCOUNT AND GST....103
EXHIBIT 40 ADOPTED UNIT RATES FOR KEY ITEMS....104
EXHIBIT 41 MAJOR COMPONENTS DETAIL FOR KEY ITEMS....104
EXHIBIT 42 O & M STRATEGY 107
EXHIBIT 43 MANPOWER COST....108
EXHIBIT 44 VEHICLE MAINTENANCE COST 109
EXHIBIT 45 CIVIL WORK COST (₹-CRORE)....111
EXHIBIT 46 DETAILS OF TOTAL E & M COST (₹-CRORE) 112
EXHIBIT 47 BREAKUP OF YEARLY E & M COST (₹-CRORE)....113
EXHIBIT 48 MAJOR MAINTENANCE CYCLES & COST 116
EXHIBIT 49 SUMMARY OF COST....119

ACRONYMS AND ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
SPV	**QUAZIGUND EXPRESSWAY PRIVATE LIMITED**	**NHAI**	**National Highway Authority of India**
AMC	Annual Maintenance Contract	MM	Major Maintenance
ATMS	Advanced Traffic Management System	MS	Milestone
BC	Bituminous Concrete	NCR	Non-Compliance Report
BOQ	Bill of Quantities	NOC	No Objection Certificate
BHS	Both hand Side	NMS	Network Management System
BI	Bump Indicator	NSV	Network Survey Vehicle
CA	Concession Agreement	OFC	Optical Fibre Cable
CAPEX	Capital Expenditure	OPEX	Operation Expenditure
COD	Commercial Operations Date	O&M	Operation and Maintenance
COS	Change of Scope	PCC	Plain Cement concrete
CUP	Cattle Under Pass	PCI	Pavement condition Index
DBM	Dense Bituminous Macadam	PCR	Pavement condition rating
DG	Diesel Generator	PCU	Passenger Car Unit
DLC	Dry Lean Concrete	PCOD	Provisional Completion Certificate
DLP	Defect liability period	PQC	Pavement Quality Concrete

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
DPR	Detailed Project Report	PUP	Pedestrian Under Pass
ECB	Emergency Call Box	POP	Pedestrian Over pass
ESAL	Equivalent Standard Axle Load	PMB	Polymer Modified Bitumen
EPC	Engineering Procurement & Construction	QA/QC	Quality Assurance/Quality Control
ETC	Electronic Toll Collection	RCC	Reinforced Cement Concrete
FOB	Foot Over Bridge	RAP	Reclaimed Asphalt Concrete
FO	Flyover	RFQ	Request for Qualification
FRL	Formation Road Level	RHS	Right Hand Side
FWD	Falling Weight Deflectometer	RM	Routine Maintenance
GAD	General Arrangement Drawing	RMS	Radio Mobile System
GFC	Good for Construction	ROB	Road Over Bridge
GSB	Granular Subbase	ROW	Right of Way
GST	Goods & Service Tax	SR	Service Road
HT	High Tension		
IPC	Interim Payment Certification	SPV	Special Purpose Vehicle
IRC	Indian Roads Congress	SOR	Schedule of Rates
INR	Indian Rupees	SAN	Storage Area Network
ITM	Integrated Traffic Management	TMS	Toll Management System

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
KVA	Kilo-Volt-Ampere	TOR	Terms of reference
LA	Land acquisition	BOT	Build Operate & Transfer
LHS	Left hand side	TLB	Truck lay bay
LCV	Light Commercial Vehicle	VUP	Vehicular Under Pass
LVUP	Low height Vehicular under pass	VDF	Vehicle Damage Factor
LED	Light Emitting Diode	VIDS	Video Incident Detection System
LIU	Light Interface Units	VMS	Variable Message Sign
MIS	Management Information System	WIP	Work in Progress
MSA	Million Standard Axles	WIM	Weigh in motion
MAV	Multi Axle Vehicle	WMM	Wet mix macadam



Chapter 1.

Introduction

Chapter 1. INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt Ltd (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an infrastructure investment trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt Ltd has appointed M/s Knight Frank India (KFI) (hereinafter referred as "Technical Consultant" or "KFI") to carry out Technical Due Diligence of **Rehabilitation, Strengthening, and Four-Laning of the Quazigund to Banihal section (from km 189.350 to km 205.618), including construction of two 2-lane tunnels spanning a total of 8.45 km,** was conceptualized in the Union Territory of Jammu & Kashmir. This project was structured on a DBFOT (Annuity) model.

1.2 Scope of Work

Exhibit 1 Scope of TDD Services

S. No	Terms of Reference
1.	A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets.
2.	Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, as built drawings, O&M manual, COD/PCOD certificate, Punch list, previous major maintenance etc.
3.	Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, Axle Load, material investigations etc.
4.	Formulation of future major maintenance Strategy.
5.	Estimation of any initial expenses to be incurred due to deficiencies observed in diligence.
6.	Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period

S. No	Terms of Reference
7.	Estimation of Annual Operation expenses along with Systems cost (TMS/HTMS) till the end of concession period.
8.	Review of balance work cost for Project Road including estimation of quantities and item rates

1.3 Approach

Approach followed for this Due Diligence study is to understand the requirement of the client and terms of reference set forth. Our aim is that the study report should assist the clients in achieving their objectives.

1.4 Methodology

Methodology adopted is broadly outlined as under:

- Objectives of the client were identified from discussions and terms of reference spelt out for the study.
- Available data was collated and analysed by desk study.
- Requirements were identified to augment information/ data as available.
- Detailed List of data required was sent to Mapple team from time to time
- Personal discussions were carried out with Clients by senior executives from KF to explain data requirements.
- Extensive interaction was made by KF with Clients and data was collected.
- Information to be gathered from Client head office & team were listed
- Relevant documents regarding project highway, including CA Agreement and other documents were collected and the provisions studied in detail.
- All data as collected was duly collated and arranged in the order as required for preparation of the report.

1.5 Study

- Data collected from all sources was duly collated and disseminated to concerned experts in KF.
- Project documents such as CA Agreement, O&M Costing details, O&M Manual etc were studied in detail.
- The data made available was analysed, and comments formulated for inclusion in the report.

1.6 Structure of the Report

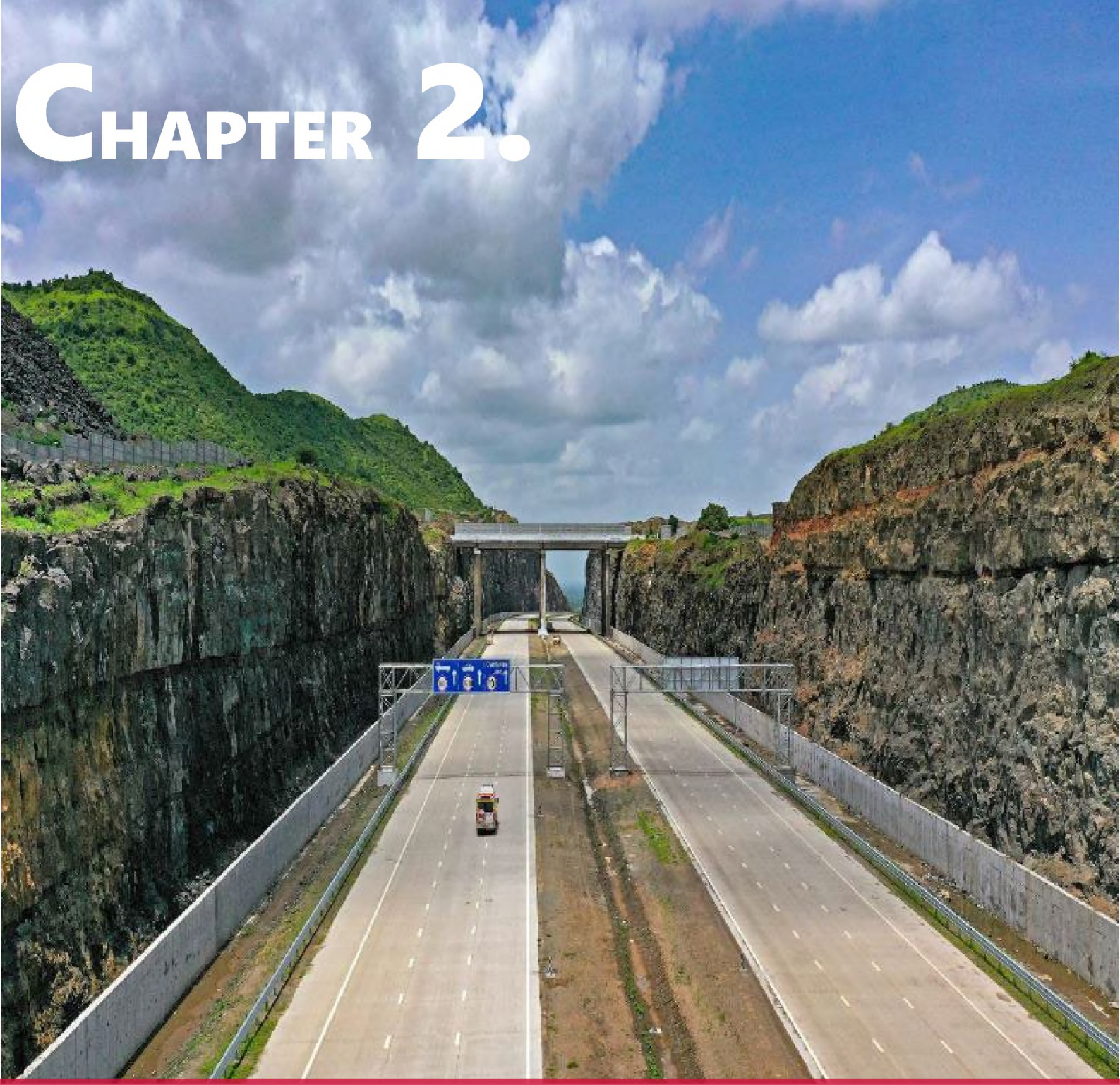
This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyse the same as per the best engineering / industry practices.

The report is organized with the following chapters for easy understanding of various issues –

Exhibit 2 Structure of the Report

S.nos	Chapter	Description
1	**Chapter 1**	**Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies**.**
2	**Chapter 2**	**Project Description:** The chapter describes existing project features, overview of project development.
3	**Chapter 3**	**Review of Agreements:** The chapter describes review of CA, Supplementary, State Support Agreement, Settlement Agreement & Various O & M Agreements.
4	**Chapter 4**	**Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit**.**
5	**Chapter 5**	**Pavement Investigation and Assessment:** This chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance
6	**Chapter 6**	**Cost Estimates**: This chapter summarizes the forecasting of O&M and major maintenance cost over the remaining concession period

Chapter 2.



Project Description

Chapter 2. PROJECT DESCRIPTION

2.1 Location of Project Road

This asset is a DBFOT (Annuity) project that involves the operation and maintenance of a four-lane stretch from Quazigund to Banihal, covering km 189.350 to km 205.618 of NH-44, including two tunnels (2-lane each) with a combined length of 8.45 km on NH-1A, situated in the Union Territory of Jammu & Kashmir. The Banihal–Quazigund Road Tunnel, spanning approximately 8.45 km, is positioned at an elevation of 1,790 meters (5,870 feet) beneath the Banihal Pass in the Pir Panjal range of the lower Himalayas. This vital infrastructure connects Anantnag and Ramban districts, significantly improving regional connectivity by reducing the distance between Srinagar and Jammu by 16 km and cutting travel time from 6 hours to approximately 5.5 hours.

As one of the longest road tunnels in India, it serves as a key all-weather route, bypassing the previously troublesome Jawahar Tunnel and Shaitan Nalla—areas often rendered impassable during winter due to snowfall and landslides. Its lower elevation compared to the Jawahar Tunnel (by 400 meters) makes it less susceptible to avalanches, ensuring year-round connectivity between Kashmir and the rest of India.

The tunnel is equipped with advanced features including forced ventilation for air circulation, 126 jet fans to prevent harmful gas buildup, cross passages every 500 meters for emergency evacuation, and state-of-the-art safety and monitoring systems. These include 234 CCTV cameras and a comprehensive fire-fighting system installed throughout the twin tubes. Constructed using the Austrian tunnelling method, the tunnel exemplifies modern engineering and plays a vital role in enhancing transportation efficiency and strategic connectivity in the region.

Following a competitive bidding process, the contract was awarded to a consortium comprising **M/s Navayuga Engineering Company Limited and M/s Krishnapatnam Port Company Limited,** with Navayuga Engineering serving as the lead member. In order to implement the project, the consortium incorporated a Special Purpose Vehicle (SPV) named M/s Navayuga Quazigund Expressway Private Limited. The Concession Agreement was signed on 13th July 2010.

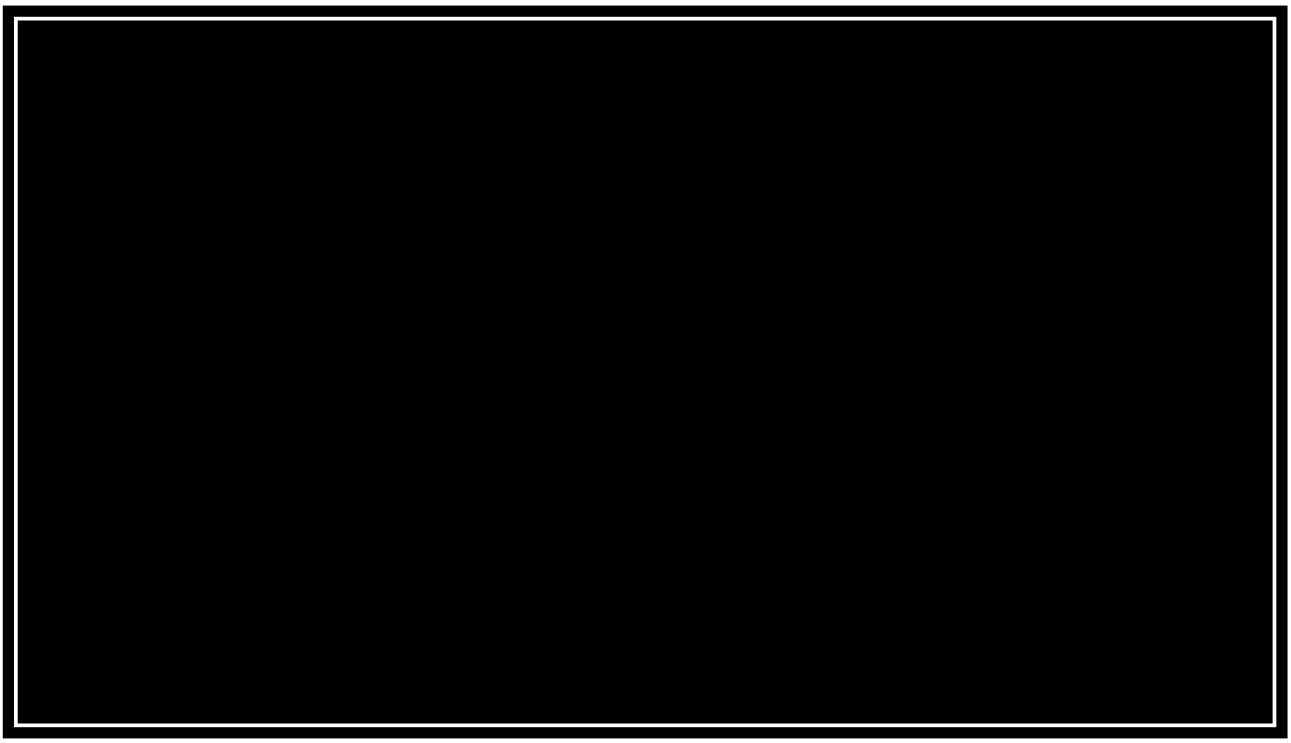
The project road achieved Provisional Completion (PCOD) on 31st July 2021, followed by the receipt of the Completion Certificate on 15th December 2022. Currently, the project is in the Operations and Maintenance (O&M) phase

The project was subsequently acquired by the National Investment and Infrastructure Fund (NIIF) through its NIIF Master Fund in 12th July 2022.

The project has since been managed by Athaang Infrastructure, NIIF's proprietary roads platform, and the company was renamed ***M/s* Quazigund Expressway Private Limited**. The **current proposed acquisition** of the project is by ***M/s Cube Highways and Infrastructure V Pte. Ltd.***

Accordingly, Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and flied investigations. Same is presented in this report.

Exhibit 3 Project Location Map



2.2 Terrain

The valleys flanking the Pir Panjal range lie at an elevation of around 1800 meters, while the highest peak directly above the planned tunnel alignment rises to approximately 3000 meters above sea level. Near the northern portal, quaternary soft rocks such as clayey silt are anticipated at shallow depths, only a few tens of meters deep. However, the majority of the tunnel will be excavated through a diverse array of hard rocks with varying lithological characteristics.

During geological field investigations, various rock types and structural features were identified. The sequence of lithologies observed follows a south-to-north trend, moving from older to younger formations.

Quartzite

Quartzite encountered in the region is fine to medium-grained, typically grey to white in color, and appears in thick beds, occasionally interbedded with shale. The rock is siliceous and extremely hard, with bedding planes often lacking joints. Quartzite is predominantly found in the southern section near the south portal, although interbedded quartzite layers also appear within the shale-dominated Mesozoic sedimentary sequence in the northern section. Near the south portal, quartzite exhibits several transitional features, including layers and gradations into conglomerates, indicating complex depositional processes within the massive quartzite formation.

2.3 Climate

The Quazigund–Banihal project corridor, located in the Pir Panjal range of the lower Himalayas in Jammu & Kashmir, experiences a cold mountain climate with significant seasonal variations. Winters, from December to March, are long and harsh, with temperatures often dropping below freezing — average lows near –5°C and highs around 3–5°C — accompanied by heavy snowfall. Summers, from May to August, are mild and pleasant, with daytime temperatures ranging between 15°C and 25°C. The region receives moderate to heavy precipitation throughout the year, averaging between 900 mm and 1,200 mm annually, primarily from western disturbances in winter and monsoon rains from June to September. Humidity levels remain moderate to high, typically between 60% and 80%. Due to its elevation of about 1,790 m above sea level, the area often experiences fog, frost, and occasional strong valley winds. Despite these challenging conditions, the Banihal–Quazigund tunnel ensures reliable, all-weather connectivity by mitigating the impacts of snow and landslides that commonly affect higher-altitude routes

2.4 Development as per Schedule B

As per **Schedule–B (Development of the Project Highway)** of the Concession Agreement for the **Quazigund–Banihal Section of NH-44 (Km 189.350 to Km 204.700)**, the Concessionaire is required to undertake the **design, engineering, construction, and development** of the following works:

The project involves **four-laning** of the existing two-lane highway, including the construction of **two parallel tunnels**—one of **0.69 km** and another of **8.45 km** length—along with approaches and associated infrastructure. The scope of development includes:

- **Main Carriageway:** Four-lane divided highway with appropriate pavement composition and geometric standards.
- **Tunnels:** Two 2-lane tunnels with modern ventilation, lighting, fire-fighting, drainage, and safety systems.
- **Bridges and Structures:** Construction and rehabilitation of bridges, culverts, retaining and breast walls as per design requirements.
- **Drainage Works:** Longitudinal and cross-drainage systems for efficient stormwater discharge.
- **Slope Protection:** Embankment stabilization, retaining structures, and erosion control measures.

- **Roadside and Safety Works:** Provision of crash barriers, traffic signage, road markings, boundary stones, kilometer and hectometer stones, and delineators.
- **Ancillary Facilities:** Construction of toll plazas at Km 193.760 and Km 203.880, bus bays, truck lay-bys, rest areas, pedestrian facilities, and landscaping.
- **Mechanical & Electrical Systems:** High-mast and tunnel lighting, communication systems, traffic management and surveillance systems, and emergency call boxes.
- **Environmental Works:** Tree plantation, slope greening, and environmental protection structures as per the Environmental Management Plan.

All works are to be executed in conformity with the **Manual of Specifications and Standards for Four-Laning of Highways (IRC:SP-84-2009)** and the **technical specifications provided in Schedule-D**.

2.4.1 Roadway and Geometric

Exhibit 4 Roadway and Geometric

Component	Chainage (km)	Description	Specifications
Four-Lane Main Highway	189.350–193.792 & 203.865–204.700	New 4-lane carriageway connecting Banihal to Quazigund	2 × 7.5 m lanes + 2 × 1.5 m paved shoulders + 4.0 m median
Twin Tube Tunnel		**Twin Tube Tunnel**	• **Tube 1 – 8457.70 meter Tube 2 – 8463.38 meter**
Viaduct	194.236 to 195.660		• ***Viaduct of length 1526m approved by NHAI HO***
Intervening 2-lane Rigid Pavement Road	194.488–195.425	Rigid pavement between tunnels	Width: 2 × 3.75 m + 2 × 1.5 m paved shoulders

The total project length is **15.35 km**, consisting of **two tunnels (9.146 km total length)** and **6.204 km of approach and open road sections.**

2.5 Administrative details of the Project

The Concession stands granted to operate the road from the Appointed date for the concession period with the obligation on concessionaire to maintain the road in the same period. Administrative details of projects are as at Exhibit 2 below.

Exhibit 5 Administrative Details of Project

Feature	Description
Project Name	Augment the Rehabilitation, Strengthening and Four Lanning of Quazigund to Banihal Section from km 189.350 to km 205.618 of NH1A, Including 2-Tunnels (2-Lane) of 8.45 km Length on NH-1A, on DBFOT(Annuity) basis, in the UT of Jammu & Kashmir.
Mode of the Execution (BOT Toll/ BOT Annuity	BOT Annuity
Scheme / Phase	Operation, Maintenance and Transfer
No. of Lanes/ Configuration	4 (Twin tunnel 2 lane)
Length of the Project (in Km)	As per CA: 15.35 Kms Actual Construction: 16.268 Kms
Total Project Cost (in Cr)	₹1987 Crore
Annuity Bi-annually	34 installments of INR 245 Crores each, every 6 months
NH No. (New / Old)	NH 44 / NH 1A
Concessionaire	**M/s Quazigund Expressway Private Limited.**
EPC Contractor	NAVAYUGA QUAZIGUND EXPRESSWAY PRIVATE LIMITED
Independent Engineer (O&M phase)	M/S ISAN Corporation in JV with M/S Chaitanya Projects Consultancy Pvt. Ltd.
Date of Award of Work (LOA)	13.07.2010
Date of Signing of Concession Agreement	13-Jul-10
Appointed Date	05-Jun-11
Concession Period	20 years (including 5 Years construction period from appointed date)
Construction period	1825 Days

Feature	Description
PCOD Date	31.07.2021
Final Completion Date	15.12.2022
End Date of Concession period	Year 2031
No. of Toll Plazas (Number and Location)	Two (One on Banihal side and one on Quazigund side) o Lamber Toll Plaza Ch: 193+760 (7 Lanes) o Ujroo Toll Plaza m 204+563 (7 Lanes)

2.6 Salient Features of Project

Salient features of the project are covered at **Exhibit 6** below.

Exhibit 6 Salient Features of Project

Sl. No.	Particulars	As per Schedule-B	As Built
1	Project Road Start	Km 189+350 at Banihal	Km 189+350 at Banihal
2	Project Road End	Km 204+700 at Quazigund	Km 205+618 at Quazigund
3	Project Length	15.35 km	16.268 km
4	Rigid Pavement	17+1 Kms	
	Tunnel		

1	Tunnel	• **Short Tunnel** –
		  ○ Length 696 m
		  ○ From Km 193.792 to Km 194.488
		• **Long Tunnel** –
		  ○ Length 8.45 Km Single Tube Tunnel
		  ○ From Km 195.425 to Km 203.865
			• **Twin Tube Tunnel**
			• **Tube 1 – 8457.70 meter**
			• **Tube 2 – 8463.38 meter**

2	Length (Excavation) (Portal to Portal)	• **1st Tube: 8442.51m** • **2nd Tube: 8457.45 m,**	*Both tunnels relate to Vehicular cross passages at an interval of 500m*
3	Tunnel Details	• **Clearance above pavement: 5.0 meters** • **Tunnel type: Uni-directional twin tube** • **Clear width: 7.0 meters** • **Driving lane width: 3.750 meters** • **Emergency lane width: 3.250 meters** • **Tunnel height from pavement level: 8.58 meters**	

Sl. No.	Particulars	As per Schedule-B	As Built
		• **Intermediate slab height: 5.55 meters** • **Slab thickness: 200 mm**	
Twin tube solution approved by NHAI vide letter no. NHAI/BOT/11019/5/2010/QB/38 dated 26.05.2011			
5	Cross Passage	16 nos.	
6	Functional Cross Section	○ 7.0m single lane carriage way with an emergency lane, ○ Driving Lane 3.75m wide and emergency lane 3.25m wide, Vertical clearance 5.50m	
6	Firefighting and Scudder system	SCADA System, Fire Fighting system	
Structures			
1	Viaduct	1 no. Length: 1424 m	Viaduct at km 194.236 to 195.660
Viaduct of length 1526m approved by NHAI HO & conveyed vide PD's letter no. PD/SGR/14001/2014/Gen/049 dated 30.10.2014, in lieu of short tunnel T-1 (696 m length & viaduct of length 270 m)			
2	RUB (Road Under Bridge)	1 no. Length: 79.95 m	RUB on Katra-Quazigund New B.G. Railway line at Ch. 191.107 (Railway Chainage Ch. 151.710).
3	Minor Bridges	6 Nos South End- (Span-110.85 M, 22.854M, 9.940M,25M,10.82M,9.22M.)	
4	Major Bridges -	1 no. Length: 110.95 m	Four Lane Bridge across River Bichlari at Ch.189.440
5	Minor Bridges	05 nos.	
6	Culvert	20 nos. (Box Culvert)	
Misc.			
1	Toll Plaza	2 Nos. (for north side and south side traffic	Ch: 193+760 and Km 204+563 having 7 lanes

Sl. No.	Particulars	As per Schedule-B	As Built
2	Drainage pipe in tunnel Tube I	8.450 km (4 nos.)	
3	Drainage pipe in tunnel Tube II	8.450 Km (4nos.)	
4	Drainage pipe in Cross passages	32 Nos. (On both the ends)	
5	Slope Protection works at South Portal	100 mts	
6	Slope Protection works at North Portal	150 mts	
7	Lay bays	2 Nos.	
8	Firefighting Niches	66 Nos.	
9	Vehicular emergency exit	11 Nos.	
10	Ventilation Building	02 Nos.	
11	Tunnel Control Centre (Building)	02 Nos.	
12	Toll Plaza Building	02 Nos	

Exhibit 7 Tunnel Layout

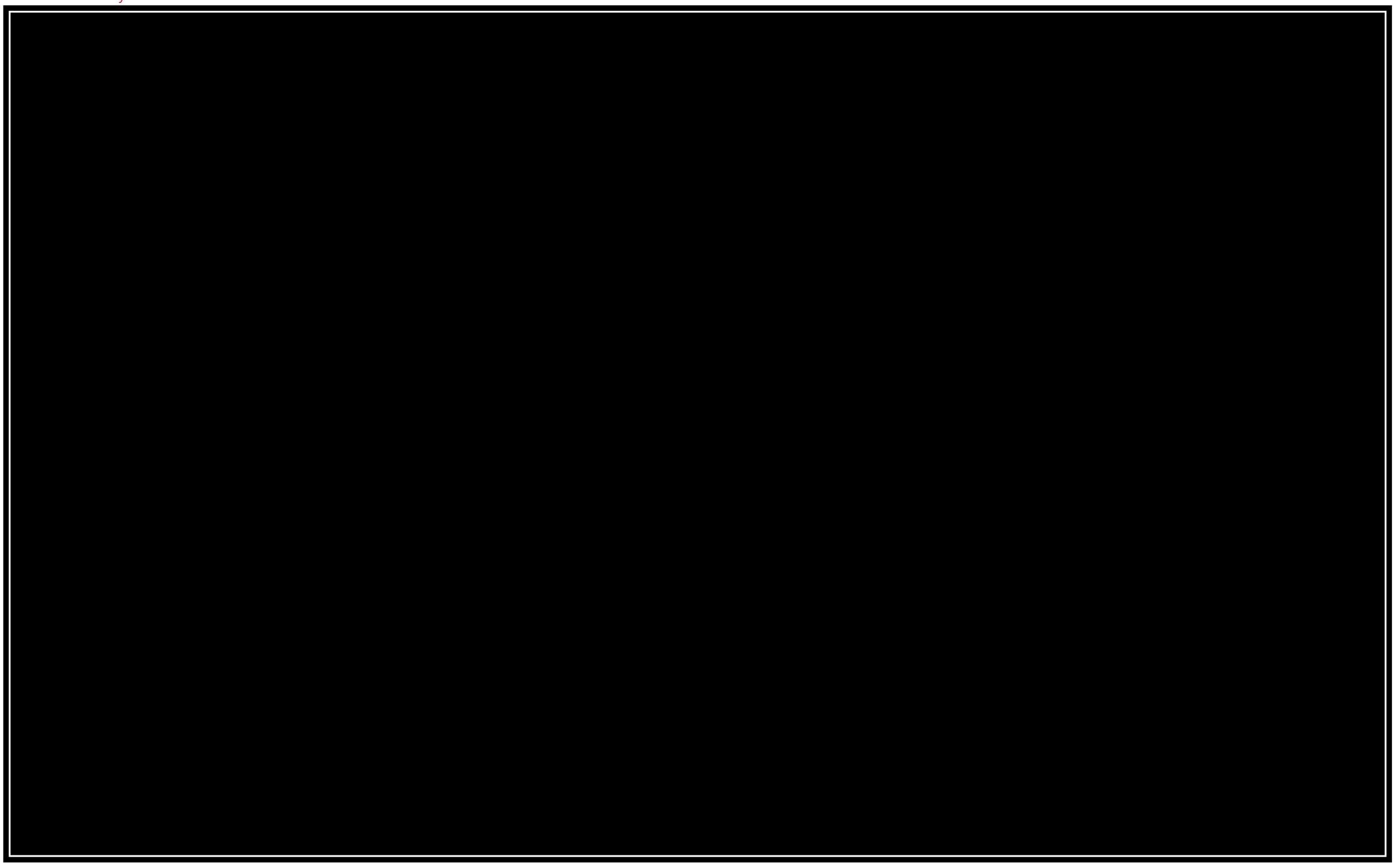


Exhibit 8 Vehicular Cross Passage Details

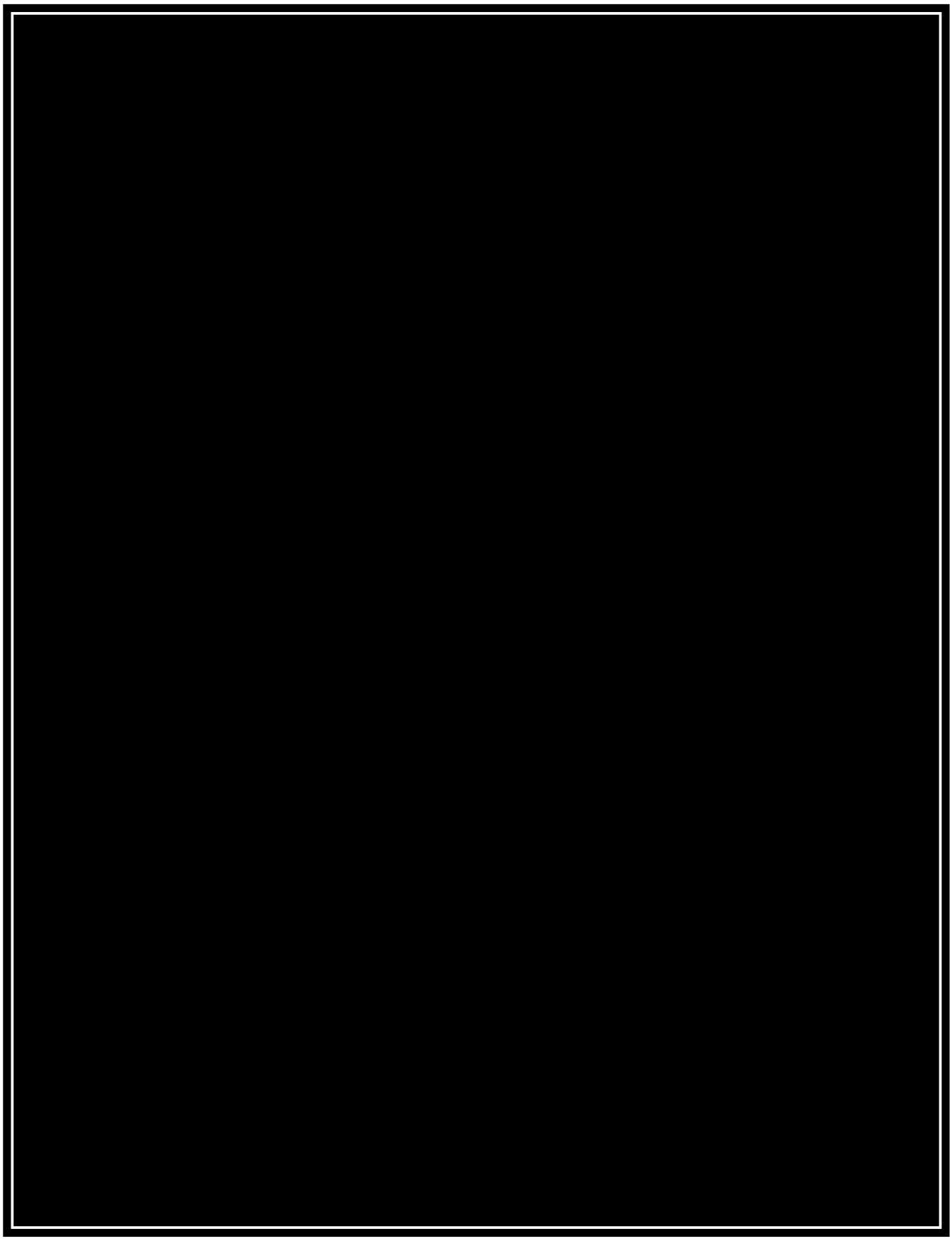
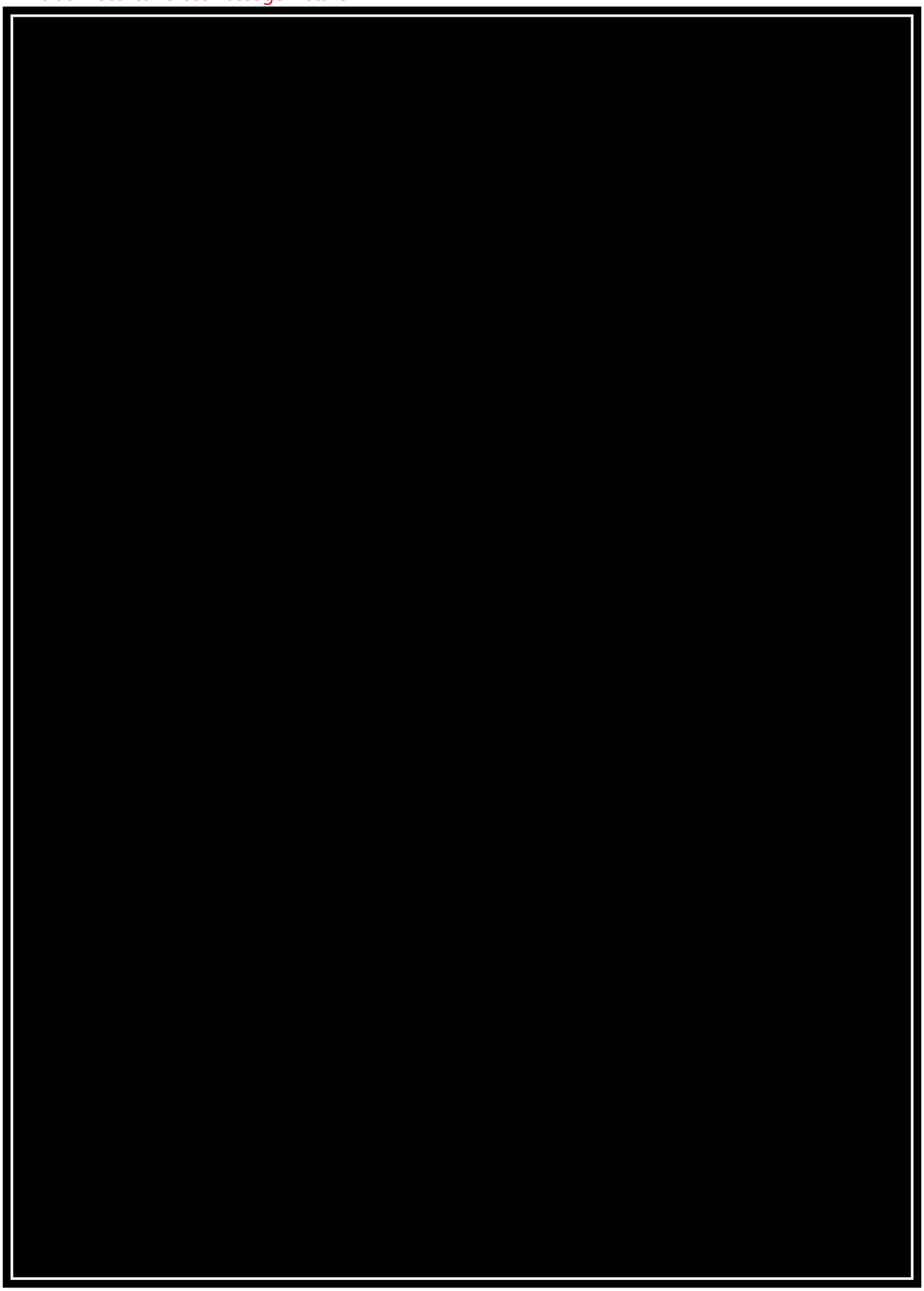


Exhibit 9 Electrical Cross Passage Details



2.7 Project Completion Certificate and PCOD & FCOD

A. Partial Commercial Operation Date (PCOD):

- The scheduled completion date was 31.072021.

B. Final Commercial Operation Date (COD):

- The IE issued the Completion Certificate on 15.12.2022.

2.8 Annuity Details

As per the Concession Agreement, an annuity amount of ₹201.90 crore is payable every six months. To date, a total of 22 annuity payments have been made by the Authority. The detailed breakdown of these annuity payments is provided below

Exhibit 10 Details of Annuity Payments

Sr. No.	Annuity	Annuity Due On	Amount Claimed	Ded. by IE	Annuity Received	Remarks
1	1st Annuity	30-07-2022	245	0	245	
2	2nd Annuity	30-01-2023	245	0.34	244.66	Deduction for Descope items
3	3rd Annuity	31-07-2023	245	0	245	
4	4th Annuity	30-01-2024	245	0.38	244.62	Deduction for Maintenance works
5	5th Annuity	30-07-2024	245	0	245	
6	6th Annuity	30-01-2025	245	0	245	
Total Amount (₹-Crore)			**1470**	**0.72**	**1469.28**	
Deduction (%)				**0.05%**		

Based on the above, Knight Frank is of the view that the total deductions of just ₹0.72 crore across six annuity payments—including ₹0.35 crore for descoped items—indicate the concessionaire's consistently high standard of maintenance over the three-year project period

2.9 Extension of Time

There is no extension of time for the concession period on the project

2.10 Penalty

There is no penalty on project as of now.

2.11 Approvals & Permits

Since Project is in O & M stage therefore all necessary approvals required are in place with concessionaire.

2.12 Change of Scope

As informed, the Concessionaire submitted a cost estimate for street lighting along the viaduct and highway section between Km 193+600 and Km 195+366 via letter no. NQEPL/1239/JK/21-22/300 dated 06.09.2021 to the then Independent Engineer under the Change of Scope (CoS). The Independent Engineer provided comments on the proposal to the Authority through letter no. CPC/OM-03/2021/HO/GEN/015/4642 dated 12.01.2022. Subsequently, the Contractor referred the matter back to the Independent Engineer through letter no. NQEPL/1239/JK/21-22/402 dated 24.01.2022. Following further review, the Change of Scope proposal was recommended to the Authority via the Independent Engineer's letter no. CPC/OM-03/NQE/2021/HO/CON/049/5960 dated 04.05.2022.

2.13 Power Availability of Project

Exhibit 11 Power Details of Project

Location	DPR Status	33KV Line	33/11 KV Substation	Remarks
Status 33/11kv sub-station (permanent)				
North Portal	Approved	23 Kms from Wanpoh Anantnag Grid, work under progress	12.5MVA capacity (OLTC AVR, with +45% to -3% voltage correction)	Substation work completed
South Portal	Approved	3 Kms from nearest Grid (line installed). To be extended by 1 Km to SPVB permanent station later	Proposed 12.5MVA OLTC AVR, with +45% to -3% voltage correction	Concessionaire should approach NHAI for further course of action
Present Power availability.				
North Portal	Local receiving station at Hiller (Augmented to 10MVA). Independent power transformer for tunnel uses with automatic voltage correction up to 15%.	At 11KV level (dedicated line), 2 KM line length, Dog (100mm^2) conductor installed and commissioned.	From Local Area 33/11KV Sub-Station	In use for tunnel equipment operation till permanent 12.5MVA station is in place.
South Portal	3.15MVA (Augmented to 10MVA) with 15% voltage correction.	At 33KV level (dedicated line), 11KV line with 2X50 sqmm conductor used for overhead line from 33/11KV Sub-station to SPVB	From Tethar 80MVA, 33/11KV Substation	In use for tunnel equipment operation till permanent 12.5MVA station is in place.

☛ **Currently, both North and South Portals are operating on temporary power arrangements using augmented substations (10MVA) with voltage correction. While the permanent 12.5MVA substations are either completed or proposed, they are not yet commissioned for operational output. Timely commissioning and coordination with NHAI are essential to ensure uninterrupted long-term power supply for tunnel operations.**

2.14 Special Features of Project

Each tunnel tube ensures uninterrupted traffic flow, featuring a 3.75-meter-wide main carriageway and a 3.25-meter-wide emergency lane, which is designated for use during vehicle breakdowns and rescue operations.

An Integrated Tunnel Control System (ITCS) has been implemented to oversee and manage various tunnel facilities and utilities. The ITCS includes:

1. Monitoring and control of traffic management systems inside and outside the tunnel.
2. Monitoring and control of the tunnel's ventilation systems.
3. Monitoring and control of the power supply systems within and outside the tunnel.
4. Monitoring of the emergency call system within the tunnel.
5. Monitoring of the Linear Heat Sensing System inside the tunnel and the fire alarm system in external buildings.
6. Monitoring and control of video surveillance systems both inside and outside the tunnel.

2.15 Tunnel Safety and Operations Systems Overview

- ***Traffic Control System***

The Traffic Control System includes traffic lights, message signs, and road signs positioned at the north and south roundabouts, tunnel portals, and inside the tunnel. These components regulate traffic under normal, congested, and emergency conditions. All traffic devices are monitored and operated using Programmable Logic Controllers (PLCs) through the Integrated Tunnel Management System (ITMS), with both automatic and manual operation modes available.

- **CCTV Monitoring & Video Surveillance**

The CCTV system monitors vehicle movement and road conditions inside and around the tunnel. It supports live viewing, recording, and playback functionalities.

  - Fixed cameras installed inside the tunnel enable incident detection.
  - Rotating cameras are positioned 50 meters before each portal.
  - A traffic counting system is integrated with the video feed.
  - Automatic Incident Detection is included.
  - All devices are connected via CAT6 on a TCP/IP network, managed through a Video Management System (VMS).
  - The system provides server redundancy and 24-hour recording capacity.

- **Linear Heat Sensing (LHS) and Fire Alarm System**

- LHS systems with optical sensors are installed in both portals, control rooms, and ECP LV rooms.
- Evaluation units trigger zone alarms, interfaced with the ITCS SCADA system via Modbus.
- Addressable fire alarm panels are located in the north and south control rooms and admin buildings.
- Conventional smoke detectors are installed in ECP LV rooms at ~1.5 km intervals and connected via RIOs using hardwired NO/NC contacts.

- **Emergency Communication System (ECS) & Public Address (PA) System**
  - SOS call boxes are installed every 250 meters along the emergency lanes within the tunnel.
  - The system allows verbal communication between tunnel users and operators. All calls are recorded and stored for 30 days.
  - PA speakers with noise-sensing microphones are located in ECP LV rooms and buildings to broadcast emergency or general messages.

- **Networking Infrastructure**

The tunnel network is structured in three rings:

- **Major Ring**: Four core switches (two each at Main Control Centre and Backup Control Centre), configured with redundancy protocols.
- **Sub Rings**: Two rings connecting MCC and BCC via ten distribution (aggregation) switches to ensure continuity even if a cross-passage is down.
- **Access Rings**: Eight rings (four per tunnel side) connecting SOS points via access switches (E1–E34), ensuring localized failure does not disrupt the entire network.

- **Telephone System**

The telephone network facilitates emergency communication between Tunnel Control Centre (TCC), Backup Control Centre (BCC), and tunnel staff at ECP LV rooms. It remains operational during fire events and supports emergency coordination.

- **Rigid Height Barriers**

Rigid height restriction barriers are installed at:

- South Portal railway junction
- Junction near the North Portal

These prevent entry of oversized vehicles into the tunnel.

- **Ventilation System**

A combination of semi-transversal and longitudinal ventilation systems is installed to ensure safety and air quality. Key functions include:

- Smoke control and safe evacuation during fire events
- Maintaining visibility and clear escape routes
- Effective smoke extraction during firefighting

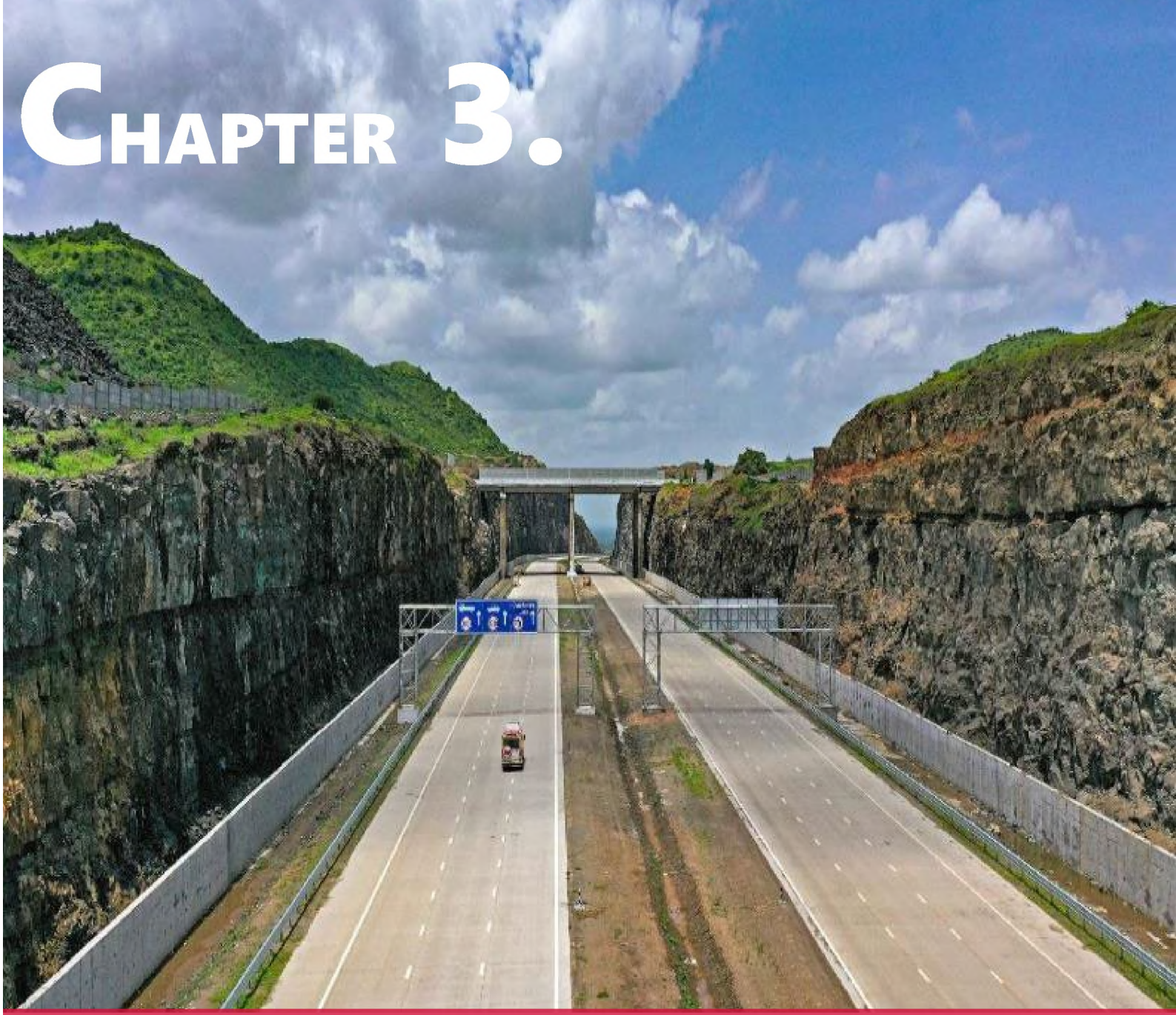
The system is designed to manage a fire heat release rate of 50 MW (as per HBI Technical Report I6007-13-R-04/01 – 04/00).

During early fire stages, smoke stratifies and spreads bi-directionally at ~1–2 m/s. After 5 minutes and at ~600 m from the source, smoke cools, descends, and reduces visibility if not ventilated.

KF View:

The tunnel is equipped with a comprehensive, integrated safety and operations system including traffic control, surveillance, emergency response, ventilation, and communication networks. These systems are designed with redundancy, automation, and real-time monitoring to ensure uninterrupted tunnel operations and quick response in case of emergencies, thereby enhancing safety, reliability, and user experience.

Chapter 3.



Review of Project Agreements

Chapter 3. REVIEW OF PROJECT AGREEMENTS

3.1 Review of Concession Agreement

The Concession Agreement was executed between NHAI and Navayuga Quazigund Expressway Pvt. Ltd. (NQEPL) on 13 July 2010 for Rehabilitation, Strengthening and Four-Laning of the Quazigund–Banihal section of NH-1A from Km 189.350 to Km 204.700, including two tunnels (≈0.69 km and 8.45 km) on a DBFOT (Annuity) basis under NHDP in the Union Territory of Jammu & Kashmir.

Exhibit 12 Key Terms of Concession Agreement

Particulars	Description
Date of Agreement	13 July 2010 (execution following LOA dated 30.04.2010).
Appointed Date	05 June 2011
Employer	NHAI (National Highways Authority of India)
Concessionaire	Quazigund Expressway Private Limited (NQEPL).
Concession Period	**20 years** from Appointed Date, covering construction, O&M, and eventual transfer
Length of the Project, Total project Cost	Length of Project: 15.35 km stretch including 2 tunnels (0.69 km & 8.45 km) Total Project Cost **₹2070 crore**.
Achievement of Project Milestones	Linked to Right of Way & completion schedule. **Project Milestones – Quazigund–Banihal CA (Schedule G)** The project has a **5-year (1825 days) construction period** from Appointed Date. Milestones are defined with deadlines and minimum expenditure thresholds of the **Total Project Cost (TPC)**.
Construction Period/ Scheduled completion date	• **1825 days (5 years) from Appointed Date.** • 04 June 2016
Premium / Fee	Concession Fee obligations exist (Art. 26), but **no toll right**; revenue is **Annuity** (Art. 27)

Particulars	Description
Annuity Payment	₹245 crore per half year, payable by NHAI to Concessionaire post COD
Performance Security	**₹99.35** crore Bank Guarantee, valid until 1 year from Appointed Date; replenishable if encashed
Extension of Time COD	Allowed in case of **Force Majeure** (Article 34) or **Authority default** (delays in ROW, approvals).
Escrow	**Escrow Account** before Appointed Date; deposits include **Financial Package, Annuities, other revenues/receipts**; detailed in **Article 31/Schedule-S.**
PCOD	The **Provisional COD was achieved on 31 July 2021**. It was recognized formally in the **Settlement Agreement dated 24 June 2022**, after RO Jammu recommended EOT till 30 June 2021.
FCOD	The **Final COD was achieved and certified on 15 December 2022**. This milestone was formally recorded in the **Supplementary Agreement dated 10 November 2023**.
Respective rights and obligations of the Parties	NHAI: ROW, support, annuity payment. Concessionaire: DBFOT design, construction, O&M, financing
Change in Ownership	**Equity lock-in (≥51% for construction period + 2 years' post-COD)**
Dispute Resolution Process	Tiered: conciliation (Article 44.2) arbitration (Article 44.3) under Arbitration Act, 1996.
Governing Law and Jurisdiction	Agreement governed by Indian Law; jurisdiction vested with Delhi courts. (**Article 47**).

3.1.1 Obligations of the Authority & Concessionaire

Exhibit 13: Key Obligations of Parties

Authority	Concessionaire
Provide Right of Way (ROW) for the Project Highway, free from encumbrances	Design, engineer, finance, procure, construct, operate, and maintain the Project Highway on DBFOT (Annuity) basis
Assist in obtaining statutory approvals, permits, and clearances from Government authorities	Achieve Financial Close within 180 days (extendable with damages) and furnish Performance Security
Pay annuity of ₹201.90 crore (half yearly) post COD, as per Article 27	Maintain the Project Highway in accordance with Specifications, Standards, and O&M requirements (Schedule K)
Maintain existing highway during the development period until Appointed Date	Comply with safety requirements, traffic regulations, and emergency response obligations
Provide assistance for utilities shifting, police support, medical aid posts, and land acquisition (if required)	Ensure timely achievement of project milestones and Scheduled Completion Date (COD within 1,095 days of Appointed Date)
Not levy any additional local tax/toll on the Project Highway	Hand back the Project Highway to NHAI at the end of Concession Period or upon termination, free of encumbrances
Cooperate with Independent Engineer for monitoring construction and O&M	Bear project risks, costs, and liabilities, except as specifically allocated to NHAI under the Agreement

3.1.2 Financial Provisions and Settlements:

The Agreement (Articles 28, 29; Schedules L & R) sets out strict financial safeguards to protect cash flows and lender interests. All revenues and annuities flow through an escrow with defined payment priority, equity is locked in to ensure sponsor commitment, and lenders hold substitution rights in case of default. Provisions on insurance, change in law, and regular financial reporting further enforce financial discipline. **The detailed covenants are presented in the exhibit below.**

Exhibit 14: Key Financial covenants detail

Aspect	Details
Escrow Account	All project-related revenues, including annuity payments from NHAI, insurance proceeds, and any other receivables, are deposited into a designated **Escrow Account** maintained with an Escrow Bank. Disbursements follow a defined priority sequence: (i) statutory dues, (ii) O&M expenses, (iii) senior debt servicing, (iv) reserve creation, and (v) equity returns/distributions. *(Ref: Article 31, Schedule S)*
Annuity Payments	The project operates on a **DBFOT (Annuity)** basis. NHAI pays a **fixed semi-annual annuity of ₹245 crore** to the Concessionaire for **20 years from COD/PCOD**, irrespective of traffic volume. Payments are routed through the **Escrow Account**, with deductions only for **O&M or lane-availability shortfalls**, as per **Article 27 and Schedule M**.
Toll Fees	The Concessionaire has **no right to collect tolls** from road users. Under **Article 25**, the right to levy and collect tolls rests with **NHAI**, which may collect directly or through its appointed agencies under the **National Highways Fee Rules, 2008**. The Concessionaire's revenue stream consists solely of **annuity payments**, making it **traffic independent**.
Debt Service Coverage	Senior lenders have **first charge** over project cash flows routed through the Escrow Account. In the event of a shortfall in debt servicing, the Concessionaire is required to provide **sponsor support** until sufficient project cash flows are achieved post-COD.
Equity Lock-In	The lead sponsor is required to maintain a **minimum 51% equity shareholding** in the Concessionaire during the **construction period** and for a further **two years post-COD**, unless otherwise approved by NHAI. *(Ref: Article 5.2.5)*

Aspect	Details
Change in Law Compensation	Under **Article 41 (Change in Law)**, if any legislative or regulatory change materially impacts project costs or revenues, the affected party is compensated to maintain **financial neutrality**. Compensation is determined on a **Net Present Value (NPV)** basis and may be implemented through **annuity adjustments or concession period extensions**.
Revenue Shortfall Loan	Not applicable. The Concession Agreement does **not provide for a Revenue Shortfall Loan**, as the project's annuity structure ensures fixed payments from NHAI irrespective of traffic performance.
Total Project Cost (TPC)	The **Indicative Project Cost** defined at the Invitation for Qualification (IFQ) stage is **₹1,987 crore**, used for determining limits for Change of Scope (COS) and related financial covenants. *(Ref: Article 48.1)*
Insurance	The Concessionaire must maintain comprehensive **insurance coverage** for construction, third-party liability, O&M, and force majeure events, naming **NHAI and lenders as co-insureds**. Certificates must be furnished periodically as per **Article 32**.
Substitution Rights	In case of persistent Concessionaire default, **lenders have the right to substitute** the Concessionaire with a nominated entity under a **Substitution Agreement (Schedule R)**, ensuring continuity of operations and debt protection.
Financial Reporting	The Concessionaire is required to submit **periodic financial statements, progress reports, and audited accounts** to **NHAI and lenders**, in compliance with Articles **29 and 33** of the Concession Agreement.

3.1.3 Delay Damages and Penalties under the Concession Agreement

Exhibit 15: Key Terms of Damages/ Penalty

Clause / Article	Situation	Damages / Penalty	Remarks
Clause 4.2 & 10.3	Delay by Authority in providing Right of Way beyond 90 days from Appointed Date	₹50 per day per 1,000 sq. m. of land delayed	Payable to Concessionaire until ROW is given
Clause 4.3 & 24.1	Delay by Concessionaire in achieving **Financial Close** within 180 days	0.1% of Performance Security per day (extendable up to 120 days); further extension possible at 0.2% per day; max 20% of Performance Security	Weekly advance payment required for extension
Article 15.2 (COD Delay)	COD not achieved within 91 days after Scheduled Completion Date (Appointed Date + 1095 days)	0.1% of Performance Security per day until COD	If not achieved within 270 days, Authority may terminate
Article 17.7.3 (Lane Closure)	Delay in reopening lanes after repair/maintenance	0.1% of Average Daily Annuity per 250 m stretch/day	Independent Engineer approval required for closures
Article 35 (Compensation for Breach)	Breach by Concessionaire or Authority (other than those with specified damages)	Compensation = direct costs incurred by non-defaulting party	Does not include consequential losses
Article 49 (Transitional Arrangements)	Delay in completing Affected Stretch (wildlife clearance pending) beyond 180 days after Scheduled COD	₹57,250 per day	Recoverable by deduction from annuity

3.1.4 Legal and Operational Framework:

- **Force Majeure Events:**
    - Covers natural events, political events, and indirect events.
    - Relief is available only if reported within 7 days.
    - Time extensions granted for achievement of milestones and COD.
    - Compensation limited to actual costs, no claim for indirect losses.
- **Compensation for Breach of Agreement**
    - Sets principles for damages due to breach.
    - Damages are pre-estimated, not penalties.
    - Both parties are obligated to mitigate costs/losses.
- **Termination:**
    - Covers natural events, political events, and indirect events.
    - Relief is available only if reported within 7 days.
    - Time extensions granted for achievement of milestones and COD.
    - Compensation limited to actual costs, no claim for indirect losses.
- **Divestment of Rights and Interest**
    - On termination, Concessionaire must hand over project assets free of encumbrance.
    - Obligations include O&M records, designs, clearances, contracts, and project facilities.
- **Defects Liability after Termination**
    - Concessionaire remains liable for construction defects discovered post-termination.
    - Liability period typically one year from termination/transfer date.

3.2 Review of Supplementary Agreements

The **Concession Agreement of 13.07.2010** was modified through **four Supplementary Agreements** and one **Annex Undertaking**. The first, dated **27.06.2011**, revised termination payment provisions under Force Majeure, clarifying payout formulas linked to Debt Due and Insurance Cover, thereby strengthening financial transparency and lender assurance. The second, dated **25.08.2014**, approved tunnel design modifications to twin unidirectional tubes and redefined cost responsibilities, ensuring project continuity without altering concession terms. The third, dated **06.10.2020**, partially modified the 2018 Settlement Agreement by restructuring timelines and confirming the ₹575 crore advance repayment terms. The fourth, dated **10.11.2023**, formally recorded project completion milestones and corporate restructuring, while the **Annex-2 Undertaking** dated **08.11.2023** reaffirmed the concessionaire's commitment to complete all residual works. Together, these agreements enhanced contractual clarity, reinforced financial stability, and ensured smooth transition from construction to operation.

Exhibit 16: Summary of Supplementary Agreements

Date	Parties	Purpose / Context	Key Terms / Amendments
27 June 2011	NHAI & Navayuga Quazigund Expressway Pvt. Ltd.	***Supplementary Concession Agreement (Termination Clauses)***	•Amended **Article 34.9** concerning termination payments during Force Majeure events. Clarified financial compensation for **Non-Political**, **Indirect Political**, and **Political** Force Majeure. • Non-Political FM: payout = **90% of Debt Due minus Insurance Cover**. • Established clear termination formulas improving **lender protection** and **financial certainty**.
25 August 2014	NHAI & NQEPL	***Second Supplementary Agreement – Viaduct and Twin Tunnel Design Modification***	• Approved alternate tunnel configuration: **twin unidirectional tubes** (8.45 km and 0.69 km). • Tunnel component constituted ~**86%** of total civil cost; redesign added ~₹207 crore (~10% of TPC). • Concessionaire agreed to **bear entire additional cost**, exceeding the 5% COS threshold. • Improved **safety and operational efficiency**; minor time extension allowed for design approval and execution.
6 October 2020	NHAI & NQEPL	***Supplementary Agreement – Modification of 2018 Settlement***	• Adjusted timelines following construction delays and fund infusion. • Revised interim completion date to **10 July 2020** (from 31 December 2019).

Date	Parties	Purpose / Context	Key Terms / Amendments
			• Confirmed interest on **₹575 crore advance** at **Bank Rate + 2% p.a.** • Both parties waived pending claims upon achieving COD within revised timeline. • Ensured continued project funding and completion certainty.
8 November 2023	Quazigund Expressway Pvt. Ltd. (formerly NQEPL) → NHAI	***Annex-2 Undertaking***	• Concessionaire undertook to **complete all pending punch-list and maintenance items** identified by the Independent Engineer. • Committed to completion within stipulated timelines. • Served as **final compliance assurance** during transition to O&M phase.
10 November 2023	NHAI & Quazigund Expressway Pvt. Ltd.	***Post-Completion Supplementary Agreement***	• Formally acknowledged **project completion** and **corporate restructuring**. • Recorded milestones: Appointed Date – **05 June 2011**; EOT – **30 June 2021**; PCOD **31 July 2021**. COD **15 December 2022**. • Confirmed transition from construction to full O&M phase and validated revised schedules.

3.3 Review of State Support Agreement

The **State Support Agreement** was executed on **28th November 2011** between:

- **The Governor of Jammu & Kashmir** (the *State Government*), acting through the **Public Works Department (PWD)**, and
- **The President of India**, represented by the **Ministry of Road Transport & Highways (MoRTH)** and the **National Highways Authority of India (NHAI)** (the *Authority*).

This agreement provides the framework for **State Government support** to ensure the **smooth implementation, operation, and maintenance** of the **Quazigund–Banihal Highway Project** under the **Concession Agreement dated 13 July 2010** between NHAI and **Navayuga Quazigund Expressway Pvt. Ltd. (NQEPL)**.

Exhibit 17: Key Terms of the State Support Agreement

Parameter	Details
Date of Agreement	28th November 2011
Parties	The Governor of Jammu & Kashmir (State Government) & The President of India (Authority), represented by MoRTH/NHAI
Purpose	To provide State Government support and facilitation for the implementation and operation of the **Quazigund–Banihal Highway Project** under the **DBFOT (Annuity)** model
Support by State Government	• Provide continuous **Right of Way (ROW)** and unhindered site access.• Assist in obtaining all **applicable permits, clearances, and local approvals**.• Facilitate **utility shifting** (electricity, water, telecom, etc.).• Ensure **no local levies, barriers, or municipal taxes** are imposed on the project highway.• Provide **police support** for traffic control, removal of encroachments, and ensuring project security.• Establish **traffic aid posts, mobile patrol units, medical aid posts, and ambulance services** as per government standards.
Restriction on Competing Roads	The State shall not develop or permit any **competing road or Tollway** that adversely affects project traffic, except as allowed under the Concession Agreement and with annual notification to NHAI.
Restriction on Additional Tollways	No additional or parallel Tollway to be constructed except as permitted by the Concession Agreement.

Parameter	Details
Restriction on Local Taxes	The State Government shall not impose **local tolls, taxes, or levies** on the project highway; however, existing State revenue interests at **Lakhanpur and Lower Munda** shall remain unaffected.
Substitution of Concessionaire	The State acknowledges the **lenders' and Authority's rights** to substitute the Concessionaire in the event of persistent default, as per the Substitution Agreement (Schedule-R of CA).
Obligations of Authority	The Authority shall ensure that the Concessionaire **complies with applicable laws, permits, and the Concession Agreement** in coordination with the State Government.
State Default	Failure by the State Government or its agencies to **cure a breach within 60 days** of notice constitutes **State Default**, treated as a breach under the Concession Agreement.
Compensation & Termination Payments	The State Government is liable for **compensation or termination payments** resulting from its default, payable within **60 days**, with **interest at Bank Rate + 3%** for delays.
Duration	Effective from the date of execution and valid until **termination or expiry** of all related Concession Agreements under the project.
Indemnity	Both the State and the Authority mutually **indemnify each other** against losses or liabilities arising from their respective breaches or defaults.
Dispute Resolution	Initial resolution through **conciliation** under the **Arbitration and Conciliation Act, 1996**; failing which, disputes shall be settled by **arbitration under ICADR Rules, New Delhi**.
Governing Law & Jurisdiction	Governed by the **laws of India**; jurisdiction lies with **Courts at Delhi**.
Miscellaneous	• Includes **waiver of sovereign immunity** by the State Government. • Agreement **binding on successors and assigns**. • All notices to be in **writing**. • The agreement is executed in **English**.

3.4 Review of Settlement Agreements

3.4.1 First Settlement Agreement (2018)

The **Settlement Agreement** was executed on **11th December 2018** at **NHAI HQ, New Delhi**, between:

- **National Highways Authority of India (NHAI)** (*Authority*), and
- **Navayuga Quazigund Expressway Pvt. Ltd. (NQEPL)** (*Concessionaire*).

The Agreement was signed under **Section 73 of the Arbitration and Conciliation Act, 1996**, following conciliation by the **Conciliation Committee of Independent Experts (CCIE-2)**. **It was executed to resolve project delays, financial constraints, and claims arising under the Concession Agreement dated 13.07.2010**, including disputes related to land acquisition, Force Majeure events, and One-Time Fund Infusion (OTFI) support.

Exhibit 18: Key Aspects of the 2018 Settlement Agreement

Parameter	Details
Date of Agreement	11th December 2018
Parties	NHAI (Authority) & Quazigund Expressway Pvt. Ltd. (Concessionaire)
Context	Settlement under Section 73 of the Arbitration and Conciliation Act, 1996, following CCIE-2 conciliation to address delays, cost overruns, and fund infusion for project completion
Background	• Concession Agreement signed 13.07.2010.• Appointed Date: 05.06.2011; scheduled completion: 04.06.2016. • Project delayed due to land acquisition, utility shifting, weather, law & order, and Force Majeure events.
NHAI Support	• Approved **One-Time Fund Infusion (OTFI)** of ₹575 Cr as advance loan .• Carried interest: **Bank Rate + 2% p.a.** • Recovery mechanism: from future annuities.
EOT & Compensation	• Extension of Time up to **31.12.2019**.• **880 days** delay recognized as not attributable to Concessionaire. • **424 days** (2.327 annuities) deducted for Concessionaire default. • Restored Annuities = ₹1,180.90 Cr (against 880 days).
Settlement Scope	• All pending claims and disputes till date of signing fully settled. • Concessionaire waived all cost overrun, IDC, escalation, and overhead claims.

Parameter	Details
Utilization Conditions	• ₹575 Cr to be used **only for physical completion**; not for IDC, debt servicing, or administrative costs. • To be disbursed in tranches based on verified progress.
Monitoring Mechanism	• Oversight by a **Monitoring Committee** comprising NHAI CGM (Tech), RO Jammu, and lender's representative. • Concurrent audit by NHAI-appointed auditor. • Sub-escrow account established for fund flow control.
Concessionaire Obligations	• Achieve **COD by 31.12.2019**. • Resume and complete stalled works .• Indemnify NHAI for any claims linked to land or delay.
NHAI Obligations	• Release ₹575 Cr advance loan. • Restore eligible missed annuities (880 days). • Grant time extension and finalize closure of all pending disputes.
Finality	Full and final settlement of all disputes up to 11.12.2018; no residual claims permissible.
Governing Law & Jurisdiction	Laws of India; Courts at Delhi.

3.4.2 Second Settlement Agreement (2022)

The **Settlement Agreement** was executed on **24th June 2022** at **NHAI HQ, New Delhi**, between:

- **National Highways Authority of India (NHAI)** (*Authority*), and
- **Quazigund Expressway Pvt. Ltd. (NQEPL)** (*Concessionaire*).

The Agreement was signed under **Section 73 of the Arbitration and Conciliation Act, 1996**, after review by **CCIE-2** and approval of the **Empowered Committee (MoRTH)**. It settled all remaining disputes till **Provisional COD (31.07.2021)**, including annuity restoration, change in law claims, and VAT reimbursement.

Exhibit 19: Key Aspects of the 2022 Settlement Agreement

Parameter	Details
Date of Agreement	24th June 2022
Parties	NHAI (Authority) & Quazigund Expressway Pvt. Ltd. (Concessionaire)
Context	Conciliation under Section 73 of the Arbitration & Conciliation Act, 1996 (CCIE-2), resolving all disputes till PCOD (31.07.2021)
Reference – 2018 SA	Original Settlement Agreement (11.12.2018) established OTFI & 880-day compensation; 2022 SA finalized reconciliation of missed annuities, O&M claims, and VAT liabilities.
Disputes Resolved	Claims under Clause 35.2 & 35.3 of CA, delays in 100% land availability, restoration of annuities, VAT impact, O&M cost reimbursement, interest reconciliation.
Settlement Amount	**₹863.24 Cr** (against total claim ₹2,223 Cr) comprising: • ₹719.81 Cr – 2.938 annuities restored (after 0.23 annuity deduction for 42-day delay). • ₹143.43 Cr – reimbursement for VAT, O&M, power supply, and excess TDS on interest.
Financial Impact	~61% reduction versus total claim value.
PCOD & Schedule	• **PCOD Date**: 31.07.2021. • Revised **Schedule M** finalized accordingly. • No change in total concession period.
NHAI Obligations	• Pay ₹863.24 Cr within 30 days of signing (by 30.06.2022). • Recognize PCOD and revised Schedule M. • Close all pending claims.

Parameter	Details
Concessionaire Obligations	• Maintain project highway per CA terms till concession end. • Waive all claims (cost overrun, IDC, escalation, O&M expenses). • Indemnify NHAI from third-party or statutory authority claims.
Legal Validation	Authenticated by **CCIE-2 (Justice I.P. Vasishth, Mr. A.K. Upadhyay, Mr. V.V. Ranganathan)** confirming voluntary and fair settlement.
Finality	Full and final closure of all disputes and claims till 31.07.2021; no residual claims or litigations permissible.
Governing Law & Jurisdiction	Laws of India; Courts at New Delhi.

3.5 Review of Major O&M Contracts

3.5.1 Review of Integrated Tunnel Management System (ITMS) Annual Maintenance Contract (AMC) Agreement

The Annual Maintenance Contract (AMC) for the Integrated Tunnel Management System (ITMS) at the Banihal Tunnel Project, Jammu & Kashmir, was executed between Athaang Infrastructure Pvt. Ltd. and Honeywell Automation India Ltd. in August 2023. The agreement covers comprehensive maintenance of key tunnel safety, control, and communication systems under a structured one-year service framework.

Exhibit 20: Key Terms of ITMS Annual Maintenance Contract (AMC) Agreement

Parameter	Details
Date of Work Order	07th August 2023
Parties	**Athaang Infrastructure Pvt. Ltd.** (Employer) & **Honeywell Automation India Ltd.**, Ground Floor, United Trade Centre, Sector 43, Gurgaon, Haryana (Contractor)
Contract Reference	Offer Ref.: HBS/North/2023/AIPL/New Contract/0039
Contract Value	**Basic AMC:** ₹1,25,10,000/- **GST @18%:** ₹22,51,800/- **Total: ₹1,47,61,800/- (Rupees One Crore Forty-Seven Lakh Sixty-One Thousand Eight Hundred Only)**
Project / Location	Banihal Tunnel Project, Jammu & Kashmir
Contract Period	1 Year (Service 180° Program) from date of award; extendable based on performance
AMC Type	Non-Comprehensive – includes manpower, maintenance, and software support; excludes hardware/spare replacement (chargeable basis)
Scope of Works	• Maintenance of **Integrated Tunnel Management System (ITMS)** comprising:– SCADA and PLC Systems– Fire Detection & Linear Heat Sensing (LHS)– CCTV Surveillance Network– Emergency Call & Telephone Systems– Traffic Management and Networking Systems

Parameter	Details
	• Software patching and bug fixes • Preventive and corrective maintenance • 4 preventive visits per year and SLA-based breakdown response
Support Model	• **On-site Team:** First-line troubleshooting (2 engineers on site) • **Technical Support Group (TSG), Pune HQ:** Advanced diagnosis and configuration • **Global Assistance Centers (Australia/USA/Germany):** Escalation and specialized support
Service Response & SLA	• **Minor Faults:** Within 24 hours • **Major Faults (CCTV/SCADA):** Within 24–48 hours • **Uptime Commitment:** ≥95% per quarter
Penalty for Downtime	• ≥95% uptime – Nil • 90–95% – 1% of quarterly AMC • 85–90% – 2%• 80–85% – 3% • <80% – 5% (maximum annual cap 5%)
Manpower Deployment	Two (2) full-time engineers at site (9×6 shift), supported by Honeywell's regional service network; PPE and equipment provided by Contractor
Payment Terms	• Quarterly advance payment against invoice within 30 days of receipt • No escalation permitted except statutory variations • Applicable deductions: TDS, GST, and other statutory levies
Mobilization Period	Within 15–20 days from the date of award
Cooling / Grace Period	120 days from contract commencement (no penalties during this stabilization phase)
Reports & Documentation	• Maintenance service report after each visit • Quarterly system health and uptime reports• Performance logbook maintained at site
Exclusions	Replacement of major hardware components, PCs, cabling, batteries, consumables, and civil/electrical works
Inspection & Quality	Subject to inspection by Employer, Independent Engineer, or Authority (NHAI); defects to be rectified at Contractor's cost

Parameter	Details
Liability & Indemnity	Contractor responsible for safety of personnel, equipment, and work quality; indemnifies Employer against any losses due to negligence or misconduct
Insurance	Contractor must insure workmen, materials, tools, and equipment; failure to maintain insurance may result in withholding of payments
Termination	Either party may terminate with **30 days' written notice**; Employer may terminate for non-performance, subcontracting without consent, breach, or safety violations
Suspension of Payments	Employer may suspend payments if Contractor fails to rectify defaults within 7 days of notice
Special Conditions	• Contractor bound by **Step-in Rights** of NHAI/Lenders • Replacement of unfit or negligent staff mandatory• Strict confidentiality of project data to be maintained
Jurisdiction	Laws of India; Arbitration under the **Arbitration and Conciliation Act, 1996**; Courts at Delhi

3.5.2 Review of Substation AMC Agreement

The Annual Maintenance Contract (Non-Comprehensive) for the Substation System at the Banihal Tunnel (NH-44) was executed between Quazigund Expressway Pvt. Ltd. (QEPL) and Sterling & Wilson Pvt. Ltd. The contract ensures the preventive and breakdown maintenance of the complete substation network supporting tunnel operations and ancillary systems.

Exhibit 21: Key Terms of Substation AMC Agreement

Parameter	Details
Date of Agreement / Work Order	04th October 2023
Employer	Quazigund Expressway Pvt. Ltd. (QEPL), Control Room, South Portal, Banihal, Ramban District, J&K
Contractor	Sterling & Wilson Pvt. Ltd.
Service Order Reference	QB/E&M/2023-24/158
Linked Proposal Reference	Honeywell Proposal Ref.: HBS/North/2023/AIPL/New Contract/0039 dated 07 August 2023
Contract Period	As per preventive maintenance cycle (2 quarters) – extendable based on performance and mutual consent
Contract Value	Net Total: ₹17,57,500/- GST @18%: ₹3,16,350/- Total: ₹20,73,850/- (Rupees Twenty Lakh Seventy-Three Thousand Eight Hundred Fifty Only)
Payment Terms	• Payment as per approved AMC schedule (2 quarters). • Payment released after successful completion of each service cycle. • All statutory deductions (TDS, GST, cess) as applicable.
Scope of Work	• Preventive maintenance of complete substation system. • Four preventive maintenance visits per year (as per Annexure I checklist) • Emergency breakdown visits on call. • Performance testing, tightening, cleaning, insulation, and functional checks.

Parameter	Details
	• Compliance with client's specifications and statutory regulations.
Execution Requirements	• Maintenance to be carried out under the supervision of QEPL officials and in line with NHAI guidelines. • All work to conform with relevant Indian Standards and safety norms. • Contractor to deploy qualified and experienced personnel only.
Service Provider Obligations	• Responsible for quality, reliability, and timeliness of services. • Must maintain qualified manpower and tools at all times. • Any deficiencies to be rectified at Contractor's cost.
Performance Documentation	• Preventive Maintenance Reports (PMRs) to be submitted after each visit. • Emergency Breakdown Reports (EBRs) to be filed post-rectification. • Post-implementation support as per agreement framework.
Standards & Compliance	• All works in accordance with client's technical standards, OEM manuals, and statutory safety laws.• Contractor responsible for compliance with all labour, EHS, and regulatory requirements.
Inspection & Verification	Subject to verification by QEPL, Independent Engineer, and/or NHAI. Non-compliance or defects to be rectified by Contractor at own cost.
Termination Clause	• QEPL may terminate the agreement at any stage without compensation if the Contractor fails to meet contractual obligations or timelines. • Contractor must refund any advance payments immediately upon termination. • QEPL may also terminate for breach, EHS violations, or non-performance.
Confidentiality (Clause 13)	All information shared by QEPL to be treated as strictly confidential. Any breach constitutes a material breach, giving QEPL termination rights.

Parameter	Details
Indemnity	Contractor shall indemnify QEPL against all losses, damages, claims, or IPR infringements arising from its acts, negligence, or performance failures.
Assignment / Subletting	Contractor shall not assign, transfer, or subcontract any part of the agreement without prior written consent of QEPL.
Delay & Damages	• Time is of essence. • Delay or non-compliance with specifications allows QEPL to terminate the contract • No explicit LD clause; remedy limited to termination and refund of advances.
Liability & Risk	Contractor responsible for safety of personnel, tools, and equipment; liability capped to contract value except for willful misconduct or statutory violations.
Insurance	Contractor to maintain insurance coverage for workmen, materials, tools, and equipment; non-compliance may lead to withheld payments.
Dispute Resolution / Arbitration	Disputes to be resolved through arbitration under the Arbitration and Conciliation Act, 1996; Sole Arbitrator to be appointed by QEPL COO; Venue: Mumbai; Language: English.
Governing Law & Jurisdiction	Governed by the laws of India; jurisdiction with Courts at Mumbai.

3.5.3 Review of Electrical Substation AMC Agreement

The Annual Maintenance Contract (Non-Comprehensive) for the Electrical Substation System at the Banihal Tunnel (NH-44) was executed between **Navayuga Quazigund Expressways Pvt. Ltd. (NQEL)** and **Sterling & Wilson Pvt. Ltd.** The contract covers routine preventive maintenance as well as emergency corrective support for the complete substation infrastructure supporting tunnel operations and associated electrical systems.

Exhibit 22: Key Terms of Electrical Substation System

Parameter	Details
Date of Agreement / Service Order	11th January 2023
Employer	Navayuga Quazigund Expressways Pvt. Ltd. (NQEL), South Portal, Banihal, Ramban District, J&K
Contractor	Sterling & Wilson Pvt. Ltd.
Service Order Reference	Service Order No. 35
Contract Period / Validity	01-Jan-2023 to 31-Dec-2023 (12 Months)
Contract Value	Base AMC: ₹35,15,000/- GST @18%: ₹6,32,700/- **Total: ₹41,47,700/-** (Rupees Forty-One Lakh Forty-Seven Thousand Seven Hundred Only)
Payment Terms	• 25% advance within 15 days of order issuance (adjustable in final invoice).• Balance through quarterly invoices, payable within 30 days of certification.
Scope of Work	• Non-Comprehensive AMC for complete electrical substation system. • Preventive maintenance: Quarterly, Half-yearly, and Annual detailed inspections including transformers, ACBs, VCB/SF6 panels, UPS, relays, and thermography. • Emergency breakdown support with corrective rectifications. • Thermography before and after rectification.
Execution Requirements	• Services to commence within 45 days of advance payment • Work to be executed under supervision of NQEL and as per statutory electrical safety norms and OEM standards.

Parameter	Details
Maintenance Schedule	• **Quarterly:** Visual inspection, logbook verification, fuse and protection checks. • **Half-Yearly:** Transformer IR/PI testing, breaker servicing, cable terminations. • **Annual:** Dielectric tests, relay calibration, CT testing, complete thermography of substation.
Corrective Maintenance	Emergency visit and repair/rectification in event of faults, failures, or operational disruption.
Documentation & Reporting	• Submission of Preventive Maintenance Reports (PMRs) after each planned visit. • Breakdown Maintenance Reports (BMRs) after each emergency intervention. • Annual Thermography Study Report.
Standards & Compliance	Services to comply with client specifications, statutory regulations, OEM manuals, and electrical safety protocols. Contractor responsible for manpower competency and regulatory compliance.
Performance Monitoring	All maintenance activities to be jointly certified by NQEL authorities. Any deficiencies to be rectified at contractor's cost.
Termination Clause	• NQEL may terminate the contract by giving 30 days' notice.• Compensation limited strictly to proportionate value of work completed. • Failure to meet service standards may lead to recovery of damages from invoices or retention.
Deficiency & Damages Clause	• Any service lapse, negligence, or operational impact shall be treated as "Deficiency in Service." • Client reserves right to assess and recover damages as liquidated claim (not considered penalty).
Confidentiality	All client-shared drawings, operational data, and technical details to be treated as confidential. Breach is considered material and may trigger termination.

Parameter	Details
Indemnity	Contractor indemnifies NQEL against any claims, IPR violations, service failures, or damages caused due to negligence or improper maintenance.
Assignment/ Subletting	Permitted only with prior written approval of NQEL. Contractor remains fully liable for subcontractor performance.
Force Majeure	Applicable in case of strikes, war, natural calamities, civil disruptions, or conditions beyond reasonable control.
Arbitration & Dispute Resolution	Sole Arbitrator appointed by Client COO; Arbitration under Arbitration and Conciliation Act 1996; Venue: Mumbai; Language: English
Governing Law & Jurisdiction	Indian Law applicable; Courts at Mumbai shall have jurisdiction

3.5.4 Review of Toll Management System AMC Agreement

The Annual Maintenance Contract (Non-Comprehensive) for the Toll Management System (TMS) on the Banihal Tunnel Section (NH-44) was executed between **Athaang Infrastructure Pvt. Ltd. / Quazigund Expressways Pvt. Ltd. (QEPL)** and **Techsture Technologies India Pvt. Ltd.** The agreement covers preventive and corrective maintenance of all toll system hardware, software, networking assets, and plaza-level IT infrastructure to ensure uninterrupted toll collection and system uptime.

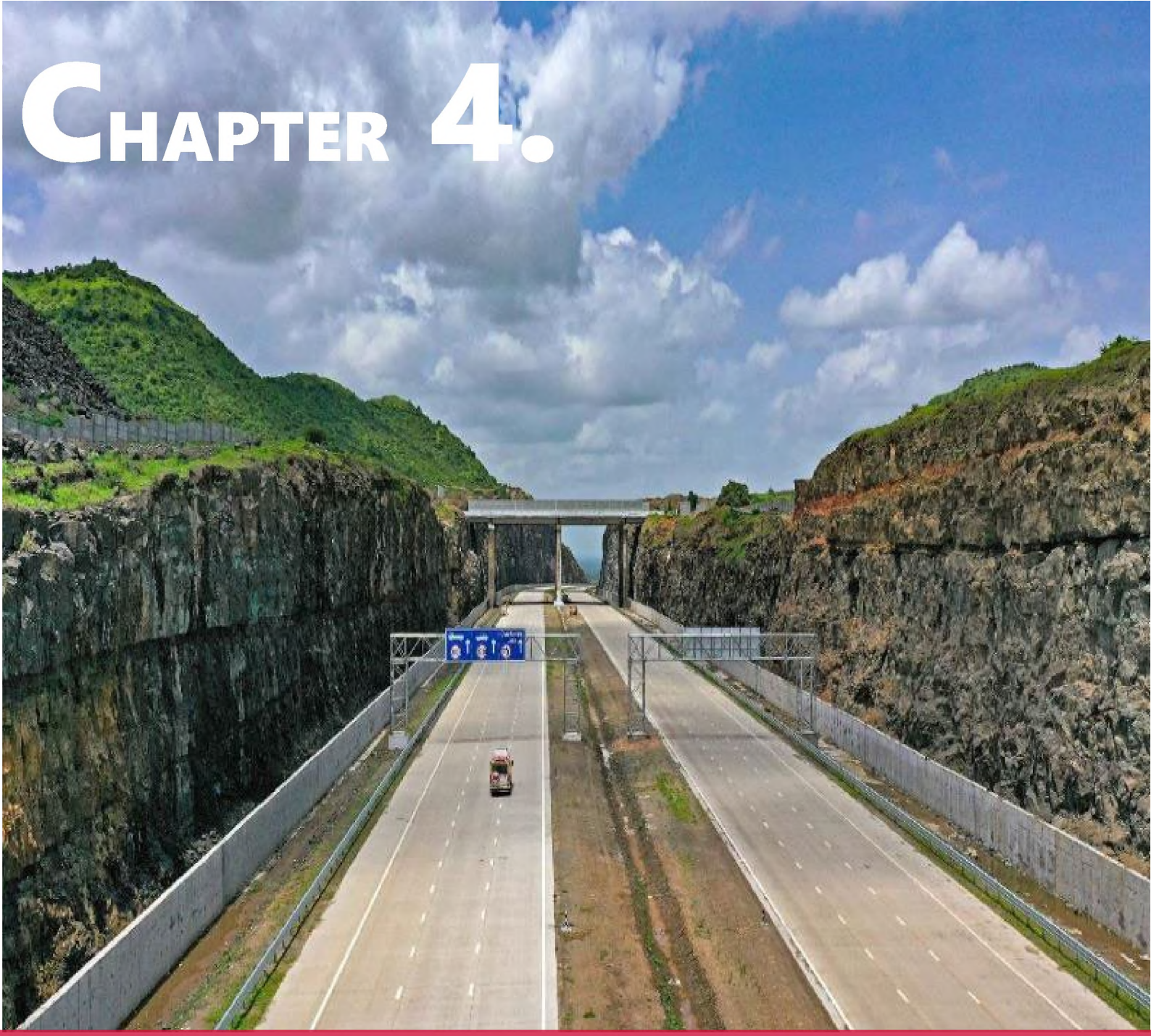
Exhibit 23: Key Terms of Toll Management System AMC Agreement

Parameter	Details
Date of Agreement / Purchase Order	30th June 2023
Employer / Purchaser	Athaang Infrastructure Pvt. Ltd. / Quazigund Expressways Pvt. Ltd. (QEPL)
Contractor / Service Provider	Techsture Technologies India Pvt. Ltd.
Purchase Order Reference	QB/IT/2023-24/86
Contract Period / Validity	01-Jul-2023 to 30-Jun-2024 (12 Months)
Automatic Renewal Clause	Automatically renewed annually unless terminated by either party with 30 days' prior written notice
Contract Value	**Base AMC: ₹14,98,600/-** **GST @18%: ₹2,28,600/-** **Total: ₹17,27,200/- (Rupees Seventeen Lakh Twenty-Seven Thousand Two Hundred Only)**
Payment Terms	• Monthly billing after successful completion of each month. • Payments subject to statutory deductions (TDS, GST, etc.).

Parameter	Details
Scope of Work	• Comprehensive AMC for TMS including hardware, software, ATMS support, lane systems, networking and control systems. • Daily/weekly preventive maintenance of critical components – barriers, printers, power supply, UPS, cabling, controllers. • Free software updates for compliance with IHMCL/NHAI standards. • Corrective maintenance including bug fixing, emergency rectification, and service restoration.
Manpower Deployment	• 1 Resident IT Engineer at each toll plaza (9 AM – 6 PM, emergency on-call support). • 1 Remote Software Engineer (offsite). • 1 Service Manager for escalation and reporting control.
System Uptime Requirement	Minimum **98% uptime** for toll system operations.
Penalty Clause	• If downtime >5% and attributable to contractor → **12% deduction on AMC value**. • Response to faults must be immediate (online support).
Maintenance & Reporting Protocol	• Daily and weekly system checklists to be logged. • Fault register maintained at plaza, signed by QEPL authority. • Weekly reports and MoM documentation for review meetings.
Training Obligations	Techsture to provide preventive and corrective maintenance training to QEPL technical team.
Spares Management	Contractor to provide list of recommended spares; QEPL to maintain onsite stock and manage issuance log.
Termination Clause	• QEPL reserves right to terminate anytime for non-performance or breach. • Supplier must refund any advance in case of early termination. • "Time is essence of contract" – delays qualify for termination action.

Parameter	Details
Confidentiality (Clause 13)	All toll data, system logs, configurations, and operational records are confidential. Breach is considered material → liable for termination.
Indemnity	Contractor indemnifies QEPL against all claims, damages, losses, or IPR-related disputes arising due to performance deficiencies.
Assignment / Subletting	Contractor shall not assign or subcontract any portion of the contract without written consent from QEPL.
Arbitration & Dispute Resolution	Arbitration under the Arbitration & Conciliation Act, 1996; Sole Arbitrator to be appointed by QEPL COO; Venue: Mumbai; Language: English.
Governing Law & Jurisdiction	Governed by the laws of India; Jurisdiction with Courts at Mumbai.

Chapter 4.



Review of Pavement Design

Chapter 4. CONDITION ASSESSMENT OF PROJECT ROAD

4.1 General

This chapter presents a detailed assessment of the existing condition of the Jammu–Udhampur Project Highway in accordance with the provisions of the Concession Agreement and relevant IRC guidelines. The objective of this assessment is to evaluate the current condition and performance of the pavement, structures, tunnels, toll plaza facilities, service roads, drainage systems, safety installations and other highway assets. The observations are based on site inspections, maintenance records, annuity performance, and interaction with the concessionaire's O&M team.

This section presents the findings of the **condition assessment** of the **Quazigund–Banihal Section of NH-44 (Km 189+350 to Km 204+700)** in the Union Territory of Jammu & Kashmir. The assessment has been prepared based on **field observations recorded during the site inspection conducted on 08 October 2025**, the results obtained from the **Falling Weight Deflectometer (FWD) survey carried out in June 2023**, and the **Mobile Bridge Inspection Unit (MBIU) survey conducted in December 2023**.

The integration of these three key datasets — *pavement deflection study (FWD)*, *structural evaluation of bridges (MBIU)*, and *visual field inspection* — provides a **comprehensive and reliable representation** of the current structural and functional condition of the project highway and its associated infrastructure.

The project corridor lies in a **mountainous and geotechnically sensitive zone** of the Himalayas, characterized by **steep gradients, sharp horizontal curves, high rainfall, and frequent exposure to adverse weather conditions**. The alignment commences near **Banihal village at Km 189+350** and terminates near **Quazigund at Km 204+700**, passing through two critical tunnel sections — a **single-tube short tunnel (Km 193+830 to Km 194+540)** and a **double-tube long tunnel (Km 194+700 to Km 204+000)**. The corridor serves as a **vital component of NH-44**, ensuring all-weather connectivity between Jammu and Srinagar.

The purpose of this condition assessment is to determine the **current structural health, performance efficiency, and serviceability** of the project highway and its assets. The study integrates data from both **instrumental evaluations** (FWD and MBIU) and **visual condition surveys**, enabling a holistic review of the **pavement system**, **structures**, **drainage**, and **associated highway facilities**.

Exhibit 24 Existing Vs Schedule B

Sl. No.	Particulars	As per Schedule–B	As Built & Deviations Settled in Supplementary Agreement
1	Project Road Start	Km 189+350 at Banihal	Km 189+350 at Banihal
2	Project Road End	Km 204+700 at Quazigund	Km 205+618 at Quazigund
3	Project Length	15.35 km	16.268 km
4	Tunnel	Short Tunnel – Km 193.792 to Km 194.488 (Length 696 m) Long Tunnel – Km 195.425 to Km 203.865 (Length 8.45 km)	Twin Tube Tunnel Tube 1 – 8457.70 m Tube 2 – 8463.38 m

The primary objectives of this assessment are to:

- Evaluate the **structural adequacy, layer stiffness, and residual life** of the pavement using **FWD test results (June 2023)**.
- Assess the **structural integrity and physical condition of bridges and culverts** based on the **MBIU inspection results (December 2023)**.
- Document the **on-ground physical condition of the pavement, structures, and roadside facilities** based on the **site inspection (08 October 2025)**.
- Identify **stretches requiring overlay, rehabilitation, or other maintenance interventions** to restore performance levels.
- Evaluate the **functionality of drainage, signage, tolling, and traffic management systems**.
- Verify **compliance with Operation and Maintenance (O&M) standards** as prescribed by **IRC codes** and the **Concession Agreement**.

This assessment has been carried out in accordance with the following key references:

- **IRC:115-2014** – *Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements using FWD Technique*
- **IRC:117-2014** – *Guidelines for Structural Evaluation of Rigid Pavements*
- **IRC:37-2018** – *Guidelines for the Design of Flexible Pavements*
- **IRC:SP:35-2015** – *Code of Practice for Inspection and Maintenance of Bridges*
- **IRC:83-2019 (Part I & II)** – *Guidelines for Design and Condition Assessment of Bridge Components*
- **IRC:SP:16 and IRC:SP:83** – *Guidelines for Maintenance of Highways and Toll Facilities*

4.2 Pavement

The proposed pavement design for the **Quazigund–Banihal Section (Km 189.350–Km 204.700)** follows **IRC:37-2012** and **IRC:58-2015** standards for flexible and rigid pavements respectively.

Exhibit 25 Main Carriageway (Flexible Pavement)

S. No.	Layer	Material Description	Thickness (mm)
1	Bituminous Concrete (BC)	Wearing course using VG-30 grade bitumen	40
2	Dense Bituminous Macadam (DBM)	Binder course with VG-30 bitumen	110
3	Wet Mix Macadam (WMM)	Granular base layer	250
4	Granular Sub-base (GSB)	Well-graded granular material	200
	Total Crust Thickness		**600 mm**

Exhibit 26 Service Road Pavement

S. No.	Layer	Material Description	Thickness (mm)
1	Bituminous Concrete (BC)	Surface course using VG-30 bitumen	40
2	Dense Bituminous Macadam (DBM)	Binder course	60
3	Wet Mix Macadam (WMM)	Granular base	250
4	Granular Sub-base (GSB)	Granular sub-base material	200
	Total Crust Thickness		**550 mm**

Exhibit 27 Rigid Pavement (Toll Plaza / Tunnel Section)

S. No.	Layer	Material Description	Thickness (mm)
1	Pavement Quality Concrete (PQC)	M-40 grade concrete	300
2	Dry Lean Concrete (DLC)	M-10 grade concrete	150
3	Granular Sub-base (GSB)	Granular layer	150
	Total Thickness		**600 mm**
	Reinforcement Details		

4.3 Assessment of Highway

Knight Frank carried out a detailed review and assessment of the **project highway assets**, which included **Service Roads (SR), Intersections, TLBs, BLBs, Sign Boards, MBCBs, and other related infrastructure components**. The assessment was undertaken through **comprehensive visual inspections** along the entire project stretch, supplemented by a **review of relevant reports and maintenance records** shared by the Client during site visit.

The objective of this exercise was to evaluate the **existing physical condition, functionality, and maintenance requirements** of each asset category. Based on the observations and data collected, a **maintenance strategy** has been formulated covering **regular repair, preventive, and routine maintenance activities** to ensure the long-term sustainability and serviceability of the highway assets.

Furthermore, the **pavement condition** was assessed through a combination of **visual inspection, and Falling Weight Deflectometer (FWD) testing**, providing a comprehensive understanding of surface condition, structural strength, and performance.

Overall, the review indicates that the **project highway assets are in satisfactory condition**, with all key components performing as intended. Minor deficiencies identified during the inspection can be addressed through routine and preventive maintenance measures as part of the recommended asset management plan.

a) Service Road/Slip:

Total length of service road is 400 m & the width of service road is 4.5 m. Haulage Road length is 3.546 Kms & the width of Haulage Road is 6 m. Service Road / Haulage Roads is constructed along the project as flexible pavements. The overall pavement condition is good. Pavement Markings are also found in service roads but are faded at some places

b) Lighting

Highway lighting has been provided at key locations such as junctions, flyovers, tunnels, and toll plazas to ensure adequate visibility and road safety during night hours. High mast lighting systems are installed specifically at junctions and toll plaza areas for enhanced illumination. Additionally, solar-powered blinker signals have been installed at selected median openings to alert and guide motorists at potential conflict points.

c) Metal Beam Crash Barrier

Metal beam crash barriers and wire-rope barriers are installed at critical locations (carriageway edges, underpasses, approaches and high-embankment zones) to protect against vehicular run-offs.

During inspection, minor looseness in some wire-rope assemblies and local damage to parapets/railings were observed. These are localized issues that can be rectified through routine tightening, replacement of worn components, and targeted repairs to restore full safety performance.

d) Drainage

The **drainage system** along the **Quazigund–Banihal Section of NH-44**, including the **Banihal Tunnels (T1 & T2)**, is a **comprehensive surface and subsurface drainage network** designed to efficiently manage both stormwater runoff and groundwater infiltration. The system comprises **longitudinal side drains**, **cross-drainage connections**, and **inspection manholes** categorized as **Surface (S), Drainage (D), Cable Recess (R), Low Voltage (L), and High Voltage (H)** types, placed at regular intervals along both tubes. These drains are interconnected through **RCC channels and perforated pipes** located behind the waterproofing layer to prevent hydrostatic pressure and ensure proper discharge towards portal-side sumps and outfalls.

Drainage Statistics:

- **Total drainage length (T1 & T2 combined): ~18.3 km (both tubes)**
- **Manholes and access chambers: 520 Nos (S, D, R, L, H types)**
- **Average spacing between manholes: 25–30 m**
- **Discharge outlets / sumps: 4 Nos (2 per tunnel)**

e) Bus Bays /Bus Shelters & Truck Lay Byes:

The project includes **two bus bays with passenger shelters** and **two truck lay-byes**, located near the **tunnel portals and toll plaza approaches**. These facilities are provided on both carriageways for safe stoppage, passenger convenience, and parking of heavy vehicles. All areas are equipped with **paved surfaces, drainage, lighting, and signage**, and were observed to be **functionally operational and well-maintained**, with only **minor repairs and cleaning** required at isolated locations.

f) Median & Median Opening:

The **median width** along the **Quazigund–Banihal Section of NH-44** varies between **1.5 m and 4.0 m**, constructed with **RCC kerbs and reinforced concrete shoulders** as per the **Concession Agreement (CA)** specifications. **Median openings** have been provided at designated locations to facilitate controlled cross-movement in accordance with traffic and safety requirements approved by local authorities. These openings are delineated with **pavement markings and reflective studs** to guide vehicular movement. A total of **46 median openings** are provided along the project stretch.

During inspection, it was noted that **blinker lights and cautionary signboards** were missing at a few openings, which should be reinstated under routine maintenance to ensure continued compliance with **IRC:67 and MoRTH safety standards**.

KF View:

Overall, the project highway is in satisfactory condition, with all major assets performing as intended. Minor deficiencies such as faded markings, missing blinkers, and loose barriers can be addressed through routine maintenance to ensure continued safe and efficient operation.

4.4 Assessment of Structures

A **visual condition survey** of all bridge and culvert structures was carried out jointly by the **Knight Frank (KF) team** and the **Concessionaire**, with the objective of **identifying and quantifying structural deterioration** arising from various factors such as **dead load, live load, wind load**, and **physical or chemical influences** exerted by the environment. In addition to examining **damages caused by unpredictable natural events** or **vehicular collisions**, the inspection also aimed to detect or monitor the impact of any **construction-related imperfections** that may affect long-term performance. Such periodic inspections play an important role in **enhancing the service life and safety** of both existing and newly built bridge structures.

Knight Frank reviewed the **structural condition assessment** of bridges and culverts along the **Banihal village at Km 189+350** and terminates near **Quazigund at Km 204+700**, passing through two critical tunnel sections — a **single-tube short tunnel (Km 193+830 to Km 194+540)** and a **double-tube long tunnel (Km 194+700 to Km 204+000)** during the **Operation & Maintenance phase**, based on **visual inspection** and findings from the **Mobile Bridge Inspection Unit (MBIU) survey** carried out in **December 2023** . The assessment encompassed all **major and minor bridges**, as well as **underpasses** along both the **left-hand and right-hand carriageways** of the corridor.

The observations were made through detailed **visual inspection, functionality checks, and performance verification** of all civil, structural, and electromechanical components, including **bridges, tunnels, culverts, toll plazas, ventilation buildings, drainage systems, and associated road furniture**.

Exhibit 28 Details of Structures

S. No.	Type of Structure	Chainage (Km)	Description / Configuration
1	**Major Bridge No. 1 (LHS)**	189+435	3×36.63 m span, RCC abutments & piers
2	**Major Bridge No. 4**	190+310	RCC deck slab type
3	**Railway Over Bridge (ROB)**	190+400 – 191+100	45 m wide steel girder with RCC slab
4	**Viaduct (South Portal Approach)**	192+600 – 194+200	Multi-span elevated viaduct

S. No.	Type of Structure	Chainage (Km)	Description / Configuration
5	**Truck Parking – South Portal (Lamber)**	192+700 – 193+500 (LHS)	Concrete pavement area with drainage channels
6	**Tunnel T1 (Short Tunnel)**	193+792 – 194+488	Length 0.69 km; 8.50 m wide carriageway with 1.05 m footpath
7	**Tunnel T2 (Main Tunnel)**	195+425 – 203+865	Length 8.45 km; 9.35 m wide carriageway with 1.16 m footpath
8	**Viaduct / Bridge (North Portal Exit)**	204+100 – 204+600	RCC spans with expansion joints
9	**Box Culverts (3 Nos)**	204+814, 205+131, 205+527	RCC Box type structures
10	**Truck Parking – North Portal (Ujroo)**	205+100 (RHS)	Concrete pavement area with facilities
11	**Toll Plaza Building – South (Lamber)**	193+760 (Approx.)	Admin + ETC + Control Rooms
12	**Toll Plaza Building – North (Ujroo)**	203+880 (Approx.)	Admin + ETC + Power rooms
13	**Ventilation Building – South Portal**	193+750	Jet fans, axial fans, and control panels
14	**Ventilation Building – North Portal**	203+880	Louvers, dampers, DG set & exhaust shafts
15	**Drainage Systems (General)**	Throughout alignment	Longitudinal drains, sumps, de-oiling tanks

The inspection revealed that the overall condition of the project assets is **functionally satisfactory**, with **major structures, tunnels, and ancillary facilities in operational condition**, while a few **localized deficiencies** such as damaged gratings, faded signages, non-functional tunnel lights, open hydrant cabinets, and minor surface cracks were observed at specific chainages. Routine **maintenance, cleaning, repainting, and rectification** activities were found to be ongoing under the scope of the concessionaire.

KF View:

Overall, based on the review of the previous MBIU survey reports (conducted by the SPV in December 2023) and a comprehensive visual examination during the site visit, it was observed that most structures are in sound structural condition and maintained in a fair state of serviceability.

4.5 Assessment of Road Furniture & Project Facilities

The inspection of highway and road furniture included **signages, guardrails, pavement markings, hazard markers, drainage gratings, SOS boxes, and lighting systems**. The overall condition was **fair**, but several elements were found needing repainting, replacement, or cleaning.

Road safety devices like **hazard markers, chevrons, and reflective signs** were either faded or damaged at several chainages, and some **road studs and rumble strips** were missing or worn. Tunnel SOS boxes were functional but had **non-working LED indicators** at certain points.

Exhibit 29 Details of Road Furniture's Items

S. No.	Facility / Item	Chainage (Km)	Observation / Condition
1	**Hazard Marker (Damaged)**	189+520 (RHS)	Bent / missing marker
2	**Overhead Gantry Sign Boards**	189+350 & 205+618	Faded / damaged boards
3	**Chevron Signs (Faded)**	192+300 – 192+400 (RHS)	Reflective film worn out
4	**Weighbridge Sign Board (Missing)**	193+935 (LHS)	Missing near Lamber Toll Plaza
5	**Informative Sign – Toll Ahead (Faded)**	193+300 (LHS)	Film faded
6	**Hazard Marker (Rectified)**	192+350 (LHS)	Earlier missing, now fixed
7	**Drainage Gratings – Truck Parking SP**	192+700 – 193+500	Damaged gratings
8	**Pavement Cracks / Settlement Zone**	193+050 – 193+080 (LHS)	Settlement at MCW
9	**Median Plantation – Section 1**	189+350 – 191+000	Plantation with tree guards

S. No.	Facility / Item	Chainage (Km)	Observation / Condition
10	**Road Studs / Cat Eyes (Missing)**	Inside tunnels and viaduct	Missing at several locations
11	**SOS Boxes (LED not working)**	Inside tunnels	Few SOS box lights not functional
12	**Fire Hydrant Cabinets (Open)**	Inside tunnels	Doors unlocked and unprotected
13	**Median Kerb Painting (Trial Patch)**	First 500 m inside Tunnel T1	Trial painting executed
14	**ROW Poles / Boundary Markers**	Throughout corridor	Not installed per NHAI standards
15	**Plantation – North Portal Section**	205+000 – 205+618	Ongoing plantation
16	**Lighting (Tunnel & Toll Plaza)**	Both tunnels and portals	Many non-functional lights
17	**Ventilation Jet Fans (Dusty)**	Inside tunnels	Working intermittently
18	**Bridge Name & ID Boards**	All bridge locations	Damaged / faded
19	**Medical Aid Post (Toll Plaza Complex)**	South & North Toll Plazas	Functional
20	**Rumble Strips**	Tunnel approaches & junctions	Faint markings

4.5.1 Project Facilities

Project facilities include **ventilation buildings, truck lay-bys, drainage systems, and tunnel support structures**. These were found in operational state with periodic maintenance activities.

Exhibit 30 Details of Project Facilities

Facility	Chainage (Km)	Condition / Observation
Ventilation Building – South Portal	193+750	Minor dust accumulation: fan cleaning required
Ventilation Building – North Portal	203+880	GI sheets replaced; louver maintenance pending

Facility	Chainage (Km)	Condition / Observation
Truck Parking – South Portal	192+700 – 193+500	Drainage damaged; repair under process
Truck Parking – North Portal	205+100	ROW cleaning required; gratings damaged
Drainage System	Entire corridor	Desilting in progress

KF View:

Based on the site visit, Knight Frank is of the view that the road furniture and project facilities are functionally adequate but require targeted remedial and maintenance action. Most defects are localized and maintenance-driven; however, a small number of safety-critical items (non-working SOS LED indicators, open fire-hydrant cabinets, missing road studs and non-functional lighting) should be rectified immediately to maintain safety and serviceability

4.6 Assessment of Tunnels

The **Quazigund–Banihal Section of NH-44 (Km 189+350 to Km 205+618)** traverses the **Pir Pranjal range of the Middle Himalaya**, a geologically complex zone characterized by folded sedimentary formations of the **Murree and Siwalik Groups**. The alignment primarily passes through the **Middle Siwalik formation**, comprising **medium- to fine-grained sandstone, siltstone, shale, and claystone**, with interbedded argillaceous and arenaceous strata. The overburden varies significantly across the alignment due to steep topographical gradients and sharp elevation differences between the north (Quazigund) and south (Banihal) portals.

The project features **two major tunnels – Tunnel T1 and Tunnel T2**, forming the critical connectivity link between Banihal and Quazigund, thereby bypassing the earlier snow-prone Jawahar Tunnel stretch. Both tunnels are twin-tube structures designed to carry **unidirectional traffic**, with dedicated **ventilation, lighting, fire safety, and drainage systems** as per **MoRTH and IRC:SP:91-2010 guidelines**.

An overview of the tunnel details for the project is provided below.

Exhibit 31: Details of Tunnel

Tunnel No.	Section	Portal Location	Design Chainage (Km)	Length (m)
T-1 (Short Tunnel)	South Portal (Banihal)	193.792 – 194.488	193+792 to 194+488	**690 m**
T-2 (Main Tunnel)	South to North (Banihal–Quazigund)	195.425 – 203.865	195+425 to 203+865	**8,440 m**

- **Total Tunnel Length:** 9.13 km (comprising two twin-tube tunnels)
- **Tunnel Configuration:** 2 × 2 carriageways (unidirectional, twin-tube)
- **Cross Passages:** At 300 m intervals for emergency evacuation
- **Fire Hydrant System:** Provided along both tubes at 90 m intervals
- **Drainage Sumps and Pumps:** Installed at each portal for dewatering

4.6.1 Tunnel Drainage

During our site visit, two separated drainage systems are Observed in tunnel for carriageway (surface) water and groundwater.

a) SURFACE WATER DRAINAGE SYSTEM:

The surface water is collected at surface water manholes located inside the driving lane side with inlets at intervals of approx. 50-60 m.

b) GROUNDWATER WATER DRAINAGE SYSTEM

The groundwater is collected by the sidewall drainage and the sub-base drainage. The groundwater within the side wall drainage is discharged into the main ground water drainage at the maintenance niches at intervals of approx. 50-60 m.

4.6.2 Manhole

During the inspection, manholes were observed to be strategically positioned at regular intervals to allow for routine inspection of electrical cables and drainage systems. Various types of manholes are present within the tunnel, including:

- Surface Water Manholes
- Cable Recess Manholes
- Low Voltage (LV) Cable Manholes
- High Voltage (HV) Cable Manholes

The details of manholes and their location are

- **Driving Lane: HV cable manholes, Recess manholes, Surface drainage manholes**
- **Emergency Lane: LV cable manholes**

Based on the site visit, Knight Frank (KF) is of the view that the regularly provided surface drain boxes—typically spaced at 25–50 m—provide effective access to the principal drainage conduit running the length of the tunnel. At the time of inspection, the drain boxes showed no visible clogging, which indicates consistent and effective maintenance practices to keep the drainage system operating unobstructed.

4.6.3 Power Supply & Substations in Tunnels:

Each tunnel portal is served by a dedicated **33/11 kV substation**, ensuring reliable power supply for tunnel systems, control rooms and ancillary buildings. The substations are located at the **Banihal (South) and Quazigund (North) portals** and receive primary power from the local utility (JKPDD). Redundant feed arrangements (Circuit A and Circuit B) and a looped HT cable between portal ventilation buildings and the five in-tunnel substations provide continuity of supply along the tunnel. UPS units provide conditioned emergency power for TMS and essential lighting; diesel generators provide backup in the event of utility failure.

- **Substation–1 (South / Banihal):** receives 11 kV from JKPDD and feeds tunnel lighting, ventilation, TMS and fire systems.
- **Substation–2 (North / Quazigund):** independent 11 kV supply feeding ventilation fans, control room and firefighting systems.

Key power assets and configuration observed / provided:

- DG sets: **one 500 kVA (North) and one 600 kVA (South)** (capable of being synchronized to provide improved redundancy for critical loads).
- DG synchronizing panel with **3 × 1600 A ACBs**.
- Ventilation power panels with **3 × 1600 A ACBs** and **6 × 400 A MCCBs**.
- Four (4) distribution sub-panels (each with a **400 A MCCB** and multiple **100 A MCCBs**).
- **16 VFD panels** for jet-fan control.
- MV/LV transformers located inside the ventilation buildings and at five in-tunnel electrical cross-passage substations (ECP-01 to ECP-05), spaced at approximately **1,500 m** intervals.
- 11 kV MV cables routed in conduit beneath the tunnel carriageway; HT cables looped between all substations to enable cross-feeding.

Redundancy is provided by the dual-circuit arrangement: **each tunnel substation can be fed from either portal** (Circuit A via Tube-1 or Circuit B via Tube-2), allowing one portal to supply the combined emergency/UPS load in the event of a failure at the other portal. DGs are sized and configured principally to sustain **UPS and essential systems (TMS & emergency lighting)**; full-load support for all tunnel loads from DGs alone is limited and therefore utility redundancy and cable loop arrangements remain the primary resilience strategy.

All major subsystems and field equipment are integrated to the **Control Room** via server–client/Modbus interfaces. The control room features a widescreen video wall tied to operator workstations and a master–slave server configuration with a database management system for

logging events, alarms and maintenance records; a designated operator monitors and controls day-to-day operations.

4.6.4 Tunnel Ventilation System and Safety Features

The **ventilation system** in both tunnels is of the **longitudinal type**, designed to maintain acceptable air quality and visibility levels within the tubes. Each tunnel tube is fitted with **axial jet fans**, strategically placed to regulate air movement and remove exhaust gases. The system is integrated with **CO (Carbon Monoxide)** and **NO_2 (Nitrogen Dioxide)** sensors for real-time air quality monitoring and is controlled through a **centralized SCADA system** housed at the south portal control building.

- **Tunnel T1:** Equipped with **8 jet fans**, 4 CO sensors, and 4 NO_2 sensors.
- **Tunnel T2:** Equipped with **20 jet fans**, 10 CO sensors, and 10 NO_2 sensors.
- **Cross Passages:** Provided every 300 m for emergency evacuation and fire segregation.
- **Fire Safety:** Fire hydrant network with landing valves every 90 m; emergency fire extinguishers at both portals; CCTV and Public Address System integrated with ATMS.
- **Drainage:** Longitudinal drain with collection sumps and submersible pumps at each portal to remove seepage and stormwater.

Exhibit 32: Summary of Tunnel Systems

Component	Description / Quantity	Status
Number of Tunnels	2 (Twin-Tube Configuration)	Operational
Total Length	9.13 km	Functional
Jet Fans	28 Nos. (T1 – 8, T2 – 20)	Operational
CO & NO_2 Sensors	28 Nos. (distributed along tunnels)	Functional
Cross Passages	300 m interval	Operational
DG Sets	2 Nos. (500 KVA each) per portal	Working
Substations	2 Nos. (Banihal & Quazigund)	Active
Fire Hydrant Points	At 90 m intervals	Functional
Drainage Sumps	2 (one at each portal)	Operational

4.7 Assessment of Tunnel FIREFIGHTING SYSTEM

The firefighting system includes both portable fire extinguishers and a pressurized hydrant network. The tunnel hydrant system is specifically designed to deliver pressurized water through hydrant valves positioned within the tunnel. Two-way hydrants are installed in designated niches at **250-meter intervals**, while **isolation valves** are provided every **1,000 meters** to enable sectional control. The system utilizes **150 NB main header pipes** to distribute water throughout the tunnel. Fire pump houses are located at both the **north and south portals**, each responsible for covering half the tunnel length. The **pumping capacity** of the system is **144 m^3/h**.

Each pump house is equipped with:

- **One electric motor-driven horizontal centrifugal pump**
- **One standby diesel engine-driven horizontal centrifugal pump**, activated during power failure or main pump breakdown
- **One jockey pump** to maintain system pressure during minor leakages

At each portal, **fire water storage tanks** with an effective capacity of **144 cubic meters** are installed. These tanks are divided into compartments and fitted with essential monitoring equipment such as **level indicators** and **temperature transmitters** to ensure reliable operation.

4.7.1 List of Key Major Fire Fighting Equipment observed at site during visit

I. **Hydrant Main Pumps** – 2 units

II. **Hydrant Standby Pumps** – 2 units

III. **Jockey Pumps** – 2 units

IV. **Circulation Pumps** – 2 units

V. **HSD Tank** – 1 unit

Knight Frank review the Maintenance and Inspection Schedule adopted by company for the maintenance of Firefighting system.

The following schedule is followed by site team for the maintenance of firefighting system.

- **Fire Hydrants** – Inspected biannually to check for damages, leaks, and operational readiness
- **Hydrant Functional Tests** – Conducted twice a year or as needed to ensure proper valve function and system response
- **Fire Extinguishers** – Inspected twice a year by an authorized third-party agency
- **Fire Alarm System** – Checked periodically in accordance with the Standard Operating Procedure (SOP)
- **Sprinkler Systems** – Inspected as per the SOP or maintenance manual to ensure leak-free and unobstructed operation
- **Emergency Lighting** – Tested monthly or quarterly to ensure functionality during power outages
- **General Maintenance** – Carried out in line with the project-specific maintenance manual for all components

KF View:

Based on the site visit, Knight Frank is of the view that the firefighting installation (hydrants, pump houses, storage tanks and portable equipment) is fit for purpose and maintained to acceptable standards. KF advises targeted actions such as regular diesel engine exercise under load, documented monthly pump performance logs, and an annual full-system functional test to mitigate operational risk.

4.8 Assessment of TUNNEL VENTILATION SYSTEM

The **ventilation system** in both tunnels is of the **longitudinal type**, designed to maintain acceptable air quality and visibility levels within the tubes. Each tunnel tube is fitted with **axial jet fans**, strategically placed to regulate air movement and remove exhaust gases. The system is integrated with **CO (Carbon Monoxide)** and **NO_2 (Nitrogen Dioxide)** sensors for real-time air quality monitoring and is controlled through a **centralized SCADA system** housed at the south portal control building.

Knight Frank team reviewed the tunnel ventilation system adopted for the project which is as follows

- The ventilation system designed with the heat release rate of 50MW consists of two tubes with unidirectional traffic flow.
- The first tube, known as the Northbound tube, leads traffic in the northern direction towards Srinagar,
- Second tube, called the Southbound tube, leads traffic in the southern direction towards Banihal
- There are two ventilation stations each at one portal end with total of eight fans (four at each end) located at the ends of these ducts. Half of both the tubes are catered by one fan station from North & South bound portals. The ventilation duct of each tube is separated by a remotely operated fire damper.
- The tunnels are also featured by booster jet fan (in group of two) which are strategically placed in the niches on side wall of the tunnel at 100 m spacing.

I. **Northbound Tube**

- Number of Jet Fans: 60
- Number of Fan Groups: 30
- Fan Diameter: 1000 mm
- Power Rating (each): 30 kW

II. Southbound Tube

- Number of Jet Fans: 66
- Number of Fan Groups: 33
- Fan Diameter: 1000 mm

- Power Rating (each): 30 kW

KF View:

Both the Ventilation Stations house a total of eight axial fans, All the axial fans are reversible

In emergency situations, the fans operate based on demand, with their speed and operation directly proportional to the fire's location within the tunnel.

4.8.1 List of Major Equipment for Tunnel Ventilation System:

S. No.	Item Description	Qty (nos.)	Equipment Design Life
1	Axial Fan135 m^3/s @ 3381 Pa (incl. transition piece) **Motor**: 1500 kW, 807 A, 1500 rpm	8	30 Years
2	VFD Panel- VFD Module: 400V, 880A & 500 kW- Main ACB: 690V & 1250A	8	15 Years
3	Jet Fan26.3 m^3/s, 1004 N (incl. 2 silencers & 1 fan bracket) **Motor**: 130 kW, 52.6 A, 1475 rpm	126	20 Years

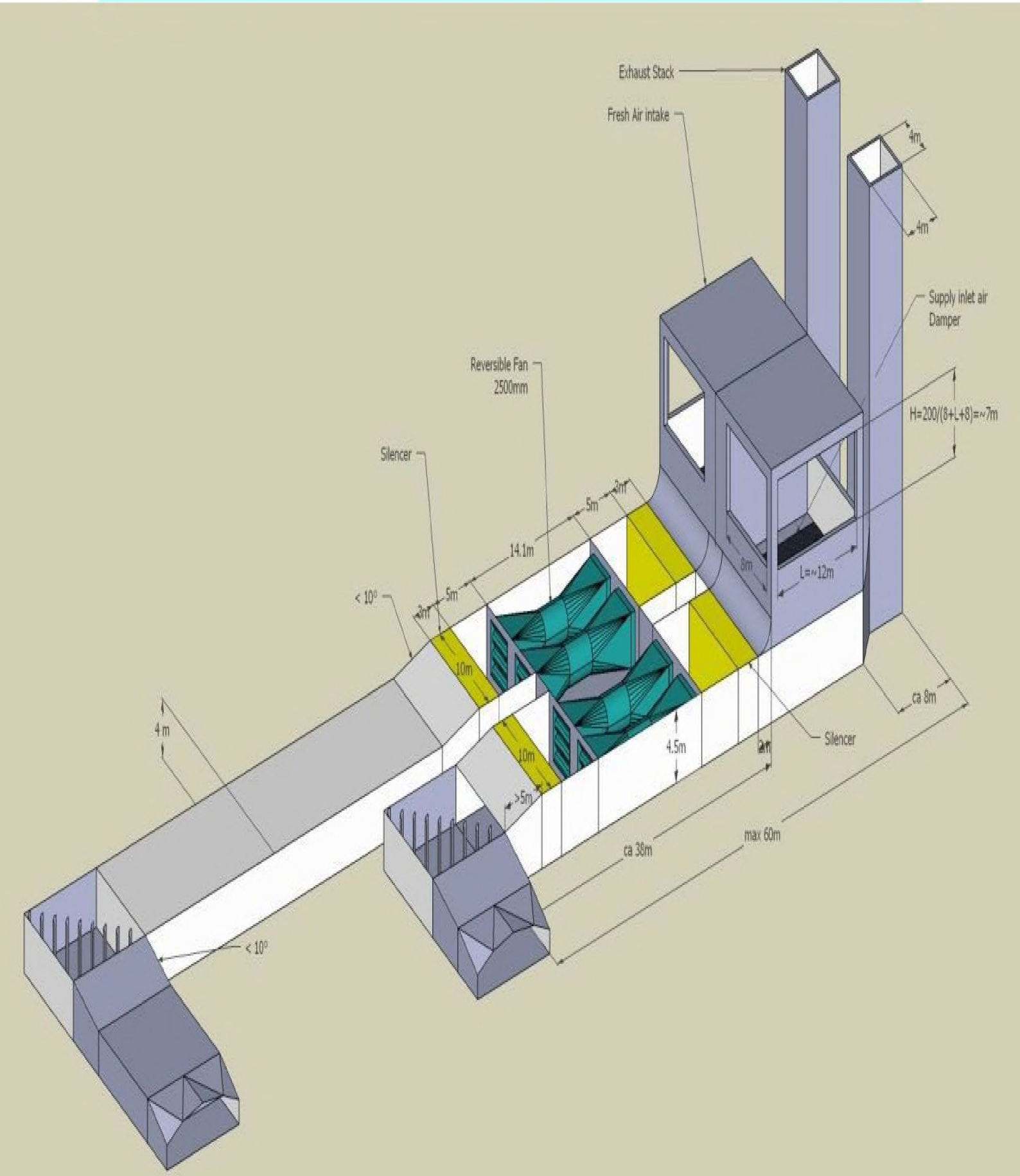
List of Maintenance Check & Frequency

Activity	Brief Description
Inspection	Check fans, dampers, systems for wear, noise, vibration.
Cleaning	Remove dust/debris to maintain airflow and efficiency.
Equipment Testing	Test fans/dampers; full tests post-fire incidents.
Monitoring Systems	Track air quality; adjust ventilation in real time.
Emergency Protocols	Define and train for emergency system use.
Fire Doors	Check closure, seals, and integrity.
Cross Pressure Test	Routine checks to detect air leakages.

KF View:

Based on the site visit, Knight Frank is of the view that the ventilation arrangement (two portal fan stations with 8 axial fans plus 126 jet fans and remotely-operated dampers) is fit for purpose and operates on demand as intended. To mitigate operational risk KF advises targeted actions: scheduled VFD and motor insulation

tests, vibration and bearing monitoring, regular jet-fan anchorage and silencer inspections, calibration of air-quality/smoke sensors, cross-pressure validation and annual full-load/realistic fire drills with control-system verification.



4.9 Assessment of INTEGRATED TUNNEL MANAGEMENT SYSTEM (ITMS)

Knight Frank team reviewed the Integrated Tunnel Management system adopted for the project which is as follows

- The ITMS network is composed of the optical fiber infrastructure installed inside the tunnels and the Ethernet switching equipment that provide the transmission backbone.
- The ITMS network transmission system will interface with the following systems to provide IP and ethernet services.
  - Emergency call station
  - CCTV Surveillance system & AID
  - Linear heat sensing
  - Traffic control system
  - Ventilation system
  - Tunnel lighting system
  - PLC & Power supply
  - Toll collections

KF View:

Knight Frank is in view that implementation of an Integrated Tunnel Management System (ITMS) leveraging fiber optic and Ethernet networks integrates multiple critical systems—CCTV, emergency call stations, ventilation, lighting, and traffic control—ensuring enhanced tunnel surveillance, control, and incident response capabilities.

4.10 Assessment of Toll Plaza

Two toll plaza complexes are located near **Lamber (South)** and **Ujroo (North)**, housing toll booths, administrative offices, control rooms, electrical panels, and washrooms. Both complexes are structurally stable and operational, though minor civil maintenance and electrical works were observed in progress.

Exhibit 33 Details of Toll Plaza

S.no	Toll Plaza Details		
1	Chainage (Km)	193+760	203+880
2	Toll plaza name	Lamber Toll Plaza	Urjoo Toll Plaza
3	No of lanes	6 lanes (3 each direction) – ETC & Manual mix	6 lanes (3 each direction) – ETC & Manual mix
4	Admin Building	Yes	Yes
5	Static Weigh Bridges (SWB)	2	2
6	Toilets	2	2
7	High mast lights	4 No's	4 No's
8	Toll Booths	12 No's	12 Nos.
9	Ambulance	2 Nos.	
10	Crane	2 No's	
11	Highway Patrolling Vehicles	2 No's	
12	Hybrid	10 No's	
13	Medical-Aid Post	Yes	Yes
14	Canteen	Yes	Yes
15	Control & Server Room	Yes	Yes
16	Firefighting System	Yes	Yes
17	Separator width at Toll booths (m)	1.8	1.8
18	Toll lanes width (m)	3.5	3.5
19	Extra Wide Lane width (m)	5.5	5.5

KF View:

Knight Frank reviewed the two toll plazas located at Km 193+760 (Lamber Toll Plaza) and Km 203+880 (Urjoo Toll Plaza) during the site visit, in line with the provisions of the Concession Agreement. Both plazas are equipped with 5 + 1 lanes

in each direction, operating under a Hybrid Electronic Toll Collection (ETC) system comprising both manual and electronic lanes.

Each toll plaza is provided with key facilities such as canopy and high mast lighting, administrative and control buildings, toilet blocks, static weighbridges, tow-away cranes, highway patrolling vehicles, paramedical booths, ambulance services, canteen, and firefighting systems.

Based on the inspection, Knight Frank is of the view that both Lamber and Urjoo Toll Plazas are in good operational condition, with all essential systems functional and routine maintenance being carried out satisfactorily.

4.11 Assessment of Toll Management System (TMS)

Knight Frank conducted a review of the **Toll Management System (TMS)**, including the **Electronic Toll Collection (ETC)**, **Weigh-in-Motion (WIM)** systems, and associated control mechanisms along the **Quazigund–Banihal Section of NH-44 (Km 189+350 to Km 205+618)** during the **site visit.**

The assessment was undertaken through field inspections, system demonstrations, and a review of documents and operational data provided by the Concessionaire. The TMS has been established to ensure **efficient, transparent, and automated toll collection**, integrating ETC, video surveillance, data logging, and centralized monitoring through control rooms at the **Lamber (Km 193+760)** and **Ujroo (Km 203+880)** toll plazas.

The system operates under a **Hybrid ETC framework**, equipped with **automatic vehicle classifiers, smart card readers, loop detectors, WIM sensors, automatic barriers, and CCTV cameras**. All systems are supported by **UPS and DG power backups** to maintain uninterrupted operation. Based on the inspection, the **TMS, ETC, and WIM systems were found to be in good working condition**, with only minor issues related to periodic calibration and sensor cleaning. Overall, the TMS is performing satisfactorily, ensuring smooth toll operations, reduced congestion, and improved transparency across the corridor.

4.11.1 Toll System Maintenance

The **Toll Management System (TMS)** for the **Quazigund–Banihal Section of NH-44** was installed by **M/s Techsture Technologies India Pvt. Ltd., Ahmedabad** and has been in continuous operation since its commissioning in **2017**. The **Concessionaire, M/s Quazigund Expressway Private Limited (QEPL),** has continued to engage the same system integrator under an **Annual Maintenance Contract (AMC)** for the operation and maintenance of all **TMS components**, including the **Hybrid Electronic Toll Collection (ETC) system** installed across all toll lanes at the **Lamber (Km 193+760)** and **Ujroo (Km 203+880)** Toll Plazas. The integrator remains responsible for the **upkeep, calibration, and servicing** of all tolling hardware and software systems to ensure uninterrupted functionality and compliance with NHAI standards.

4.11.2 Advanced Traffic Management System (TMS)

The ATMS installed in the tunnels includes **CCTV cameras, jet fans, ventilation controllers, and SOS panels**. Most systems are working, though several **CCTV cameras, jet fans, and LED indicators** require cleaning and calibration. The control rooms are functional, and operators were present during inspection.

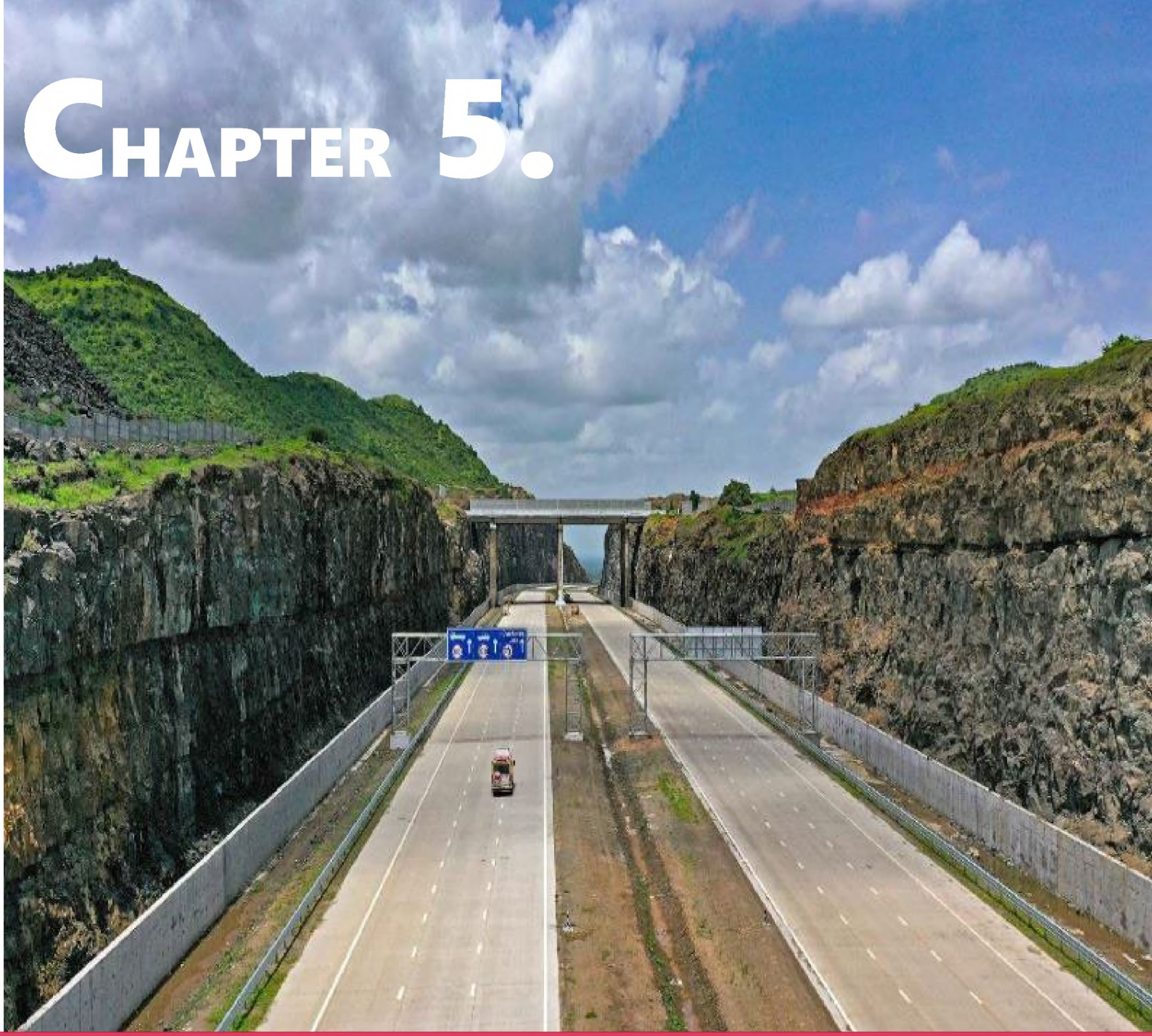
☛ Knight Frank reviewed the **Toll Management System (TMS)** installed along the **Quazigund–Banihal Section of NH-44 (Km 189+350 to Km 205+618)**, including **Electronic Toll Collection (ETC)** and **Weigh-in-Motion (WIM)** systems, through field inspections, system demonstrations, and review of operational records provided by the Concessionaire. The system operates under a **Hybrid ETC framework**, integrating **AVC, WIM, CCTV surveillance, and data logging** for centralized control at **Lamber (Km 193+760)** and **Ujroo (Km 203+880)** Toll Plazas.

The toll operations are being managed through a **third-party agency**, with the TMS presently **functional but operating with certain technical limitations**. The **Automatic Vehicle Classification (AVC)** system is profiler-based with local data storage; however, it does not transmit data independently when the lane controller is taken offline for maintenance. It was also observed that the **Lane Status Display Unit (LSDU)**—a critical component for real-time hardware monitoring and alert generation—has **not been installed**, leading to manual communication of equipment failures by toll operators or IT staff during inspections.

At present, the TMS functions primarily as a **ticketing-based system**, with toll transaction validation dependent on **manual inputs** from toll collectors. While overall tolling operations remain stable with no reported disruptions to revenue realization, **integration between AVC classification and Fastag validation** can be strengthened to improve transaction accuracy, transparency, and system reliability.

Based on the site inspection, Knight Frank is of the view that while the TMS and toll collection process are operational and performing satisfactorily, enhancements in real-time monitoring, system alerting, and data integration are recommended to ensure improved efficiency and long-term reliability.

Chapter 5.



Chapter 5. PAVEMENT INVESTIGATION & ASSESSMENT

5.1 General

The life of the Pavement has a co-relation with both its structural as well as Functional Condition. Inspecting and tracking of pavement condition, scheduling maintenance, and treating distress can have serious ramifications impinging on safety of road users and enhancing functional efficiency in end use of the Facility. It is therefore essential to carry out the assessment of the condition of the pavement on a given date taking into cognizance a variety of data to arrive at well-considered decisions and drawing up of the maintenance strategy and taking appropriate course of action to apply funds and resources in optimizing the desired levels of operations on the road assets. Condition data can include factors like roughness, specific distresses, rut depth, friction, and structural health.

Once measurements of road condition are available, they are interpreted in such a way that allows the decision-making process to occur in a logical fashion. This might involve converting multiple physical parameters into a single index, allowing different sections of a road network to be directly compared against one another etc.

Pavement performance under prevailing as well as projected traffic and environmental conditions is crucial as it has a direct bearing on the economic returns from the project developments. While an under-designed pavement will fail prematurely, imposing undesirable Cost Over runs on the Project. It is therefore necessary to ensure the pavement layer thicknesses; configurations and materials are adequately designed and require minimal maintenance under the anticipated traffic loading throughout the life cycle of the project.

To achieve this objective and thereby to predict the performance of any pavement structure, it is necessary to analyze material characteristics, traffic condition, present physical condition of the pavement layers, local environment, and its impacts. In addition, it is also necessary to presume what level of performance and what pavement conditions will be considered satisfactory to estimate the future operation and maintenance cost of the road.

Due to the variety of variables involved, it is essential to determine the exact level of pavement performance through the project life. But, based on the assessment of present condition of pavement, analysis of available survey data, traffic projections and estimations regarding the pavement life, future maintenance requirements can be estimated.

This part of the report deals with the Review of Pavement Design and provides insights on Design Life of the Pavement, Crust thickness, History of Overlays over the Existing Pavement Etc. for sound pavement performance through the project life.

The pavement design for the Quazigund–Banihal Section of NH-44 (Km 189.350 to Km 204.700) has been carried out in accordance with the guidelines laid down in **IRC:37-2012**, **IRC:81-1997**, and **MoRTH Specifications (5th Revision)**. The design accounts for the heavy commercial vehicle traffic, high axle loading, subgrade strength, and environmental conditions prevalent in the mountainous terrain of Jammu & Kashmir.

5.2 Objectives

The project road passes through a high-altitude hilly region of the Pir Panjal range, characterized by steep gradients, low temperatures, and substantial rainfall and snowfall. The alignment includes open road sections, tunnels, viaducts, and approaches requiring both **flexible and rigid pavement designs**.

The objective of the pavement design is to ensure durability, structural strength, and riding comfort for the design life of the pavement, while minimizing maintenance requirements under varying climatic and loading conditions. The design life adopted for flexible pavement is **15 years**, and for rigid pavement (tunnel and toll plaza sections) is **30 years**.

5.3 Review of Pavement Design

A. Design CBR

As per the Pavement design report, the subgrade CBR of **8%** was adopted for all flexible pavement designs. This value was derived from field investigations and laboratory tests and is consistent with IRC 37:2012 requirements. The CBR has been used to compute the resilient modulus of subgrade and thereby establish the required layer thicknesses.

B. Design MSA

Traffic projections were computed using commercial vehicle counts, axle load data, VDF, lane and directional distribution factors. The **Appendix-1 MSA Report** confirmed the following:

- COD 2017 – 2.80 million standard axles (base year traffic).
- 2026 (10 years) – 40 MSA,
- 2031 (15 years) – 70 MSA,
- 2036 (20 years) – 107 MSA

This formed the basis for flexible pavement thickness design and for extrapolating rigid pavement requirements.

C. Pavement Crust of Main Carriageway

The adopted pavement composition for the main carriageway, derived from IRC:37-2012 guidelines and IITPAVE analysis.

The crust thicknesses are as follows:

Exhibit 34 Adopted Composition – Main Carriageway:

Layer	Thickness	Remarks
Bituminous Concrete (BC)	40 mm	Surface Course, VG_30 grade bitumen
Dense Bituminous Macadam (DBM)	110 mm	Binder Course
Wet Mix Macadam (WMM)	250 mm	Base Layer
Granular Sub-Base (GSB)	200 mm	Sub-Base & Drainage Layer
Total Thickness	**600 mm**	**Adequate for 70 MSA (15 year)**

Paved shoulders are to be constructed with the same crust as the main carriageway, as per **IRC SP:84-2014 Clause 5.10**

D. For Service Road/Slip Road

The service road pavement design was carried out as per IRC SP:84-2014 requirements, with a design traffic of 10 MSA and subgrade CBR = 8%.

The crust thicknesses are as follows:

Exhibit 35 Adopted Composition – Service Roads:

Layer	Thickness	Remarks
Bituminous Concrete (BC)	40 mm	Surface Course
Dense Bituminous Macadam (DBM)	60 mm	Binder Course
Wet Mix Macadam (WMM)	250 mm	Base Layer
Granular Sub-Base (GSB)	200 mm	Sub-Base
Total Thickness	**550 mm**	**Adequate for 10 MSA (10 year)**

This configuration is economical, structurally adequate, and suitable for expected traffic demand on service roads.

E. Rigid Pavement – Tunnel and Toll Plaza

Rigid pavements are proposed for the tunnel and toll plaza areas, designed as per **IRC:58-2015** for a **30-year design life**. These sections are expected to carry cumulative loading equivalent to >100 MSA.

The crust thicknesses are as follows:

Exhibit 36 Adopted Composition - Tunnel and Toll Plaza:

Layer	Thickness	Remarks
Pavement Quality Concrete (PQC)	40 mm	Designed with dowel/tie bars, flexural strength governed by IRC:58
Dry Lean Concrete (DLC)	60 mm	Minimum cement content, strength as per IRC SP:49; extended 0.5 m beyond PQC
Granular Sub-Base (GSB – drainage)	250 mm	Designed with permeability ≥ 20 m/day
Total Thickness	**550 mm**	**Adequate for 30 years (>100 MSA cumulative traffic)**

F. Overlay Design

At the stage, **no overlay has been prescribed**, as the project involves the provision of **entirely new pavements**. The need for **future overlays** will be assessed based on **deflection surveys**, **roughness measurements**, and **distress mapping** conducted during the pavement's service life. Based on current projections, it is anticipated that overlays may be required after approximately **10 to 12 years** of service, subject to the **actual performance** of the pavement over time.

5.4 Test Pits & Subgrade Investigations

No information related to test pits or subgrade investigations is provided

5.5 Network Survey Vehicles (NSV) Survey

No information related to test pits or subgrade investigations is provided

5.6 FALLING WEIGHT DEFLECTOMETER (FWD) SURVEY

5.6.1 Pavement Evaluation by Falling Weight Deflectometer (FWD) Technique

a) Introduction:

The project stretch on NH-44 (old NH-1A), from **Km 189+350 to Km 204+700**, in Jammu & Kashmir, was evaluated using the Falling Weight Deflectometer (FWD) technique in June 2023. The study aimed to assess the **structural strength, residual life, and overlay requirements** for both flexible and rigid pavement sections in accordance with **IRC:115-2014** and **IRC:37-2018** guidelines.

b) Project Road

The evaluated corridor lies in Pulwama district, beginning near **Banihal (Km 189+350)** and terminating near **Km 204+700**. The stretch includes a **short single-tube tunnel (Km 193+830 to Km 194+540)** and a **long double-tube tunnel (Km 194+700 to Km 204+000)**. The alignment passes through hilly terrain with heavy traffic loading and experiences harsh climatic conditions including severe winters.

c) Pavement Condition

The pavement evaluation revealed distinct characteristics across flexible and rigid pavement sections. **Flexible pavement sections** comprised **bituminous layers over granular base and sub-base**, with **variable field conditions**. These sections exhibited typical **distresses such as rutting, cracking, and ravelling**. In contrast, **rigid pavement sections** featured **PQC slabs** at selected stretches, particularly near **tunnel approaches**, where **Load Transfer Efficiency (LTE)** and **flexural strength assessments** were conducted to evaluate structural performance. Overall, the **surface condition ranged from fair to good**, although certain stretches with **low residual life** were identified, necessitating **immediate overlay interventions** to maintain serviceability.

d) Falling Weight Deflectometer

In order to evaluate the structural strength of the existing flexible pavement, Falling Weight Deflectometer (FWD) survey has been carried out along the project road as per IRC: 115-2014 guidelines on the Main carriageway. The **equipment and procedure** for the pavement evaluation involved conducting a **Falling Weight Deflectometer (FWD) survey** using impulse loading equivalent to a **40 kN axle load**, simulating an **80 kN standard axle**. Deflections were recorded at

offsets of **0, 200, 300, 450, 600, 900, and 1200 mm**, with tests spaced at **250 to 500 meters** along both the **left-hand side (LHS)** and **right-hand side (RHS)** carriageways. To ensure accuracy, **temperature corrections** (standardized to **35°C**) and **seasonal variation adjustments** for **monsoon conditions** were applied.

For analysis, **KGPBACK** software was used to **back-calculate layer moduli**, while **IITPAVE** facilitated **fatigue and rutting life analysis** as well as **overlay design**.

5.6.1.1 FWD Analysis

i. Flexible Pavement Analysis

- **Back-calculated Moduli (15th Percentile):**
  - **Bituminous Layer:** 1644 – 2807 MPa (LHS), 1474 – 2234 MPa (RHS).
  - **Granular Layer:** 74 – 195 MPa (LHS), 72 – 253 MPa (RHS).
  - **Subgrade:** Stabilized at ~100 MPa (standardized).
- **Remaining Life & Overlay Requirement:**
  - **Design traffic considered:** 22 MSA.
  - **LHS:**
    - Section Km 191+200–193+500: Remaining life only **2.6–3 MSA**, requiring **80 mm overlay (30 mm BC + 50 mm DBM)**.
    - Section Km 204+370–204+700: Remaining life ~**4 MSA**, requiring **70 mm overlay (30 mm BC + 50 mm DBM)**.
    - Other stretches showed adequate life with no immediate overlay required.
  - **RHS:**
    - Section Km 193+800–191+700: Remaining life only **2 MSA**, requiring **80 mm overlay (30 mm BC + 50 mm DBM)**.
    - Section Km 191+700–189+350: Remaining life ~**12 MSA**, requiring **40 mm BC overlay**.
    - Other sections have sufficient rutting and fatigue life without overlay.

ii. Rigid Pavement Analysis

- **Methodology:**
  - Analysis followed **IRC:117-2014** using deflection basin parameters, load transfer efficiency (LTE), modulus of subgrade reaction, and flexural strength of concrete.
  - Fatigue behaviour checked through stress ratio (SR) models.

5.7 Structural Investigations

a. Introduction:

The MBIU survey was carried out in December 2023 to assess the structural and functional condition of bridges and viaducts along the Quazigund–Banihal section of NH-44. The objective was to record inventory details, identify maintenance requirements, and provide a comprehensive health check of the existing structures in service

b. Project Scope:

The inspected stretch covers NH-44 from Km 189+350 to Km 204+700. The inventory includes:

Total structures inspected: 14

Breakdown: 2 Major Bridges, 8 Minor Bridges, 2 RUBs (Road Under Bridges), and 2 Viaducts

Exhibit 37 List of Bridge Inspected

S. No	Chainage	Vent Size	Length of Bridge (m)	Type of Bridge
1	189+435 (Left)	3x36.63m	110.00	Major Bridge
2	189+435 (Right)	3x36.63m	110.00	Major Bridge
3	189+852 (Left)	1x22.654m	22.654	Minor Bridge
4	189+852 (Right)	1x22.654m	22.654	Minor Bridge
5	190+137	1x8.84m	8.84	Minor Bridge
6	190+318 (Left)	1x25m	25.00	Minor Bridge
7	190+318 (Right)	1x25m	25.00	Minor Bridge
8	191+097 (Left)	2x30m + 23.7m	83.70	RUB
9	191+097 (Right)	2x30m + 23.7m	83.70	RUB
10	191+427 (Left)	1x10.82m	10.82	Minor Bridge
11	191+427 (Right)	1x10.82m	10.82	Minor Bridge
12	193+395	1x9.2m	9.20	Minor Bridge
13	194+236 (Left)	38x36.60m	1390.80	Viaduct
14	194+236 (Right)	39x36.60m	1427.40	Viaduct

c. General Condition of Structure:

- Most structures are **serviceable** but exhibit early signs of distress.
- Common issues include:

- **Leakage through expansion joints** (observed at multiple bridges).
- **Clogged drainage spouts** across several structures.
- **Hairline cracks** on abutments, retaining walls, and underside decks (notably at Km 189+852).
- **Honeycombing and exposed reinforcement** near abutments and piers (e.g., A2 at Km 189+852).
- **Rusting in rivets and steel components** on viaduct piers (Km 194+236).
- **Debris accumulation** under and around bridges.

d. General Condition of Structure:

Exhibit 38 Inspection Reports of Bridges NH-44, Section: Banihal to Quazigund

S. No.	Location of Bridge (Ch)	Maintenance Requirements Observed During Inspection
1	189+435 (Left)	1. Leakage of Water through Expansion Joints. Needs to be repaired. 2. Clogging in Drainage Spouts, needs Cleaning.
2	189+435 (Right)	1. Leakage of Water through Expansion Joints Need to be repaired. 2. Clogging in Drainage Spouts, need Cleaning. 3. Slight settlement of 1st pier observed towards Quazigund, needs detailed inspection.
3	189+852 (Left)	1. Clogging in Drainage Spouts, need Cleaning. 2. Hair cracks were observed on the abutment surface & deck surface. 3. Honey combing & exposed reinforcement observed near A2 LHS, need to be repaired.
4	189+852 (Right)	1. Clogging in Drainage Spouts, need Cleaning. 2. Irregular surface of footpath, need proper plastering. 3. Hair cracks were observed on the surface of the deck underside & Abutment. 4. Steel bars were coming out of the retaining wall, need to be cut.
5	190+137	1. Bridge is in Good Condition.
6	190+318 (Left)	1. Clogging in Drainage Spouts, need Cleaning. 2. Debris observed in Expansion joints, need to be cleaned.
7	190+318 (Right)	1. Clogging in Drainage Spouts, need Cleaning.

S. No.	Location of Bridge (Ch)	Maintenance Requirements Observed During Inspection
8	191+097 (Left)	1. Bridge is in Good Condition. 2. Watermarks & leakage of water observed from the joints, need to be repaired. 3. The cover on the drainage in the footpath is damaged at a few locations, need to be replaced.
9	191+097 (Right)	1. Leakage of water from the joints was observed and rubber between the joints had also come out. Needs to be repaired. 2. The cover on the drainage in the footpath is damaged at few locations, need to be replaced.
10	191+427 (Left)	1. Clogging in Drainage Spouts, need Cleaning. 2. Debris under the bridge, require cleaning.
11	191+427 (Right)	1. Clogging in Drainage Spouts, need Cleaning. 2. Stone particles & Debris on footpath, need to be cleaned. 3. Steel reinforcement coming out of the parapet wall, need repairing.
12	193+395	1. Bridge is in Good Condition. 2. Stones & debris observed under the bridge, need cleaning. 3. Vegetation growth & accumulation of debris observed, require cleaning.
13	194+236 (Left)	1. Vertical cracks observed in the pier (4th & 5th). 2. Rusting started in rivets, need painting.
14	194+236 (Right)	1. Debris observed in the expansion joint, need to be cleaned. 2. Clogging in the Drainage spout, need to be cleaned. 3. Vertical cracks observed in pier no. 4th & 5th. 4. Steel beam in the expansion joints is damaged at the 17th expansion joint, needs repairing. 5. The Drainage spout at some location placed above deck level, need to be aligned properly. 6. Near 13th Expansion joints crash barrier is slightly damaged. 7. Horizontal surface cracks observed on 10th pier, require repair. 8. Rusting started in rivets, need painting.

e. <u>Repair and Maintenance Requirements:</u>

- **Expansion joints:** Repair of leakage and damaged sealing material.
- **Drainage spouts:** Cleaning, de-clogging, and realignment.
- **Cracks**: Repair of hairline and vertical cracks in abutments, piers, and decks with epoxy grouting/patching.
- **Concrete defects:** Honeycombing and exposed reinforcement require patch repair and protective coating.
- **Corrosion:** Application of anti-corrosive paint to rusted steel rivets and beams.
- **Structural safety:** Detailed inspection of the settled pier at Km 189+435 (RHS).
- **Debris removal:** Cleaning of accumulated debris beneath structures

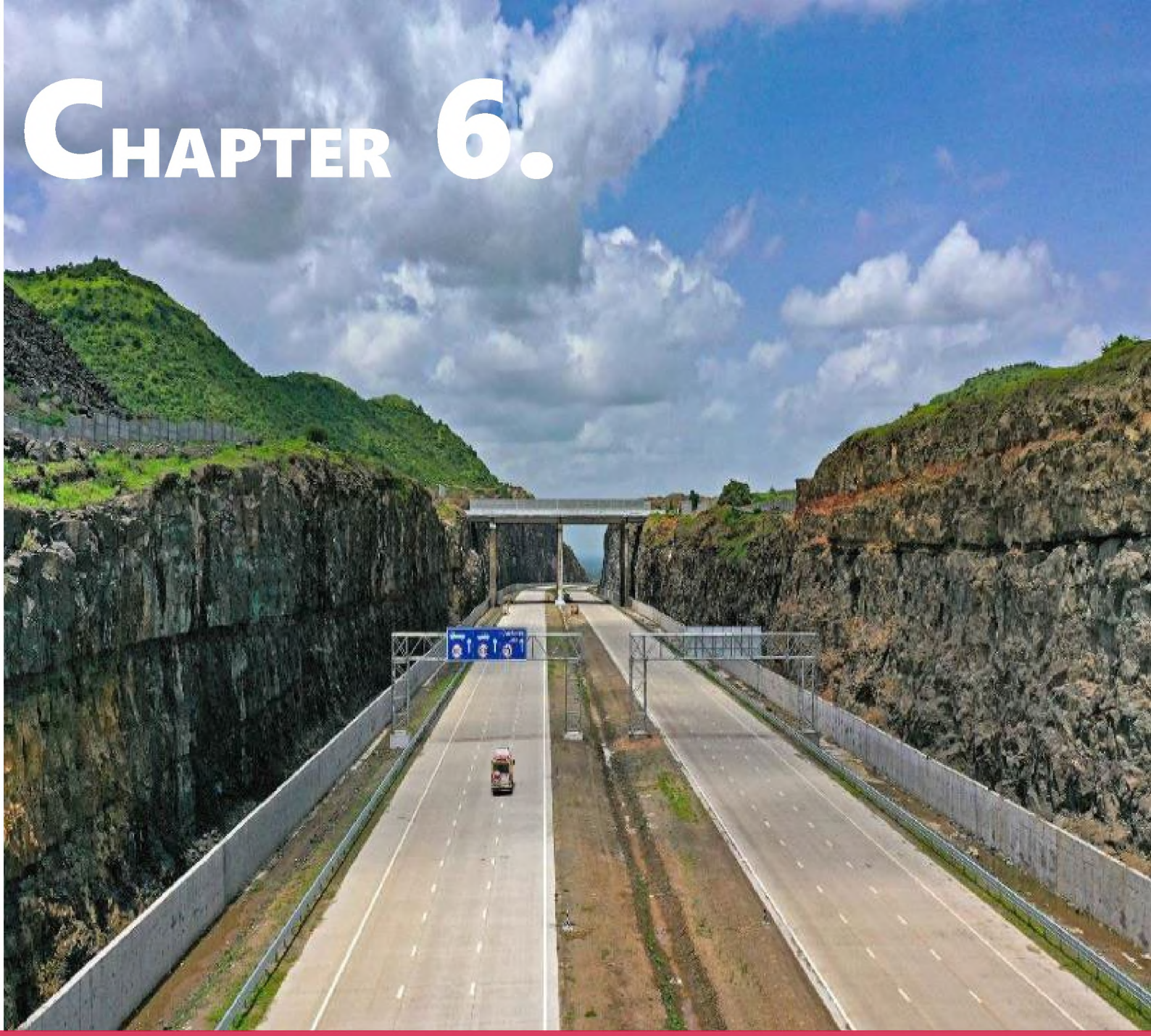
The MBIU survey indicates that the bridge and viaduct structures along the Quazigund–Banihal stretch are **generally in a functional condition** but show **localised defects** requiring attention. Timely intervention, particularly on drainage systems, expansion joints, and structural cracks, is essential to prevent further deterioration.

The **viaducts at Km 194+236** and **major bridge at Km 189+435** are critical locations requiring priority repair due to structural cracks, rusting, and settlement. Regular monitoring and preventive maintenance are recommended across the corridor.

5.8 Major Maintenance of Pavement

The periodic maintenance strategy has been developed considering the service life of flexible and rigid pavements, climatic conditions of the project corridor, and expected traffic loading. The project corridor (Km 189.350 – Km 204.700) includes both **flexible pavements** on the main carriageway and service roads, and **rigid pavements** at the toll plaza, tunnel sections, and lay-bys. Maintenance interventions are planned in two distinct **Maintenance Management (MM) Cycles**, ensuring the pavement network continues to perform within the serviceability criteria prescribed

Based on above test results, Concessionaire prepared Strategy, Major Maintenance details discussed at **Chapter 6**



Chapter 6.

Cost Estimate

Chapter 6. COST ESTIMATES

6.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories –

I. Routine O&M Cost
II. Major Maintenance Cost
III. Periodic Replacement of TMS/ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and Escalation.

6.2 Rate Assumption

The cost estimates are based on the following assumptions:

Following assumptions are considered for unit rates of various items while estimating the cost –

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per the MoRTH Standard data book. The input rates for MoRTH standard data book were adopted as below
   a) **Manpower and labor** – As per applicable minimum wages published by Ministry of Labour & Employment, Government of India
   b) **Bitumen** – Bitumen rates are considered to be sourced from IOCL Panipat Refinery. The distance (to- from) from the midpoint of Project Highway is considered as 550 kms. VG-30 and VG-40 grades of bitumen are considered in our cost estimate.

☛ ***Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.***

Therefore, Bitumen prices are considered as per the client's forecast. Current published of bitumen are considered for unit rates calculation for FY24 and FY25. Average 10 years of price of bitumen are considered for unit rates calculation for FY26 and onwards, since bitumen prices have been range bound over the last five-six years. Following rates of bitumen are considered

Exhibit 39 Bitumen Rates (in INR/MT) - Ex-MI supply excluding discount and GST

Refineries	Grade	Rate for FY24 and FY25	Rate for FY26 onwards
IOC Mathura	VG10	45522	33955
IOC Mathura	VG30	46322	34552
IOC Mathura	VG40	48652	36290
IOC Haldia	VG10	45922	33258
IOC Haldia	VG30	46722	33838
IOC Haldia	VG40	49052	35525
IOC Barauni	VG10	46952	34004
IOC Barauni	VG30	47752	34584
IOC Barauni	VG40	50082	36271
CPC Chennai	VG10	44922	33541
CPC Chennai	VG30	45722	34138
CPC Chennai	VG40	48052	35878
IOCL Panipat	**VG10**	**45,830**	**33,915**
IOCL Panipat	**VG30**	**46,630**	**34,506**
IOCL Panipat	**VG40**	**48,960**	**36,230**

c) **Sand and Aggregate** are sourced from the nearest quarry located on project highway.

d) **Cement** is procured from the nearest local market.

e) **Machinery Hire charges** of Plant and Machinery for various items of works have been considered from J&K SOR 2022 and some rates are considered from MORT&H Standard Data Book 2001-2002. Escalation has been considered on MORT&H Plant and Machinery rates to arrive at the present rates of 2024-25.

f) **Material Rates** are obtained from SOR of J&K, PWD 2021-22.

g) Some of the rates are based on Consultant's experience on similar ongoing projects in adjacent locations.

h) **Overheads and profits** have been considered based on MORT&H Standard Data Book. Applicable taxes have been considered in the Rate Analysis.

Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines

Exhibit 40 Adopted Unit Rates for Key items

S.nos	Items Description	Unit	Rates (₹)
1	Dense Bituminous Macadam	Cum	9,731
2	Bituminous Concrete	Cum	11,274
3	Slab replacement cost (PQC)-MCW	Cum	7,949
4	Joint Sealant Replacement/Repairs	Rm	191
5	PQC Taxing	Sqm	185
6	Micro surfacing	Sqm	220
7	Milling	Sqm	107
8	Raising of Road Kerb	m	409
9	Road Marking	sqm	518
10	Kerb and Crash Barrier Painting	sqm	116
11	Tack Coat	Sqm	14
12	Manhole	Nos.	26,695

- *The above unit rates are excluding GST.
- The unit rate of each item includes 10 % overhead for road works, 15 % overhead for structure works and 10 % contractor's profit.
- Details of components considered in rate analysis & quantification are presented in below **Exhibit 41**

Exhibit 41 Major Components Detail for Key items

Sr. No.	Particular	Source	Reference
1	Rate Analysis	MORTH	Standard Data Books published by MORTH
2	**Material**		
A	Aggregate Rates	Nearby Project Corridor	As per Local Market Rates
B	ATMS, TMS cost		As per Vendor offer.
C	Cement	As provided in Local market	As per Local Market Rates
3	Equipment hire cost	Nearby project location	Standard Data Books published by MORTH
4	Labour	As per minimum wages	As per minimum wages

6.3 Routine Operation & Maintenance (O& M) Cost

Operations and Routine Maintenance work required as per the CA. During the concession period, the Concessionaire is fully responsible for Operation & Maintenance of Project Highway. Schedule K elaborates the requirements of various service factor desirable level and acceptable level during O & M period along with time if any parameter level of service beyond acceptable limit.

The CA Stipulates that the Concessionaire shall Operate and Maintain the Project Highway in accordance with Article 17 – Operation & Maintenance & Schedule –K Maintenance Requirements of Concession Agreement. The obligation of Concessionaire as per Article 17 is as follows:

- permitting safe, smooth, and uninterrupted flow of traffic on the Project Highway during normal operating conditions; collecting and appropriating the Fee.
- minimizing disruption to traffic in the event of accidents or other incidents affecting the safety and use of the Project Highway by providing a rapid and effective response and maintaining liaison with the emergency services of the State.
- carrying out periodic preventive maintenance of the Project Highway.
- undertaking routine maintenance including prompt repairs too, cracks, joints, drains, embankments, structures, pavement markings, lighting, road signs and other traffic control devices.
- undertaking major maintenance such as replacement of panels in rigid pavement and associated activities
- preventing, with the assistance of concerned law enforcement agencies, any unauthorized use of the Project Highway
- preventing, with the assistance of the concerned law enforcement agencies, any encroachments on the Project Highway
- protection of the environment and provision of equipment and materials therefore
- operation and maintenance of all communication, control and administrative systems necessary for the efficient operation of the Project Highway
- maintaining a public relations unit to interface with and attend to suggestions from the Users, government agencies, media, and other agencies; and
- Complying with Safety Requirements in accordance with Article 18.

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have been made from the expenses of similar type of projects to arrive at the operating cost. The estimates are projected based on best industry practices and are compared with the operation cost in the vicinity of the project area. Same has been divided into following major head

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Incident Management Services
4. Electricity and Diesel Charges
5. TMS/HTMS/System Expenses
6. Office Operating Expenses
7. Vehicle Running Expenses
8. Professional Fees Expense
9. Insurance Expense
10. IE Fees
11. Horticulture & ROW Maintenance
12. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or "wear-and-tear". Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards

6.4 O & M Strategy

Important Operations and maintenance work have been outsourced by the SPV. Details of important works are listed below

Exhibit 42 O & M Strategy

Sn	Activity	Strategy
1	Manpower	In-house
2	Civil work cost	In-house
3	Manpower for Electrical & Mechanical	Outsource
4	Agency for Toll Plaza (TMS)	Outsource
5	AMC for Electrical system	Outsource
6	ITMS AMC	Outsource
7	Rectification work for Electromechanical	Outsource

6.5 Manpower cost

Manpower costs have been estimated based on a combination of market benchmarks and historical contractual data, with appropriate price escalation factored in to reflect anticipated future cost increases. The manpower requirements are categorized into four primary segments:

1. **Project Office and Administration**: Covers expenses related to staff involved in overall project management, administrative duties, and associated benefits and overheads.
2. **Route Operations**: Includes salaries and benefits for frontline operational personnel such as toll operators, traffic controllers, and other essential staff ensuring uninterrupted tunnel functionality.
3. **Ancillary Services**: Encompasses costs for support roles like security staff, emergency response units, and other service teams vital to maintaining safety and operational readiness.
4. **Highway and Tunnel Maintenance and Repair**: Pertains to compensation for technical and maintenance staff responsible for routine upkeep, repairs, and general infrastructure support within the tunnel.

Total Manpower cost estimated by Knight Frank is ₹ 83.20 Crore for the balance concession period.

Exhibit 43 Manpower Cost

Manpower Cost			
Year in Nos	**Years**	**Manpower**	**Remarks**
			Each year 10% escalation is considered
1	FY26	10.8	
2	FY27	11.9	
3	FY28	13.0	
4	FY29	14.4	
5	FY30	15.8	
6	FY31	17.4	
Total Cost (₹- Crore)		**83.30**	

Detailed Manpower Costs covers following items cost

- **Project Office and Administration**: Costs are derived from prevailing market rates and past contractual terms, incorporating annual cost escalations.
- **Route Operations**: Calculated based on staffing requirements, specific roles, and associated employee benefits, ensuring adequate coverage for smooth tunnel operations.
- **Ancillary Services**: Includes estimated expenses for security and emergency response personnel, along with costs for necessary equipment and training.
- **Highway and Tunnel Maintenance and Repair Works**: Provides a thorough breakdown of costs for maintenance crews, factoring in labor, tools, and essential equipment required for upkeep and repairs.

6.6 Vehicle Maintenance Cost

Total Vehicle maintenance cost considered is ₹5.61 Crore for balance concession period. It is assumed that all required vehicles will be continuously available for the entire duration of the project. & following items considered for preventive maintenance work:

- **Maintenance Costs:** Assumed at 2.5% of the vehicle cost annually, accounting for regular upkeep and minor repair work.
- **Insurance Costs:** Estimated at 3% of the vehicle cost each year, ensuring coverage for accidents and associated liabilities.
- **Fuel Costs:** Projected based on typical fuel consumption patterns and prevailing fuel rates, with provisions for future price variability.
- **Price Escalation:** Incorporated across maintenance, insurance, and fuel components to reflect anticipated inflation and market shifts over the seven-year duration**.**

Details of Vehicle maintenance cost is tabulated in below **Exhibit 44.**

Exhibit 44 Vehicle Maintenance cost

Vehicle Maintenance Cost (₹-Crore)			
Year in Nos	**Years**	**Vehicles**	**Remarks**
			An annual escalation rate of 10% has been factored in each year.
1	FY26	0.7	
2	FY27	0.8	
3	FY28	0.9	
4	FY29	1.0	
5	FY30	1.1	
6	FY31	1.2	
Total Cost (₹- Crore)		**5.61**	

Above cost is including of GST

Breakdown of Vehicle Maintenance Costs:

- **Routine Maintenance**: Includes yearly expenses for regular servicing, part replacements, and minor repairs.
- **Insurance Premiums**: Calculated annually based on the vehicle's value and the required coverage.
- **Fuel Expenses**: Projected based on average fuel consumption and anticipated price escalation over time.

6.7 Civil work cost

Total Civil work cost considered is ₹12.33 Crore for balance concession period.

The civil cost component encompasses essential maintenance and repair activities for the tunnel and related infrastructure. The key elements include:

- **Painting**: Tunnel walls up to 4 meters high will be painted, with 30% of the total area refreshed annually to maintain appearance and structural integrity.
- **Bitumen and Concreting**: Includes roof concreting and waterproofing for the pump house and portal building, using a 50 mm concrete layer.
- **Grouting**: Applied to 20% of the tunnel length for crack repairs, with 20 nipples per location and 0.5 kg of epoxy per nipple. For water seepage, grouting is done on 2% of the tunnel length under similar specifications.
- **Drain Cleaning**: 25% of surface and main drains will be cleaned each year to ensure effective drainage and prevent clogging.
- **Instrumentation**: Installation of 1,000 crack meters is planned, with a dedicated instrumentation engineer stationed on-site to oversee monitoring and maintenance.
- **Miscellaneous Costs**: 10% of total civil expenses are reserved for unforeseen requirements and minor repair works.

Following items considered for Civil work:

- **Painting**: Includes costs for paint materials, labor, and equipment required for scheduled annual painting works.
- **Bitumen and Concreting**: Detailed cost allocation for concrete materials, waterproofing compounds, and associated labor charges.
- **Grouting**: Covers expenses for epoxy/resin materials, labor, and tools used for crack and water seepage grouting activities.
- **Drain Cleaning**: Encompasses labor, machinery, and waste removal costs for routine cleaning of surface and main drainage systems.
- **Instrumentation**: Costs related to procurement and installation of crack meters, along with the salary of an on-site instrumentation engineer.
- **Miscellaneous**: Budget provision for unforeseen repairs and incidental civil maintenance requirements.

The below **Exhibit 45** presents a detailed breakdown of costs related to manpower, vehicle maintenance, and civil works. It outlines specific estimates for each component across the seven-year period from FY 2026 to FY 2031, providing a comprehensive overview of all expenses associated with the operation and maintenance of the tunnel.

Exhibit 45 Civil Work Cost (₹-Crore)

S.No.	Description		FY26	FY27	FY28	FY29	FY30	FY31	Total Cost
1	***Painting***				3,54,13,735				**3,54,13,736**
2	***Bitumen + concreting***								
3	***Grouting***		65,99,056	70,60,989	75,55,259	80,84,127	86,50,016	92,55,517	**4,72,04,963**
4	***Cleaning of Drains***		28,81,386	30,83,084	32,98,899	35,29,822	37,76,910	40,41,294	**2,06,11,395**
5	***Instrumentation Engineer***		10,16,400	11,18,040	12,29,844	13,52,828	14,88,111	16,36,922	**78,42,146**
6	***Cracks Meter***		1,43,113	1,53,130	1,63,850	1,75,319	1,87,591	2,00,723	**10,23,725**
Sub Total			**1,06,39,954**	**1,14,15,243**	**4,76,61,587**	**1,31,42,096**	**1,41,02,628**	**1,51,34,455**	**11,20,95,965**
10% Miscellaneous			**10,63,995**	**11,41,524**	**47,66,159**	**13,14,210**	**14,10,263**	**15,13,446**	**1,12,09,596**
Total Cost			**1,17,03,950**	**1,25,56,768**	**5,24,27,746**	**1,44,56,306**	**1,55,12,891**	**1,66,47,901**	**12,33,05,561**

Average Civil work Cost estimated is ₹1.86 Crore per year including GST.

6.8 Electrical and Mechanical (E & M) Cost

Total E & M Cost estimated is ₹26.82 crore for balance concession period including GST.

The following considerations have been made during calculation of E & M costs:

- **Component Replacement Costs:** Several parts of the Electrical & Mechanical (E&M) systems—particularly energy storage units—have defined operational lifespans and will require periodic replacement. These costs are essential to include in the Life Cycle Cost (LCC) analysis to accurately reflect future financial requirements.
- **Annual Maintenance for MEP Equipment:** Includes detailed costs for regular maintenance activities such as routine servicing, minor repairs, and replacement of worn-out components.
- **Annual Consumable Costs:** Covers frequently used items like lubricants, filters, lighting fixtures, and other expendables that are consumed during daily operations. These are non-repairable parts that must be replaced regularly.
- **Additional Electromechanical Works:** Accounts for costs related to enhancements necessary for ensuring effective functioning of the tunnel ventilation during fire incidents, protective measures for E&M systems, and fire safety provisions for critical areas like tunnel control rooms.
- **Annual Electricity Costs:** Reflects average yearly electricity expenses factored into the overall cost estimation.

Exhibit 46 Details of Total E & M Cost (₹-Crore)

Electrical & Mechanical Cost			
Year in Nos	**Years**	**Electrical & mechanical (₹-Crore)**	**Remarks**
1	FY26	3.56	
2	FY27	3.9	
3	FY28	4.2	
4	FY29	4.6	
5	FY30	5.0	
6	FY31	5.5	
Total E & M Cost (₹- Crore)		**26.82**	

Exhibit 47 Breakup of Yearly E & M Cost (₹-Crore)

S.nos	Items	Monthly Cost (₹-crore)
1	O&M Reports	0.18
2	O&M of Tunnel Ventilation System	0.71
3	O&M of MEP & SCADA	1.43
4	Miscellaneous	0.36
5	Energy Cost	0.89
Total Annual Cost (Annually)		3.56

Price Escalation: ***9% applied to replacement, maintenance, and spare consumable cost to account for inflation and other market changes over the 6-year periods.***

- **Tunnel Ventilation System:**

The tunnel ventilation system includes key components such as **Axial Flow Fans, Jet Fans, Dampers, and Attenuators**. Axial Flow Fans are primarily used for moving large volumes of air efficiently along the tunnel's length. Jet Fans are installed within the tunnel to provide longitudinal ventilation by pushing air in the direction of traffic flow. Dampers help regulate and control airflow by opening or closing specific ventilation pathways. Attenuators are used to reduce noise generated by the ventilation equipment, ensuring quieter and more efficient tunnel operations.

- **O & M of MEE & SCADA**

The tunnel's electrical and mechanical infrastructure comprises a range of essential components, including **Cable Trays**, **HV (High Voltage) Cables**, and **LV (Low Voltage) Cables** for power distribution. **Electrical Panels** and **Transformers** play a crucial role in regulating and managing electrical supply. Backup power is ensured through a **DG Set** and **UPS (Uninterruptible Power Supply)** systems.

For lighting and visibility, a robust **Lighting** setup is installed throughout the tunnel. **Fire Fighting Pipes**, **Pumps**, and **Valves** form the core of the fire suppression system, ensuring safety during emergencies. The HVAC system includes **HVAC Dampers**, **VRF (Variable Refrigerant Flow) units**, and **Extraction Fans** to manage air quality and temperature control. Additionally, **SCADA-PLC**

systems provide automation and centralized monitoring of all tunnel operations, enhancing safety and efficiency.

The average Electrical & Mechanical (E&M) Cost as per calculation is ₹6.83 Crore per year, which seems reasonable as per industrial practice.

6.9 Toll Plaza TMS Cost

The total cost estimated towards Toll Plaza TMS is ₹1.2 Crore per including GST.

The cost estimation for the **Agency for Toll Plaza TMS** spans from FY26 to FY31, starting at ₹0.15 million in FY26 and increasing annually by approximately 9%, reaching ₹0.20 million by FY31. This escalation accounts for inflation and cost adjustments over time.

☛ ***The cost considered for the Toll Plaza TMS is based on the purchase order issued to Techsture Technologies, the agency appointed by the concessionaire.***

6.10 Major Maintenance Cost

As mentioned in earlier chapter, Currently, the Project Highway is maintained by existing Annuity Concessionaire.

Based on RI & FWD Test results, SPV team made 01 MM cycles for the overlay of projects. Following items were considered during each MM cycle based on the ground requirements.

A. Flexible Pavement

- Overlay of 30-40 mm BC on MCW based on ground conditions and Test results.
- Overlay of 30 mm BC on service road considered.

B. Rigid Pavement

- Dismantling for existing PQC
- Relaying of dismantled panels
- Grouting with cement mortar
- Replacement and relaying of joints
- Diamond grinding with texturing

C. Replacement of Wearing Coat on structures

It is assumed that the pavement will be overlaid before handing over of the project confirming the pavement parameters kept within the limits as per Detailed strategy at **Exhibit 48.** Hence, the major maintenance cycles are proposed between year 2029.

6.11 Major Maintenance items

Based on detailed highway inventory carried out during site investigation and data provided by the concessionaire following items considered during major maintenance work

- Bituminous concrete for MCW using VG-30
- Dense Bituminous Macadam for MCW using VG-30
- Bituminous concrete for Service Road using VG-30
- Dense Bituminous Macadam for MCW using VG-30
- Micro surfacing
- Repair of Transverse & Longitudinal joints on MCW & Service Road for Rigid pavement area
- Joint Sealant replacement of rigid area
- PQC taxing for rigid pavement area
- Removal & Relaying of Panels
- Crack Sealing

6.12 Major Maintenance items

Major maintenance works to be considered in 01 cycles to the year 2029. A total Cost of ₹28.18 crore (Without Escalation) considered for major maintenance work Upto end of Concession period. Major maintenance Strategy is shown in **Exhibit 48. Detailed Cost Estimate attached as Annexure A.**

Exhibit 48 Major Maintenance Cycles & Cost

Major Maintenance Strategy & Cost Details for QB Project			
Cycle	**Year**	**Strategy**	**KF Cost (₹-Crore)**
MM Cycle-01	**(Year 2029)**	**A) Main Carriageway:** 01. 40 mm BC: 50% Length 02. 30 mm BC: 50% Length 03. 50mm DBM Rehabilitation: 5% Area 04. Road Marking: 100% Length 05. Kerb Painting: 100% Length 06. Kerb Raising: 100% Length 07. Manhole Repair: 100% **B) Service Road:** 01. 30 mm BC on 100% length	28.18

Major Maintenance Strategy & Cost Details for QB Project			
Cycle	**Year**	**Strategy**	**KF Cost (₹-Crore)**
		02. Road Marking 100% length **<u>C) Rigid-MCW</u>** 01. 5% Slab Replacement 02. 100% Joint Replacement 03. 100% Retexturing & Grinding 04. 100% Micro surfacing	
Total MMR Cost (₹-Crore) with GST			**28.18**

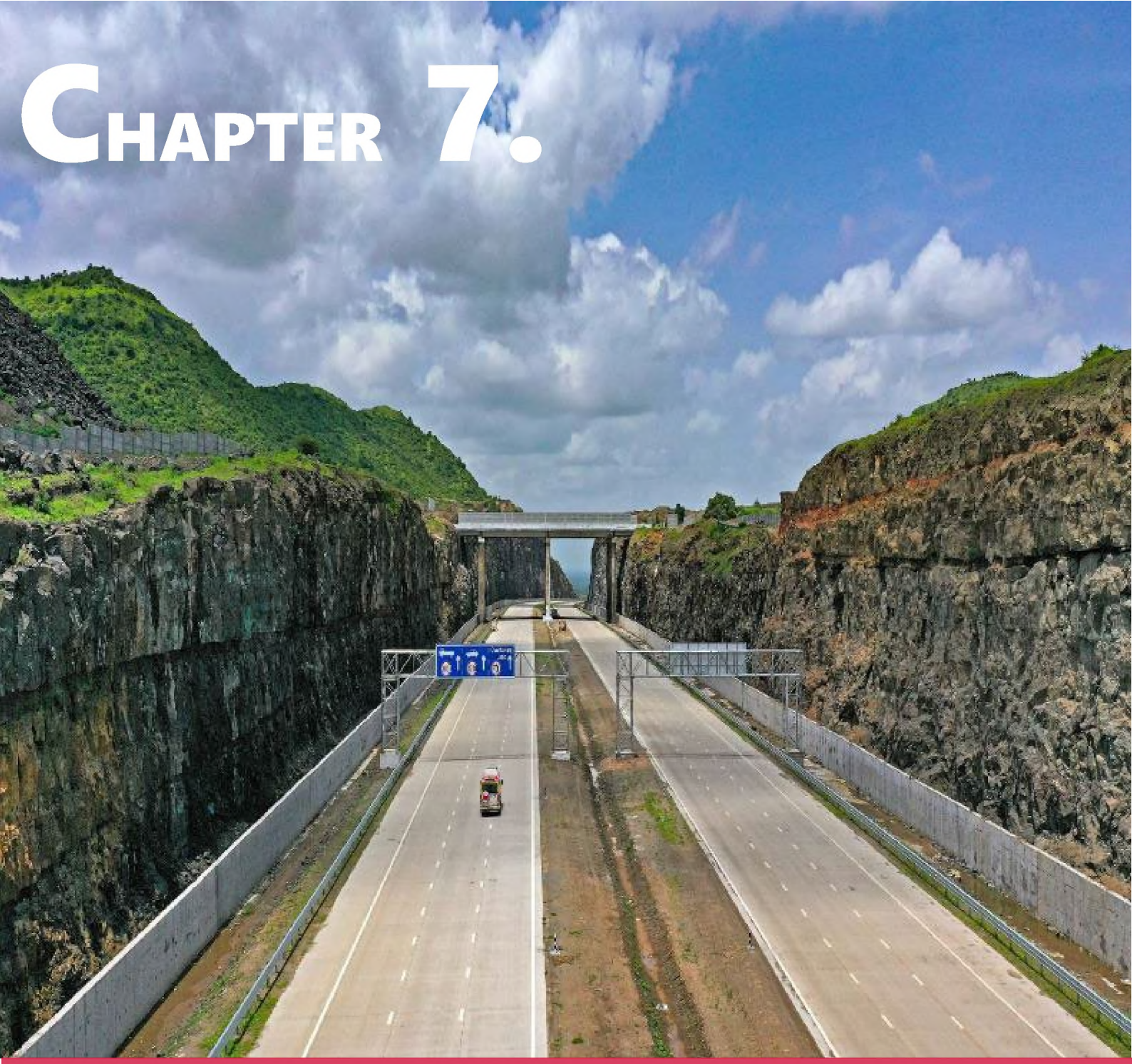
6.13 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period as below.

Exhibit 49 Summary of Cost

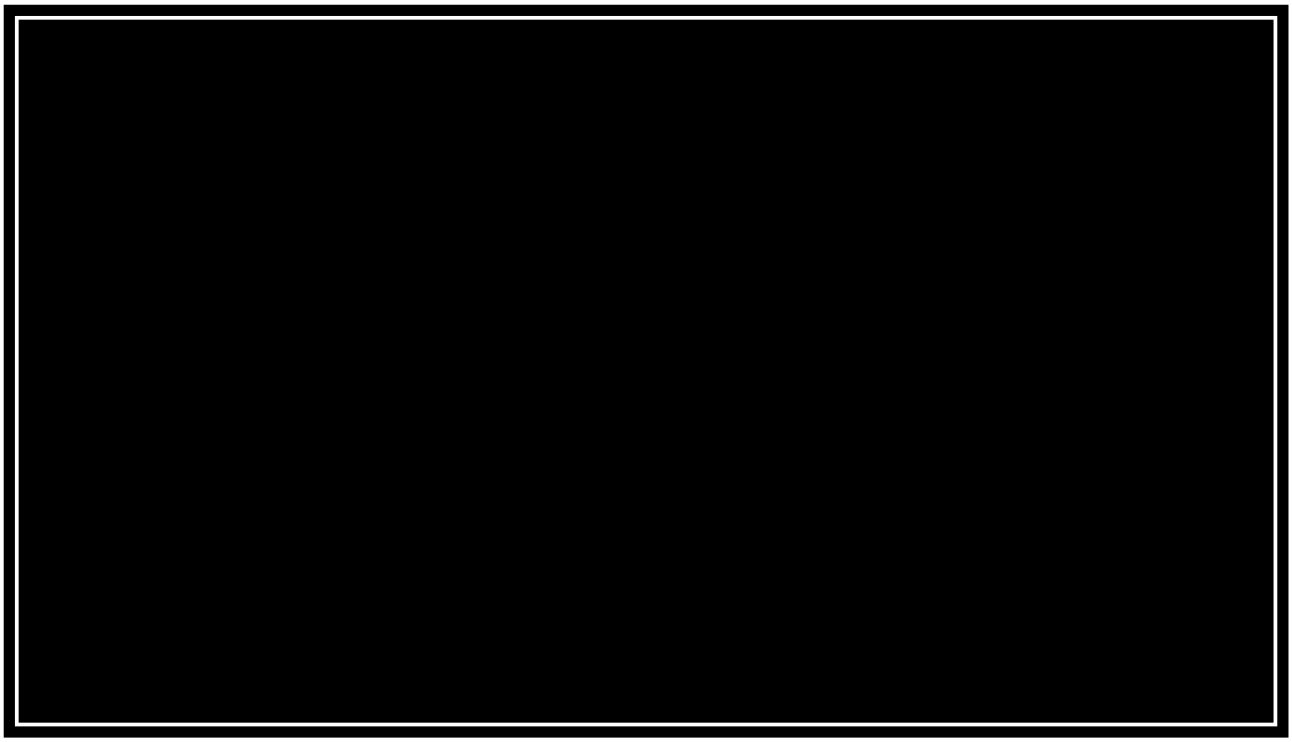
S.No.	Year of expense		FY26	FY27	FY28	FY29	FY30	FY31	Total Cost
1	**Routine O&M Cost**								
1.1	Manpower		10.8	11.9	13	14.4	15.8	17.4	83.20
1.2	Vehicles		0.7	0.8	0.9	1	1.1	1.2	5.61
1.3	Civil		1.2	1.3	5.2	1.4	1.6	1.7	12.33
1.4	Electro & Mechanical		3.6	3.9	4.2	4.6	5	5.5	26.82
1.5	Agency for Toll Plaza TMS		0.1	0.2	0.2	0.2	0.2	0.2	1.04
1.6	AMC for Electrical system		0.5	0.5	0.5	0.6	0.6	0.7	3.40
1.7	ITMS AMC		5.7	6.1	6.6	7	7.5	8	40.98
1.8	Rectification work for Electromechanical		-	-	-	-	-	-	0.00
	Subtotal of O&M Cost		**22.6**	**24.7**	**30.6**	**29.2**	**31.8**	**34.7**	**173.37**
2	**Major Maintenance Cost**					**28.18**			**28.18**
3	Periodic Cost of TMS/HTMS Replacement	-	-	-	-	-	-	-	-
	Total Cost		**22.6**	**24.7**	**30.6**	**57.38**	**31.8**	**34.7**	**201.55**

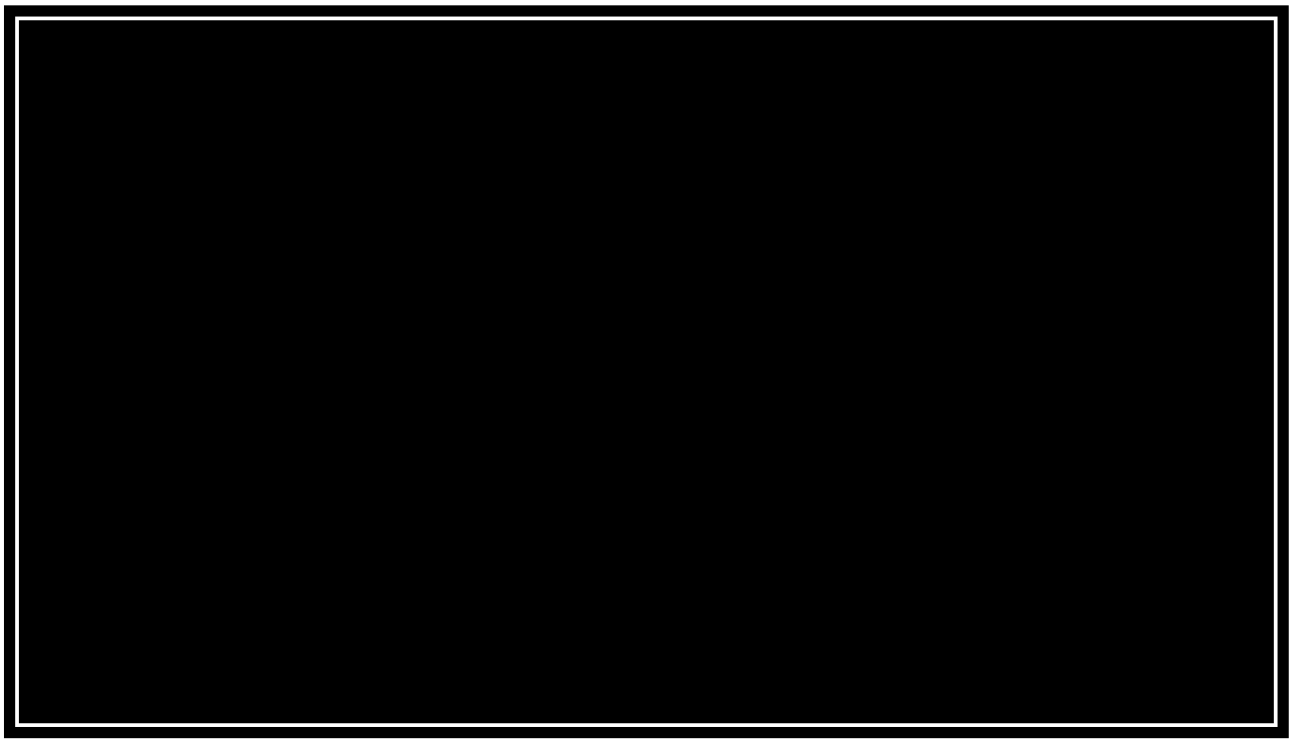
Chapter 7.

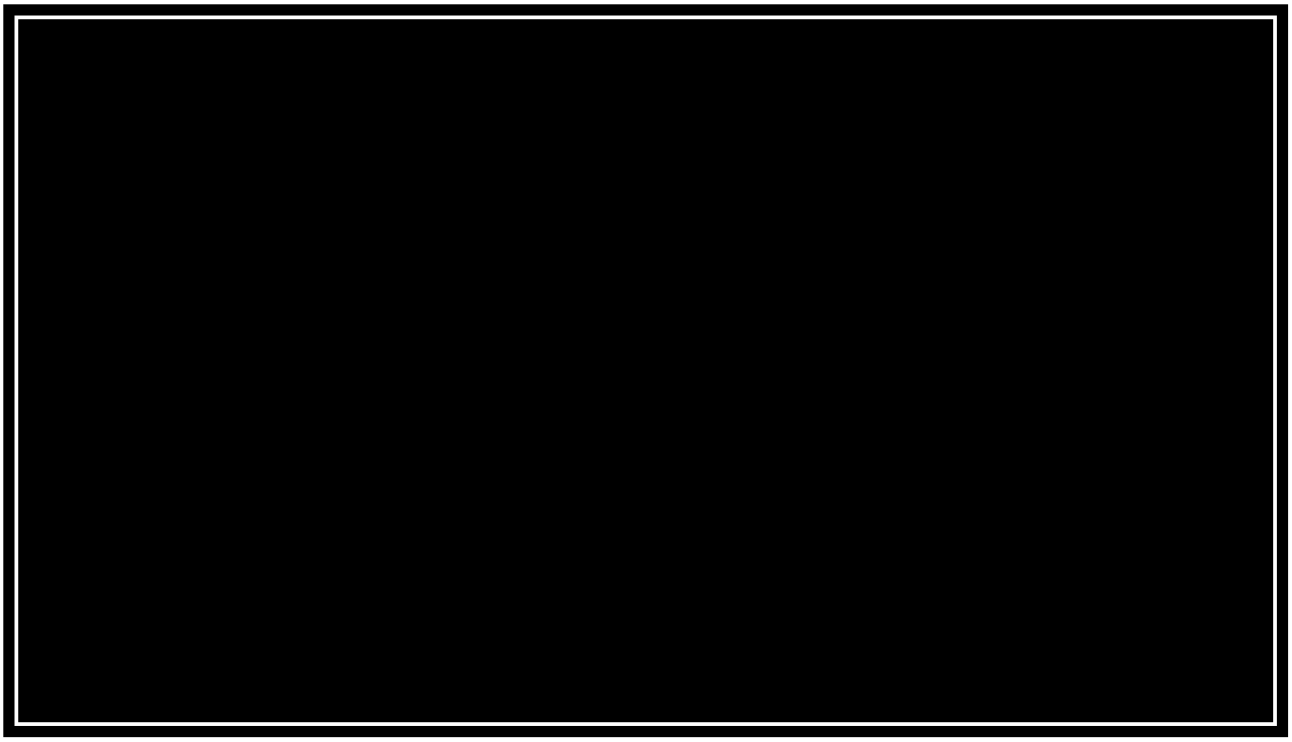


Project Photographs

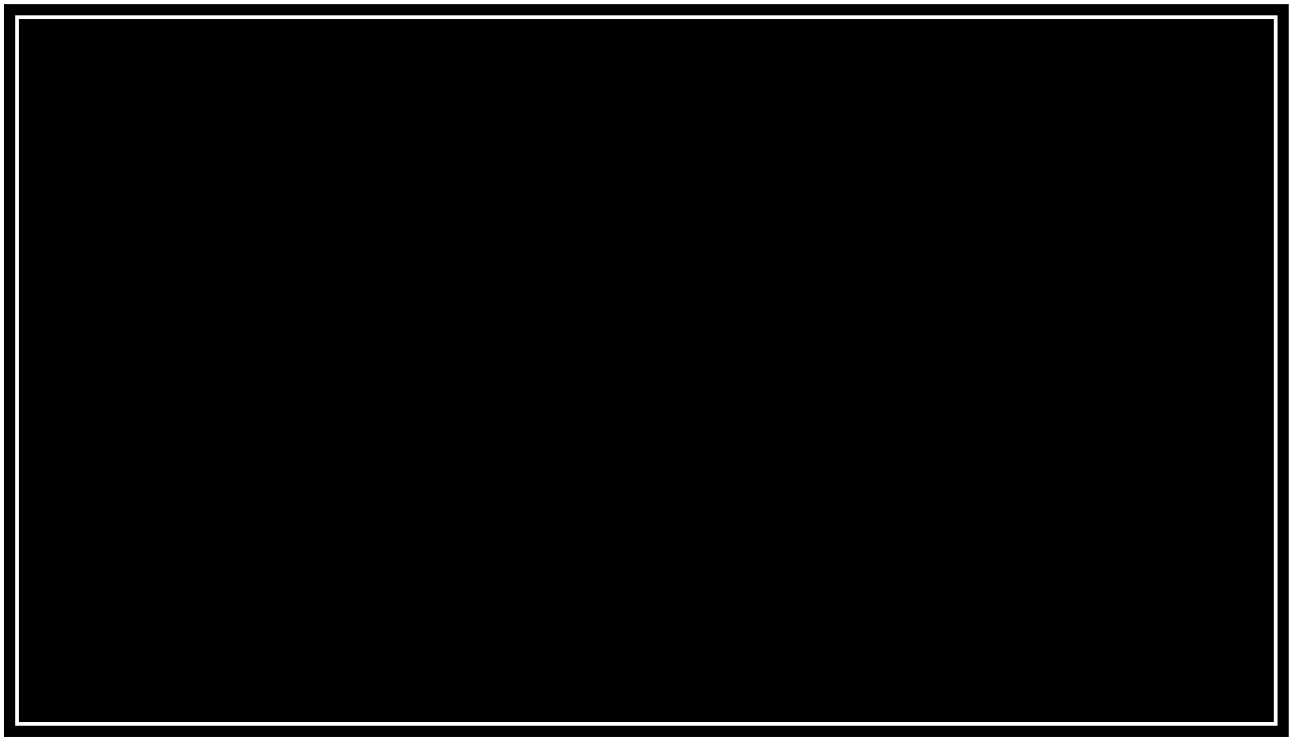
Chapter 7. PROJECT PHOTOGRAPHS



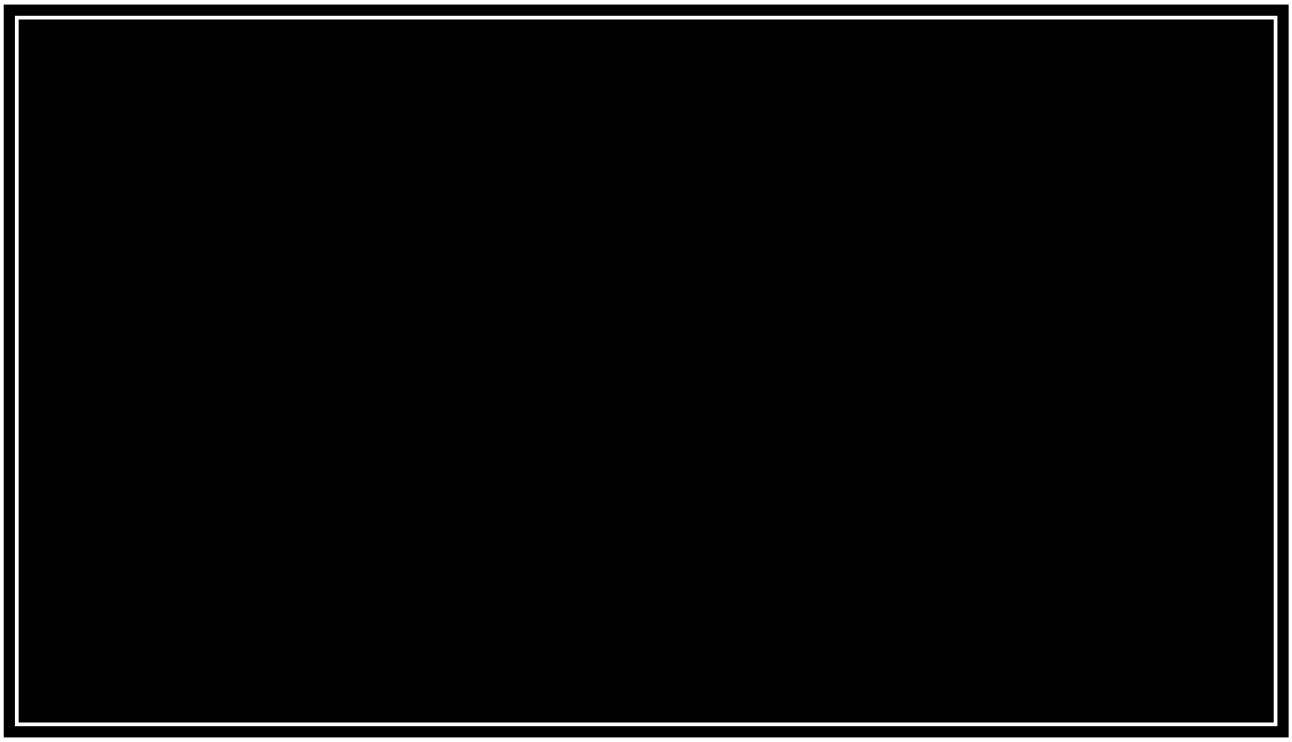




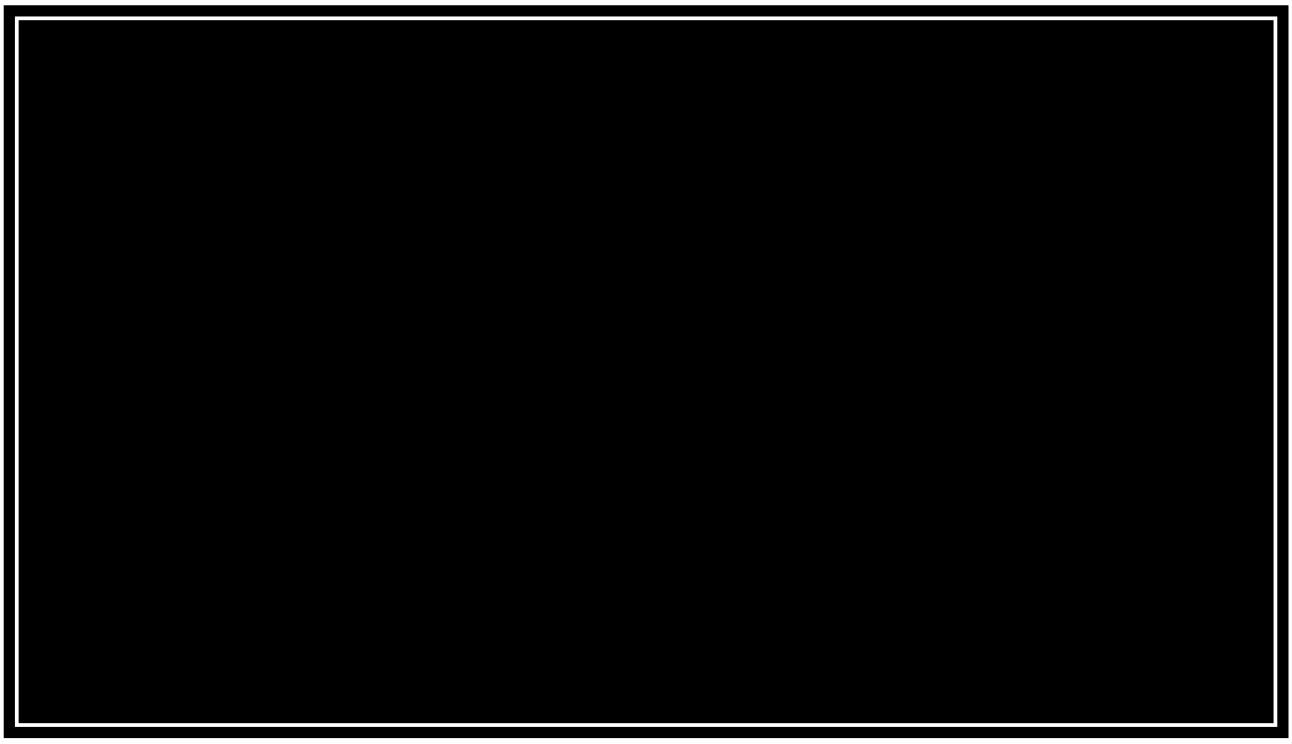
Cross Passage



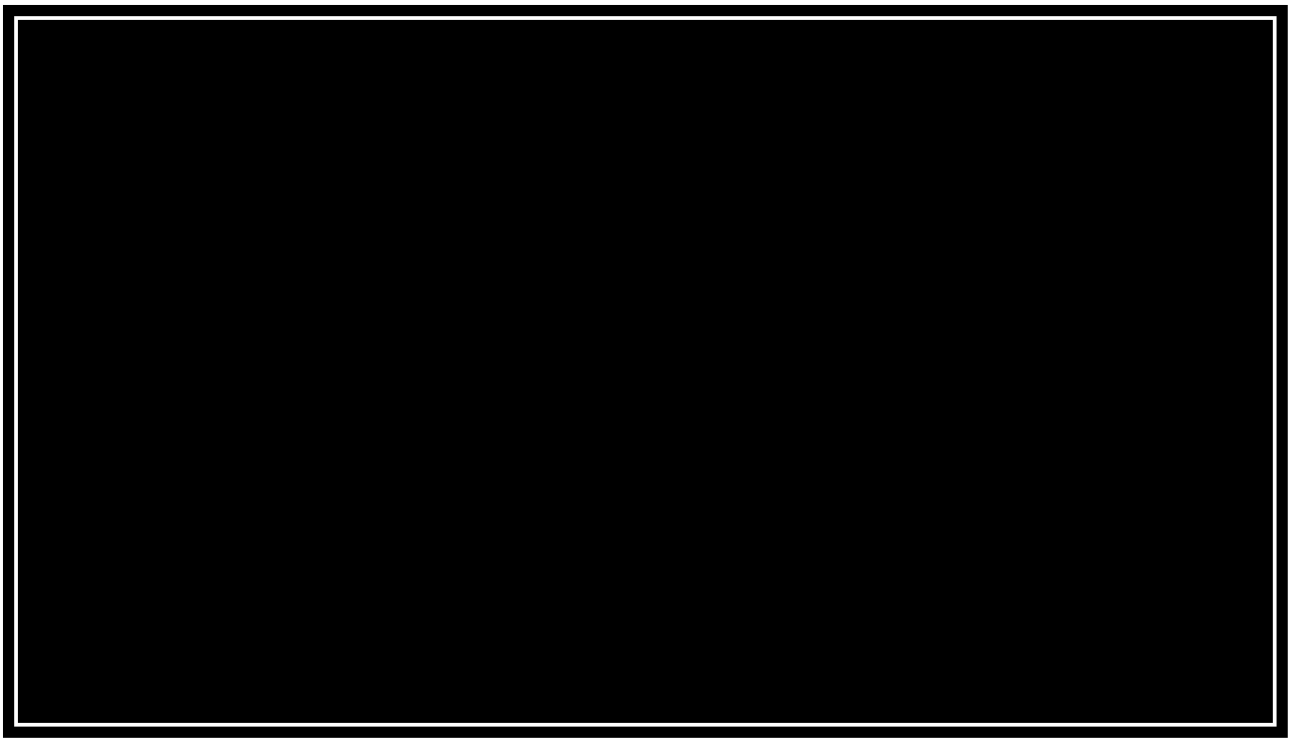
Jet FAN Inside Tunnel



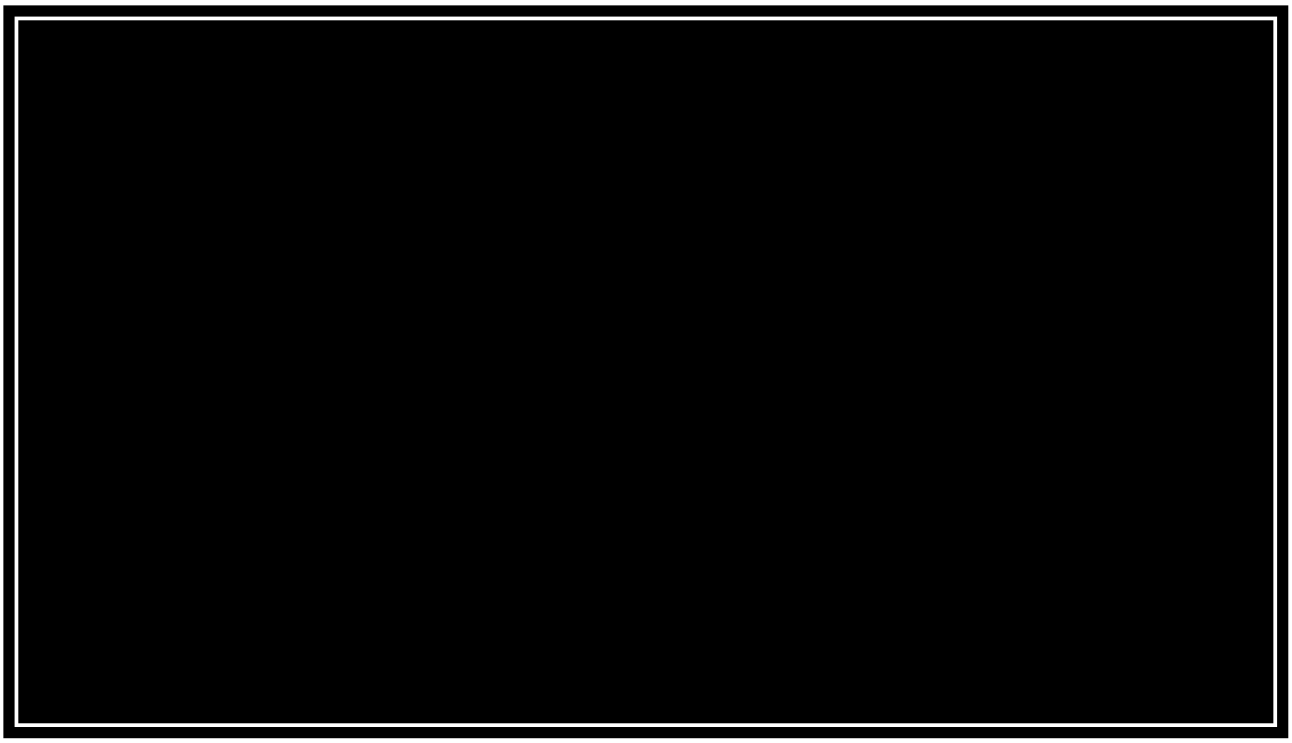
Cross Passage



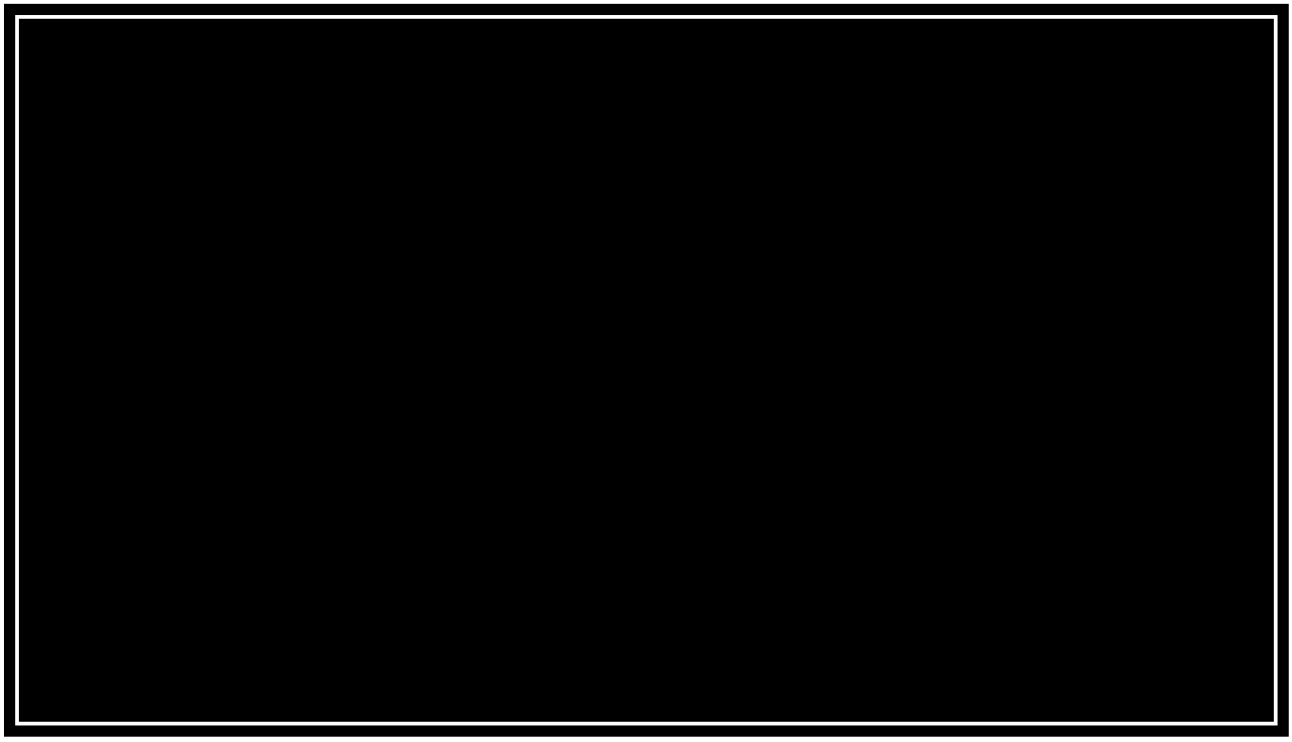
Ventilation FAN



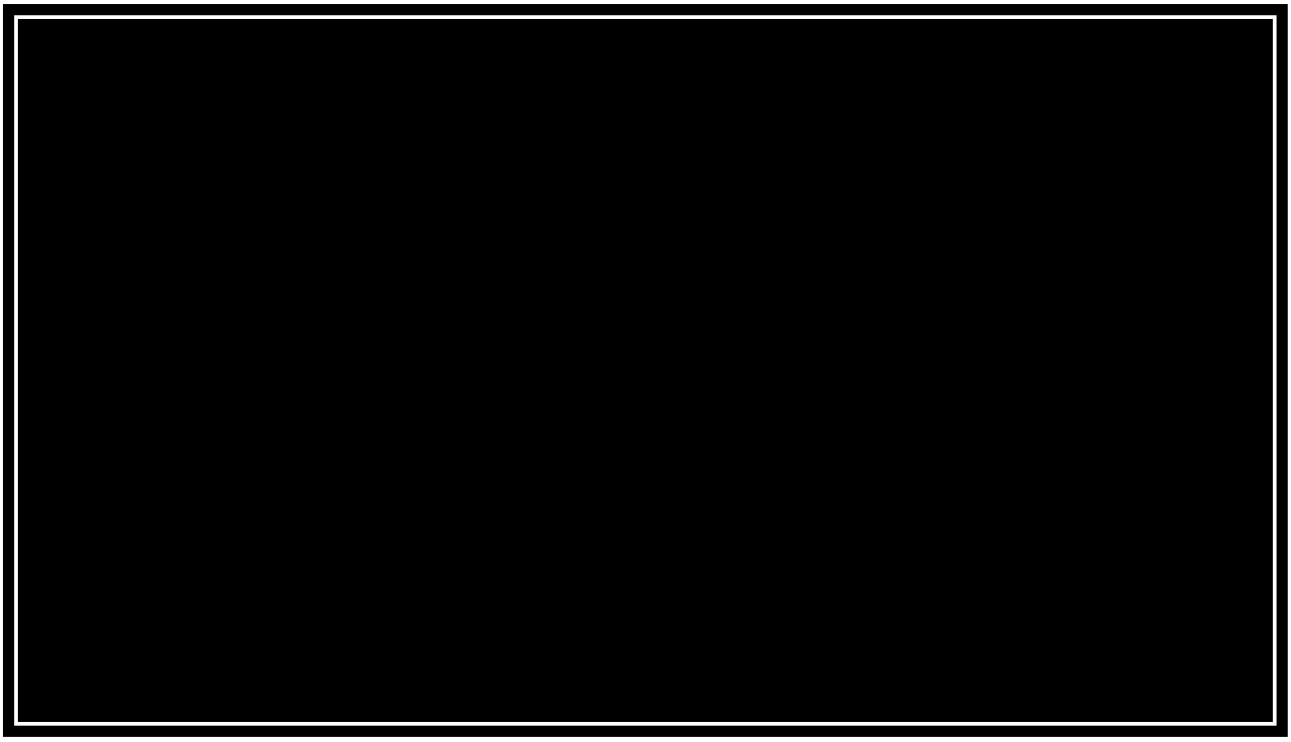
Pump Room



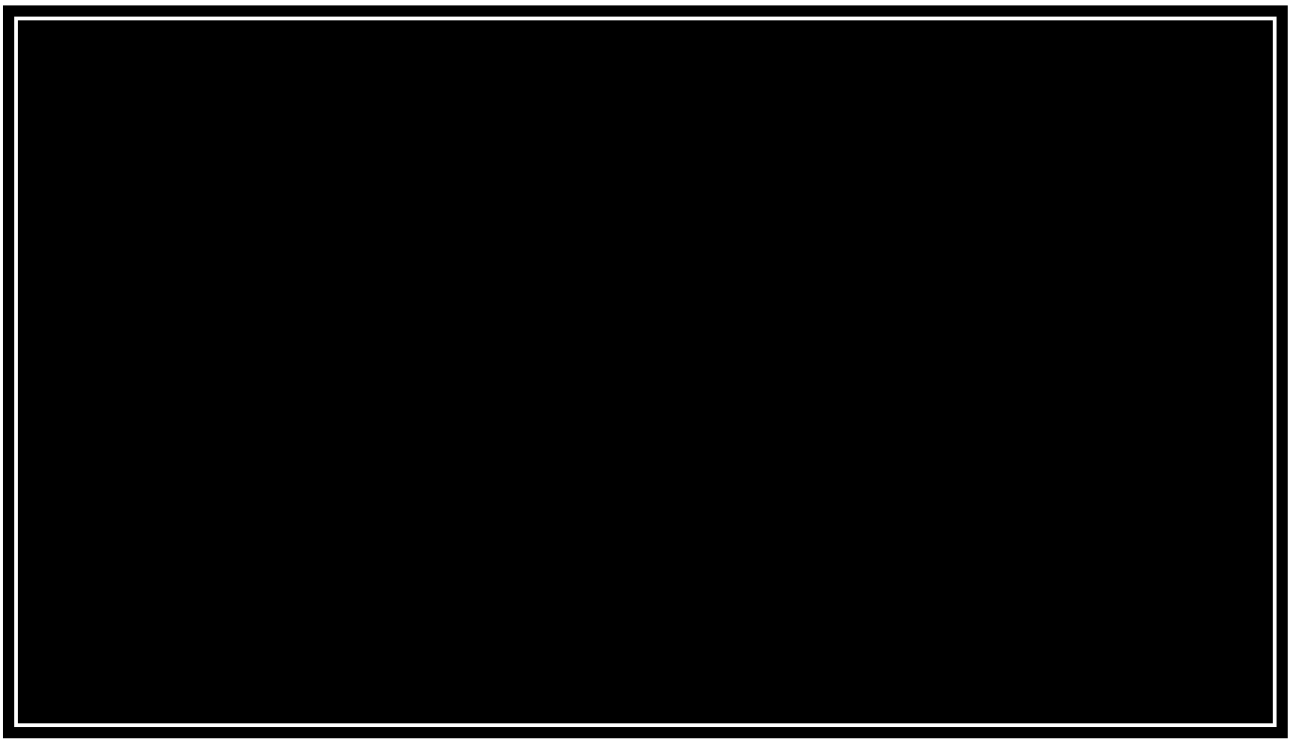
Power Supply System



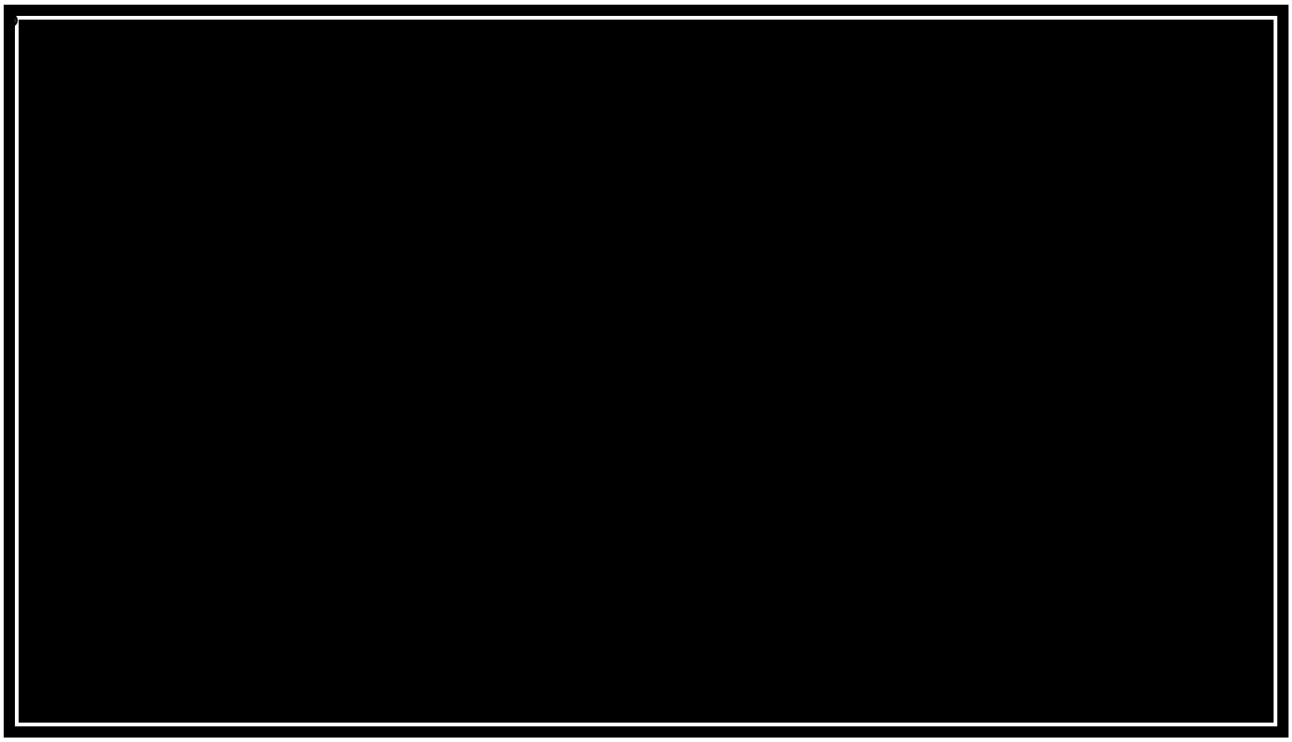
Ground water Niche & Main Drainage Manhole



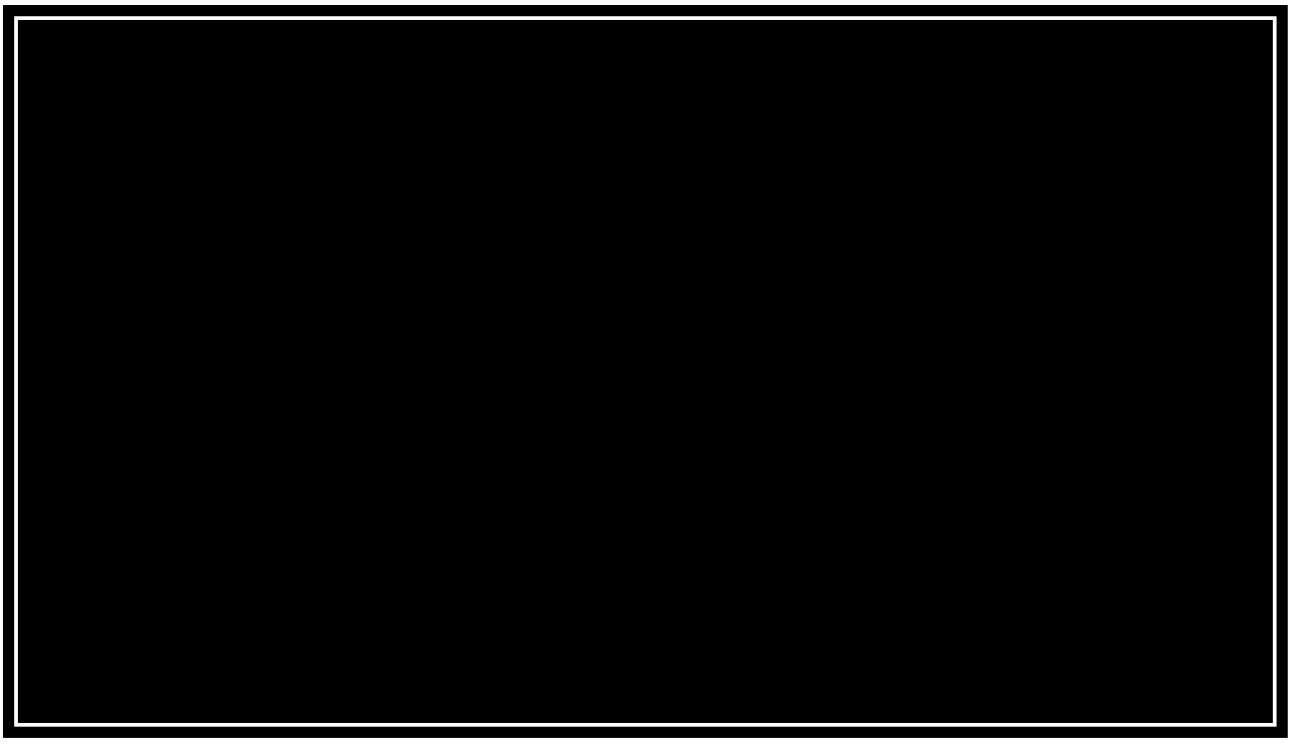
Control Room – South Side



Control Room-North Side



Pump Room



LV Panels

Annexure- A

(Major Maintenance Cost)

Major Maintenance Strategy & Cost Details for QB Project			
Cycle	**Year**	**Strategy**	**KF Cost (₹-Crore)**
MM Cycle-01	**(Year 2029)**	**A) Main Carriageway:** 01. 40 mm BC : 50% Length 02. 30 mm BC : 50% Length 03. 50mm DBM Rehabilitation : 5% Area 04. Road Marking : 100% Length 05. Kerb Painting : 100% Length 06. Kerb Raiseing : 100% Length 07. Manhole Repair: 100% **B) Service Road:** 01. 30 mm BC on 100% length 02. Road Marking 100% length **C) Rigid-MCW** 01. 5% Slab Replacement	28.18
Total MMR Cost (₹-Crore) with GST			**28.18**

A. Periodic Maintenance Cycle -01 (Year 2029)						
S.no	**Description**	**Unit**	**Quantity**	**Rate**	**Amount (₹-Lakh)**	**Remarks**
A)	**Flexible Pavement (Main Carriageway)**					
1	Overlay (BC)	Cum	6,554	11,274	739	40 mm BC on 50% VG 30 30 mm BC on 50% VG 30
2	Tack Coat	Sqm	1,69,904	14	24	
3	DBM Rectification	Cum	468	9,731	46	5% 50mm DBM Rehabilitation
4	Road Marking	Sqm	13,161	518	68	100%
5	Earthen Shoulder	Cum	887	294	3	
6	Kerb Increase	RM	16,268	409	67	
7	Kerb Painting	Sqm	6,101	116	7	100%
8	Manhole	Nos.	694	26,695	185	Actual
9	Milling	Sqm.	1,57,592	107	168	20% more for junctions, truck lay by, bus bay etc.
Total Flexible Cost (MCW+SR)					**1,306**	
B)	**Flexible Pavement (Service Road)**					
1	Overlay (BC)	Cum	54	11,274	6	30 mm on 100% length
2	Tack Coat	Sqm	1,800	14	0	
Total Flexible Cost (Service Road)					**6**	
C)	**Rigid Pavement**					
1	Slab replacement cost (PQC)-MCW	Cum	2064	7,949	164	5% Considered
2	Joint Sealenat Replacement/Repairs	Rm	72158	191	138	100% Considered
3	PQC Taxing	Sqm	137625	185	255	
4	Microsurfacing	Sqm	137625	220	302	100% Considered
Total Flexible Cost (Service Road)					**859**	
Total Periodic Maintenance Cost					**2,171**	
Contigencies (10%)					**10.0%**	Hilly area consideration
Total Periodic Maintenance Cost (₹-Lakh)					**2,388**	
Total Periodic Maintenance Cost (₹-Crore)					**23.88**	

Contact

Rajeev Vijay

Executive Director - Government and Infrastructure Advisory

Rajeev.vijay@in.knightfrank.com

+91 99100 54852

Maj Gen K T Gajria

Senior Consultant - Government and Infrastructure Advisory

MajGenKT.Gajria@in.knightfrank.com

+91 98712 00483

Aashif Ahmed

Associate Director- Government and Infrastructure Advisory

aashif.ahmed@in.knightfrank.com

+91 93114 10574

FP Project Management

Technical Due Diligence of Madurai - Kanyakumari (Package-3) of NH-44 from km. 116+500 to km. 180+000 in the state of Tamil Nadu

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

REVISION RECORD					
Document No. 265011 / HE / LIE / Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	VKD / VMK	CSB	SMA

This report is to be regarded as confidential to our client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Mumbai

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 5
2.4 Terrain 5
2.5 Abutting Land Use 5
2.6 Right of Way 5
2.7 Existing Utilities 5
2.8 Development as per Schedule-B 6
3 Condition Assessment of Project Road 7
3.1 Pavement 7
3.1.1 Pavement Condition Survey 7
3.2 Service Road / Slip Road 9
3.3 Major / Minor Junctions 9
3.4 Condition Survey of Bridge 10
3.5 Condition Survey of Culverts 16
3.6 Drainage 16
3.7 Slope Protection 16
3.8 Road Furniture 17
3.9 Avenue Plantation and Median Plantation 21
3.10 Toll Plaza 22
3.11 Lane Equipment 23
3.11.1 RFID ETC Transceiver 23
3.11.2 Lane Controller with Industrial PC 24
3.11.3 Automatic Vehicle Classification (AVC) Sensors 24
3.11.4 Automatic Lane Barrier 24
3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 25
3.11.6 Incident Capture Camera (AVC Camera) 25

3.11.7 License Plate Image Capture Camera (LPIC) 25
3.11.8 Over Head Lane Signal (OHLS) 25
3.11.9 Toll Booth Equipment 26
3.11.10 Medium Speed Weigh in Motion (MSWIM) 27
3.12 Plaza Equipment 27
3.12.1 TMS Server 27
3.12.2 55" LED screen for CCTV monitoring 27
3.12.3 Workstations in Control Room, POS room 27
3.13 Advanced Traffic Management System (ATMS) 27
3.13.1 Automatic Traffic Counter cum classifier (ATCC) 28
3.13.2 Mobile Radio communication System (MRCS) 28
3.13.3 Emergency Call Boxes (ECB) 28
3.13.4 Portable Weigh in Motion (PWIM) 28
3.13.5 MET System 28
3.13.6 Variable Message Signboards (VMS) 28
3.13.7 CCTV Surveillance Cameras 29
3.13.8 Video Incident Detection System 29
3.13.9 Vehicle Actuated Speed Display (VASD) 29
3.13.10 Adequacy of Toll Collection System and ATMS 29
3.14 Truck Lay-bye 29
3.15 Traffic Aid Post and Medical Aid Post 29
3.16 Toilet Block 29
3.17 Bus Bays and Passenger Shelters 30
3.18 Balance Work Status 30
3.19 Operation and Maintenance 30
3.19.1 O&M Contract 30
3.19.2 Organization Chart 30
3.19.3 Operation 32
3.19.4 Routine Maintenance 32
4 Pavement Investigation and Assessment 33
4.1 General 33
4.2 Axle Load and VDF 33
4.3 Design Traffic 33
4.4 Network Survey Vehicles (NSV) Survey 34
4.5 FWD Survey 35
4.6 Test pit and Subgrade Investigation 36
4.7 Periodic Maintenance Strategy 40

5 Cost Estimates 41
5.1 General 41
5.2 Rate Assumption 41
5.3 Balance Work Cost 43
5.4 Routine O&M Cost 43
5.5 Major Maintenance Cost 44
5.6 Periodic Replacement of TMS / ATMS System 45
5.7 Escalation Assumption 45
5.8 Summary of Cost 45
Annexures 47
Annexure I : Routine Maintenance Cost 48
Annexure II : Major Maintenance Cost 54

List of Tables

Table 2-1 Details of Scope of Work 6
Table 3-1 Details of Major Junctions 9
Table 3-2 Details of Summary for Structures 10
Table 3-3 Condition Survey of Major Structure 11
Table 3-4 Details of Additional Gantry / Cantilever Sign 17
Table 3-5 Details of Summary for Toll Plaza Items 22
Table 3-6 Details of Truck Lay-bye 29
Table 4-1 Vehicle Damage Factor 33
Table 4-2 MSA Calculation 33
Table 4-3 Test Results Summary of granular layer Samples 38
Table 4-4 Test Results Summary of Natural Ground Soil Samples 39
Table 4-5 Major Maintenance Cycle 40
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 41
Table 5-2 Summary of Unit Rates 42
Table 5-3 Summary of Operation Cost 44
Table 5-4 Summary of Major Maintenance Cost 44
Table 5-5 Escalation 45

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start and End of Project Road 5
Figure 3-1 Photographs of Pavement Condition (MCW) 8
Figure 3-2 Photographs of Service Road / Slip Road 9
Figure 3-3 Photograph of Junctions 9
Figure 3-4 Photographs of Major Structures 15
Figure 3-5 Photographs of Culverts 16
Figure 3-6 Photographs of Pavement Marking 18
Figure 3-7 Photographs of Sign Boards 19
Figure 3-8 Photographs of Highway Lighting 19
Figure 3-9 Photographs of MBCB / Crash Barrier 20
Figure 3-10 Photographs of Delineator 20
Figure 3-11 Photographs of Pedestrian Guard Rail 21
Figure 3-12 Photographs of Avenue Plantation 21
Figure 3-13 Photographs of Median Plantation 22
Figure 3-14 Photographs of Toll Plaza 23
Figure 3-15 Photographs of Passenger Shelter 30

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s. FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of Madurai to Kanyakumari section (Package-III) km. 116+500 to km. 180+000 in the State of Tamil Nādu (hereinafter referred as "Project Road").

Salaipudhur Madurai Tollway Private Limited (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for tolling, operation, maintenance, and transfer of Madurai to Kanyakumari Section (from km. 116+500 to km. 180+000) of NH-44. The project was awarded to Concessionaire on 20th October 2020.The length of Project Road is 63.50 kms with one toll plaza at Salaipudhur Village at km. 125+350.

Accordingly, Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and filed investigations. The same is presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, Axle load, material investigations etc.
- Formulation of future major maintenance strategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence.
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period.
- Review of balance work cost for Project Road including estimation of quantities and item rates.

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design, and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets, mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimate.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Company. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyze the same as per the best engineering / industry practices.

The site visit and inspection were carried out from **17th March 2026 to 18th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for due diligence studies.

Chapter 2 **Project Description:** The chapter describes existing project features, and overview of project development.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates:** The chapter summarizes the forecasting of O&M and major maintenance costs over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **Salaipudhur Madurai Tollway Private Limited** is a company promoted by Cube Highways or a Special Purpose Vehicle (SPV) formed for implementing this project on 27th December 2019. The Appointed Date for the Project Road is 20th October 2020.

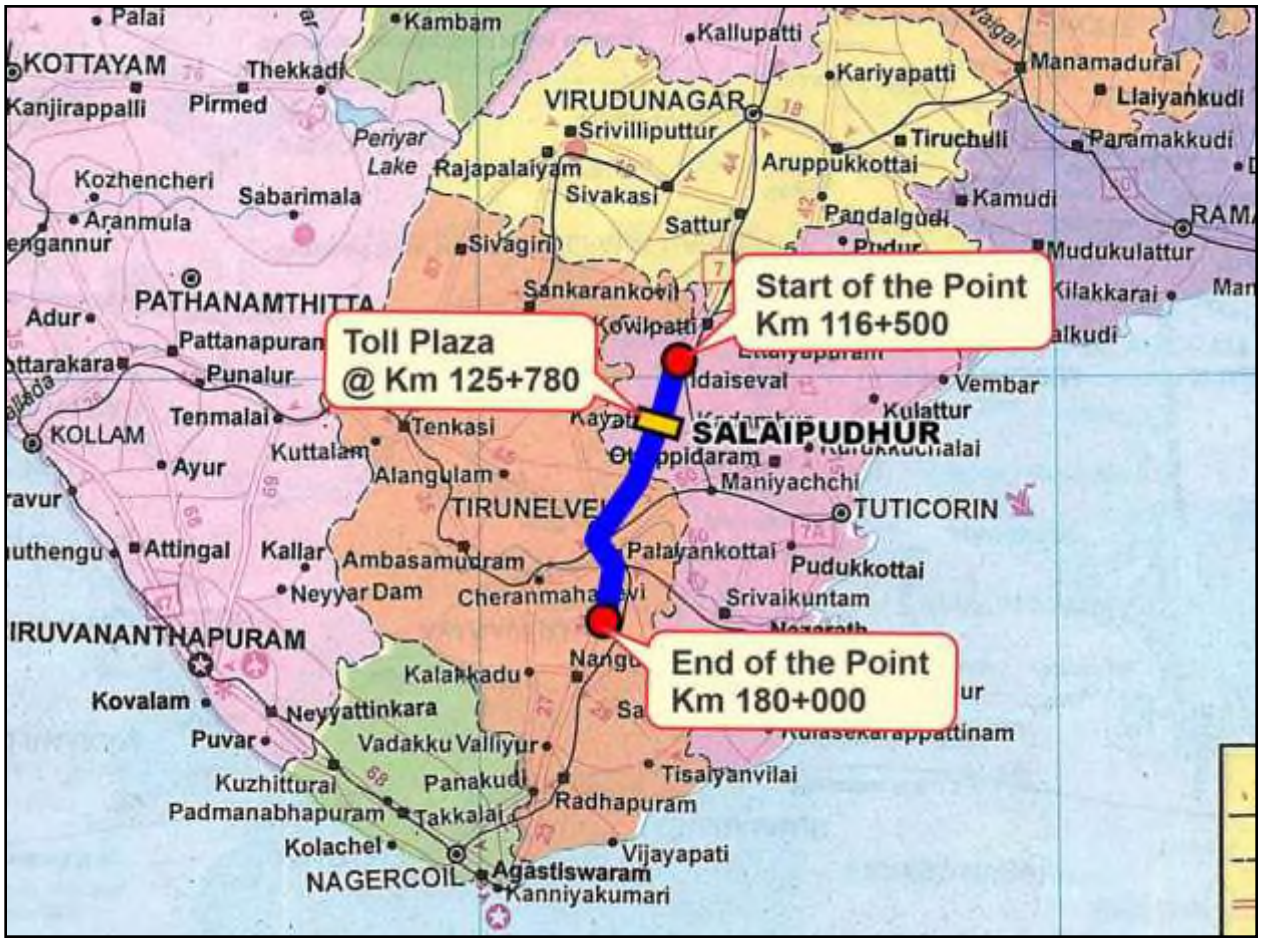
The project is being developed under TOT (Toll Operate Transfer) Bundle-3 with concession period of 30 years from the Appointed Date. The end of the concession period is 21st October 2050.

2.2 Location

The Project Road is part of National Highway No. 44 (old NH-7) of Madurai - Kanyakumari section in the state of Tamil Nādu. The total project length is 63.50 kms.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map



The photographs taken during the site visit are presented below.

Figure 2-2 Start and End of Project Road

Start of Project Road at km. 116+500

End of Project Road at km. 180+000

2.3 Climate

The project area being in the region of southeast of the western ghats, the area is hot and dry. Temperatures range between a maximum of 37 °C and a minimum of 22 °C. April to June are the hottest months and December and January are the coldest with temperatures rising towards the end of February. Rainfall occurs mostly during the north-east monsoon in the months of October to December. However, the project stretch receives little rainfall, averaging 840 mm. Annual rainfall has ranged from 964 mm to 228 mm during past decades.

2.4 Terrain

The Project Road, traverses through plain terrain.

2.5 Abutting Land Use

The land use along the Project Road is predominantly agriculture or barren with intermittent built-up area.

2.6 Right of Way

The width of the existing Right of Way (ROW) for the Project Road is 60 m throughout its length.

2.7 Existing Utilities

During widening of the Project Road, various affected utility services were shifted to proposed ROW. The different types of utilities found along the road include, electrical poles, telephone poles, OFC cables, etc.

2.8 Development as per Schedule-B

The Project Road from Kayathar (km. 116+500) to Nanguneri village (km. 180+000) has been developed as a four-lane divided carriageway with median width of 2 m, service road at some built-up locations and other arrangements. The Project Road passes through rural as well as built-up sections.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Type of Structure	Unit	Scope	Remark
1	O&M of Main Carriageway	km.	63.50	
2	Construction of Service Road	km.	3.02	Total (LHS+RHS)
3	Repair & rehabilitation of Major Bridges	Nos.	05	
4	Repair & rehabilitation of Minor Bridges	Nos.	17	
5	Repair & rehabilitation of Box Culvert	Nos.	24	
6	Repair & rehabilitation of Pipe Culvert	Nos.	86	
7	Repair & rehabilitation of Flyover	Nos.	01	
8	Repair & rehabilitation of ROB	Nos.	03	
9	Repair & rehabilitation Vehicular Underpass (VUP)	Nos.	16	
10	Junction Improvement	Nos.	10	
11	Provision of Unlined Drain	m	2501	Total (LHS+RHS)
12	Provision of RCC Cover Drain	m	150	RHS

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The Project Road is four lane divided carriageway and generally has paved carriageway of 9.0 m with earthen shoulder of 1.5 m on either side. The Project Road has a median width of 2.0 m throughout its length.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the Toll Plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

Pavement condition survey was carried out from **17th March 2026 to 18th March 2026** through visual inspection for the entire project length. From the visual inspection, it is found that the average pavement condition of the Project Road is found to be Good.

Some of the photographs taken during the site visit are presented as below.

Figure 3-1 Photographs of Pavement Condition (MCW)

km. 125+510

km. 126+900

km. 142+050

km. 142+420

km. 180+010

km. 177+590

km. 130+200

km. 128+150

km. 133+500

km. 177+450

km. 122+100

km. 122+700

3.2 Service Road / Slip Road

The service road with a width of 5.50 m is constructed in built-up areas and adjoining underpass locations. The Project Road has a total length of 46.040 km of existing and new service road (which includes service road on both sides).

Figure 3-2 Photographs of Service Road / Slip Road

Service Road at km. 127+650 (LHS)

Service Road at km. 169+450 (RHS)

3.3 Major / Minor Junctions

There are 03 nos. of major junctions and 31 nos. of minor junctions along Project Road. The junction details are presented in the table below.

Table 3-1 Details of Major Junctions

Sr. No.	Chainage (km)	Type of Junction	Name of Access Road		Surface Type of Access Road	
			LHS	RHS	LHS	RHS
1	138+720	Y	Old NH	-	BT	
2	142+450	T		Village		BT
3	144+350	T		Renacon		ER+BT

The photographs taken during site visit is presented as below:

Figure 3-3 Photograph of Junctions

Major Junction at km. 142+450

Minor Junction at km. 122+810

3.4 Condition Survey of Bridge

The inventory of structures including major bridges, minor bridges, ROB's, flyover, underpasses and culverts is presented in table as below:

Table 3-2 Details of Summary for Structures

Type of Structure	Total Number of Structures
Major Structures:	
Road Over Bridge (ROB)	03
Flyover	01
Major Bridges (MJB)	05
Minor Bridges (MNB)	17
Vehicular Underpass (VUP)	16
Culverts:	
Pipe Culverts	86
Box Culverts	24
Total	**152**

The detailed condition survey of structures was carried out by visual inspection. The observations and findings are presented in table below:

Table 3-3 Condition Survey of Major Structure

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
Major Bridges								
1	127+850	LHS	6 x 17	7.5	10.5	RCC	Open	Structure is sound in condition. Vegetation need to be removed at waterway.
		RHS	6 x 17	7.5	10.5	RCC	Open	
2	130+100	LHS	11 x 17.3	7.5	10.5	RCC	Open	Structure is sound in condition. Vegetation need to be removed at waterway
		RHS	11 x 17.3	7.5	10.5	RCC	Open	
3	131+600	LHS	9 x 8	7.5	11	RCC	Open	Structure is sound in condition.
		RHS	5 x 18.7	7.5	10.5	RCC	Open	
4	139+450	LHS	15 x 12	7.5	11	RCC	Open	Structure is sound in condition.
		RHS	7 x 24	7.5	10.5	RCC	Open	
5	153+800	LHS	11 x 20	7.5	10.5	RCC	Open	Structure is sound in condition. Vegetation grown over abutment cap on A1 side.
		RHS	11 x 20	7.5	10.5	RCC	Open	

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
Minor Bridges								
1	118+440	LHS	4 x 5.8	7.5	8.5	RCC	Open	Structure is sound in condition. Vegetation at waterway need to be removed.
		RHS	4 x 5.8	12.5	13.5	RCC	Open	
2	118+640	LHS	3 x 4.8	7.5	8.5	RCC	Open	Structure is sound in condition. Silt & Vegetation need to be removed.
		RHS	3 x 4.8	12.5	13.5	RCC	Open	
3	122+110	LHS	2 x 6.5	7.5	8.5	RCC	Open	Structure is sound in condition. Silt & Vegetation need to be removed.
		RHS	2 x 6.5	12.5	13.5	RCC	Open	
4	123+210	LHS	2 x 5.4	7.5	8.5	RCC	Open	Structure is sound in condition. Silt & Vegetation need to be removed.
		RHS	2 x 5.4	9	10	RCC	Open	
5	125+510	LHS	2 x 6.8	7.5	8.5	RCC	Open	Structure is sound in condition. Silt deposited, need to be removed.
		RHS	2 x 6.8	12.5	12	RCC	Open	
6	129+100	LHS	1 x 9.5	9	10	RCC	Open	Structure is sound in condition. Silt deposited, need to be removed.
		RHS	1 x 9.5	9	10	RCC	Open	
7	139+990	SR+LHS	2 x 8	7+10.5	8+12.9	RCC	Open	Structure is sound in condition.

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Carriageway (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
		RHS+SR	2 x 8	10.5+7	10+8	RCC	Open	
8	140+400	SR+LHS	2 x 6.7	7+10.1	8+11.1	RCC	Open	Structure is sound in condition.
		RHS+SR	2 x 6.7	9+7	10+8	RCC	Open	
9	148+700	SR+LHS	3 x 4.75	7+8.75	8+9.75	RCC	Open	Structure is sound in condition.
		RHS+SR	3 x 4.75	10+7	11+8	RCC	Open	
10	151+700	LHS	2 x 10	9	10	RCC	Open	Structure is sound in condition.
		RHS	2 x 10	9	10	RCC	Open	
11	152+000	LHS	1 x 10	9	10.5	RCC	Open	Structure is sound in condition.
		RHS	1 x 10	9	10.5	RCC	Open	Vegetation need to be removed.
12	154+550	LHS	1 x 10	9	10	RCC	Open	Structure is sound in condition.
		RHS	1 x 10	9	10	RCC	Open	
13	156+210	LHS	1 x 10	9	10.5	RCC	Open	Structure is sound in condition.
		RHS	1 x 10	9	10.5	RCC	Open	Vegetation need to be removed.
14	156+450	LHS	3 x 7.5	7.5	10	RCC	Open	Structure is sound in condition.
		RHS	3 x 7.5	7.5	10	RCC	Open	
15	157+650	LHS	1 x 10	9	10	RCC	Open	Structure is sound in condition.
		RHS	1 x 10	9	10	RCC	Open	Water is stagnant. Need to correct it.
16	166+012	LHS	1 x 10	9	10	RCC	Open	Structure is sound in condition.
		RHS	1 x 10	9	10	RCC	Open	
17	166+350	LHS	1 x 10	9	10	RCC	Open	Structure is sound in condition.
		RHS	1 x 10	9	10	RCC	Open	
18	172+800	LHS				RCC	Open	Structure is sound in condition.
		RHS				RCC	Open	

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Total Length (m)	Carriageway width (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
Flyover									
1	159+400	Both	20 + 30 + 5 x 20 + 30 + 20	200	9.5	12.5	RCC	Open	Structure is sound in condition.

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Total Length of Bridge (m)	Carriageway (m)	Deck Width (m)	Type of structure	Type of foundation	Remarks
ROB									
1	150+600	LHS	1 x 33.3	33.3	7.5	10	RCC	Open	Structure is sound in condition. Steel expose at diaphragm beam
		RHS	1 x 33.3	33.3	7.5	10	RCC	Open	
2	161+520	LHS	1 x 27.3	27.3	9.5	12.5	RCC	Open	Structure is sound in condition.
		RHS	1 x 27.3	27.3	9.5	12.5	RCC	Open	
3	179+380	LHS	3 x 22.10 + 26.70 + 22.10	70.9	9	12.5	RCC	Open	Structure is sound in condition.
		RHS	1 x 12.14	12.14	9	10.5	RCC	Open	

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Total Length of Bridge (m)	Carriageway (m)	Deck Width (m)	Type of structure	Remarks
VUP								
1	127+600	LHS	2 x 10	20	10.25	25	RCC	Structure is sound in condition.
		RHS	2 x 10	20	10.25		RCC	
2	128+210	LHS	1 x 10	10	9	10	RCC	Structure is sound in condition.
		RHS	1 x 10	10	9	10	RCC	
3	130+730	LHS	2 x 10	20	9.75	25	RCC	Structure is sound in condition.
		RHS	2 x 10	20	9.75		RCC	
4	140+700	LHS	1 x 10	10	10.25	25	RCC	Structure is sound in condition.
		RHS	1 x 10	10	10.25		RCC	
5	148+860	LHS	2 x 10	20	8.75	20	RCC	Structure is sound in condition.
		RHS	2 x 10	20	8.75		RCC	
6	149+130 (LVUP)	LHS	1 x 10	10	8.75	20	RCC	Structure is sound in condition.
		RHS	1 x 10	10	8.75		RCC	
7	150+190	LHS	2 x 10	20	8.75	20	RCC	Structure is sound in condition.
		RHS	2 x 10	20	8.75		RCC	
8	151+125	LHS	1 x 5.0	5	10.5	32	RCC	Structure is sound in condition.
		RHS	1 x 5.0	5	10.5		RCC	
9	153+630	LHS	1 x 10	10	9.75	25	RCC	Structure is sound in condition.
		RHS	1 x 10	10	9.75		RCC	

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Total Length of Bridge (m)	Carriageway (m)	Deck Width (m)	Type of structure	Remarks
10	157+050	LHS	1 x 10	10	9.75	25	RCC	Structure is sound in condition.
		RHS	1 x 10	10	9.75		RCC	
11	161+390	LHS	1 x 12.7	12.7	9.5	27	RCC	Structure is sound in condition.
		RHS	1 x 12.7	12.7	9.5		RCC	
12	162+710	LHS	1 x 10	10	9.75	25	RCC	Structure is sound in condition.
		RHS	1 x 10	10	9.75		RCC	
13	166+650	LHS	1 x 10	10	9.75	25	RCC	Structure is sound in condition.
		RHS	1 x 10	10	9.75		RCC	
14	169+475	LHS	2 x 10	20	9.75	25	RCC	Structure is sound in condition.
		RHS	2 x 10	20	9.75		RCC	
15	171+780	LHS	1 x 10	10	8.75	20	RCC	Structure is sound in condition.
		RHS	1 x 10	10	8.75		RCC	
16	173+600	LHS					RCC	Structure is sound in condition. Not In concessionaire scope
		RHS					RCC	

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Total Length of Bridge (m)	Carriageway (m)	Deck Width (m)	Type of structure	Remarks
LVUP								
1	149+130	LHS	1 x 10	10	8.75	20	RCC	Structure is sound in condition.
		RHS	1 x 10	10	8.75		RCC	
2	158+260	LHS	1 x 10	10	9.75	24	RCC	Structure is sound in condition.
		RHS	1 x 10	10	9.75		RCC	

Sr. No.	Chainage (km)	Side	Span Arrangement (m)	Total Length of Bridge (m)	Carriageway (m)	Deck Width (m)	Type of structure	Remarks
PUP								
1	149+600	LHS				25	RCC	Structure is sound in condition. Not in Concessionaire scope.
		RHS					RCC	

Figure 3-4 Photographs of Major Structures

View of MNB at km. 118+640

View of MJB at km. 127+850

View of MJB at km. 130+100

View of MJB at km. 139+450

View of LVUP at km. 149+130

View of Flyover at km. 159+400

View of VUP at km. 169+400

View of ROB at km. 179+380

3.5 Condition Survey of Culverts

The cross-drainage structure includes hume pipe culverts and box culverts at various locations. There are 110 Nos. of culverts along the Project Road. The height of culvert varies from 1.0 m to 3.0 m from bed level. During the condition survey of structure, these culverts were inspected on sample basis.

The project involves strengthening and widening of existing road to four lane divided carriageway. The culverts beneath existing alignment are either widened or reconstructed. The structural condition of culverts is generally found in sound condition. The quality of surface concrete of box culverts is satisfactory. The RCC parapet, crash barrier or RCC railing has been provided at culvert locations, which is maintained properly.

In most of culverts, the waterway is clear. However, near to urban area and some location is found blocked due to debris, drainage water or bushes, tree growth, which will be removed by the Concessionaire. The cement concrete pitching or stone pitching has been provided for slope protection.

The culverts are maintained by the Concessionaire during O&M period. However, in case of few culverts, cement concrete pitching has been damaged which required to be addressed under routine repair work by the Concessionaire.

The photographs taken during site visit is presented as below.

Figure 3-5 Photographs of Culverts

Pipe culvert at km. 122+835

Box culvert at km. 123+180

3.6 Drainage

There are 6.030 kms of existing drain (which includes drain on both sides) of the Project Road. However, 0.150 kms of RCC drain is additionally constructed in locations where service roads are provided.

3.7 Slope Protection

Slope protection and chute drains are found on Project Road at required locations. A few of the slope protection and chute drains are damaged which need to be rectified by the Concessionaire.

3.8 Road Furniture

The Concessionaire has provided additional road furniture along the Project Road as per the standards and specifications mentioned in Schedule-C. The details of the items are provided below.

a) Lighting Along the Project Road

Highway lighting is provided at underpasses, flyovers, toll plaza, ROBs and built-up locations. High mast lighting is provided at toll plaza location. Highway lighting is also provided at approaches of underpass and flyovers.

b) Transverse / Thermoplastic Bar Marking Locations

Transverse / Thermoplastic Bar Markings on either side of carriageway is provided as per Section 11.2 of IRC:35-2015.

c) New Installation of Safety Barriers

There are 3015 m of new installation of safety barriers installed by the Concessionaire along the Project Road.

d) Additional Gantry / Cantilever Sign Board

As per schedule-B, additional gantry/ cantilever sign is provided at the following locations.

Table 3-4 Details of Additional Gantry / Cantilever Sign

Sr. No.	Chainage (km)	Side	Location	Type
1	130+600	BHS	Underpass	Cantilever Gantry Sign Board
2	140+500	BHS	Underpass	Cantilever Gantry Sign Board
3	159+000	BHS	Flyover	Cantilever Gantry Sign Board
4	166+550	BHS	Underpass	Cantilever Gantry Sign Board

Pavement Marking

Pavement marking for the Project Road is done as per the design standards indicated in section 12 of Schedule-D. Pavement marking is faded at some locations which will be rectified by the Concessionaire. Some of the photographs of road marking are presented below.

Figure 3-6 Photographs of Pavement Marking

km. 126+800

km. 127+100

km. 156+210

km. 157+650

Road Studs

Road studs / Cat's eye for the Project Road is provided as per the design standards indicated in section 12 of Schedule-D. Road studs / Cat's eye has been fixed at junction and zebra crossings. However, at a few locations some cat eyes have been damaged, which will be rectified by the Concessionaire.

Traffic Signage / Median Kerb painting / KM Stone

Traffic signs includes roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Roadside signs, overhead signs, kerb mounted signs, Kilometre stones, vertical post of sign boards, chevron boards and median kerb paint are all in good condition.

Some of the photographs of sign boards are presented below.

Figure 3-7 Photographs of Sign Boards

Informatory warning board at km.118+440

Gantry board with name & direction at km.126+400

Km stone at km. 140+000

Hectometer stone at km. 128+200

Direction name board at km. 157+650

Indicative signage for median opening at km. 139+600

Highway Lighting

Highway lighting is provided at underpasses, flyovers, toll plaza, ROBs and built-up locations. High mast lighting is provided at toll plaza location. Highway lighting is also provided at approaches of underpass and flyovers.

Figure 3-8 Photographs of Highway Lighting

km.124+210

km. 160+400

Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site.

Some of the photographs of metal beam crash barriers are presented below.

Figure 3-9 Photographs of MBCB / Crash Barrier

km. 123+200 (LHS)

km. 127+950 (RHS)

Delineators

The traffic delineators are provided by Concessionaire for road users in abnormal condition of weather for the Project Road. The same is maintained by the Concessionaire. Some of the photographs of delineators are presented below.

Figure 3-10 Photographs of Delineator

km. 125+400 (RHS)

km. 126+400 (LHS)

Pedestrian Guard Rail

The pedestrian guard rails are provided in the median. It is maintained by the Concessionaire.

Some of the photographs of pedestrian guard rails are presented below.

Figure 3-11 Photographs of Pedestrian Guard Rail

km. 142+020 (Service roadside)

km. 153+350 (Median portion)

Road Land Boundary

Road land boundary pillar has been found / available on Project Road.

3.9 Avenue Plantation and Median Plantation

Avenue plantations are done in open country location and median plantation has been provided in the project length as per IRC specification.

Some of the photographs taken during the site visit are presented below.

Figure 3-12 Photographs of Avenue Plantation

km. 117+500 (LHS)

km. 122+210 (LHS)

Figure 3-13 Photographs of Median Plantation

km. 125+600 to km. 126+900

km. 151+300 to km. 152+100

3.10 Toll Plaza

As per the Concession Agreement, there is one existing toll plaza at Salaipudhur Village at km. 125+350 with the following infrastructure.

Table 3-5 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details
1	Toll Plaza Chainage	km. 125+350
2	Number of Tolling Lanes	8 lanes for toll operation plus 2 lanes for over dimensional vehicles.
3	Weigh in Motion Facility (Number of Lanes)	Yes
4	No. of ETC Lanes	in each direction
5	Number of Toll Booths	9 singles
6	Canopy	Present
7	Administrative Building	Present
8	Parking cum Toilet Block	Present
9	Availability of Tunnel or Elevated Walkway for Movement between Toll Lanes and Administrative Building	Tunnel/no
10	Availability of Static Weigh Bridge	Yes
11	Availability of Loading/Unloading Facility for Overloaded Vehicles	No
12	Storage facility for Overloaded Material	No
13	High mast Light	Yes
14	Streetlight	Yes
15	Low mast Light	No
16	User Fee Boards	4
17	Cantilever/Gantry Boards	Yes
18	Automatic boom barrier	Yes

Figure 3-14 Photographs of Toll Plaza

Toll Plaza at km. 125+350

Toll Plaza at km. 125+350

3.11 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors
4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.11.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction).

RFID

3.11.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data.

Lane Controller at Toll Plaza

3.11.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVCC at Toll Plaza

3.11.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at Toll Plaza

3.11.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL at Toll Plaza

3.11.6 Incident Capture Camera (AVC Camera)

The incident capture camera is installed on island of the booth to capture the image of the vehicle from the back side. The AVC triggers the Image capture system.

3.11.7 License Plate Image Capture Camera (LPIC)

License Plate Image capture camera is installed on a 3 m pole facing incoming vehicle to capture the image of the vehicle number plate.

3.11.8 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane “Open” and “Close” sign consists of a pair of “GREEN” (arrow) and “RED” (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at Toll Plaza

3.11.9 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer
- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and type of ticket.

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.

Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

Toll Booth at Toll Plaza

3.11.10 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

MSWIM at Toll Plaza

3.12 Plaza Equipment

3.12.1 TMS Server

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio WiFi module. Firewall with Sophos antivirus is provided.

3.12.2 55" LED screen for CCTV monitoring

55" LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

The toll plaza manager is able to observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager is able to comprehend the situation at the lane by a zoomed view of the particular lane.

3.12.3 Workstations in Control Room, POS room

Workstations are available in control room (lane monitoring, administration, and audit), cash room and PoS.

3.13 Advanced Traffic Management System (ATMS)

Advanced Traffic Management System (ATMS) installed for the Project Road is controlled by the ATMS center at the toll plaza location (km. 125.350). As per Concession Agreement, ATMS shall conform to ATMS Policy guidelines (2016) which comprises of the following:

- Automatic Traffic Counter cum Classifier (ATCC)
- Mobile Radio communication system
- Emergency Call Box
- Portable Weigh in Motion
- Meteorological Data system
- Variable Message Signboards (VMS)
- CCTV system

- Video Incident Detection System (VIDS)
- Vehicle actuated Speed Display (VASD)

Status of these systems at site are described below:

3.13.1 Automatic Traffic Counter cum classifier (ATCC)

Automatic Traffic Counter cum Classifiers (ATCC) is installed at Toll Plaza (km. 125+350).

3.13.2 Mobile Radio communication System (MRCS)

Mobile Radio communication System (MRCS) is not yet installed. Application for MRCS UHF band has been sought from WPC, DoT, Ministry of Communications which is not yet allocated.

3.13.3 Emergency Call Boxes (ECB)

ECB's are not installed at site.

3.13.4 Portable Weigh in Motion (PWIM)

PWIM's are provided at site.

3.13.5 MET System

Meteorological sensors comprise of sensors to measure the atmospheric temperature, humidity, pavement surface temperature, visibility and equipment for measuring wind speed and direction and installed at Toll Plaza km 125.350.

3.13.6 Variable Message Signboards (VMS)

Variable message sign boards are installed at 10 locations. These display specific messages to the users based on the prevailing conditions on the highway. The message can be changed at any point of time from the HTMS centre. About 250 customised messages can be stored on the system.

3.13.7 CCTV Surveillance Cameras

Surveillance cameras are installed at 34 locations along the Project Road. The ATMS control room has video wall to monitor these locations through the cameras installed.

3.13.8 Video Incident Detection System

45 nos. fixed CCTV cameras are installed as part of Video incident detection system.

3.13.9 Vehicle Actuated Speed Display (VASD)

VASD is installed at 11 locations each on LHS and RHS.

3.13.10 Adequacy of Toll Collection System and ATMS

- Adequacy-All lanes are hybrid ETC system as stipulated by NHAI in Technical Specifications of Hybrid ETC system. NHAI has approved maintenance costs for TMS. TMS shall be upgraded every 5 years at the cost of the Authority.

- Advanced Traffic Management System (ATMS) installed is as per specifications required by the Authority and in working condition.

3.14 Truck Lay-bye

The truck lay-bye are provided at the following locations on Project Road.

Table 3-6 Details of Truck Lay-bye

Sr. No.	Chainage (km)	Remarks
1	130+100	LHS
2	139+500	RHS

3.15 Traffic Aid Post and Medical Aid Post

Traffic Aid Post and Medical Aid Posts are present in the toll plaza location at 125.350.

3.16 Toilet Block

Toilet blocks are provided at the Toll Plaza on Project Road.

3.17 Bus Bays and Passenger Shelters

There are 36 Nos. of bus bays / shelter along the Project Road.

The photographs taken during the site visit are presented below.

Figure 3-15 Photographs of Passenger Shelter

3.18 Balance Work Status

There are no balance work to be executed as per the Concession Agreement.

It is to be noted that at present, at three different locations along the project highway, NHAI has allotted COS works to third party on stand-alone basis. In the said 02 locations, along the project length, underpass & approach construction is being carried out by the third party. Thus, a total length of 3.10 km of project length (where COS / new construction works are in progress), out of total project length of 53.50 kms, is not under the maintenance scope of the Concessionaire at present.

3.19 Operation and Maintenance

3.19.1 O&M Contract

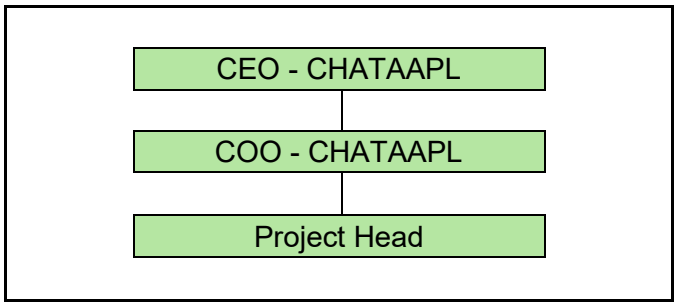
As per Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall confirm to all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement. The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

3.19.2 Organization Chart

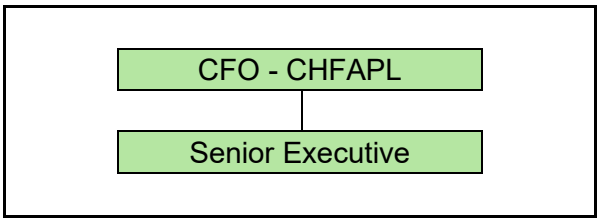
The Concessionaire has shared the Organization Chart at site for Operation and maintenance. Accordingly, there is 01 Project Head, 01 Senior Executive (HR), 01 Manager (TMS / IT), 01 Executive (TMS / IT), 01 supervisor , 01 executive, 01 electrician 01 Plaza Manager, 01 Assistant Plaza Manager, 03 Cashiers and 04 validators to carry

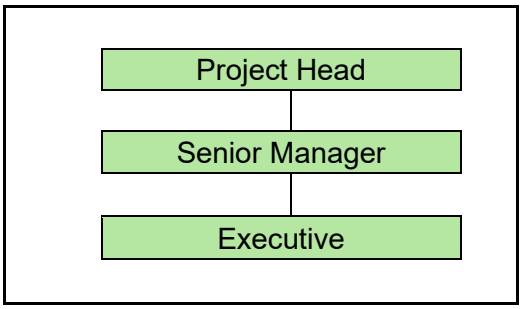
out O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent subcontractors.

Organization Chart

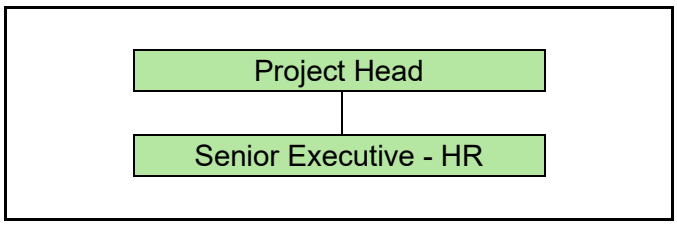


Finance & Accounts

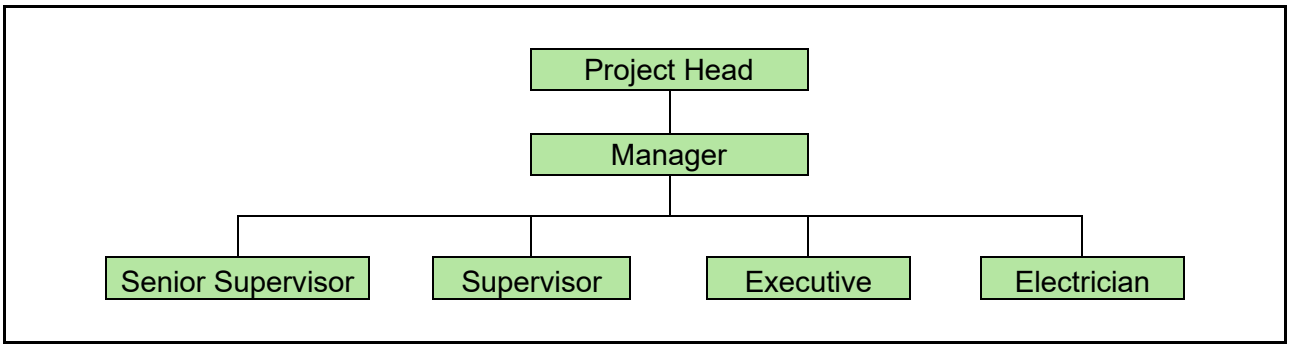




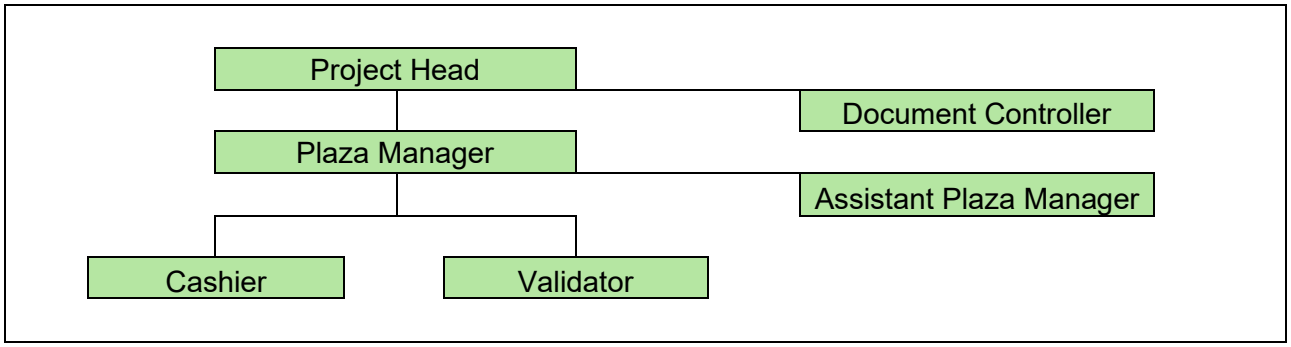
Human Resource



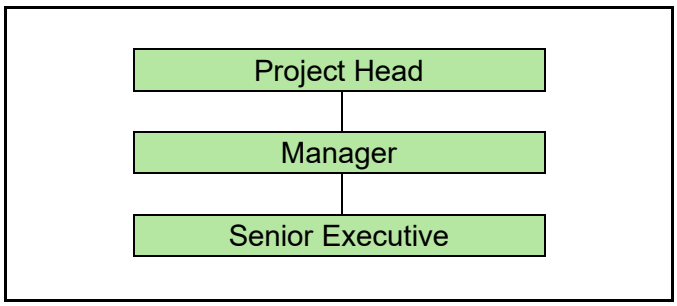
Operations & Maintenance



Operations System



Traffic and safety



3.19.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.19.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Article 15 and Schedule-F of the Concession Agreement defines the Operation and Maintenance requirement during the concession period.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 30 years from the Appointed Date (as TOT Package i.e., 20th October 2020) including construction period.

4.2 Axle Load and VDF

The Concessionaire has conducted the Axle Load Survey on Project Road at km. 125.780 (near Toll Plaza) from 17th March 2020 to 19th March 2020. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-1 Vehicle Damage Factor

Weighted Average VDF Values			
Sr. No.	Vehicle Type	Direction	
		Madurai - Kanyakumari	Kanyakumari - Madurai
1	BUS	0.777	0.968
2	LCV	0.808	0.695
3	2-Axle	2.921	3.279
4	3-Axle	5.656	5.103
5	MAV	13.441	7.893

4.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data as provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-2 MSA Calculation

Year	MSA (LHS)	Cumulative MSA (LHS)	MSA (RHS)	Cumulative MSA (RHS)	Remarks
FY27	2.21	**2.21**	1.66	**1.66**	
FY28	2.29	**4.50**	1.71	**3.37**	
FY29	2.37	**6.87**	1.77	**5.14**	1st MM Cycle
FY30	2.45	**9.32**	1.83	**6.97**	1st MM Cycle
FY31	2.54	**11.86**	1.89	**8.86**	
FY32	2.62	**14.48**	1.95	**10.81**	
FY33	2.71	**17.19**	2.01	**12.82**	
FY34	2.80	**19.99**	2.08	**14.90**	
FY35	2.90	**22.89**	2.15	**17.05**	
FY36	2.99	**25.88**	2.21	**19.26**	2nd MM Cycle

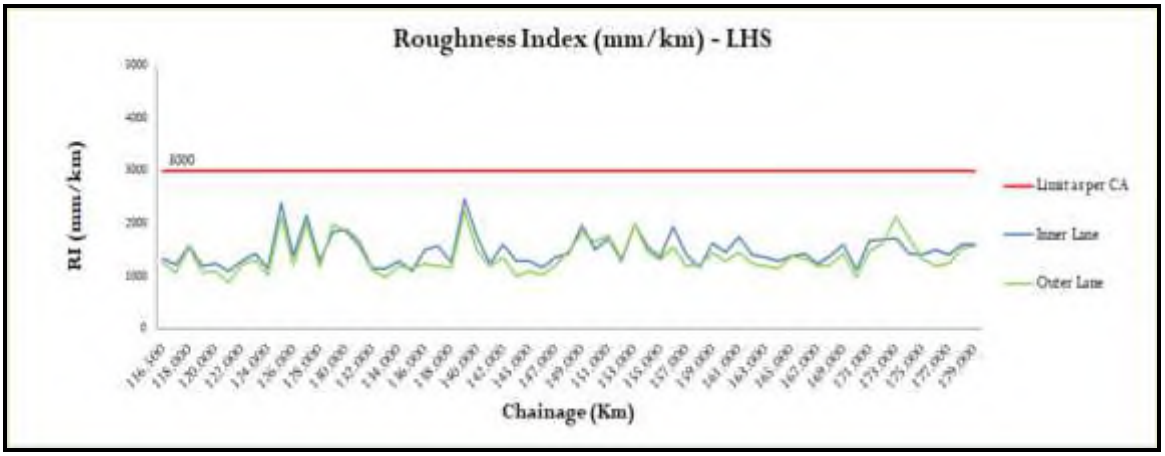
Year	MSA	Cumulative	MSA	Cumulative	Remarks
FY37	3.09	**28.97**	2.28	**21.54**	2nd MM Cycle
FY38	3.19	**32.16**	2.35	**23.89**	
FY39	3.29	**35.45**	2.42	**26.31**	
FY40	3.39	**38.84**	2.49	**28.80**	
FY41	3.49	**42.33**	2.57	**31.37**	
FY42	3.60	**45.93**	2.64	**34.01**	Crossing 40,000 PCU's limit & 3rd MM cycle
FY43	3.71	**49.64**	2.72	**36.73**	Crossing 40,000 PCU's limit & 3rd MM cycle
FY44	3.82	**53.46**	2.80	**39.53**	Crossing 40,000 PCU's limit
FY45	3.93	**57.39**	2.88	**42.41**	Preparation of DPR
FY46	4.05	**61.44**	2.96	**45.37**	Preparation of DPR
FY47	4.16	**65.60**	3.04	**48.41**	Augmentation 6-Laning (Assuming 3 years Construction Period)
FY48	4.28	**69.88**	3.13	**51.54**	Augmentation 6-Laning (Assuming 3 years Construction Period)
FY49	4.40	**74.28**	3.21	**54.75**	Augmentation 6-Laning (Assuming 3 years Construction Period)
FY50	3.62	**77.90**	2.64	**57.39**	
FY51	3.72	**81.62**	2.71	**60.10**	

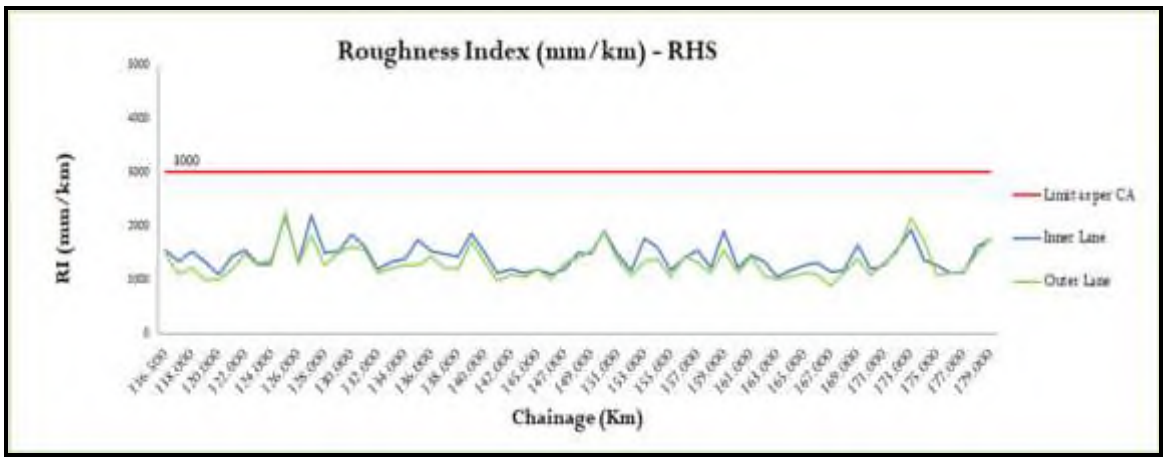
4.4 Network Survey Vehicles (NSV) Survey

The Concessionaire has conducted pavement condition survey on each lane of carriageway through NSV. The NSV survey was conducted on the Project Road on 1st March 2026. The summary of the same is presented below.

Table 2-3: Summarized condition of Roughness as per Concession Agreement for all lanes (MCW)

Roughness Summary % as per Schedule F of CA (mm/km) - MCW					
Condition	Limit as per Schedule F of Concession Agreement (mm/km)	LHS		RHS	
		Inner Lane	Outer Lane	Inner Lane	Outer Lane
Good	<3000	100.00%	100.00%	100.00%	100.00%
Poor	>3000	0.00%	0.00%	0.00%	0.00%

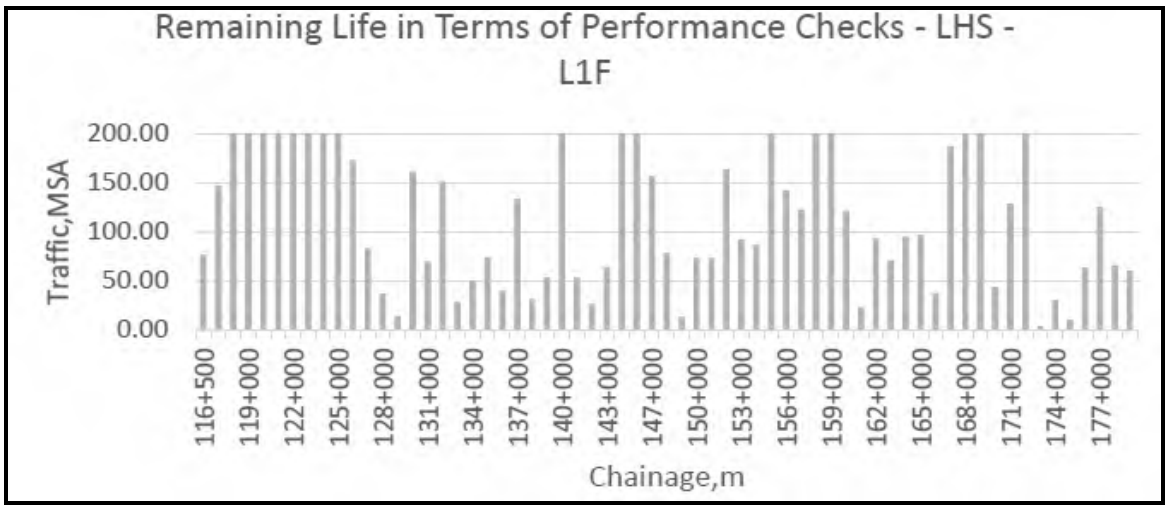


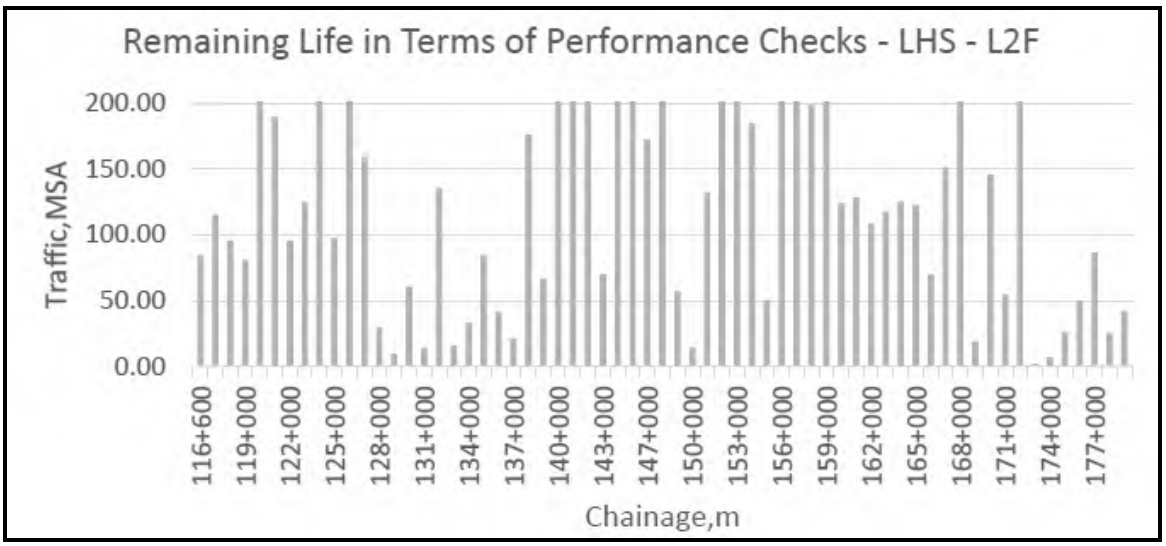


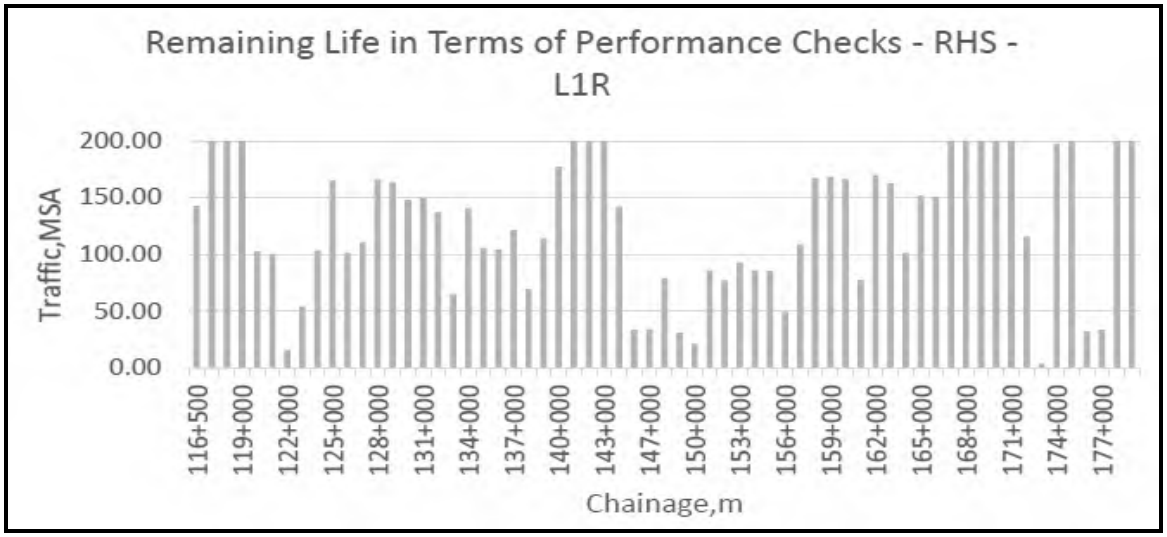
4.5 FWD Survey

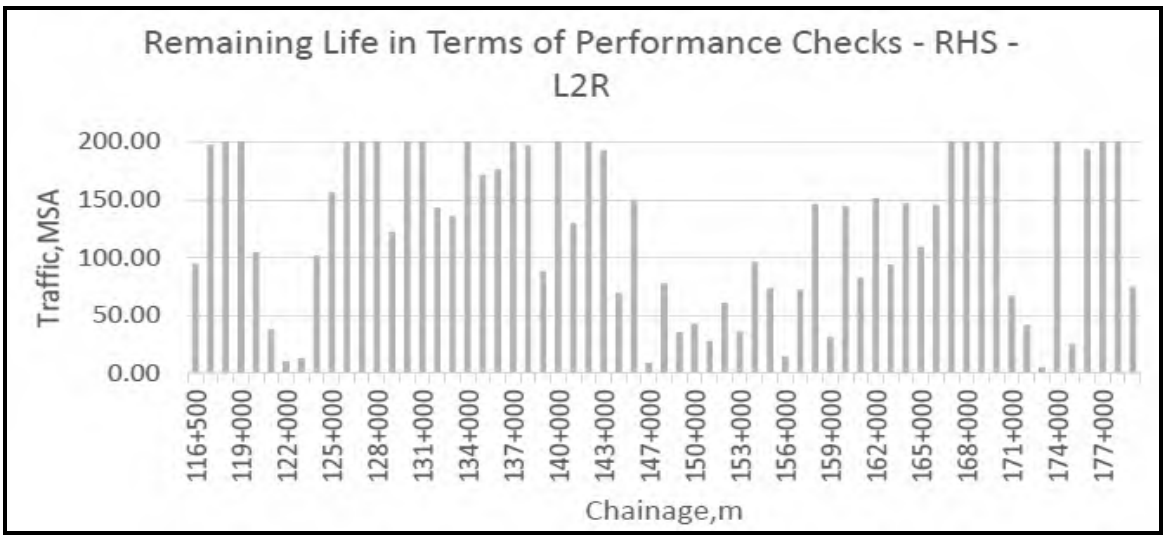
The structural evaluation and analysis of the remaining life of project was carried out in conformity with IRC:115-2014 “Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique”.

The FWD survey was conducted on the Project Road on 4th March 2026 to 09th March 2026. The summary of the same is presented below.









However, the maintenance can be carried out on as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. However, improvement in Riding Quality is expected if the roughness value exceeds 3000 mm/km.

4.6 Test pit and Subgrade Investigation

The Concessionaire has carried out the subgrade investigation for Project Road. The results of the same as provided by the Concessionaire are tabulated as below.

Sr. No.	Road Name	Existing Chainage (km)	Side	DCP-CBR
1	NH-7	117+500	RHS	13.1
2	NH-7	120+000	LHS	24.3
3	NH-7	122+600	RHS	15.2
4	NH-7	125+000	LHS	13.9
5	NH-7	128+000	RHS	15.3
6	NH-7	130+700	LHS	19.9
7	NH-7	131+600	RHS	16.2
8	NH-7	132+500	RHS	14.4
9	NH-7	135+000	LHS	17.2

Sr. No.	Road Name	Existing Chainage (km)	Side	DCP-CBR
10	NH-7	137+400	RHS	16.3
11	NH-7	137+550	RHS	13.9
12	NH-7	139+800	LHS	16.1
13	NH-7	142+700	RHS	15.6
14	NH-7	145+000	LHS	20.0
15	NH-7	147+550	RHS	12.4
16	NH-7	150+800	LHS	14.1
17	NH-7	152+450	RHS	13.9
18	NH-7	154+650	LHS	17.0
19	NH-7	155+000	LHS	12.2
20	NH-7	157+000	LHS	21.6
21	NH-7	157+100	RHS	13.5
22	NH-7	160+020	LHS	17.2
23	NH-7	162+700	RHS	15.3
24	NH-7	164+950	LHS	11.2
25	NH-7	166+800	RHS	13.4
26	NH-7	170+150	LHS	12.6
27	NH-7	172+400	RHS	16.8
28	NH-7	175+000	RHS	19.7
29	NH-7	177+200	RHS	16.4
30	NH-7	177+300	LHS	13.7
31	NH-7	180+000	LHS	16.9
Average DCP-Equivalent CBR				**15.8**

Table 4-3 Test Results Summary of granular layer Samples

Sr. No.	Chainage (km)	Side (LHS/RHS)	Type of Sample	Cumulative Percentage of Passing through IS Sieve (mm)												MoRTH 5th Revision	MoRTH 4th Revision	Atterberg Limits			Specific Gravity	W.A (%)	AIV (%)
				75	53.0	45.0	26.5	22.4	11.2	9.5	4.75	2.36	0.600	0.425	0.075			Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)			
1	117+500	RHS	WMM	100.0	93.5	85.2	51.4	46.9	28.7	24.2	19.0	15.1	9.2	7.3	0.6	Not Conforming to any Gradation	Not Conforming to any Gradation	21	NP	NP	2.83	0.33	34.97
2	120+000	LHS	GSB	100.0	100.0	92.1	53.1	44.2	19.9	14.9	10.2	6.6	3.1	2.4	0.7	4.75mm IS Sieve Material is Slightly Coarser side in GSB-IV	4.75mm IS Sieve Material is Slightly Coarser side in GSB-V	23	18	5	2.82	0.39	35.47
3	122+600	RHS	GSB	100.0	100.0	100.0	68.0	59.8	34.2	28.0	21.5	16.3	10.5	8.7	1.1	Conforming to GSB-III & IV	Conforming to GSB-III & IV	21	NP	NP	2.76	0.23	32.71
4	125+000	LHS	WMM	100.0	100.0	100.0	91.9	78.6	41.0	32.7	24.6	20.7	11.8	9.4	1.0	4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	22	NP	NP	2.77	0.21	30.15
5	128+000	RHS	WMM	100.0	100.0	100.0	76.3	48.9	36.2	30.5	26.9	19.5	11.9	8.6	1.2	22.4mm,11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	22.4mm,11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	23	NP	NP	2.80	0.25	27.57
6	130+700	LHS	GSB	100.0	98.3	82.6	6.5	0.8	0.5	0.4	0.3	0.3	0.3	0.2	0.2	Not Conforming to any Gradation	Not Conforming to any Gradation	24	NP	NP	2.83	0.30	30.18
7	131+600	RHS	WMM	100.0	100.0	98.6	58.5	46.7	38.1	31.0	26.5	20.3	16.8	10.2	1.0	22.4mm,11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	22.4mm,11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	20	NP	NP	2.74	0.28	31.63
8	132+500	RHS	GSB	100.0	100.0	98.2	58.2	44.1	18.2	13.6	9.7	7.1	4.7	4.5	0.5	4.75mm, IS Sieve Material is Slightly Coarser Side in GSB-III & IV	4.75mm, IS Sieve Material is Slightly Coarser Side in GSB-IV & V	21	NP	NP	2.81	0.25	32.6
9	135+000	LHS	WMM	100.0	100.0	100.0	95.6	83.6	37.9	31.1	26.8	20.7	14.3	12.4	0.8	22.4mm IS Sieve Material Slightly Finer & 11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	22.4mm IS Sieve Material Slightly Finer & 11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	19	NP	NP	2.80	0.24	28.35
10	137+400	RHS	WMM	100.0	100.0	96.2	85.6	68.2	36.9	32.5	19.3	16.1	10.8	9.2	1.3	11.2mm,4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	11.2mm,4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	19	NP	NP	2.81	0.29	29.87
11	137+550	RHS	WMM	100.0	100.0	100.0	91.5	74.6	46.8	35.4	30.2	18.6	15.4	10.8	1.8	Confirming to WMM Gradation	Confirming to WMM Gradation	19	NP	NP	2.78	0.28	26.86
12	139+800	LHS	GSB	100.0	100.0	96.8	64.2	42.5	34.9	19.5	9.2	6.3	4.1	2.2	1.1	4.75mm IS Sieve Material is Slightly Coarser side in GSB-III&IV	4.75mm IS Sieve Material is Slightly Coarser side in GSB-IV&V	20	NP	NP	2.83	0.25	33.42
13	142+700	RHS	GSB	100.0	100.0	98.0	68.5	52.6	31.6	21.3	10.9	8.2	5.2	3.8	1.5	Confirming to GSB-III	Confirming to GSB-IV	23	NP	NP	2.82	0.24	35.14
14	145+000	LHS	WMM	100.0	100.0	100.0	75.5	55.9	35.3	30.3	30.0	20.2	8.9	6.4	0.9	22.4mm,11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	22.4mm,11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	22	NP	NP	2.79	0.31	30.15
15	147+550	RHS	WMM	100.0	100.0	100.0	72.7	60.7	36.9	31.9	26.9	23.0	11.7	9.2	1.0	11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	11.2mm IS Sieve Material Slightly Coarser side in WMM Gradation	20	NP	NP	2.82	0.32	33.24
16	150+800	LHS	GSB	100.0	100.0	100.0	43.7	35.2	15.0	13.1	11.4	9.7	7.3	6.1	1.0	26.5mm IS Sieve Material is Slightly Coarser Side in GSB-III	26.5mm IS Sieve Material is Slightly Coarser Side in GSB-IV	22	NP	NP	2.74	0.24	31.24
17	152+450	RHS	GSB	100.0	100.0	88.0	62.3	44.1	36.5	30.2	29.4	26.8	21.5	11.6	4.6	9.5mm IS Sieve Material Slightly Coarser side in GSB-I	9.5mm IS Sieve Material Slightly Coarser side in GSB-I	20	NP	NP	2.79	0.31	32.41
18	154+650	LHS	GSB	100.0	100.0	96.5	74.1	65.7	46.6	45.9	35.3	28.9	21.2	13.5	11.1	0.075 mm IS Sieve Material is Slightly Finer Side in GSB-I	0.075 mm IS Sieve Material is Slightly Finer Side in GSB-I	23	NP	NP	2.77	0.38	31.06
19	155+000	LHS	WMM	100.0	100.0	100.0	65.5	55.6	43.5	30.5	28.8	19.2	13.8	7.9	0.7	22.4mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	22.4mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	21	NP	NP	2.74	0.26	24.67
20	157+000	LHS	WMM	100.0	100.0	100.0	50.2	40.3	29.8	29.0	27.6	23.3	16.3	13.0	1.7	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side	19	NP	NP	2.82	0.29	29.23

Sr. No.	Chainage (km)	Side (LHS/RHS)	Type of Sample	Cumulative Percentage of Passing through IS Sieve (mm)												MoRTH 5th Revision	MoRTH 4th Revision	Atterberg Limits			Specific Gravity	W.A (%)	AIV (%)
				75	53.0	45.0	26.5	22.4	11.2	9.5	4.75	2.36	0.600	0.425	0.075			Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)			
																in WMM Gradation	in WMM Gradation						
21	157+100	RHS	WMM	100.0	100.0	100.0	48.7	38.9	5.8	2.1	0.9	0.8	0.8	0.7	0.4	Not Conforming to Any Gradation	Not Conforming to Any Gradation	20	NP	NP	2.83	0.32	27.53
22	160+020	LHS	GSB	100.0	100.0	96.8	58.4	43.4	11.7	9.4	8.1	6.2	4.0	3.3	0.2	4.75mm, IS Sieve Material is Slightly Coarser Side in GSB-III & IV	4.75mm, IS Sieve Material is Slightly Coarser Side in GSB-IV& V	20	NP	NP	2.79	0.26	26.15
23	162+700	RHS	GSB	100.0	100.0	100.0	55.9	39.7	14.2	11.9	9.9	7.8	6.1	5.3	1.0	4.75mm, IS Sieve Material is Slightly Coarser Side in GSB-IV & V	4.75mm, IS Sieve Material is Slightly Coarser Side in GSB-III & V	23	NP	NP	2.82	0.37	31.55
24	164+950	LHS	WMM	100.0	100.0	100.0	82.0	67.1	45.3	35.9	21.6	16.8	12.1	9.8	0.6	4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	4.75mm IS Sieve Material Slightly Coarser side in WMM Gradation	22	NP	NP	2.74	0.22	27.69
25	166+800	RHS	WMM	100.0	100.0	92.9	59.8	50.9	27.6	19.0	10.3	6.1	3.0	2.6	0.4	Not Conforming to any Gradation	Not Conforming to any Gradation	21	NP	NP	2.76	0.36	27.63
26	170+150	LHS	GSB	100.0	97.1	89.1	47.4	36.7	25.2	22.3	19.2	16.9	10.9	8.2	0.8	53mm,26.5 mm IS Sieve Material is Slightly Coarder Side in GSB-IV	26.5 mm IS Sieve Material is Slightly Coarder Side in GSB-IV	20	NP	NP	2.76	0.44	32.23
27	172+400	RHS	GSB	100.0	100.0	97.8	67.3	60.2	41.1	37.0	32.3	27.0	14.9	11.3	1.1	Conforming to GSB-I	Conforming to GSB-I	22	NP	NP	2.77	0.42	35.93
28	175+000	RHS	WMM	100.0	100.0	100.0	47.6	41.8	32.8	28.4	25.6	21.5	18.2	15.2	1.1	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	22.4mm,11.2mm IS Sieve Material is Slightly Coarser Side in WMM Gradation	20	NP	NP	2.83	0.41	36.45
29	177+200	RHS	WMM	100.0	100.0	95.2	65.3	62.3	48.2	34.3	30.2	23.6	16.8	16.2	1.1	Conforming to WMM Gradation	Conforming to WMM Gradation	22	NP	NP	2.81	0.38	34.26
30	177+300	LHS	WMM	100.0	100.0	100.0	73.2	62.7	40.1	34.3	28.7	23.5	14.4	10.6	0.5	Conforming to WMM Gradation	Conforming to WMM Gradation	21	NP	NP	2.75	0.34	33.45
31	180+000	LHS	GSB	100.0	97.8	82.2	47.6	43.9	34.8	31.9	27.8	23.8	13.9	10.4	0.2	53mm,26.5 mm IS Sieve Material is Slightly Coarder Side in GSB-III &IV	26.5 mm IS Sieve Material is Slightly Coarder Side in GSB-IV	23	NP	NP	2.78	0.38	36.52

Table 4-4 Test Results Summary of Natural Ground Soil Samples

Sr. No.	Location (Km.)	Side (LHS / RHS)	Soil Classification as per IS: 1498	Gradation: Percent by weight passing through the Sieve (IS:2720-IV)						Clay & silt content %	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		4-Days Soaked CBR (%)	Free Swell Index (%)
				19.0 mm	10.0 mm	4.75 mm	2.0 mm	425 microns	75 microns		Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density (gm/cc)	OMC (%)		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	133+200	LHS	SM	95.5	88.5	65.3	6	21.5	15.8	15.8	18	NP	NP	2.11	8.3	18.7	0.0
2	141+800	LHS	ML-CL	100.0	100.0	88.5	5	65.2	55.4	55.4	28	21	7	1.97	9.6	8.6	15.0
3	145+000	RHS	MI	100.0	98.5	88.2	8	68.2	55.1	55.1	38	25	13	1.85	13.2	5.3	35.0
4	153+300	RHS	CL	100.0	100.0	88.5	6	55.0	52.1	52.1	30	22	8	1.96	10.4	8.9	20.0
5	163+100	LHS	ML-CL	100.0	100.0	88.5	6	65.2	51.2	51.2	28	21	7	1.91	10.0	8.3	15.0
6	166+500	LHS	SM-SC	100.0	100.0	78.5	55.2	45.2	38.8	38.8	21	17	4	2.03	9.0	13.7	10.0
7	166+600	RHS	ML-CL	100.0	100.0	88.5	65.2	55.5	50.2	50.2	28	22	6	1.95	9.2	9.2	10.0

4.7 Periodic Maintenance Strategy

Unlike the old Concession Agreements where periodicity and threshold limits were clearly described for the major maintenance, the Concession Agreement of this project does not specify the periodicity or the threshold limits for carrying out the full-length periodic maintenance. Schedule-F of the Concession Agreement specifies the threshold limits and the timeline for carrying out repairs to the distresses during the operation period.

The maintenance thus can be carried out as and when required basis and to the compliance of Schedule-F requirement to maintain the road in serviceable condition. Only improvement to Riding Quality is expected if the roughness value exceeds 3000 mm/km.

Overlay work is completed at site on both side of the carriageway in the month of October 2021 i.e., FY 2022. Thus, next cycle of the overlay is proposed in FY 2029 after 7 years from previous MM cycle.

As per Article 14 of CA, the Authority shall carry out capacity augmentation under EPC contract if traffic exceeds 40,000 PCU for three consecutive accounting years. As per the traffic study report submitted by the Company it is observed that the project traffic crosses 40,000 PCU in FY 2042, FY 2043, FY 2044. Assumption has made that execution of 6-laning of Project Road will start in the year 2047 or 2048. It is also assumed that during 6-laning of Project Road, the overlay of existing four lane road will be part of the capacity augmentation. Hence, the major maintenance cycle is adjusted accordingly.

The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-5 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2027 to FY 2028	-	-
2	FY 2029	Major maintenance with 30 mm BC with PMB (100%) + Milling & 50 mm DBM (6%)	Major Maintenance with 30 mm BC with VG-40 (50%) + Micro-surfacing (50%)
3	FY 2030 to FY 2035	-	-
4	FY 2036	Major maintenance with 30 mm BC with PMB (100%) + Milling & 50 mm DBM (5%)	Major Maintenance with 30 mm BC with VG-40 (50%) + Micro-surfacing (50%)
5	FY 2037 to FY 2042	-	-
6	FY 2043	Major maintenance with 30 mm BC with PMB (100%) + Milling & 50 mm DBM (5%)	Major Maintenance with 30 mm BC with VG-40 (50%) + Micro-surfacing (50%)
7	FY 2044 to FY 2046	-	-
8	FY 2047 to FY 2049	Assumption of Capacity Augmentation to Six Lane Configuration	
9	FY2050	-	-
10	FY 2051	End of Concession Period	

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Works Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (BC, DBM, Concrete, Road markings etc.) are calculated as per the MoRTH Standard Data Book 2019. The input rates for MoRTH standard data book were adopted as below:

   a. **Manpower and Labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

   b. **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

      Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards, since bitumen prices have been range bound over the last five-six years. Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Supply Location	Applicability of Rates	Product	Current Published Price (FY 2027)	Long term price (Avg last 10 years)
Mathura	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Panipat	All States	VG-10	45,102	35,125
		VG-30	46,402	36,137
		VG-40	48,962	38,131
Koyali	All States	VG-10	47,102	37,125
		VG-30	48,402	38,137
		VG-40	51,082	40,251
Haldia	All States	VG-10	46,602	35,683

Supply Location	Applicability of Rates	Product	Current Published Price (FY 2027)	Long term price (Avg last 10 years)
		VG-30	47,402	36,295
		VG-40	49,962	38,256
Barauni	All States	VG-10	47,132	36,213
		VG-30	48,432	37,325
		VG-40	50,992	39,286
CPCL	Kerala	VG-10	47,402	35,519
		VG-30	48,402	36,395
		VG-40	50,762	38,120
CPCL	Tamil Nadu	VG-10	47,902	36,019
		VG-30	48,402	36,395
		VG-40	50,962	38,320
CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320
CPCL	Karnataka	VG-10	44,602	32,719
		VG-30	45,402	33,395
		VG-40	47,962	35,320

c. **Sand and Aggregate:** Rates are taken from Public works Department Tamilnadu SOR FY 2025-26.

d. **Cement:** Rates are taken from Public works Department Tamilnadu SOR FY 2025-26.

e. **Steel :** Rates are taken from Public works Department Tamilnadu SOR FY 2025-26.

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable PWD SOR.

g. **Actual Rates of items as per work order:** The rates of road marking, road stud, kerb raising, micro surfacing, milling, median filling rates etc. are considered as per the work order shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam	Cum	9,217
2	Bituminous Concrete (VG40)	Cum	10,361
3	Bituminous Concrete (PMB)	Cum	12,205
4	Milling	Sqm	90
5	Micro-surfacing	Sqm	162

Sr. No.	Item Description	Unit	Rates (Rs.)
6	Kerb Re-laying	Rmt	330
7	Road Marking on BC surface	Sqm	573
8	Road Marking on micro surface	Sqm	713
9	Road Studs	Nos.	203

5.3 Balance Work Cost

As discussed in the previous chapter, the balance works cost for Project Road is **NIL**.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1 Salary and Welfare Expenses
2 Tolling Operations Services
3 Toll Security Services
4 Incident Management & Emergency Services
5 Electricity and Diesel Charges
6 TMS / HTMS / System Expenses
7 Office Operating Expenses
8 Vehicle Running Expenses
9 Professional Fees Expense
10 Community Development
11 Communication Expenses
12 Conveyance Expenses
13 Insurance Expense
14 IE Fees
15 Routine Maintenance Cost (Project Road)
16 Horticulture & ROW Maintenance
17 Miscellaneous including Contingency

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation and Maintenance cost (Routine O&M) is presented below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027 to FY 2050)	Amount (FY 2051)
1	Salary and Welfare Expenses	1,56,65,760	1,56,65,760
2	Tolling Operations Services	2,22,28,778	2,22,28,778
3	Toll Security Services	53,12,874	53,12,874
4	Incident Management & Emergency Services	1,91,15,165	1,91,15,165
5	Electricity and Diesel Charges	25,07,747	25,07,747
6	TMS / HTMS / System Expenses	49,76,982	55,07,640
7	Office Operating Expenses	13,52,244	13,52,244
8	Vehicle Running Expenses	27,60,000	27,60,000
9	Professional Fees Expense	71,89,624	1,05,24,646
10	Community Development	2,52,477	2,52,477
11	Communication Expenses	3,47,156	3,47,156
12	Conveyance Expenses	3,78,716	3,78,716
13	Insurance Expense	73,74,673	73,74,673
14	IE Fees	79,45,711	79,45,711
15	Routine Maintenance Cost (Project Road)	3,32,70,908	4,30,60,855
16	Horticulture & ROW Maintenance	2,13,01,100	2,13,01,100
17	Miscellaneous including Contingency	38,96,316	40,50,944
	Total Cost (Rs.)	**15,58,76,232**	**16,96,86,487**
	Total Cost (Cr.)	**15.59**	**16.97**
	Per km Cost (Lakhs)	24.55	26.72

5.5 Major Maintenance Cost

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Table 5-4 Summary of Major Maintenance Cost

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2027 to FY 2028	-	
2	FY 2029	79.07	
3	FY 2030 to FY 2035	-	
4	FY 2036	87.30	
5	FY 2037 to FY 2042	-	
6	FY 2043	78.38	
7	FY 2044 to FY 2047	-	
8	FY 2048 to FY 2049	-	Capacity Augmentation in FY 2048 / FY 2049
9	FY 2050	-	
9	FY 2051	-	End of concession period
Total Cost (Cr.)		**244.75**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement of cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2027	7.29	
2	FY 2034	7.29	
3	FY 2041	7.29	
4	FY 2048	7.29	
Total Cost (Cr.)		**29.16**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-5 Escalation

Year	Escalation	Year	Escalation
2025	-	**2041**	3.99%
2026	-	**2042**	3.99%
2027	5.25%	**2043**	3.99%
2028	4.86%	**2044**	3.99%
2029	4.44%	**2045**	3.99%
2030	4.24%	**2046**	3.99%
2031	4.13%	**2047**	3.99%
2032	4.08%	**2048**	3.99%
2033	4.01%	**2049**	3.99%
2034	4.00%	**2050**	3.99%
2035	4.03%	**2051**	3.99%
2036	4.01%	**2052**	3.99%
2037	3.98%	**2053**	3.99%
2038	3.98%	**2054**	3.99%
2039	4.00%	**2055**	3.99%
2040	3.99%	**2056**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summaries yearly for remaining concession period along with escalation as mentioned in clause 5.7.

Escalated O&M Cost (in INR Cr.)

Sr. No.	Year of expense	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34	FY35	FY36	FY37	FY38	FY39	FY40	FY41	FY42	FY43	FY44	FY45	FY46	FY47	FY48	FY49	FY50	FY51
1	Routine O&M Cost																									
1.01	Salary and Welfare Expense	1.57	1.64	1.72	1.79	1.86	1.94	2.02	2.10	2.18	2.27	2.36	2.45	2.55	2.65	2.76	2.87	2.98	3.10	3.23	3.35	3.49	3.63	3.77	3.92	4.08
1.02	Tolling Operations Services	2.22	2.33	2.43	2.54	2.64	2.75	2.86	2.97	3.09	3.22	3.35	3.48	3.62	3.76	3.91	4.07	4.23	4.40	4.58	4.76	4.95	5.15	5.35	5.57	5.79
1.03	Toll Security Services	0.53	0.56	0.58	0.61	0.63	0.66	0.68	0.71	0.74	0.77	0.80	0.83	0.87	0.90	0.94	0.97	1.01	1.05	1.09	1.14	1.18	1.23	1.28	1.33	1.38
1.04	Incident Management Services	1.91	2.00	2.09	2.18	2.27	2.37	2.46	2.56	2.66	2.77	2.88	2.99	3.11	3.24	3.37	3.50	3.64	3.78	3.94	4.09	4.26	4.43	4.60	4.79	4.98
1.05	Electricity and Diesel Charges	0.25	0.26	0.27	0.29	0.30	0.31	0.32	0.34	0.35	0.36	0.38	0.39	0.41	0.42	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.63	0.65
1.06	TMS / HTMS / System Expenses	0.27	0.38	0.50	0.63	0.65	0.91	1.31	0.36	0.51	0.66	0.83	0.86	1.20	1.72	0.48	0.67	0.87	1.09	1.13	1.58	2.26	0.63	0.88	1.15	1.43
1.07	Office Operating Expenses	0.14	0.14	0.15	0.15	0.16	0.17	0.17	0.18	0.19	0.20	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.33	0.34	0.35
1.08	Vehicle Running Expenses	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.37	0.38	0.40	0.42	0.43	0.45	0.47	0.49	0.51	0.53	0.55	0.57	0.59	0.61	0.64	0.66	0.69	0.72
1.09	Professional Fees Expense	0.72	0.75	0.79	0.82	0.85	0.89	0.93	0.96	1.00	1.04	1.08	1.13	1.17	1.22	1.27	1.32	1.37	1.42	1.48	1.54	1.60	1.66	1.73	1.80	2.74
1.10	Community Development	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07
1.11	Communication Expenses	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09
1.12	Conveyance Expenses	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09	0.09	0.10
1.13	Insurance Expense	0.74	0.77	0.81	0.84	0.88	0.91	0.95	0.99	1.03	1.07	1.11	1.15	1.20	1.25	1.30	1.35	1.40	1.46	1.52	1.58	1.64	1.71	1.78	1.85	1.92
1.14	IE Fees	0.79	0.83	0.87	0.91	0.94	0.98	1.02	1.06	1.11	1.15	1.20	1.24	1.29	1.35	1.40	1.45	1.51	1.57	1.64	1.70	1.77	1.84	1.91	1.99	2.07
1.15	Routine Maintenance Cost	3.33	3.49	3.64	3.80	3.96	4.12	4.28	4.45	4.63	4.82	5.01	5.21	5.42	5.63	5.86	6.09	6.34	6.59	6.85	7.12	7.41	7.70	8.01	8.33	11.21
1.16	Horticulture & ROW Maintenance	2.13	2.23	2.33	2.43	2.53	2.64	2.74	2.85	2.97	3.08	3.21	3.34	3.47	3.61	3.75	3.90	4.06	4.22	4.39	4.56	4.74	4.93	5.13	5.33	5.55
1.17	Miscellaneous and Contingency	0.39	0.41	0.43	0.44	0.46	0.48	0.50	0.52	0.54	0.56	0.59	0.61	0.63	0.66	0.69	0.71	0.74	0.77	0.80	0.83	0.87	0.90	0.94	0.98	1.05
	Subtotal of O&M Cost	15.36	16.21	17.03	17.86	18.59	19.58	20.72	20.56	21.52	22.51	23.55	24.49	25.77	27.27	27.05	28.30	29.61	30.97	32.21	33.89	35.86	35.57	37.22	38.93	44.19
2	Major Maintenance Cost	-	-	72.79	-	-	-	-	-	-	80.20	-	-	-	-	-	-	72.11	-	-	-	-	-	-	-	-
3	Periodic Cost of TMS/HTMS Replacement	7.30	-	-	-	-	-	-	9.77	-	-	-	-	-	-	12.85	-	-	-	-	-	-	16.90	-	-	-
4	Balance Works Cost	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**22.66**	**16.21**	**89.81**	**17.86**	**18.59**	**19.58**	**20.72**	**30.33**	**21.52**	**102.72**	**23.55**	**24.49**	**25.77**	**27.27**	**39.90**	**28.30**	**101.71**	**30.97**	**32.21**	**33.89**	**35.86**	**52.47**	**37.22**	**38.93**	**44.19**

ANNEXURES

ANNEXURE I : ROUTINE MAINTENANCE COST

Routine Maintenance Cost (4-Lane)	
Ordinary Repair Cost for Flexible (with GST)	**3,32,70,908**
(inclusive of GST)	**= 5.24 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD	**Urban** More than 4500 CVD	**Project Length (km)**		**Per Year Project Maintenance Cost**	
				2,56,409	**3,08,543**				
						Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	392306.00	472070.00	-	-	-	-
		Paved shoulder	1.70	435896.00	524522.00	40.48	-	1,76,45,070	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	512819.00	617085.00	-	-	-	-
		Paved shoulder	2.20	564101.00	678794.00	-	23.02	-	1,56,25,838
					TOTAL		**63.500**		**3,32,70,908**

Routine Maintenance Cost (6-Lane)	
Ordinary Repair Cost for Flexible (with GST)	**4,30,60,855**
(inclusive of GST)	**= 6.78 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD **2,56,409**	**Urban** More than 4500 CVD **3,08,543**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
						Normal	**Urban**	**Normal**	**Urban**
1	Six lane with divided carriageway	without Paved shoulder	2.09	535896.00	644854.00	-	-	-	-
		with Paved shoulder	2.26	579485.00	697306.00	40.48	-	2,34,57,553	-
2	Six lane with divided carriageway and service lane on either side	without Paved shoulder	2.56	656408.00	789869.00	-	-	-	-
		with Paved shoulder	2.76	707690.00	851577.00	-	23.02	-	1,96,03,303
					TOTAL		**63.500**		**4,30,60,855**

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Potholes repair (50 mm deep)	100 % Pothole free	As & when required	1.00%
	Volume (cum)			5.00
	Rs/m^3			11446
	Cost in Rupees			57,230
	ii) Patch repair	100 % Patch less	As & when required	1.00%
	Area (sqm)			100
	Rs/m^2			458
	Cost in Rupees			45,784
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	1.50%
	Area (sqm)			150
	Rs/m^2			80
	Cost in Rupees			12,064
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.50%
	Area (sqm)			187.5
	Rs/m^2			54
	Cost in Rupees			10,067
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			458
	Cost in Rupees			34,338
	v) Road marking	14%	Once in 7th year &	14580

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
			@ Repaired location	
	SUB TOTAL			**1,74,063**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6937
	ii) Jungle Clearance	100%	Twice in a Year	2276
	iii) Kuccha Drain Maintenance	100%	Twice in a Year	1219
	SUB TOTAL			**10,432**
3	**Maintenance of Cross Drainage works:**			
	i) Cleaning of culvert bed	100%	Once in a Year	3072
	ii) Repair of floors	100%	Once in a Year	5560
	iii) Repair of parapets	100%	As & when required	2317
	SUB TOTAL			**10,949**
4	**Maintenance of Minor & Major Bridges:**			
	i) Cleaning and removal of dirt & vegetation from pier caps, Bearings, Expansion Joints, Superstructure, Substructure and Retaining wall etc.	100%	As & when required	40,644
	ii) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints			
	iii) Repair of minor washouts, erosion scour and animal holes			
	iv) Sealing Cracks with Cement/ Epoxy Mortar			
	v) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**40,644**
5	**Miscellaneous Items:**			
	i) Turfing and Arboriculture		Once in a Year	2710

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	ii) Maintenance of gang hut store, sheds, animal & debris removal		Once in a Year	4064
	iii) Lettering, Painting of Km stones & kerbs, sign boards, hectometre stone etc.		Once in a Year	4064
	iv) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	8129
	v) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1355
	vi) Traffic Census		Once in a Year	0
	vii) Provision for roughness measurement		Twice in a Year	0
	SUB TOTAL			**20,322**
	GRAND TOTAL (Normal)			**2,56,409**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Centre Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	19346
	ii)Repairs to footpath	100%	As & when required	5419
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	5419
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	8400
	vi) Repair of divider/ Railing in City portion	100%	As & when required	10839
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2710
	SUB TOTAL			**52,133**
	GRAND TOTAL (Urban)			**3,08,543**

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
7	**Additional Cost required for Hilly Areas (Zone VI)**			
	i) Repairs to Retaining wall / Breast Walls	100%	As & when required	20593
	ii) Removal of Slip or Snow Clearance, Repairs to Drains	100%	As & when required	27909
	iii) Road Marking	33%	Once in three years with thermoplastic paint	0
	SUB TOTAL			**48,502**
	GRAND TOTAL (Hilly)			**3,04,911**

ANNEXURE II : MAJOR MAINTENANCE COST

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						12,43,381	18	2,23,31,115
	For BC	Sqm	1	1	10,96,533.41		10,96,533	10,96,533		
	For DBM	Sqm	1	1	59,124.50		59,125	59,125		
	For Misc. Location	Sqm	1	1	87,722.67		87,723	87,723		
2	BC with 30 mm	Cum	1	1	11,84,256.08	0.03	35,528	35,528	12,205	43,36,02,573
3	DBM with 50 mm	Cum	1	1	59,124.50	0.05	2,956	2,956	9,217	2,72,48,976
4	Milling	Sqm	1	1	59,124.50		59,125	59,125	90	53,21,205
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,402	3.50	4.50	561	561	123	68,960
6	Dismantling of CC Panels @ 2% area	Cum	2%		22,076	0.30	132	132	1,054	1,39,659
7	Replacement of Panels - PQC @ 2% area	Cum	2%		22,076	0.30	132	132	9,552	12,65,131
	Service Road									
8	Tack coat	Sqm	1	23,020	6.81		1,56,778	1,72,455	18	30,97,296
9	BC with 30 mm	Cum	1	23,020	6.81	0.03	4,703	5,174	10,361	5,36,04,007
10	Micro Surfacing	Sqm	1	23,020	6.81		1,56,778	1,72,455	162	2,79,37,751
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	1	26,966.6		26,967	26,967	18	4,84,320
12	Wearing Coat BC with 30 mm	Cum	1	1	26,966.6	0.03	809	809	12,205	98,73,528
13	Milling of Ex. Wearing Coat	Sqm	1	1	26,966.6		26,967	26,967	90	24,26,994
14	Painting of Crash Barrier	Sqm	4	1,618		1.12	7,217	7,217	109	7,86,647
	Other Works									
15	Raising of Road Kerb	Rmt	-	1,09,194			-	-	330	-
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	7,762			15,524	15,524	203	31,45,939
17	Painting of Kerb	Sqm	2	1,09,194		0.375	81,896	81,896	109	89,26,610
18	Road Marking on BC	Sqm					52,526	52,526	573	3,00,97,314
19	Road Marking on Micro surfacing	Sqm					5,364	5,364	713	38,25,832

Major Maintenance Cost (FY 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	MCW									
	a) Median & Edge line	Sqm	4	66,675	0.15		40,005			
	b) Lane line	Sqm	2	22,003	0.10		4,401			
	Service Road									
	a) Edge line	Sqm	2	46,040	0.10		9,208			
	b) Lane line	Sqm	1	15,193	0.10		1,519			
	Junction crossing	Sqm					2,757			
20	Filling of Earthen shoulder	Cum					9,005	9,005	443	39,89,962
	MCW		2	38,516	1.50	0.06	6,933			
	Service Road		1	23,020	1.50	0.06	2,072			
21	Miscellaneous	5%								3,19,08,691
Total Major Maintenance Cost (Rs.)										**67,00,82,508**
Total Major Maintenance Cost with GST (Rs.)										**79,06,97,359**
Total Major Maintenance Cost with GST (Cr.)										**79.07**
Per km Cost (lakh)										**124.52**
Escalation Factor for Major Maintenance (FY 2029)										**1.10**
Total Escalated Cost for Major Maintenance (FY 2029) (Cr.)										**84.45**

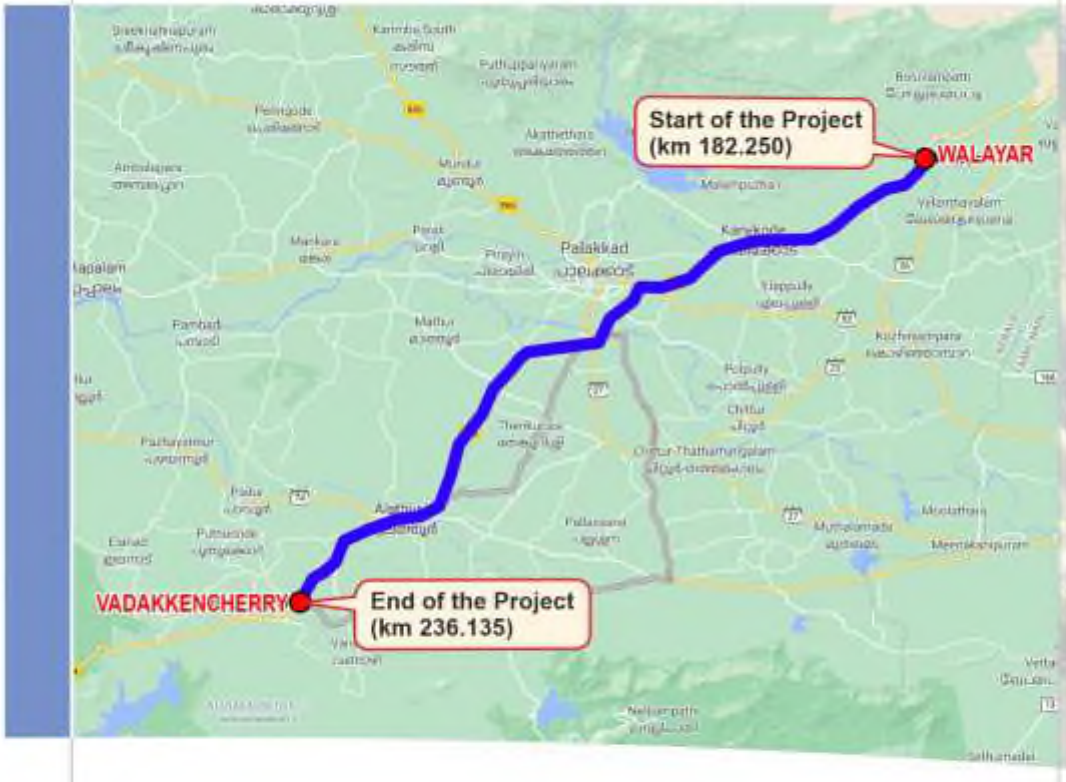
Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						12,33,526	18	2,21,54,136
	For BC	Sqm	1	1	10,96,533.41		10,96,533	10,96,533		
	For DBM	Sqm	1	1	49,270.42		49,270	49,270		
	For Misc. Location	Sqm	1	1	87,722.67		87,723	87,723		
2	BC with 30 mm	Cum	1	1	11,84,256.08	0.03	35,528	35,528	12,205	43,36,02,573
3	DBM with 50 mm	Cum	1	1	49,270.42	0.05	2,464	2,464	9,217	2,27,07,480
4	Milling	Sqm	1	1	49,270.42		49,270	49,270	90	44,34,338
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,402	3.50	4.50	561	561	123	68,960
6	Dismantling of CC Panels @ 2% area	Cum	2%		22,076	0.30	132	132	1,054	1,39,659
7	Replacement of Panels - PQC @ 2% area	Cum	2%		22,076	0.30	132	132	9,552	12,65,131
	Service Road									
8	Tack coat	Sqm	1	23,020	6.81		1,56,778	1,72,455	18	30,97,296
9	BC with 30 mm	Cum	1	23,020	6.81	0.03	4,703	5,174	10,361	5,36,04,007
10	Micro Surfacing	Sqm	1	23,020	6.81		1,56,778	1,72,455	162	2,79,37,751
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	1	26,967		26,967	26,967	18	4,84,320
12	Wearing Coat BC with 30 mm	Cum	1	1	26,967	0.03	809	809	12,205	98,73,528
13	Milling of Ex. Wearing Coat	Sqm	1	1	26,967		26,967	26,967	90	24,26,994
14	Painting of Crash Barrier	Sqm	4	1,618		1.12	7,217	7,217	109	7,86,647
	Other Works									
15	Raising of Road Kerb	Rmt	2	1,09,194			2,18,388	2,18,388	330	7,20,68,040
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	7,762			15,524	15,524	203	31,45,939
17	Painting of Kerb	Sqm	2	1,09,194		0.375	81,896	81,896	109	89,26,610
18	Road Marking on BC	Sqm					52,526	52,526	573	3,00,97,314
19	Road Marking on Micro surfacing	Sqm					5,364	5,364	713	38,25,832
	MCW									
	a) Median & Edge line	Sqm	4	66,675	0.15		40,005			

Major Maintenance Cost (FY 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	b) Lane line	Sqm	2	22,003	0.10		4,401			
	Service Road									
	a) Edge line	Sqm	2	46,040	0.10		9,208			
	b) Lane line	Sqm	1	15,193	0.10		1,519			
	Junction crossing	Sqm					2,757			
20	Filling of Earthen shoulder	Cum					9,005	9,005	443	39,89,962
	MCW		2	38,516	1.50	0.06	6,933			
	Service Road		1	23,020	1.50	0.06	2,072			
21	Median Filling	Cum	-	61,104	4.17	0.10	-	-	443	-
20	Miscellaneous	5%								3,52,31,826
Total Major Maintenance Cost (Rs.)										**73,98,68,340**
Total Major Maintenance Cost with GST (Rs.)										**87,30,44,641**
Total Major Maintenance Cost with GST (Cr.)										**87.30**
Per km Cost (lakh)										**137.49**
Escalation Factor for Major Maintenance (FY 2036)										**1.45**
Total Escalated Cost for Major Maintenance (FY 2036) (Cr.)										**116.45**

Major Maintenance Cost (FY 2043)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	Main Carriageway - Flexible Pavement									
1	Tack coat	Sqm						12,33,526	18	2,21,54,136
	For BC	Sqm	1	1	10,96,533.41		10,96,533	10,96,533		
	For DBM	Sqm	1	1	49,270.42		49,270	49,270		
	For Misc. Location	Sqm	1	1	87,722.67		87,723	87,723		
2	BC with 30 mm	Cum	1	1	11,84,256.08	0.03	35,528	35,528	12,205	43,36,02,573
3	DBM with 50 mm	Cum	1	1	49,270.42	0.05	2,464	2,464	9,217	2,27,07,480
4	Milling	Sqm	1	1	49,270.42		49,270	49,270	90	44,34,338
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 5% length	Rmt	5%	1,402	3.50	4.50	561	561	123	68,960
6	Dismantling of CC Panels @ 2% area	Cum	2%		22,076	0.30	132	132	1,054	1,39,659
7	Replacement of Panels - PQC @ 2% area	Cum	2%		22,076	0.30	132	132	9,552	12,65,131
	Service Road									
8	Tack coat	Sqm	1	23,020	6.81		1,56,778	1,72,455	18	30,97,296
9	BC with 30 mm	Cum	1	23,020	6.81	0.03	4,703	5,174	10,361	5,36,04,007
10	Micro Surfacing	Sqm	1	23,020	6.81		1,56,778	1,72,455	162	2,79,37,751
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	1	26,967		26,967	26,967	18	4,84,320
12	Wearing Coat BC with 30 mm	Cum	1	1	26,967	0.03	809	809	12,205	98,73,528
13	Milling of Ex. Wearing Coat	Sqm	1	1	26,967		26,967	26,967	90	24,26,994
14	Painting of Crash Barrier	Sqm	4	1,618.150		1.12	7,217	7,217	109	7,86,647
	Other Works									
15	Raising of Road Kerb	Rmt	-	1,09,194			-	-	330	-
16	Replacement of Road Stud									
	Normal Road Stud	Nos	2	7,762			15,524	15,524	203	31,45,939
17	Painting of Kerb	Sqm	2	1,09,194		0.375	81,896	81,896	109	89,26,610
18	Road Marking on BC	Sqm					52,526	52,526	573	3,00,97,314
19	Road Marking on Micro surfacing	Sqm					5,364	5,364	713	38,25,832
	MCW									
	a) Median & Edge line	Sqm	4	66,675	0.15		40,005			

Major Maintenance Cost (FY 2043)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	b) Lane line	Sqm	2	22,003	0.10		4,401			
	Service Road									
	a) Edge line	Sqm	2	46,040	0.10		9,208			
	b) Lane line	Sqm	1	15,193	0.10		1,519			
	Junction crossing	Sqm					2,757			
20	Filling of Earthen shoulder	Cum					9,005	9,005	443	39,89,962
	MCW		2	38,516	1.50	0.06	6,933			
	Service Road		1	23,020	1.50	0.06	2,072			
21	Median Filling	Cum	-	61,104	4.17	0.10	-	-	443	-
22	Miscellaneous	5%								3,16,28,424
Total Major Maintenance Cost (Rs.)										**66,41,96,898**
Total Major Maintenance Cost with GST (Rs.)										**78,37,52,339**
Total Major Maintenance Cost with GST (Cr.)										**78.38**
Per km Cost (lakh)										**123.43**
Escalation Factor for Major Maintenance (FY 2043)										**1.90**
Total Escalated Cost for Major Maintenance (FY 2043) (Cr.)										**129.10**

FP Project Management



Technical Due Diligence of Walayar - Vadakkancherry Section (NH-47) from km. 182+250 to km. 240+000 in the State of Kerala on DBFOT (Toll) Modes

Final Report

May 2026

Submitted to:

CUBE HIGHWAYS
FUND ADVISORS
(Investment Manager of the Cube Highways Trust)

Submitted by:

FP Project Management
Formerly Frischmann Prabhu (India) Private Limited
315, Balgovind Wadi, New Prabhadevi Road,
Prabhadevi, Mumbai - 400 025, India.
Tel: +91-22-6660 3901
E-mail: pfmumbai@fpindia.com • www.fpindia.com

Commercial in Confidence

Delivering Commitment

FP/QD/55

REVISION RECORD					
Document No. 265011/ HE / LIE / TDD_Final Report / R0					
Rev	**Description**	**Date**	**Originator**	**Checked**	**Approved**
R0	Final Report	14-May-2026	RMW / TSM	AKA	SMA

This report is to be regarded as confidential to our Client and it is intended for their use only and may not be assigned. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Prepared by:
F P Project Management
315, Balgovind Wadi,
New Prabhadevi Road
Prabhadevi
Mumbai - 400025
Tel.: 00 91 22 6660 3901
Email: pfmumbai@fpindia.com

Table of Contents

1 Introduction 1
1.1 Background 1
1.2 Scope of Work 1
1.3 Our Approach Philosophy 2
1.3.1 Composition of Team 2
1.3.2 Site Visit and Data Collection 2
1.3.3 Data Analysis 3
1.4 Structure of the Report 3
2 Project Description 4
2.1 Introduction 4
2.2 Location 4
2.3 Climate 6
2.4 Terrain 6
2.5 Abutting Land Use 6
2.6 Right of Way 6
2.7 Existing Utilities 6
2.8 Service Road 6
2.9 Development as per Schedule-B 6
3 Condition Assessment of Project Road 8
3.1 Pavement 8
3.1.1 Pavement Condition Survey 8
3.2 Service Road / Slip Road 9
3.3 Major / Minor Junctions 10
3.4 Inventory and Condition Survey of Structures and Bridges 12
3.4.1 Cross Drainage (Bridges and Culverts) 13
3.4.2 Minor Bridges 15
3.4.3 Major Bridge (length > 60 m) 18
3.4.4 Underpasses 20
3.4.5 Pedestrian / Cattle Underpasses 21
3.4.6 Grade separators 22
3.4.7 ROB 22
3.4.8 New Construction of VUP at Major Junction 23
3.5 Drainage 24
3.6 Slope Protection 25
3.7 Road Furniture 26

3.7.1 Pavement Marking 26
3.7.2 Traffic Signage 26
3.7.3 Highway Lighting 27
3.7.4 Road Studs / Cat's eyes 27
3.7.5 Pedestrian Guard Rail 28
3.7.6 Avenue Plantation and Median Plantation 28
3.7.7 Traffic Signage / Median kerb painting / KM Stone 28
3.7.8 Crash Barriers 30
3.7.9 Delineators 31
3.7.10 Chain link fencing 31
3.8 Toll Plaza 32
3.9 Lane Equipment 34
3.9.1 RFID ETC Transceiver 35
3.9.2 Lane Controller with Industrial PC 35
3.9.3 Automatic Vehicle Classification (AVC) Sensors 36
3.9.4 Automatic Lane Barrier 36
3.9.5 Lane Traffic Light (LTL) and User Fare Display (UFD) 37
3.9.6 Over Head Lane Signal (OHLS) 37
3.9.7 Toll Booth Equipment 37
3.9.8 Medium Speed Weigh in Motion (MSWIM) 38
3.10 Plaza Equipment 39
3.10.1 TMS Server & UPS Server for Central LAN 20kv 39
3.10.2 55" LED screen for CCTV monitoring 39
3.10.3 Workstations in POS room 39
3.11 Toilet Block 40
3.12 Bus Bays and Passenger Shelters 40
3.13 Balance Work Status 41
3.14 Operation and Maintenances 41
3.14.1 O&M Contract 41
3.14.2 Organization Chart 41
3.14.3 Operation 42
3.14.4 Routine Maintenance 42
4 Pavement Investigation and Assessment 43
4.1 General 43
4.2 Surveys and Investigation 43
4.2.1 Pavement Condition Survey 43
4.2.2 Axle Load Survey 43

4.2.3 Design Traffic 44
4.2.4 Network Survey Vehicles (NSV) Survey 44
4.2.5 Structural Investigations 45
4.2.6 Test pit and Subgrade Investigation 47
4.2.7 Periodic Maintenance Strategy 48
5 Cost Estimates 49
5.1 General 49
5.2 Rate Assumption 49
5.3 Balance Work Cost 51
5.4 Routine O&M Cost 51
5.5 Major Maintenance Cost 52
5.6 Periodic Replacement of TMS / ATMS System 52
5.7 Escalation Assumption 53
5.8 Summary of Cost 53
Annexures 55
Annexure I - Routine Maintenance Cost 56
Annexure II - Major Maintenance Cost 60

List of Tables

Table 2-1 Details of Scope of Work 7
Table 3-1 Details of Summary for Structures 12
Table 3-2 Details of New Minor Bridges 15
Table 3-3 Details of Major Bridges 18
Table 3-4 Details of Vehicular Underpasses 20
Table 3-5 Details of Pedestrian Underpasses 21
Table 3-6 Details of Grade Separators 22
Table 3-7 Details of ROB 22
Table 3-8 Details of Summary for Toll Plaza Items 32
Table 4-1 Summary of Pavement Condition 43
Table 4-2 Vehicle Damage Factor 43
Table 4-3 MSA Calculation 44
Table 4-4 Result of Roughness Survey 44
Table 4-5 Test Results Summary of Natural Ground Soil Samples 47
Table 4-6 Major Maintenance Cycle 48
Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST 49
Table 5-2 Summary of Unit Rates 50
Table 5-3 Summary of Operation Cost 52
Table 5-4 Escalation 53

List of Figures

Figure 2-1 Location Map 4
Figure 2-2 Start of Project Road 5
Figure 2-3 End of Project Road 5
Figure 3-1 Photographs of Pavement Condition (Main Carriageway) 8
Figure 3-2 Photographs of Service Road 9
Figure 3-3 Photographs of Major Junctions 10
Figure 3-4 Photographs of Minor Junctions 11
Figure 3-5 Photographs of Culverts 14
Figure 3-6 Photographs of Minor Bridge 16
Figure 3-7 Photographs of Major Bridges 19
Figure 3-8 Photographs of Underpasses 20
Figure 3-9 Photographs of Pedestrian Underpass 21
Figure 3-10 Photographs of Grade Separators 22
Figure 3-11 Photographs of ROB 23
Figure 3-12 Photographs of New VUP (under construction) 23
Figure 3-13 Photographs of Drainage 24
Figure 3-14 Photographs of Slope Protection 25
Figure 3-15 Photographs of Road Signages 29
Figure 3-16 Photographs of MBCB / Crash Barrier 30
Figure 3-17 Photographs of Delineators 31
Figure 3-18 Photographs of Chain link fencing 32
Figure 3-19 Photographs of Toll Plaza 33
Figure 3-20 Photographs of Bus Bays / Passenger Shelter 41

1 INTRODUCTION

1.1 Background

Cube Highways Fund Advisors Pvt. Ltd. (hereinafter referred as "the Client") is the Investment Manager of the Cube Highways Trust ("Trust" or "InvIT"). The Trust is registered with Securities and Exchange Board of India ("SEBI") as an Infrastructure Investment Trust under the SEBI InVIT Regulations. Cube Highways Fund Advisors Pvt. Ltd. has appointed **M/s FP Project Management Consultancy Services Private Limited** (hereinafter referred as "Technical Consultant" or "FPPM") to carry out Technical Due Diligence of National Highway No. 47 including the section from Walayar to Vadakkancherry (km. 182+250 to km. 240+000 of NH-47) - Package NS-2/BOT/KL-2 - on DBFOT (Toll) basis under NHDP Phase-II in the State of Kerala (approx. 54.00 kms) (hereinafter referred as "Project Road").

Walayar Vadakkencherry Expressways Private Limited (WVEPL) (hereinafter referred as "Concessionaire") is a special purpose vehicle (SPV) for development, maintenance and management of National Highway No. 47 including the section from Walayar to Vadakkancherry on DBFOT (Toll) basis under NHDP Phase-II.

The Date of Concession Agreement is 17th September 2012. The concession period of the project is 20 years commencing from the Appointed Date including implementation period. The Appointed Date of the project is 18th May 2013. The Provisional Completion Certificate was issued on 18th May 2015 and the Commercial Operation commenced from 23rd May 2015. The Completion Certificate was issued on 31st October 2015 for total length of the project i.e. 53.495 kms.

Sr. No.	Description	Date
1	Date of Signing the Concession Agreement	17th Sep 2012
2	Appointed Date	18th May 2013
3	Scheduled Project Completion Date	13th Nov 2015
4	Scheduled End of Concession	17th May 2033
5	Date of issue of Provisional Completion Certificate	18th May 2015
6	Date of Commencement of Commercial Operation	23rd May 2015
7	Date of Issue of Completion Certificate	31st Oct 2015

Presently, the project is under operation and maintenance and the Technical Consultant has undertaken the work of assessment of operation and maintenance (O&M) cost based on site inspections and field investigations. The same is according to presented in this report.

1.2 Scope of Work

The detailed scope of work for conducting the technical due diligence of Project Road is presented as below:

- A reconnaissance of the Project Road to understand the current condition of the pavement, structures, road furniture, toll plaza and other highway assets
- Review and assessment of important technical documents like CA, pavement design report, O&M report, DPR, As-built drawings, O&M manual, COD / PCOD certificate, punch list, previous major maintenance etc.
- Review of recent pavement investigations and surveys conducted on Project Road like FWD, NSV, axle load, material investigations etc.

- Formulation of future major maintenance strategy
- Estimation of any initial expenses to be incurred due to deficiencies observed in diligence
- Estimation of Routine Maintenance and Major Maintenance forecast for remaining concession period
- Estimation of Annual Operation expenses along with Systems cost (TMS / HTMS) till the end of concession period

1.3 Our Approach Philosophy

1.3.1 Composition of Team

Our team consists of well-qualified engineers and other professionals, whose experience covers all the skills and specializations required for undertaking such assignments. All the team personnel proposed are our regular employees and have a long and stable working relationship with our firm.

The Team Leader coordinates the activities between all the key staff who work closely together. The key staff is assisted by various support staff, who report to the respective key staff in their field of expertise. The Team Leader is the point of contact for Client on Technical Study.

The technical study includes review of all the available documents namely:

a) Concession Agreement including Technical Schedules
b) O&M Contract, work order and their provisions
c) Quality of construction based on available data, design and drawings
d) Documents on historical expenditure on operation and maintenance
e) O&M cost schedule for the concession period
f) Review of Completion / Provisional Completion along with punch list items
g) Review of recent pavement surveys conducted
h) Correspondence regarding scope of works and during O&M
i) Recent O&M Report submitted to Authority
j) Toll operation manual / ATMS related documents

The review of above documents is the first step towards accomplishment of the task. This gives a complete idea of the project and is used as input data for preparation of report after necessary analysis.

1.3.2 Site Visit and Data Collection

A team of experts from various streams has carried out the preliminary site visit to understand the assessment of project assets, mainly condition of the pavement and structures.

- The site visit is undertaken for detailed reconnaissance and visual pavement condition assessment.
- The condition assessment of major structures by visual inspection
- The information like material sources and the probable cost is collected for the purpose of cost estimates.

The detailed design / drawings viz. Plan & L-sections, drainage design, structure design, layout drawings for project facilities like toll plaza, bus bay, truck lay-byes, highway lighting facilities etc. are studied. Also, design / drawing and provision pertaining to road furniture are studied.

The information on availability of material in the vicinity is gathered. It has direct impact on cost of maintenance work and balance work.

The basic approach for preparation of cost estimates for operation and maintenance is as per the practice of State PWD / MORT&H in respect of highways and structures.

1.3.3 Data Analysis

Based on the study of the available information and preliminary site visits, the consultants share their preliminary observations with the Client based on the evaluation of the technical data and reports provided by the Client.

1.4 Structure of the Report

This report has been prepared based on the information, reports and documents made available to us by the Client. We have also referred to publicly available reports, literature etc. and have made our best efforts to check the authenticity of the information available, analyses the same as per the best engineering / industry practices.

The site visit and inspection of the project site was carried out during the period from **04th March 2026 to 06th March 2026**.

The report is organized with the following chapters for easy understanding of various issues.

Chapter 1 **Introduction:** The chapter gives an overview of the project background, detailed scope of work, approach, and methodology for technical due diligence study.

Chapter 2 **Project Description:** The chapter describes existing project features, overview of project development etc.

Chapter 3 **Condition Assessment of Project Road:** The chapter presents the details and condition of various essential features of the Project Road based on the site visit.

Chapter 4 **Pavement Investigation and Assessment:** The chapter describes the summary of pavement surveys and investigations carried out on Project Road along with the requirement of pavement maintenance.

Chapter 5 **Cost Estimates:** The chapter summarizes the forecast for O&M and major maintenance costs over the remaining concession period.

2 PROJECT DESCRIPTION

2.1 Introduction

National Highways Authority of India signed the Concession Agreement with **Walayar Vadakkencherry Expressways Private Limited (WVEPL),** is a company promoted by Cube Highways or company a Special Purpose Vehicle (SPV) formed for implementing this project on 20th October 2020.

2.2 Location

The Site of the Four-Lane divided Project Road comprises the section of National Highway 47 commencing from km. 182.250 (Design Chainage km. 182.250) at Walayar to km. 240.000 (Design Chainage km. 236.135) (Approx Length is 53.495 kms) at Vadakancherry in the State of Kerala.

The Location Map of the Project Road is presented below:

Figure 2-1 Location Map

The photographs taken during the site visit are presented below.

Figure 2-2 Start of Project Road

Start of Project at km. 182+207 (LHS)

Start of Project at km. 182+207 (RHS)

Figure 2-3 End of Project Road

End of Project at km. 236+130 (LHS)

End of Project at km. 236+130 (RHS)

Lane marking in progress at End of Project at km. 236+130 (LHS)

2.3 Climate

The project location has a tropical wet and dry climate. Temperatures remain moderate throughout the year with the exception in March and April being the hottest months. A very high amount of precipitation is received in project area, mainly due to the South-West monsoon. July is the wettest month, and the total annual rainfall is around 83 inches (210 cm).

2.4 Terrain

The Project Road traverses through plain / rolling terrain.

2.5 Abutting Land Use

The Project Road passes through residential and agricultural zones.

2.6 Right of Way

The width of existing Right of Way (RoW) throughout the project stretch is 60.0 m, except Toll Plaza area.

2.7 Existing Utilities

During the widening of the Project Road, various affected utility services located along the project road were shifted out at the edge of the ROW. The different types of utilities found along the road include, electrical poles, telephone poles, hand pumps, permanent structures, temples etc.

2.8 Service Road

The total length of service road on both side is 49.338 kms.

2.9 Development as per Schedule-B

The Project Road from km. 182+250 (Design Chainage km. 182+250) at Walayar to km. 240+000 (Design Chainage km. 236+135) at Vadakancherry (Approx Length is 53.495 kms) has been developed as a four-lane paved carriageway 17.5 m wide excluding median. The Project Road passes through rural as well as built-up sections.

As per Article 2 of Concession Agreement, the scope of project defined in Schedule-A and Schedule-B, (the **"Scope of the Project"**) shall mean and include, during the Concession Period:

a) Construction of the project on the Site set forth in Schedule-A and as specified in Schedule-B together with provision of project facilities as specified in Schedule-C and in conformity with the Specification and Standards set forth in Schedule-D.
b) Tolling, operation, management, maintenance, and transfer of the Project Highway subject to and in accordance with the provisions of this Agreement.
c) performance and fulfilment of all other obligations of the Concessionaire in accordance with the provisions of the Concession Agreement and matters incidental thereto or necessary for the performance of any or all of the obligations of the Concessionaire under the Concession Agreement.

Following is the Scope of Work as per Schedule-B of Concession Agreement.

Table 2-1 Details of Scope of Work

Sr. No.	Particulars	Unit	Scope as per Schedule-B	Constructed as per site
1	O&M of Main Carriageway	km	53.885	53.495*
2	Rail Over Bridge (ROB)	Nos.	01	01
3	Grade Separator	Nos.	02	02
4	Major Bridge	Nos.	02	02
5	Minor Bridge	Nos.	17	17
6	Vehicular Underpass	Nos.	08	08
7	Culverts	Nos.	165	165

*Difference of about 0.39 km in the project length is due to the missing chainage. Hence, the total construction length is 53.495 kms.

3 CONDITION ASSESSMENT OF PROJECT ROAD

3.1 Pavement

The paved carriageway is 17.50 m wide excluding the median. The project is widened to a four lane-carriageway with a width of 17.50 m as per standard cross section including paved shoulders. Service Road of 7.0 m width has been provided on one side or both sides wherever required in the built-up area to cater for the local traffic.

The entire stretch of Project Road including service road is constructed with flexible pavement. The pavement type for the toll plaza including taper is of rigid pavement.

3.1.1 Pavement Condition Survey

Pavement condition survey was carried out from **04th March 2026 to 06th March 2026** through visual inspection for the entire project length. From the visual inspection, the pavement condition of the Project Road is found to be Good.

Some of the photographs taken during the site visit are presented as below:

Figure 3-1 Photographs of Pavement Condition (Main Carriageway)

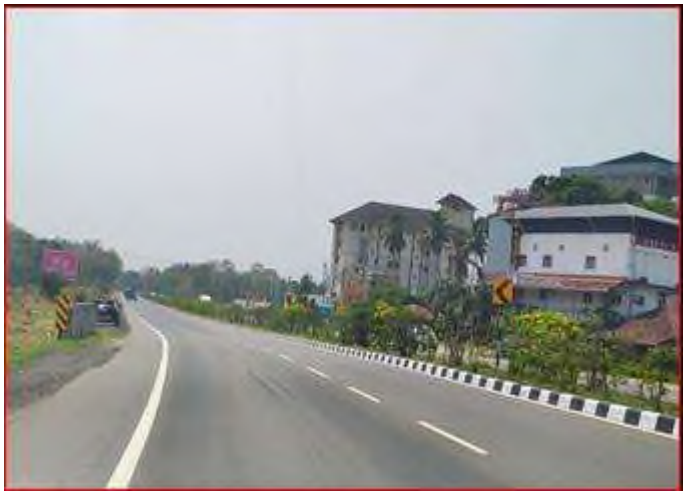
Pavement Condition at km. 184+850 (LHS)

Pavement Condition at km. 201+300 (LHS)

Pavement Condition at km. 214+250 (LHS)

Pavement Condition at km. 219+000 (RHS)

Pavement Condition at km. 222+200 (RHS)



Pavement Condition at km. 230+700 (LHS)

3.2 Service Road / Slip Road

The service road of width 7.0 is constructed in built-up area and adjoining underpass locations. The Project Road has total service road length of 49.338 kms. The condition of service roads at under construction VUP locations are poor and need to be repaired. After the completion of VUP construction, NHAI will repair the service road and hand it over to the Concessionaire for maintenance.

The photographs taken during the site visit are presented below:

Figure 3-2 Photographs of Service Road

Service Road at km. 184+850 (LHS)

Service Road at km. 113+600

Service Road at km. 223+360 LHS

Service Road at km. 222+000

3.3 Major / Minor Junctions

There are 09 nos. of major junctions and 36 nos. of minor junctions along the Project Road.

The photographs taken during site visit are presented as below:

Figure 3-3 Photographs of Major Junctions

Major Junction at km. 193+620

Major Junction at km. 196+000 (LHS)

Major Junction at km. 196+000

Major Junction at km. 203+000 (RHS)

Major Junction at km. 200+350

Figure 3-4 Photographs of Minor Junctions

Minor Junction at km. 218+920

Minor Junction at km. 220+400 (LHS)

Minor Junction at km. 231+850

Minor Junction at km. 213+100 (LHS)

3.4 Inventory and Condition Survey of Structures and Bridges

The inventory of structures including major bridges, minor bridges, ROB's, underpasses and culverts is presented in table as below:

Table 3-1 Details of Summary for Structures

Sr. No.	Type of Structure	Total Number of Structures as per Concession Agreement	Total Number of Structures as per site
1	Rail Over Bridge (ROB)	01	01
2	Grade Separator	02	02
3	Major Bridge	02	02
4	Minor Bridge	17	17
5	Vehicular Underpass	08	08
6	Culverts	165	165

All major structures and CD works were visually inspected. The structures are generally sufficient for storm water drainage. The waterway needs regular cleaning. All the old bridges are 2-lane and widened to 2 additional lanes. Old bridges have RCC railing. They are constructed in open foundation. Expansion joints in some of the bridges are observed to be damaged. Bearings of some of the bridges need to be re-inspected and repaired, if necessary. In case of some bridges, settlement in approaches and cracks in the pavement has been observed. New bridges are constructed in 2-lane with footpath keeping a provision of converting into 3-lane in future. Foundation is RCC pile foundation. The wearing course and expansion joints are found okay. Crash barriers are of RCC type and are in sound condition. Return wall are of RCC type and pitching has been provided in almost all bridges. ROB on Project Road is found in sound condition. Structures are of Box type and RCC type and are in sound condition. Expansion joints are in good condition. RE walls are provided for the approaches of the structure.

The detailed condition survey of ROB, major bridges, minor bridges, flyovers and culverts was carried out by visual inspection. The observations and findings are presented below.

3.4.1 Cross Drainage (Bridges and Culverts)

Slab culverts are visually inspected. Some culverts are old and widened. The old structures have been strengthened with repair and rehabilitation during widening. The widening is either concentric or eccentric. The quality of concrete of abutment, slab, and wing wall, or return wall, parapet wall is satisfactory except at some locations. Minor settlement on approach is observed at few culverts. The slope protection was done at a major location. The slopes are stable. Generally, all the slab culverts are found in sound condition. The waterway needs to be cleaned on both sides of the culverts. Box culverts are visually inspected. The RCC box culverts are retained and widened. The RCC quality of new box culverts is good. The structure number is painted on the parapet wall or crash barrier in most of the culverts. The waterway is clear in most of the culverts and needs to be cleared for a few culverts, particularly in urban areas.

Pipe culverts are visually inspected. The pipe culverts are either newly constructed or reconstructed, and the pipe culverts are retained and widened. The widening is either concentric or eccentric. In most of the culverts, the ends are blocked by debris, garbage or vegetation, or buried underground, especially in urban areas. Regular cleaning of the waterway is required to avoid damage to the pavement.

The following photographs were taken during the inspection of culverts.

Figure 3-5 Photographs of Culverts

Box culvert at km. 187+980 (LHS)

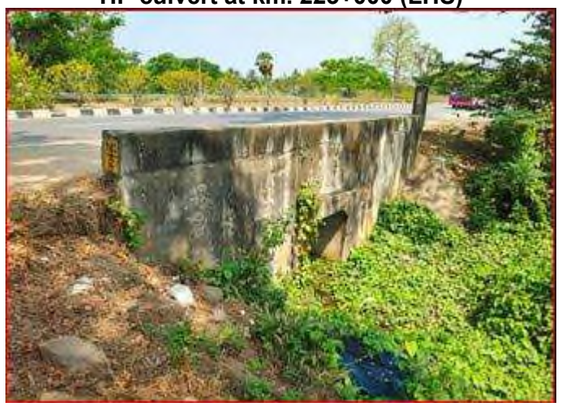
Box culvert at km. 114+750 (LHS)

HP culvert at km. 223+000 (LHS)

HP culvert at km. 223+370 (LHS)

HP culvert at km. 225+200 (LHS)

Box culvert at km. 221+250 (LHS)



Box culvert at km. 221+600 (LHS)

Box culvert at km. 218+950 (LHS)

3.4.2 Minor Bridges

Table 3-2 Details of New Minor Bridges

Sr. No.	Existing Chainage (km)	Design Chainage (km)	Proposed structural configuration	Proposed Structure type	Proposed span arrangement (m)	Total width of the structure (m)	TDD Consultant's Remarks
1	182+236	182+237	2 lane c/w with footpath	RCC Structure	3 x 9.15	12.00	RR masonry pier & Solid slab structure is on LHS. The pavement is in good condition. The new structure of RCC pier, abutment & T-beam girder is on RHS. Expansion joints, crash barriers, pavement is in Fair condition. Vegetation is noticed at LHS.
2	190+940	190+970	2 lane c/w with footpath	RCC Structure	1 x 16.50	12.00	The new structure is on LHS. The structure is in good condition. Condition of pavement, crash barrier, slope protection is in Fair condition. Minor vegetation is noticed on A1 RHS.
3	194+390	194+470	2 lane c/w with footpath	RCC Structure	1 x 22.00	12.00	The new structure is on RHS. The structure condition is good. The overall structure of the old bridge is in good condition. Cleaning and vegetation removal are necessary. Further, expansion joint and drainage spout cleaning is necessary.
4	201+l25	201+295	2 lane c/w with footpath	RCC Structure	1 x 11.20	12.00	Old structure is on LHS. The structure is in good condition. The new structure is on RHS. Both structures are in good condition.
5	204+539	204+680	2 lane c/w with footpath	RCC Structure	1 x 21.40	12.00	The new structure is on RHS. The structure condition is good. Vegetation and silt need to be removed. Cleaning of expansion joints is necessary for new structure.
6	209+350	209+950	2 lane c/w with footpath (Skew)	RCC Structure	2 x 13.00	12.00	The new structure is located on the right-hand side (RHS), and its condition is good. According to the NHAI proposal for the new construction of a Vehicular Underpass (VUP) at km. 209+900, the height of the minor bridge on both sides will be increased by another agency and the same work is completed.
7	212+568	213+160	2 lane c/w with footpath	RCC Structure	1 x 20.00	12.00	Single span structure with girders on both sides. Silt needs to be removed from the bed portion. Further, vegetation needs to be removed. Cleaning of expansion joint needs to be done
8	214+252	214+272	2 lane c/w with footpath	RCC Structure	1 x 13.50	12.00	RCC old structure is on LHS which is in good condition. Single span structure with girders, RCC pier and solid slab. The new structure is on RHS. The overall structure condition is good on both sides. Removal of heavy, thick vegetation and silt etc. on either side to be done and waterway to be cleared.
9	221+895	219+570	2 lane c/w with footpath	RCC Structure	1 x 9.00	12.00	RCC old structure is on RHS which is in good condition. The new structure is in good condition. Cleaning is required as there is presence of vegetation in the waterway of canal.
10	224+531	222+165	2 lane c/w with footpath (Skew)	RCC Structure	3 x 9.00	12.00	RCC old structure is on LHS which is in good condition. The new structure which is in LHS is in good condition. Rehabilitation is required as there is presence of vegetation and silt. Minor steel / Aggregate exposer noticed on P2 BHS Sub structure which needs to be rectified.
11	227+358	224+902	2 lane c/w with footpath	RCC Structure	3 x 16.40	12.00	RCC old structure is on RHS where concrete crash barrier is reconstructed. The new structure which is in LHS is in good condition. Rehabilitation is required in the form of cleaning of expansion joints, removal of vegetation in waterway etc.
12	239+030	235+180	2 lane c/w with footpath	RCC Structure	3 x 16.40	12.00	RCC Old structure is on RHS. The new structure which is in LHS is in good condition, but exposure of steel is observed on the side of deck slab which is repaired. Vegetation / silt removal is also required for both structures apart from rehabilitation. Minor settlement noticed at Approach road BHS.

Construction of New Cross Drainage Structures on Service Road at Minor Bridge Locations

Sr. No.	Existing Chainage (km)	Design Chainage (km)	Proposed structural configuration	Proposed Structure type	Proposed span arrangement (m)	Side (LHS / RHS)	Total width of the structure (m)	TDD Consultant's Remarks
1	194+390	194+470	2 lane c/w	RCC Structure	1 x 22.00	Both sides	8.50	The new structure is on RHS. The structure condition is good. Overall structure condition of old structure is good. Debris and vegetation removal are necessary.
2	212+568	213+160	2 lane c/w	Causeway	10 x 1.2m dia. HP	LHS	8.50	Single span structure. Silting and vegetation grown need to be removed from the bed portion. Cleaning of expansion joints is required.
3	212+568	213+160	2 lane c/w (Skew)	RCC box culvert	3 x 3.00	RHS	8.50	Single span structure. Debris and silt deposition need to be removed from the bed portion. Cleaning and repairing of expansion joint is required.
4	227+358	224+902	2 lane c/w	RCC Structure	3 x 16.40	Both sides	8.50	RCC structure (old) is on RHS where removal of thick vegetation and cleaning of expansion joint is required. On LHS (new structure), cleaning of expansion joint is required. Further, on both side removal of thick vegetation and desilting is necessary for waterway.

Sr. No.	Existing Chainage (km)	Design Chainage (km)	Proposed structural configuration	Proposed Structure type	Proposed span arrangement (m)	Side (LHS / RHS)	Total width of the structure (m)	TDD Consultant's Remarks
5	239+030	235+180	2 lane c/w	RCC Structure	3 x 16.40	RHS	8.50	RCC masonry pier and solid slab structure. Parapet wall rehabilitation work and wearing course overlaying is done. Honeycombing is observed on piers is repaired. Further, steel is exposed / came out at slab level. Pier foundation protection work is damaged. Hence, rehabilitation measures are required to be carried out to correct the deficiency / deterioration. Bearing replaced for Old Structure and drainage spouts found damaged. At A2 LHS approach slab repairing done.

The following photographs were taken during the inspection of Minor Bridges.

Figure 3-6 Photographs of Minor Bridge

MNB at km. 182+237 (Median view)

MNB at km. 182+237 (LHS view of Old bridge)

MNB at km. 190+970 (Side view)

MNB at km. 190+970 (Median view)

MNB at km. 194+470 at Service Road

MNB at km. 194+470

MNB at km. 201+295 (LHS - A1 Slope protection WIP)

MNB at km. 201+295 (Median view)

MNB at km. 204+680 (Canal Crossing LHS view)

MNB at km. 204+680 (Canal Crossing Median view)

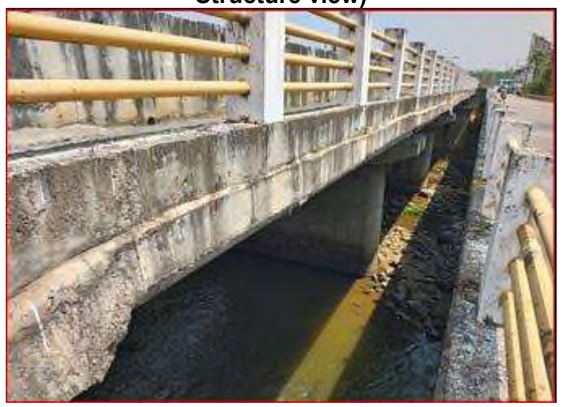
MNB at km. 209+930 (LHS - MCW View)

MNB at km. 209+930 (LHS - Service Road Structure view)

MNB at km. 213+160 (Median)

MNB at km. 213+160 (Old - MCW - LHS)

MNB at km. 224+902 (On Mangalam River)



MNB at km. 235+180 (On Mangalam River)

MNB at km. 219+570 (Canal)

MNB at km. 222+165

MNB at km. 214+272 and slope protection

MNB at km. 235+180

3.4.3 Major Bridge (length > 60 m)

There are 02 Nos. of Major Bridges on Project Road. Both Major Bridges were visually inspected. The structures are generally sufficient for the crossing of river water. The waterway needs regular cleaning. Old structures are present on the right side of both locations. All the old bridges are additional 2-lane lanes with footpaths. Old bridges have RCC railing. The sub-structures are constructed with RCC piers. Expansion joints on both the bridges need to be cleaned. Minor settlement in approaches and damage on pavement has been observed. New bridges are constructed in 2-lane with footpath. Old bridges on RHS have RCC pier and T-beam girders. The wearing course and expansion joints are found to be in good condition. W-beam and RCC type crash barriers are in sound condition. Drainage spouts and expansion joints need to be cleaned regularly. Further, vegetation and silt need to be removed from the waterway for smooth flow of water.

Table 3-3 Details of Major Bridges

Sr. No.	Design Chainage (km)	New Chainage (km)	Type of Structure	No. of Span	Span Arrangement (m)	No. of Lane with footpath	Side	Construction Scheme	TDD Consultant's Remarks
1	198+725	198+870	Major Bridge (Nagargampally River)	4	4 x 26.60	2	LHS	New Construction	The structure is in good condition. Pipe railing & Concrete crash barriers are in good condition.
				4	4 x 26.60	2	RHS	Old Construction	The structure is in fair condition. Apron Pitching needs to be repaired. Crash barriers are in sound condition. Rectification work of RHS is done with replacement of bearings.
2	207+260	207+900	Major Bridge (Yakkara River)	8	8x 21.40	2	LHS	New Construction	The structure is in good condition. Pipe railing and Concrete crash barriers are in good condition. Cleaning of Expansion joints is required.
				8	8x 21.40	2	RHS	Old Construction	The structure is in fair condition. In slope protection works vegetation needs to be clean. Drainage spouts cleaning is required. Bearings & Expansion joint replacement work is Completed as per IE requirement.

The following photographs were taken during the inspection of Major Bridges.

Figure 3-7 Photographs of Major Bridges

Major Bridge at km. 198+870 (Median view)

Expansion joint of A1-LHS Major Bridge at km. 198+870

Major Bridge at km. 198+870 (LHS - New structure - Median side view)

Major Bridge at km. 198+870 (old structure)

Wearing coat of old Major Bridge at km. 198+870

Major Bridge at km. 207+900 (Median view)

Major Bridge at km. 207+900 (wearing coat)

Major Bridge at km. 207+900 (RHS Median view)

Wearing coat of Major Bridge at km. 207+900

Bottom side view of Major Bridge at km. 207+900

Bottom median view of Major Bridge at km. 207+900 (Median)

3.4.4 Underpasses

Table 3-4 Details of Vehicular Underpasses

Sr. No.	New Chainage (km)	Type of Structure	No. of Span	Span Width (m)	No. of Lane	Construction scheme	TDD Consultant's Remarks
1	197+730	VUP	1	17.50	4	New construction	The overall structure condition of all underpasses is found to be good. RCC crash barriers, W-beam crash barriers, slope protection work, wearing coat is found to be good. Minor settlement on approaches is noticed. In underpasses at km. 217+500 and km. 234+400 vegetation removal on RE wall portion and cleaning of drainage spout is required. At the old Vehicular Underpass at km. 209+076, a crack is observed on the slope protection. Vegetation removal on slab / crash barrier needs to be removed on old underpass Approach at A1 side. At LHS Median side Girder found some reinforcement exposed due to hitting of Vehicle needs to be rectified
2 (a)	209+076	VUP (L/S)	1	13.20	2	Old construction	
2 (b)	209+076	VUP (R/S)	1	13.20	2	New construction	
3	217+500	VUP	1	25.00	4	New construction	
4	234+400	VUP	1	17.50	4	New construction	
Note: The Concessionaire has constructed two underpasses under Change of scope apart from regular scope shown above. The structures are constructed at km. 202+760 and km. 206+310 (Skew).							

The following photographs were taken during the inspection of Underpasses:

Figure 3-8 Photographs of Underpasses

VUP at km. 197+730 LHS

Bottom view of VUP at km. 197+730

VUP at km. 209+076 (LHS)

Bottom view of VUP (Old) at km. 209+076 (LHS)

VUP at km. 202+750 LHS (COS)

VUP at km. 202+750 (COS)

VUP at km. 206+310 (COS)

VUP at km. 206+310 (COS)

VUP at km. 217+500 (LHS)

A2 RHS Bearings for VUP at km. 217+500

VUP at km. 234+400

RE wall for VUP at km. 234+400

3.4.5 Pedestrian / Cattle Underpasses

Table 3-5 Details of Pedestrian Underpasses

Sr. No.	New Chainage (km)	Type of Structure	No. of Span	Span Width (m)	No. of Lane	Construction scheme	TDD Consultant's Remarks
1	187+350	PUP	1	12.00	4	New construction	The overall structure condition of all underpasses is found to be good. RCC crash barriers, W-beam crash barriers, slope protection work, wearing coat is found to be in good. condition Vegetation removal on RE wall portion and cleaning of drainage spout is required.
2	216+400	PUP	1	12.00	4	New construction	
3	222+680	PUP	1	12.00	4	New construction	
4	223+530	PUP	1	12.00	4	New construction	

The following photographs were taken during the inspection of the Pedestrian Underpass.

Figure 3-9 Photographs of Pedestrian Underpass

PUP at km. 187+350

PUP at km. 187+350

Side view of PUP at km. 223+530

RE Wall of PUP at km. 223+530

PUP at km. 216+400

PUP at km. 216+400 (A1 LHS Approach Road FRL raising WIP)

Bottom view for PUP at km. 222+622 (Median)

PUP at km. 222+622

3.4.6 Grade separators

Table 3-6 Details of Grade Separators

Sr. No.	Design Chainage (km)	Type of Structure	Side	Span Width (m)	No. of Lane	Construction scheme	TDD Consultant's Remarks
1	203+900	Flyover	RHS	1 x 60 + (2 x 7) x 25	1 x 2	New construction	The structure is in good condition. Slope protection works and crash barriers are in good condition. Vegetation is removed on RE wall portion, cleaning of drainage spout is required.
2	225+507	VUP	B/S	1 x 23.5 (Skew)	2 x 2	New construction	The structure is in good condition. Slope protection works and crash barriers are in good condition. Vegetation removal on RE wall portion and cleaning of drainage spout is required.

The following photographs were taken during the inspection of Grade separators.

Figure 3-10 Photographs of Grade Separators

Bottom view of Flyover at km. 203+900

Side view of Flyover at km. 203+900

VUP at km. 225+507 (side view)

VUP at km. 225+507 (bottom view)

3.4.7 ROB

There is 01 No. of ROB on Project Road at km. 208+975. A new structure is constructed on the right side and the existing structure is on the left side. Old structure is RCC box type. Steel reinforcement is exposed to the wing wall of old ROB. The steel railing of old ROB was found totally damaged. The new structure is constructed with RCC girder of single span. The structure is in good condition. Wearing coat is in good condition. The crash barrier for new structure is found to be in good condition.

Table 3-7 Details of ROB

Sr. No.	Design Chainage (km)	Type of Structure	Side	No. of Span	Span Width (m)	Length (m)	No. of Lane	Construction scheme	TDD Consultant's Remarks
1	208+375 / 208+975	ROB	LHS	1	10.50	6.50	2	Old construction	The pavement is in good condition. kerbs are re-cast. Hudge Vegetation is observed at slope protection area. Chute drains are not provided on embankment, as per the provision of CA. The Steel railing is totally damaged. So, all the lapses / defects mentioned above need to be attended.
			RHS	1	12.00	6.50	2	New construction	Overall, the structure is in good condition. The pavement & crash barrier condition is good. Vegetation noticed on RE Wall A1 RHS needs to be cleared.

The following photographs were taken during the inspection of ROB.

Figure 3-11 Photographs of ROB

Median View of ROB at km. 208+975

Abutment-2 and Girder of New ROB at km. 208+975

Old ROB Wing wall & structure condition at km. 208+975 (LHS)

New ROB return wall & structure condition at km. 208+975 (RHS)

3.4.8 New Construction of VUP at Major Junction

The National Highways Authority of India (NHAI) has appointed a new agency for the construction of new Vehicle Underpass (VUP) with approaches at ten major junctions (Black spots) located at all Major Junctions. The work is in progress at km. 209+900, km. 215+750 and km. 226+700.

The following photographs were taken during the inspection.

Figure 3-12 Photographs of New VUP (under construction)

A1 Approach Road Work is in progress at km. 209+900 (LHS)

Work is in progress at km. 215+750

VUP Work is in progress at km. 226+700

3.5 Drainage

Drains are to be constructed at the Project Road to have good drainage. Lined drains are provided at the sides of the service road and at some locations covered lined drains are provided at the separators between the main carriageway and service road. Median cut drains are provided at superelevation locations. The drainage condition of Project Road is in order. Silt deposits need to be removed during routine maintenance. Total 11.2 kms of covered / open line side drain is found on site. The condition of the same is good to fair.

Some of the photographs taken during the site visit are presented below.

Figure 3-13 Photographs of Drainage

Earthen Drain at km. 231+400 (RHS)

RCC Drain at km. 193+480 (LHS)

CC Drain at km. 222+370 (Median)

Drain at Median km. 233+550 (RHS)

Drain at km 233+500 (RHS)

Earthen Drain at km. 229+850 (LHS)

3.6 Slope Protection

Slope protection is found on Project Road at certain locations. At a few locations, the slope protection is damaged, which needs to be rectified by the Concessionaire.

Some of the photographs taken during the site visit are presented below.

Figure 3-14 Photographs of Slope Protection

Slope Protection at km. 194+410

Slope Protection at km. 208+450 (RHS)

Slope protection at km. 224+700 (LHS)

Slope protection at km. 208+450

3.7 Road Furniture

3.7.1 Pavement Marking

The design and marking for the Project Road are done as per the design standards as indicated in Schedule-D and the location for various treatments are drafted in consultation with the Independent Engineer.

Some of the photographs taken during the site visit are presented below.

Pavement Marking at km. 213+050

Pavement Marking at km. 230+700 (LHS)

3.7.2 Traffic Signage

Traffic signs include roadside signs, overhead signs, curb mounted signs and road marking along the Project Road. The design for the Project Road is done as per the design standard indicated in Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead signs shall be installed ahead of major intersections, toll plazas and urban areas as per detailed design requirements.

3.7.3 Highway Lighting

Highway Lighting is provided in urban and semi-urban areas of the Project Road. Lighting is provided at the locations of truck lay-bye, rest areas, toll plazas, underpasses, ROBs, service road stretches and at intersections / interchanges. IS:1944 (Part I and Part II) is followed for lighting installations. High mast lighting systems are provided at major junctions, locations of ROB / Flyover / Underpass / Grade Separator.

Some of the photographs taken during the site visit are presented below.

Highway Lighting at km. 213+100 (Median)

Highway Lighting at km. 222+400 (BHS)

3.7.4 Road Studs / Cat's eyes

The Concessionaire has provided road studs / cat's eyes as per Schedule-D on the curves, road junctions, zebra crossings, in municipal area and village settlement and ramps etc. to provide the proper visibility to the road users. All the road studs / cat's eyes on the Project Road are replaced.

Some of the photographs taken during the site visit are presented below.

Road Studs at km. 218+930 (Junction)

3.7.5 Pedestrian Guard Rail

The pedestrian guard rails are provided between main carriageway and service road at built-up locations. Damaged / missing pedestrian guard rails are replaced or repaired.

3.7.6 Avenue Plantation and Median Plantation

Avenue Plantation is available intermittently along the Project Road. However, the same requires regular maintenance. Median Plantation too needs proper regular maintenance.

Trees were planted in ROW and on either side of the road with staggered pitch as per IRC:SP:21. At present, replantation is in progress wherever required on Project Road. Arrangements for plantation of trees is in accordance with the MORT&H Technical Circle No. NH-41 (34) / 69. A spacing of 10 m - 15 m c/c is recommended for spacing of trees parallel to the roads. Set back distance of trees needed in different situations is as per the IRC:SP:21 and IRC:66. Shrubs in median is normally exceed 1 m - 1.5 m heights and as per IRC:SP:21. The landscaping is carried out as per the extent policy of NHAI as is being done on NHAI's public funded projects.

Some of the photographs taken during the site visit are presented below.

Median Plantation at km. 198+800

Avenue Plantation at km. 214+550 (RHS)

3.7.7 Traffic Signage / Median kerb painting / KM Stone

Traffic signs include roadside signs, overhead signs, kerb mounted signs and median signs along the Project Road. The design for the traffic signs along the Project Road is done as per the design standards indicated in section 11 of Schedule-D.

The height, lateral clearance, location and installation are as per relevant clauses of Schedule 'D'. Overhead sign has been installed ahead of major intersections, toll plazas, start / end of Project Road and urban areas as per detailed design requirements.

Kilometre stones, vertical post of sign boards, chevron boards and median kerb paint are faded at few locations which will be rectified by the Concessionaire.

Some of the photographs of sign boards are presented below.

Figure 3-15 Photographs of Road Signages

Over Head Half Gantry at km. 182+500 (LHS)

Signage at km. 184+850

Signage Hazard marking at km. 187+980

Signage at km. 206+750

Kilometer Stone at km. 213+000 (Median)

Hectometer Stone at km. 201+400 (Median)

ROW Piller at km. 209+120 (RHS)

Solar blinker at Median Opening at km. 218+930

3.7.8 Crash Barriers

Metal beam crash barriers are provided at bridge approaches, locations of high embankment and sharp curves. All the crash barriers provided by the Concessionaire are maintained at site.

Some of the photographs of metal beam crash barriers are presented below.

Figure 3-16 Photographs of MBCB / Crash Barrier

MBCB at km. 201+350 (LHS)

Crash barrier at km. 222+400 (LHS)

MBCB at km. 219+630 (LHS Shoulder)

MBCB at km. 220+350 (LHS)

3.7.9 Delineators

The traffic delineators are provided by the Concessionaire on the Project Road for road users. The same are maintained by the Concessionaire.

Some of the photographs of delineators are presented below.

Figure 3-17 Photographs of Delineators

Delineator at km. 219+000 (Median)

Delineator at km. 198+800

3.7.10 Chain link fencing

The chain link fencing is provided at the Major Junction Palakkad. It is maintained by the Concessionaire.

Some of the photographs of chain link fencing are presented below.

Figure 3-18 Photographs of Chain link fencing

Chain link fencing at km. 203+950 RHS Major Junction Palakkad

3.8 Toll Plaza

As per the Concession Agreement, there is one toll plaza on the Project Road at km. 189+400. The details of the Toll Plaza are as follows.

Table 3-8 Details of Summary for Toll Plaza Items

Sr. No.	Particulars	Details		Remarks
		LHS	RHS	
1	Number of Tolling Lanes	5	5	
2	Weigh in Motion Facility (Number of Lanes)	5	5	
3	No. of ETC lanes	5	5	
4	No of Toll booths	9 Singles		
5	Canopy	Present		
6	Administrative building	Present		
7	Parking cum Toilet block	Present		Toilet block available
8	Availability of Tunnel or Elevated walkaway for movement between Toll lanes and administrative building	Tunnel / Yes		
9	Availability of static weigh bridge	Yes		2 numbers
10	Availability of Loading/Unloading Facility for Overloading vehicles	No		
11	Storage facility for Overloaded material	No		
12	High mast light	Yes		
13	Streetlight	Yes		
14	Low mast light	No		
15	User fee boards	Yes		
16	Cantilever/Gantry boards	Yes		
17	Automatic boom barrier	Yes		

Figure 3-19 Photographs of Toll Plaza

View of Toll Plaza - km. 189+400 Vadakkanchery End (Pampampalam)

Admin Building at Toll Plaza

Ambulance at Toll Plaza at km. 189+400

Airtel Tower for NET communication at Toll Plaza

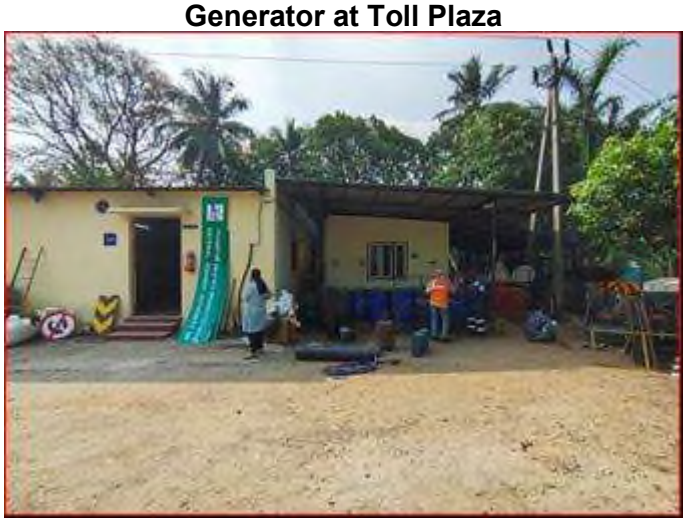
Tunnel and Cash room at Toll Plaza at km. 189+400

Computer skill development Centre at Toll Plaza

Nursery at Toll Plaza

Generator at Toll Plaza

Static Weigh Bridge at Toll Plaza (RHS)



Store & Maintenance Yard at Toll Plaza

Medical Facility at Toll Plaza

3.9 Lane Equipment

Following are the lane hardware and equipment installed at toll plaza.

1. RFID ETC Transceiver
2. Lane Controller with Industrial PC
3. AVC Sensors

4. Automatic Lane Barrier (ALB)
5. Lane Traffic Light and user fare display
6. Incident Capture Camera
7. Overhead Lane Signals
8. Traffic Lights
9. Toll Booth Equipment

3.9.1 RFID ETC Transceiver

RFID ETC Transceiver reads tags installed on the windshield of vehicles and mounted on a pole at about 6 m height. Handheld RFID readers are provided (1 no. in each direction) in case a tag is not detected by the fixed reader.

RFID at Toll Plaza

3.9.2 Lane Controller with Industrial PC

Toll Lane Controller is located within the Electronic Enclosure placed inside each toll booth which are connected to the common server and are capable of independent storage of data.

Lane Controller in Tunnel at TP

3.9.3 Automatic Vehicle Classification (AVC) Sensors

The AVC equipment comprises of a pair of height sensor poles, axle sensors and inductive loops. The height detector has a high sensing resolution and detects height when object blocks the path. The presence of vehicle is detected by inductive loop. The loop sensors embedded on the pavement trigger the AVC height sensors located on parallel pillars.

AVC at Toll Plaza

3.9.4 Automatic Lane Barrier

Boom barriers installed on all lanes are in working condition and have a working time of 0.6 - 0.9 s. Automatic Lane Barrier is used to allow only authorized vehicles to pass through the lane. The barrier is activated only on generation of user fee receipt or other relevant vehicle processing activity. A torque motor powers the barrier for raising and lowering the boom. The motor can be blocked at any position without causing any damage. In the event of power failure, the boom is automatically raised. The boom weight is exactly balanced by built-in springs.

ALB at Toll Plaza

3.9.5 Lane Traffic Light (LTL) and User Fare Display (UFD)

Lane Traffic Light (LTL) is used to instruct vehicles to stop or pass through the lane. The LTL is RED when the toll collector is expecting the vehicle at the booth. After the transaction is done; the LTL turns Green to instruct the vehicle to pass through the lane. The User Fare Display is a part of electronic toll collection equipment located at the toll booth. It is a mini variable message sign (VMS) made of Light Emitting Diodes (LED). The user fare display is used to display the toll fare that is due and that must be paid by the motorist and the classification of vehicle selected by the collector.

LTL & UFD at Toll Plaza

3.9.6 Over Head Lane Signal (OHLS)

The **Overhead Lane Signal (OHLS)** for lane “Open” and “Close” sign consists of a pair of “GREEN” (arrow) and “RED” (cross) lights. The OHLS is located at the vehicle approaching side of the canopy to show the drivers whether the lane is open or closed.

OHLS at Toll Plaza

3.9.7 Toll Booth Equipment

Toll Booth Hardware / Equipment provided are:

- Toll Collector Display (Operator Monitor)
- Customized Industrial Keyboard
- Receipt Printer

- Intercom Slave unit
- Bar code reader
- Violation Light and alarm
- Manual Booth Control (MBC)
- Booth Camera

The operator monitor termed as Toll Collector Display (TCD) is located on the toll collector's desk. It is the system's interface to the toll collector, to display the status of transactions and status of the lane peripherals.

The keyboard on the toll terminal is a programmable keyboard for Registration of toll operations and is customized for different vehicle types and type of ticket.

Toll Booth equipment's at Toll Plaza

Thermal printers are installed at the toll booths to print tickets. Intercom slave unit facilitates communication with the master unit located in the control room.
Violation system has an alarm switch which is triggered whenever there is a violation such as run-through happening on the lane. When there is an emergency, a foot switch pressed by the booth operator alerts the control room.

Booth Cameras are provided on the inside roof corner of the booth to provide surveillance through CCTV screen located in the control room. Manual Booth Controller is used to release exempt vehicles.

3.9.8 Medium Speed Weigh in Motion (MSWIM)

Medium Speed Weigh in Motion (MSWIM) is installed on entry lanes of Toll Plaza.

MSWIM at Toll Plaza

3.10 Plaza Equipment

3.10.1 TMS Server & UPS Server for Central LAN 20kv

Plaza Server is provided in a hot standby configuration and provided with port non-POE network switch and Port PoE switch. Internet connectivity is available through one lease line (Airtel) and Jio Wi-Fi module. Firewall with Sophos antivirus is provided.

UPS Central for LAN 20kv & TMS Server at Toll Plaza

3.10.2 55" LED screen for CCTV monitoring

55" LED screen for CCTV monitoring installed at the toll plaza admin block provides view of all the toll booths, important zones within the plaza where cash transactions take place (server room, control room, cash up).

The toll plaza manager can observe the activities at the toll lanes and toll booth. When the toll collector calls up on the intercom, the manager can comprehend the situation at the lane by a zoomed view of the particular lane.

3.10.3 Workstations in POS room

Workstations are available in control room (lane monitoring, administration, and audit), and POS.

Point of sale room at Toll Plaza

3.11 Toilet Block

There is one toilet block provided at Toll Plaza. A photograph of the toilet block is presented below.

Photographs of Toilet Block

3.12 Bus Bays and Passenger Shelters

There are 43 Nos. of bus bays / passenger shelter along Project Road. Some of the photographs of the bus bays are presented below.

Figure 3-20 Photographs of Bus Bays / Passenger Shelter

Bus bay at km. 187+950 (LHS)

Bus bay at km. 213+020 (LHS)

3.13 Balance Work Status

The project has received Completion Certificate on 31st October 2015 by completing all the works as mentioned in the Technical Schedules of Concession Agreement. Hence, there are no balance works to be executed as per CA.

3.14 Operation and Maintenances

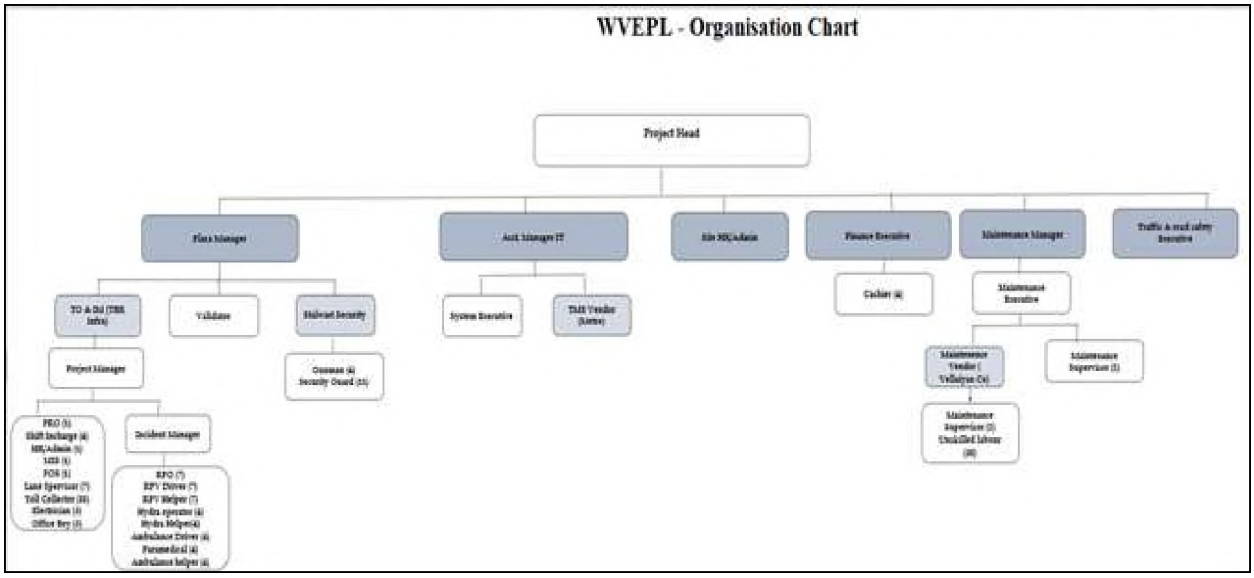
3.14.1 O&M Contract

As per Clause 15.1 of the Concession Agreement, the Concessionaire shall operate and maintain the Project Road by itself, or through O&M Contractors and if required, modify, repair, improve the Project Road to comply with Specifications and Standards, and other requirements set forth in the Agreement through Good Industry Practice, Applicable Laws and Applicable Permits and manufacturer's guidelines and instructions with respect to toll systems. The Operation and Maintenance activities shall conform to all the requirements laid down in MoRT&H, IRC Specifications and the Concession Agreement.

The Concessionaire has outsourced for carrying out the activities related to operation and maintenance of the Project Road including toll operation services, security services, AMC for TMC and AMC for DG set.

3.14.2 Organization Chart

The Concessionaire has given the Organization Chart at site for Operation and maintenance. Accordingly, there is 01 Project Head, 01 Senior Executive (F&A), 01 Senior Executive (HR), 01 Assistant Manager (TMS / IT), 01 Executive (TMS / IT), 01 Maintenance Manager, 01 Store Executive, 03 Supervisor, 02 Electrician, 01 Plaza Manager, 01 Document Controller, 04 Cashiers and 03 validators to carry out O&M activities. The team controls the maintenance activities. However, the maintenance work is undertaken and executed through competent sub-contractors.



3.14.3 Operation

Operation cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses and other miscellaneous expenses. The Concessionaire has provided the expenses occurred towards operation expenses for past years. Necessary assumptions have made from the expenses of similar types of projects to arrive at the operation cost. The estimates are projected based on the best industry practices and are compared with the operating cost in the vicinity of the project area.

The Operation Cost is presented in the subsequent chapter.

3.14.4 Routine Maintenance

The Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey.

Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Maintenance Cost is presented in the subsequent chapter.

4 PAVEMENT INVESTIGATION AND ASSESSMENT

4.1 General

Presently, the pavement of the Project Road is being maintained by the Concessionaire as per Scope of Work. The Concessionaire has received Completion Certificate on 31st October 2015 for the complete Project stretch.

The project is currently under the Operation and Maintenance stage. The concession period of the project is 20 years from the Appointed Date 18th May 2013 including construction period of 2.5 years.

4.2 Surveys and Investigation

4.2.1 Pavement Condition Survey

Pavement condition survey was carried out by the Technical Consultant from **04th March 2026 to 06th March 2026** through visual inspection for the project road and for the entire length.

The summary of pavement condition based on the visual inspection is tabulated below.

Table 4-1 Summary of Pavement Condition

Sr. No.	Chainage (km)		Length (km)	Visual Condition (As per IRC:115-2014)	
	From	To		Left Carriageway	Right Carriageway
1	182.207	236.130	53.495	Good*	Good

Observation and Conclusion:

From the above table, it is observed that the overall pavement condition for the entire project stretch is found to be Good.

*As compared to the RHS carriageway, the LHS MCW shows a higher extent of patchwork at certain locations, including crack sealing, milling, and relaying of bituminous concrete (BC).

4.2.2 Axle Load Survey

The Concessionaire conducted the Axle Load Survey on Project Road at km. 189+600 (near Toll Plaza) on 19th January 2021 and 20th January 2021. The summary of Vehicle Damage Factor (VDF) calculated as provided by the Concessionaire is tabulated below.

Table 4-2 Vehicle Damage Factor

Vehicle Category	Vehicle Damage Factor at km. 189+600 (near Toll Plaza)	
	Walayar - Vadakkancherry	Vadakkancherry - Walayar
Bus	0.856	0.759
LCV	2.000	0.470
2A	3.856	1.503
3A	9.218	2.419
MAV	17.073	6.082

4.2.3 Design Traffic

Traffic in Million Standard Axles (MSA) for the homogeneous section based on the historical traffic data provided by the Concessionaire, current traffic has been used for future projections and the estimated design MSA is computed and presented in subsequent table.

For the estimation of design MSA, Actual Traffic Growth Rates as provided by the Concessionaire were used.

Table 4-3 MSA Calculation

Year	LHS		RHS		Remarks
	MSA	Cumulative MSA (Walayar - Vadakkancherry)	MSA	Cumulative MSA (Vadakkancherry - Walayar)	
FY 2027	9.05	**9.05**	3.18	**3.18**	
FY 2028	9.77	**18.82**	3.44	**6.62**	
FY 2029	10.53	**29.35**	3.71	**10.33**	
FY 2030	11.03	**40.38**	3.89	**14.22**	
FY 2031	11.55	**51.93**	4.07	**18.29**	
FY 2032	11.87	**63.80**	4.19	**22.48**	
FY 2033	12.23	**76.03**	4.32	**26.80**	
FY 2034	12.83	**88.86**	4.53	**31.33**	End of concession period as per appointed date & CA
FY 2035	13.45	**102.31**	4.75	**36.08**	
FY 2036	14.10	**116.41**	4.99	**41.07**	
FY 2037	14.78	**131.19**	5.23	**46.30**	
FY 2038	15.49	**146.68**	5.48	**51.78**	End of concession period as per target revenue

4.2.4 Network Survey Vehicles (NSV) Survey

The Concessionaire conducted a pavement condition survey on each lane of each carriageway using NSV. The NSV survey was carried out on the Project Road from **05th March 2026 to 06th March 2026.**

Roughness Survey

Roughness Survey results were provided by the Concessionaire for analysis and to assess the riding quality on each direction (each lane) of the carriageway of Project Road.

The side-wise results of Roughness Survey are presented as below.

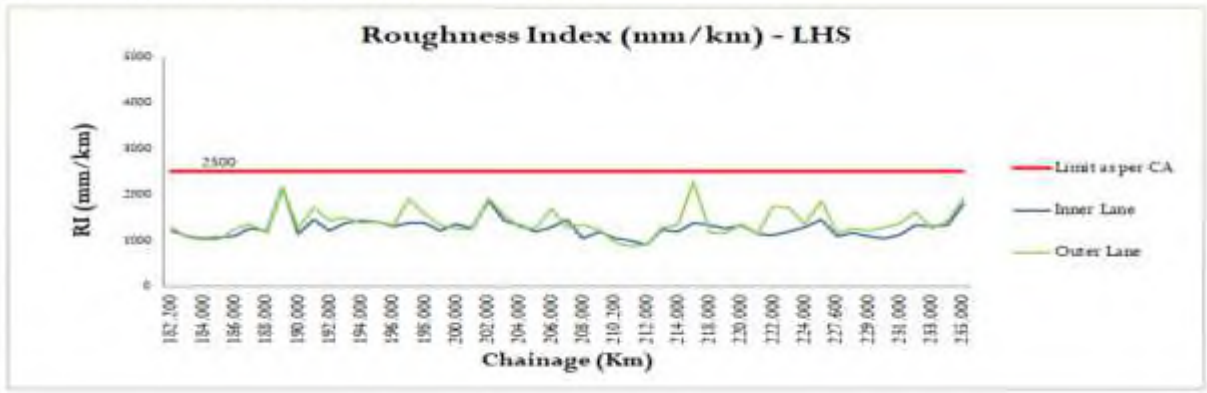
Table 4-4 Result of Roughness Survey

Table 2-1: Summary of RI Limit as per Schedule K of CA

Roughness Summary % as per Schedule K of CA (mm/km)					
Condition	Limit as per Schedule K of CA (mm/km)	LHS		RHS	
		Inner Lane	Outer Lane	Inner Lane	Outer Lane
Good	<2500	100.00%	100.00%	100.00%	100.00%
Poor	>2500	0.00%	0.00%	0.00%	0.00%

Roughness Index - LHS

Figure 2-3: Roughness Summary for WVEPL as per Schedule K of CA



Roughness Index - RHS

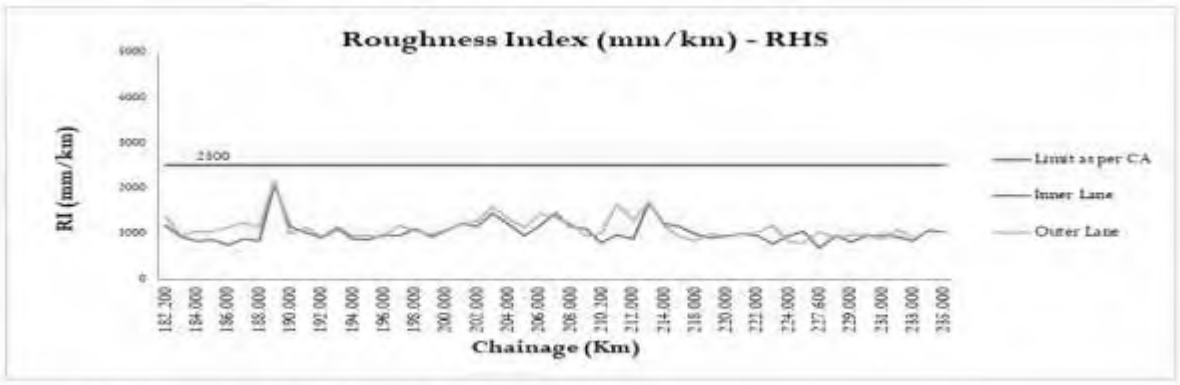


Figure 2-4: Roughness Index for WVEPL as per Schedule K of CA

Observation and Conclusion:

From the table of roughness survey result, it is observed that the overall pavement condition for the entire project stretch is found to be Good.

4.2.5 Structural Investigations

The structural evaluation and analysis of the remaining life of project was carried out in conformity with IRC:115-2014 “Guidelines for Structural Evaluation and Strengthening of Flexible Road Pavements Using Falling Weight Deflectometer (FWD) Technique”.

The FWD survey was conducted on the Project Road from **07th January 2026 to 09th January 2026**. The summary of the same is presented below.

Remaining Life of pavement on LHS

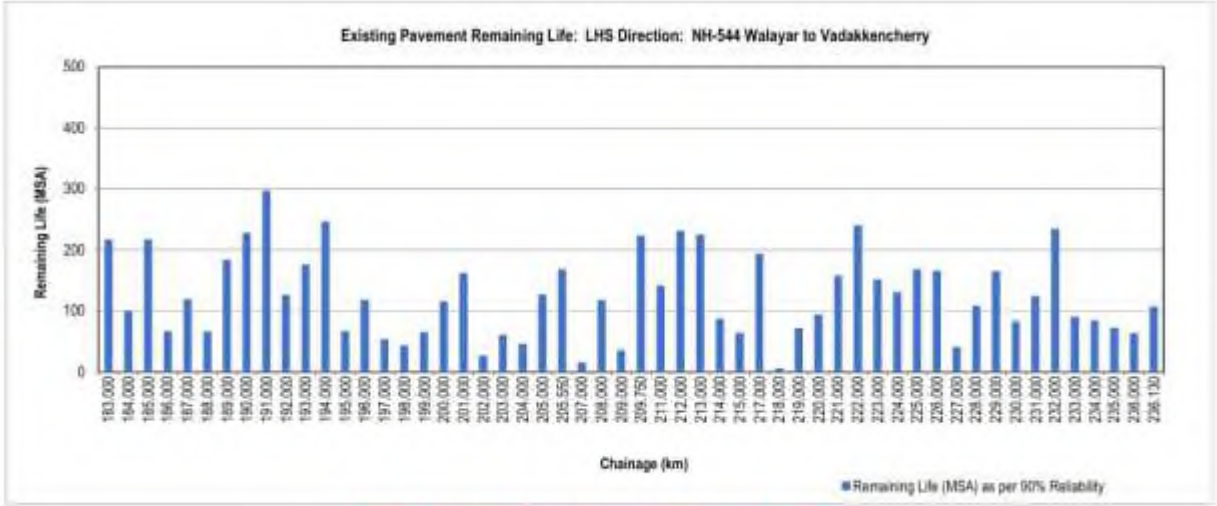


Figure 1-4: Remaining life of existing pavement on LHS Direction

Remaining Life of pavement on RHS

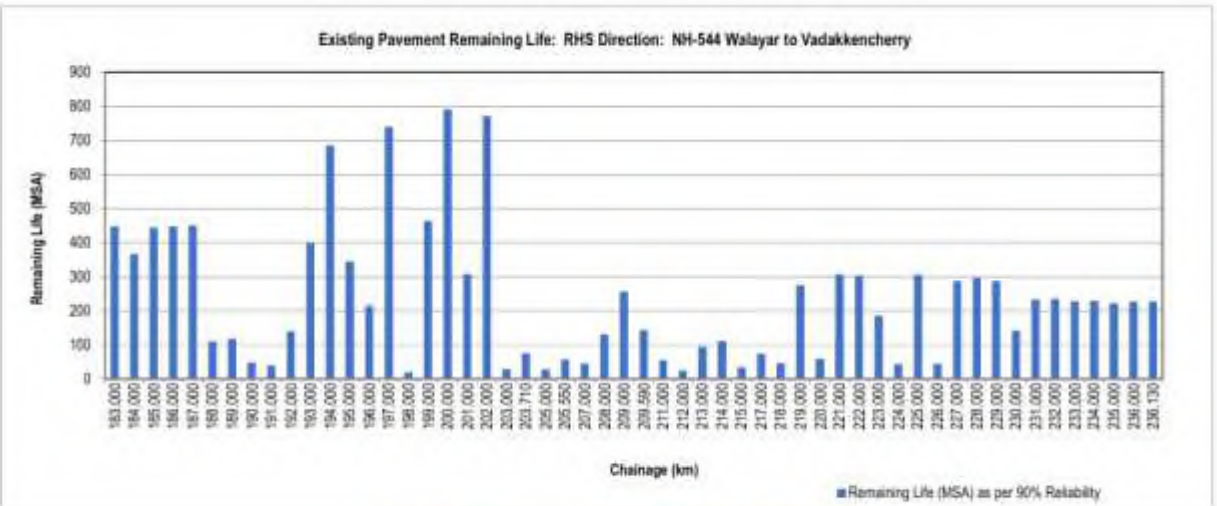


Figure 1-5: Remaining life of existing pavement on RHS Direction

However, the maintenance can be carried out on as and when required basis and to the compliance of Schedule-K requirement to maintain the road in serviceable condition. However, improvement in Riding Quality is expected if the roughness value exceeds 2500 mm/km.

4.2.6 Test pit and Subgrade Investigation

The Concessionaire carried out the subgrade investigation for the Project Road in February 2021. The results of the same as provided by the Concessionaire are tabulated below.

Table 4-5 Test Results Summary of Natural Ground Soil Samples

S. No.	Existing Chinage (Km.)	Side (LHS/RHS)	Soil Classification as per IS: 1498	Gradation: Percent by weight passing through the Sieve (IS:2720-IV)		Clay & silt content %	Atterberg Limits [IS :2720-Pt-V]			Modified Proctor Test (IS:2720-Pt-VIII)		In-situ Density		4-Days Soaked CBR (%)	Free Swell Index	Degree of Compaction (%)
				19.0 mm	4.75 mm		Liquid Limit (LL) %	Plastic Limit (PL) %	Plasticity Index (PI)	Max. dry density gm/cc.	OMC (%)	FDD (gm/cc)	FMC (%)			
1	182+500	LHS	SM	100.0	70.3	13.5	23	NP	NP	2.11	8.4	1.94	2.0	17.9	0.0	91.9
2	187+900	RHS	SM	100.0	94.0	19.5	25	NP	NP	2.09	8.7	1.89	4.0	15.4	11.1	90.4
3	190+900	LHS	SM	100.0	98.3	30.3	26	NP	NP	2.02	9.0	1.85	9.0	12.6	12.5	91.6
4	198+700	RHS	SC	100.0	93.8	39.6	30	18	12	1.96	12.4	1.88	8.0	9.7	22.2	95.9
5	200+850	LHS	SM-SC	97.7	58.0	18.2	29	22	7	2.01	10.9	1.92	5.0	11.7	15.2	95.5
6	205+000	RHS	SM	98.7	85.7	15.2	23	NP	NP	2.08	8.6	1.88	7.0	16.3	0.0	90.4
7	211+500	LHS	SM	100.0	97.3	28.4	22	NP	NP	2.03	9.1	1.99	6.0	13.6	0.0	98.0
8	215+500	RHS	SM	98.5	89.4	12.4	25	NP	NP	2.11	8.4	1.89	5.0	17.7	0.0	89.6
9	219+950	LHS	SM	98.1	89.1	33.2	26	NP	NP	1.96	9.2	1.83	7.0	12.9	0.0	93.4
10	222+150	RHS	SM	100.0	95.4	33.2	27	NP	NP	1.95	9.1	1.89	6.0	13.6	0.0	96.9
11	230+100	LHS	SM-SC	97.4	81.4	38.9	29	22	7	1.97	10.8	1.89	8.0	11.8	15.2	95.9
12	236+000	RHS	MI	100.0	96.6	50.8	36	25	11	1.93	12.3	1.91	6.0	9.2	20.0	99.0

4.2.7 Periodic Maintenance Strategy

The Concessionaire has completed an overlay on both sides of project MCW throughout the entire project length and in Service Road, BC Overlay of 30 mm / 40 mm has been provided on both sides at distress locations in FY 2023.

The maintenance can be carried out as and when required basis and to the compliance of Schedule-K requirement to maintain the road in serviceable condition. Only improvement in the Riding Quality is to be made if the roughness value exceeds 2500 mm/km.

The table below shows the major / periodic maintenance cycle throughout the concession period for the Project Road.

Table 4-6 Major Maintenance Cycle

Sr. No.	Year	Main Carriageway	Service Road
1	FY 2023	Overlay completed for Project Length	Overlay completed at distress locations
2	FY 2024 to FY 2028	-	-
3	FY 2029	Major Maintenance with 30 mm BC (75%) and 40 mm BC (25%) + Milling & 50 mm DBM (11%)	Major Maintenance with 30 mm BC (50%) + Micro-surfacing (50%)
4	FY 2030 to FY 2035	-	-
5	FY 2036	Major Maintenance with 30 mm BC (100%)	Major Maintenance with 30 mm BC (50%) + Micro-surfacing (50%)
6	FY 2037	-	-
7	FY 2038	End of concession period as per traffic study	

**Actual end of concession period as per Concession Agreement is May 2033. However, as per traffic details submitted by the Concessionaire, the revised concession period is up to FY 2038 as per provision of Article 14 of CA.*

The projected cost for periodic / major maintenance is presented in the subsequent chapter.

5 COST ESTIMATES

5.1 General

Based on the assessment carried out in previous chapters, various costs were worked out. The costs are divided into following categories.

I. Balance Work Cost
II. Routine O&M Cost
III. Major Maintenance Cost
IV. Periodic Replacement of TMS / ATMS system

Costs for different category are detailed out in subsequent sections along with the assumptions considered for rate and escalation.

5.2 Rate Assumption

Following assumptions are considered for unit rates of various items while estimating the cost:

1. Unit rates of different items (Tack Coat, BC, DBM etc.) are calculated as per the PRICE (kerala.gov.in).

   a. **Manpower and Labour:** As per applicable minimum wages published by Ministry of Labour & Employment, Government of India.

   b. **Bitumen:** Concessionaire has long term contract with IOCL for the procurement of bitumen and related products. Same discounts are considered on bitumen procurement for this analysis. Furthermore, we also understand that bitumen prices are primarily dependent on crude oil price and market demand and hence are likely to be very volatile and difficult to predict at this stage.

      Therefore, bitumen prices are considered as per the forecast of Client. Current published of bitumen are considered for unit rates calculation for FY 2027. Average 10 years of price of bitumen are considered for unit rates calculation for FY 2028 and onwards. Following rates of bitumen are considered.

Table 5-1 Bitumen Rates - Ex-MI Supply excluding discount and GST

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY 2027 (Rs. / MT)	Rate for FY 2028 onwards (Rs. / MT)
1	Mathura,	All States	VG-10	45,102	35,125
2			VG-30	46,402	36,137
3			VG-40	48,962	38,131
4	Panipat	All States	VG-10	45,102	35,125
5			VG-30	46,402	36,137
6			VG-40	48,962	38,131
7	Koyali	All States	VG-10	47,102	37,125
8			VG-30	48,402	38,137
9			VG-40	51,082	40,251
10	Haldia	All States	VG-10	46,602	35,683
11			VG-30	47,402	36,295
12			VG-40	49,962	38,256

Sr. No.	Supply Location	Applicability of Rates	Product	Rate for FY 2027 (Rs. / MT)	Rate for FY 2028 onwards (Rs. / MT)
13	Barauni	All States	VG-10	47,132	36,213
14			VG-30	48,432	37,325
15			VG-40	50,992	39,286
16	CPCL	Kerala	VG-10	47,402	35,519
17			VG-30	48,402	36,395
18			VG-40	50,762	38,120
19	CPCL	Tamil Nadu	VG-10	47,902	36,019
20			VG-30	48,402	36,395
21			VG-40	50,962	38,320
22	CPCL	Telangana and Andhra Pradesh	VG-10	44,602	32,719
23			VG-30	45,402	33,395
24			VG-40	47,962	35,320
25	CPCL	Karnataka	VG-10	44,602	32,719
26			VG-30	45,402	33,395
27			VG-40	47,962	35,320

c. **Sand and Aggregate:** Market rates are considered from the quarry located nearest to Project Road.

d. **Cement:** Market rates are considered from the nearest local market.

e. **Steel :** Rate of steel is taken from local market.

f. **Machinery Hire charges:** Hire charges for the machinery are considered in accordance with applicable PRICE (kerala.gov.in).

g. **Rates of items as per Work Order:** The rates of road marking, kerb raising, micro-surfacing, milling, road stud etc. are considered as per the Work Order issued to Contractor at Site shared by the client.

2. Goods and Service Tax (GST) is considered as 18% as per the latest Government Guidelines.

Summary of Unit Rates worked out using Standard Data Book adopted for major items is given below.

Table 5-2 Summary of Unit Rates

Sr. No.	Item Description	Unit	Rates (Rs.)
1	Dense Bituminous Macadam	Cum	9,733
2	Bituminous Concrete	Cum	10,932
3	Milling	Sqm	93
4	Micro-surfacing	Sqm	167
5	Kerb raising	Rm	268
6	Road Marking	Sqm	486
7	Road Studs	Nos.	193

5.3 Balance Work Cost

As discussed in the previous chapter, there are no balance works to be executed as per CA. Hence, the balance work cost is **NIL**.

5.4 Routine O&M Cost

Routine O&M cost is comprised of manpower cost, toll operation cost, power and electricity cost, office operating expenses, vehicle running expenses, administrative expenses, horticulture and ROW maintenance, routine maintenance and other miscellaneous expenses. The Concessionaire has provided the major agreements towards operation and maintenance for past years. Necessary assumptions have been made from the expenses of similar type of projects to arrive at the operation cost. The estimates are projected based on best industry practices and are compared with the operating cost in the vicinity of the project area. Same has been divided into following major heads.

1. Salary and Welfare Expenses
2. Tolling Operations Services
3. Toll Security Services
4. Incident Management Services
5. Electricity and Diesel Charges
6. TMS / HTMS / System Expenses
7. Office Operating Expenses
8. Vehicle Running Expenses
9. Professional Fees Expense
10. Community Development
11. Communication Expenses
12. Conveyance Expenses
13. Insurance Expense
14. IE Fees
15. Horticulture & ROW Maintenance
16. Routine Maintenance Cost

In above, the Routine Maintenance cost is derived based on the Ministry of Road Transport and Highways - Report of the Committee on Norms for Maintenance of Roads in India (published by Indian Road Congress New Delhi 2001) along with actual pavement condition assessed during condition survey. Maintenance cost constitutes the routine, day-to-day maintenance activities for project assets, including road pavement, shoulders, embankment, drainage, structures, plantations, roadside furniture, traffic signs, traffic safety devices etc. Past data has been used to assess maintenance costs due to normal usage or “wear-and-tear”. Likely costs of maintenance of structures are assessed based on their present condition and vintage, in combination with well-established guidelines and thumb rules given in Indian codes and standards.

The Routine Operation Cost is presented as below. The detailed working of routine maintenance (Sr. No. 15 of below table) is presented in **Annexure-I**.

Table 5-3 Summary of Operation Cost

Sr. No.	Particulars	Amount (FY 2027-38)
1	Salary and Welfare Expenses	1,22,82,000
2	Tolling Operations Services	2,43,09,078
3	Toll Security Services	49,90,395
4	Incident Management & Emergency Services	2,67,38,684
5	Electricity and Diesel Charges	87,30,539
6	TMS / HTMS / System Expenses	40,11,513
7	Office Operating Expenses	32,73,999
8	Vehicle Running Expenses	62,99,700
9	Professional Fees Expense	1,50,94,897
10	Community Development	14,36,848
11	Communication Expenses	3,64,514
12	Conveyance Expenses	3,97,651
13	Insurance Expense	1,48,34,137
14	IE Fees	1,30,00,790
15	Routine Maintenance Cost (Project Road)	2,42,00,758
16	Horticulture & ROW Maintenance	1,76,83,585
17	Miscellaneous including Contingency	54,30,590
	Total Cost (Rs)	**18,30,79,678**
	Total Cost (Cr)	**18.31**
	Per km Cost (Lakh)	**34.22**

5.5 Major Maintenance Cost

As informed by the Concessionaire, overlay has been completed in FY 2023 as a part of major maintenance. The Concessionaire has completed overlay of 40 mm BC (100%) on LHS and 30 mm BC (100%) on RHS. The pavement is also treated with 50 mm DBM on RHS at distressed section. As per the NSV test report conducted at site on 29th December 2023, MCW is in good condition and same has been verified during site visit.

The summary of Major Maintenance Cost is provided as below. The detailed working of the same is presented in **Annexure-II**.

Sr. No.	Year	Major Maintenance Cost (Cr.)	Remarks
1	FY 2024 to FY 2028	-	
2	FY 2029	67.71	
3	FY 2030 to FY 2035	-	
4	FY 2036	65.34	
5	FY 2037 to FY 2038	-	
Total Cost (Cr.)		**133.05**	

5.6 Periodic Replacement of TMS / ATMS System

Every 7 years, replacement cost of major TMS / ATMS system is considered. The same is provided as below.

Sr. No.	Year	HTMS O&M / Replacement Cost (Cr.)	Remarks
1	FY 2027	0.64	
2	FY 2034	0.64	
Total Cost (Cr.)		**1.28**	

5.7 Escalation Assumption

Following escalation has been considered for the O&M cost as provided by Client.

Table 5-4 Escalation

Year	Escalation	Year	Escalation
2028	4.86%	**2041**	3.99%
2029	4.44%	**2042**	3.99%
2030	4.24%	**2043**	3.99%
2031	4.13%	**2044**	3.99%
2032	4.08%	**2045**	3.99%
2033	4.01%	**2046**	3.99%
2034	4.00%	**2047**	3.99%
2035	4.03%	**2048**	3.99%
2036	4.01%	**2049**	3.99%
2037	3.98%	**2050**	3.99%
2038	3.98%	**2051**	3.99%
2039	4.00%	**2052**	3.99%
2040	3.99%	**2053**	3.99%

5.8 Summary of Cost

Different O&M cost have been worked out based on the investigations and assessment on Project Road. Cost for each of the category has already discussed in previous sections. Since the forecasting has been carried out for remaining concession period, the cost is summarised yearly for remaining concession period along with escalation as mentioned in Clause 5.7.

Escalated O&M Cost (in INR Cr.)

	Year of expense	FY 27	FY 28	FY 29	FY 30	FY 31	FY 32	FY 33	FY 34	FY 35	FY 36	FY 37	FY 38
1	Routine O&M Cost												
1.01	Salary and Welfare Expense	1.23	1.29	1.35	1.40	1.46	1.52	1.58	1.64	1.71	1.78	1.85	0.32
1.02	Tolling Operations Services	2.43	2.55	2.66	2.78	2.89	3.01	3.13	3.25	3.38	3.52	3.66	0.63
1.03	Toll Security Services	0.50	0.52	0.55	0.57	0.59	0.62	0.64	0.67	0.69	0.72	0.75	0.13
1.04	Incident Management Services	2.67	2.80	2.93	3.05	3.18	3.31	3.44	3.58	3.72	3.87	4.03	0.70
1.05	Electricity and Diesel Charges	0.87	0.92	0.96	1.00	1.04	1.08	1.12	1.17	1.22	1.26	1.31	0.23
1.06	TMS / HTMS / System Expenses	0.32	0.33	0.35	0.36	0.38	0.39	0.41	0.42	0.44	0.46	0.48	0.08
1.07	Office Operating Expenses	0.33	0.34	0.36	0.37	0.39	0.41	0.42	0.44	0.46	0.47	0.49	0.09
1.08	Vehicle Running Expenses	0.63	0.66	0.69	0.72	0.75	0.78	0.81	0.84	0.88	0.91	0.95	0.16
1.09	Professional Fees Expense	1.51	1.58	1.65	1.72	1.79	1.87	1.94	2.02	2.10	2.19	2.27	0.39
1.10	Community Development	0.14	0.15	0.16	0.16	0.17	0.18	0.18	0.19	0.20	0.21	0.22	0.04
1.11	Communication Expenses	0.04	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.01
1.12	Conveyance Expenses	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.01
1.13	Insurance Expense	1.48	1.56	1.62	1.69	1.76	1.84	1.91	1.99	2.07	2.15	2.23	0.39
1.14	IE Fees	1.30	1.36	1.42	1.48	1.55	1.61	1.67	1.74	1.81	1.88	1.96	0.34
1.15	Routine Maintenance Cost	2.42	2.54	2.65	2.76	2.88	2.99	3.11	3.24	3.37	3.50	3.64	0.63
1.16	Horticulture & ROW Maintenance	1.77	1.85	1.94	2.02	2.10	2.19	2.28	2.37	2.46	2.56	2.66	0.46
1.17	Miscellaneous and Contingency	0.54	0.57	0.59	0.62	0.65	0.67	0.70	0.73	0.76	0.79	0.82	0.14
	Subtotal of O&M Cost	18.22	19.11	19.96	20.80	21.66	22.55	23.45	24.39	25.37	26.39	27.44	4.76
2	Major Maintenance Cost	-	-	71.94	-	-	-	-	-	-	85.79	-	-
3	Periodic Cost of TMS / HTMS Replacement	0.64	-	-	-	-	-	-	0.86	-	-	-	-
4	Balance Works Cost	-	-	-	-	-	-	-	-	-	-	-	-
	Total Cost	**18.86**	**19.11**	**91.89**	**20.80**	**21.66**	**22.55**	**23.45**	**25.25**	**25.37**	**112.18**	**27.44**	**4.76**

ANNEXURES

ANNEXURE I - ROUTINE MAINTENANCE COST

Routine Maintenance Cost	
Walayar -Vadakancherry	
Ordinary Repair Cost for Flexible (with GST)	**2,42,00,758**
(inclusive of GST)	**= 4.52 lakhs per km**

CONVERSION FACTORS									
National Highways / State Highways									
Reference cost taken for Two / four lane (7.0 or 14m or 21m) with 1.5m wide shoulders									
(Refer Chapter 6.17 of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 45)									
Sr. No.	**Description for Flexible Pavement**		**Factor**	**Normal** More than 4500 CVD **2,05,129**	**Urban** More than 4500 CVD **2,60,698**	**Project Length (km)**		**Per Year Project Maintenance Cost**	
						Normal	**Urban**	**Normal**	**Urban**
1	Four-lane with divided carriageway	Without paved shoulder	1.53	313847.00	398869.00	-	-	-	-
		Paved shoulder	1.70	348719.00	443187.00	28.83	-	1,00,52,174	-
2	Four-lane with divided carriageway and service lane on either side	Without paved shoulder	2.00	410257.00	521397.00	-	-	-	-
		Paved shoulder	2.20	451283.00	573537.00	-	24.67	-	1,41,48,584
					TOTAL	**53.495**		**2,42,00,758**	

Ordinary Repairs

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
1	**Maintenance of Carriageway & Paved Shoulders (1.5m wide); B.T. Surface**			
	i) Pot holes repair (50 mm deep)	100 % Pot hole free	As & when required	0.50%
	Volume (cum)			2.50
	Rs/m^3			12744
	Cost in Rupees			31,860
	ii) Patch repair	100 % Patch less	As & when required	0.50%
	Area (sqm)			50
	Rs/m^2			510
	Cost in Rupees			25,488
	iii) Sealing (Crack)			
	a) Wider than 3 mm	100 % Crack Less	As & when required	2.50%
	Area (sqm)			250
	Rs/m^2			91
	Cost in Rupees			22,715
	b) Width less than 3 mm	75 % Crack Less	As & when required	2.00%
	Area (sqm)			150
	Rs/m^2			67
	Cost in Rupees			10,089
	iv) Repair of ruts and undulations			
	a) Greater than 20 mm	75%	As & when required	1.00%
	Area (sqm)			75
	Rs/m^2			510
	Cost in Rupees			38,232
	v) Road marking	14%	Once in 7th year & @	12902

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
			Repaired location	
	SUB TOTAL			**1,41,286**
2	**Maintenance of earthen Shoulders:**			
	i) Renewal of earthen shoulders	80%	Once in a Year	6306
	ii) Kuccha Drain Maintenance	100%	Twice in a Year	1108
	SUB TOTAL			**7,414**
3	**Maintenance of Cross Drainage works:**			
	i) Repair of floors	100%	Once in a Year	5055
	ii) Repair of parapets	100%	As & when required	2106
	SUB TOTAL			**7,161**
4	**Maintenance of Minor & Major Bridges:**			
	i) Spot painting & protective Coating required on Bearing and greasing of Bearings, railing, structural members, Expansion joints	100%	As & when required	36,950
	ii) Repair of minor washouts, erosion scour and animal holes			
	iii) Sealing Cracks with Cement/ Epoxy Mortar			
	iv) Replacement & Correction of safety barriers, Guard rails and damaged members			
	SUB TOTAL			**36,950**
5	**Miscellaneous Items:**			
	i) Lettering, Painting of Km stones & kerbs, sign boards, hectometer stone etc.		Once in a Year	3695
	ii) Replacement and providing additional retro reflective signage	20%	Covering Total Network in 4-5 Years	7390
	iii) Providing first aid kits, Umbrella, Safety Jackets, Vardi etc.		Once in a Year	1232
	iv) Traffic Census		Once in a Year	0
	v) Provision for roughness measurement		Twice in a Year	0

Details of Ordinary Repair in Rs. For one km. of Two lane (7.0 m) of NH / SH per Year				
(Refer Annex. XXIV-E of REPORT OF THE COMMITTEE ON NORMS FOR MAINTENANCE OF ROADS IN INDIA, Page 112-113)				
Sr. No.	**Activity**	**Performance Standard Level of Maintenance**	**Frequency**	**Cost Per Km. as per Traffic Intensity**
				More than 4500 CVD
				BT Surface
1	**2**	**3**	**4**	**5**
	SUB TOTAL			**12,317**
	GRAND TOTAL (Normal)			**2,05,129**
6	**Additional Cost required for Urban Area**			
	i) Renewal of Center Line, Edge Marking, Kerb Marking/ Zebra crossing etc. in City Portion	33%	Once in three years with thermoplastic paint	25764
	ii)Repairs to footpath	100%	As & when required	4927
	iii) ROB/ Fly-over Railings & repair	100%	As & when required	4927
	iv) Street Lighting	0%	As & when required	0
	v) Encroachment Removal Squad	100%	As & when required	7636
	vi) Repair of divider/ Railing in City portion	100%	As & when required	9853
	vii) Provision for maintenance of pedestrian underpass	100%	As & when required	2463
	SUB TOTAL			**55,570**
	GRAND TOTAL (Urban)			**2,60,698**

ANNEXURE II - MAJOR MAINTENANCE COST

Major Maintenance Cost (FY - 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
Main Carriageway - Flexible Pavement										
1	Tack coat	Sqm						10,27,389	13	1,33,56,053
	For BC	Sqm	2	51,550	8.75		9,02,129	9,02,129		
	For DBM	Sqm	2	5,671	7.00		79,387	79,387		
	For Misc. Location	Sqm	2	2,621	8.75		45,872	45,872		
2	BC with 30 mm	Cum	2	40,629	8.75	0.03	21,330	30,810	10,932	33,68,15,395
3	DBM with 50 mm	Cum	2	5,671	7.00	0.05	3,969	3,969	9,733	3,86,33,871
4	Milling	Sqm	2	5,671	7.00		79,387	79,387	93	73,94,935
	Main Carriageway - Rigid Pavement									
5	Joint Sealant Replacement @ 10% length	Rmt	10%	1,518	3.50	4.50	1,214	1,214	143	1,73,635
6	Dismantling of CC Panels @ 5% area	Cum	5%		23,905	0.30	359	359	2,059	7,38,310
7	Replacement of Panels - PQC @ 5% area	Cum	5%		23,905	0.30	359	359	9,459	33,91,781
	Service Road									
8	Tack coat	Sqm	1	25,902	7.00		1,81,317	1,81,317	13	23,57,123
9	BC with 30 mm	Cum	1	25,902	7.00	0.03	5,440	5,440	10,932	5,94,64,773
10	Micro Surfacing	Sqm	1	25,902	7.00		1,81,317	1,81,317	167	3,02,34,635
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
11	Tack coat	Sqm	1	1,560	19.1		29,807	29,807	13	3,87,487
12	Wearing Coat BC with 30 mm	Cum	1	1,560	19.1	0.03	894	894	10,932	97,75,405
13	Milling of Ex. Wearing Coat	Sqm	1	1,560	19.1		29,807	29,807	93	27,76,494
	Other Works									
14	Replacement of Road Stud									
	Normal Road Stud	Nos	2	6,539			13,078	13,078	193	25,26,670
15	Painting of Kerb	Sqm	2	1,04,915		0.315	66,096	66,096	141	93,19,599
16	Road Marking on BC	Sqm					45,918	45,918	486	2,23,36,959
17	Road Marking	Sqm					6,035	6,035	713	43,04,883
	MCW									
	a) Median & Edge line	Sqm	4	56,170	0.15		33,702			

Major Maintenance Cost (FY - 2029)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	b) Lane line	Sqm	2	18,536	0.10		3,707			
	Service Road									
	a) Edge line	Sqm	2	51,805	0.10		10,361			
	b) Lane line	Sqm	1	17,096	0.10		1,710			
	Junction crossing	Sqm					2,474			
18	Filling of Earthen shoulder	Cum	1	51,296	1.50	0.06	4,617	4,617	546	25,20,666
19	Miscellaneous	5%								2,73,25,434
Total Major Maintenance Cost (Rs)										**57,38,34,108**
Total Major Maintenance Cost with 18% GST (Rs)										**67,71,24,247**
Total Major Maintenance Cost with GST (Cr)										**67.71**
Per km Cost (lakh)										**126.58**
Escalation Factor for Major Maintenance Cost (FY 2029)										**1.10**
Total Escalated Cost for Major Maintenance Cost (FY 2029) (Cr)										**71.94**

Major Maintenance Cost (FY - 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
Main Carriageway - Flexible Pavement										
1	Tack coat	Sqm						9,48,001	13	1,23,24,017
	For BC	Sqm	2	51,550	8.75		9,02,129	9,02,129		
	For DBM	Sqm	2	-	7.00		-	-		
	For Misc. Location	Sqm	2	2,621	8.75		45,872	45,872		
2	BC with 30 mm	Cum	2	54,172	8.75	0.03	28,440	28,440	10,932	31,09,06,519
	Main Carriageway - Rigid Pavement									
3	Joint Sealant Replacement @ 10% length	Rmt	10%	1,518	3.50	4.50	1,214	1,214	143	1,73,635
4	Dismantling of CC Panels @ 5% area	Cum	5%		23,905	0.30	359	359	2,059	7,38,310
5	Replacement of Panels - PQC @ 5% area	Cum	5%		23,905	0.30	359	359	9,459	33,91,781
	Service Road									
6	Tack coat	Sqm	1	25,902	7.00		1,81,317	1,81,317	13	23,57,123
7	BC with 30 mm	Cum	1	25,902	7.00	0.03	5,440	5,440	10,932	5,94,64,773
8	Micro Surfacing	Sqm	1	25,902	7.00		1,81,317	1,81,317	167	3,02,34,635
	Structures (incl. FVR, Viaduct, VUP, PUP and bridges)									
9	Tack coat	Sqm	1	1,560	19.1		29,807	29,807	13	3,87,487
10	Wearing Coat BC with 30 mm	Cum	1	1,560	19.1	0.03	894	894	10,932	97,75,405
11	Milling of Ex. Wearing Coat	Sqm	1	1,560	19.1		29,807	29,807	93	27,76,494
	Other Works									
12	Raising of Road Kerb	Rmt	2	1,00,888			2,01,777	2,01,777	268	5,40,77,812
13	Replacement of Road Stud									
	Normal Road Stud	Nos	2	6,539			13,078	13,078	193	25,26,670
14	Painting of Kerb	Sqm	2	1,02,448		0.315	64,542	64,542	141	91,00,465
15	Road Marking on BC	Sqm					45,918	45,918	486	2,23,36,959
16	Road Marking on Micro Surfacing	Sqm					6,035	6,035	713	43,04,883
	MCW									
	a) Median & Edge line	Sqm	4	56,170	0.15		33,702			
	b) Lane line	Sqm	2	18,536	0.10		3,707			
	Service Road									
	a) Edge line	Sqm	2	51,805	0.10		10,361			

Major Maintenance Cost (FY - 2036)										
Sr. No.	**Description**	**Unit**	**No.**	**Length (m)**	**Width (m)**	**Depth (m)**	**Quantity**	**Total Quantity**	**Rate (Rs.)**	**Amount (Rs.)**
	b) Lane line	Sqm	1	17,096	0.10		1,710			
	Junction crossing	Sqm					2,474			
17	Filling of Earthen shoulder	Cum	1	51,296	1.50	0.06	4,617	4,617	546	25,20,666
18	Miscellaneous	5%								2,63,69,882
									Total Major Maintenance Cost (Rs)	**55,37,67,515**
									Total Major Maintenance Cost with 18% GST (Rs)	**65,34,45,667**
									Total Major Maintenance Cost with GST (Cr)	**65.34**
									Per km Cost (lakh)	**122.15**
									Escalation Factor for Major Maintenance Cost (FY 2036)	**1.45**
									Total Escalated Cost for Major Maintenance Cost (FY 2036) (Cr)	**85.79**

ANNEXURE C – TRAFFIC REPORTS

(*The remainder of this page is intentionally kept blank*)

Final Report
April 2026

Project Transit: Traffic Due Diligence for Delhi Agra Toll Road Private Limited

Cube Highways Fund Advisors Private Limited
Our ref: 23741311
Client ref: Transit 11.0

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence for Delhi Agra Toll Road Private Limited

Prepared by:

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002,
India

+91 124 441 8650
www.steergroup.com

Prepared for:

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower,
Plot No. C - 1, Sector 16, Noida- 201301 (UP, India)

Client ref: Transit 11.0
Our ref: 23741311

Steer has prepared this material for Cube Highways Fund Advisors Private Limited. This material may only be used within the context and scope for which Steer has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer shall be deemed to confirm their agreement to indemnify Steer for all loss or damage resulting therefrom. Steer has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

steer

Contents

Disclaimer		**i**
Glossary Items		**iii**
1	**Introduction**	**1**
	The assignment	1
	Our approach	2
	Contents of this report	3
2	**The Asset**	**5**
	Introduction	5
	Strategic Network Context	5
	Key economic activities	8
	Alternate routes	10
3	**Traffic Description**	**13**
	Introduction	13
	Historical trends	14
	Key findings of the TVC data analysis	23
	Key findings of origin-destination analysis	25
	Conclusions	37
4	**Socioeconomic context and traffic growth**	**39**
	Introduction	39
	Population growth	39
	Economic Indicators	40
	Economic Growth	43
	Forecasts for growth drivers	49
5	**FY26 Base year AADT and Traffic growth analysis**	**52**
	Introduction	52
	FY26 Base year AADT estimates	52
	Estimation of background elasticities	56
	Forecasts for background elasticities	60
6	**Forecast: Network overlays and forecasts**	**63**
	Introduction	63
	Analysis of potential impacts	63
	Revenue forecasting assumptions	72
	Traffic and Revenue forecasts	76
	Upside and Downside cases	81
	Summary outlook	86

Figures

Figure 2.1: Regional Context 5
Figure 2.2: Asset context 6
Figure 2.3 (clockwise): Typical cross-section of the Asset and toll plaza 8
Figure 2.4: Alternate routes to the Asset 10
Figure 3.1: CJV Ticket-segmentation at KM46 (Gadpuri) 19
Figure 3.2: MAV Ticket-segmentation at KM46 (Gadpuri) 20
Figure 3.3: CJV Ticket-segmentation at KM94 (Karman) 20
Figure 3.4: MAV Ticket-segmentation at KM94 (Karman) 21
Figure 3.5: Ticket-segmentation for CJV at KM164 (Mahuvan) 21
Figure 3.6: Ticket-segmentation for MAV at KM164 22
Figure 3.7: TVC-TMS Comparison: KM46 Gadpuri & KM164 Mahuvan 23
Figure 3.8: Daily TVC and TMS traffic comparison on KM46 24
Figure 3.9: Daily TVC and TMS traffic comparison on K164 24
Figure 3.10: TVC ADT for Kherli Jita (DME connector) 25
Figure 3.11: Zonal influence, KM46 Gadpuri 28
Figure 3.12: Zonal influence, KM164 Mahuvan 29
Figure 3.13: Zonal influence, Kherli Jita 29
Figure 3.14: Internal-external distribution, KM46 Gadpuri 30
Figure 3.15: Internal-external distribution, KM164 Mahuvan 30
Figure 3.16: Internal-external distribution, Kherli Jita 31
Figure 3.17: Commodity distribution, KM46 Gadpuri 33
Figure 3.18: Commodity distribution, KM164 Mahuvan 33
Figure 3.19: Commodity distribution, Kherli Jita 34
Figure 3.20: Trip length distribution, KM46 Gadpuri 35
Figure 3.21: Trip length distribution, KM164 Mahuvan 35
Figure 3.22: Trip length distribution, Kherli Jita 36
Figure 4.1: Annual growth – Index of Industrial Production 41
Figure 4.2: Car Ownership in India per 1,000 population 41
Figure 4.3: Relative Per Capita Income (FY15-FY25) 42
Figure 4.4: YoY Growth in Government, Consumption and Business Expenditures 43
Figure 4.5: Month on Month IIP performance 44
Figure 4.6: Industrial components of GVA 44
Figure 4.7: Evolution of Delhi's and Uttar Pradesh's state GDP and national GDP 45
Figure 4.8: Sectoral contribution to Uttar Pradesh's GSDP as of FY25 46
Figure 4.9: Western UP vs UP GSDP Growth 47
Figure 4.10: GSDP Western UP vs GDP India Forecast 48
Figure 4.11: Sectoral contribution to Delhi's GSDP in FY25 49
Figure 4.12: GDP-GSDP forecast 51

Figure 5.2: Relationship between CJV traffic and Uttar Pradesh/Delhi GSDP (KM164 Mahuvan) 57
Figure 5.3: Relationship between LCV traffic and Uttar Pradesh/Delhi GSDP (KM164 Mahuvan) 58
Figure 5.4: Relationship between Bus/2A traffic with GSDP Delhi, GSDP UP and GDP (KM164 Mahuvan) 59
Figure 5.5: Relationship between 3A+MAV combined traffic and India's GDP (KM164 Mahuvan) 60
Figure 6.1: Alternate routes and Asset route shown against the regional network context 63
Figure 6.2: Yamuna - EPE connector – Northern ring 70
Figure 6.3: Long-term PCU forecasts for Gadpuri including upside and downside scenarios 83
Figure 6.4: Long-term revenue forecasts for Gadpuri including upside and downside scenarios 84
Figure 6.5: Long-term PCU forecasts for Karman including upside and downside scenarios 84
Figure 6.6: Long-term revenue forecasts for Karman including upside and downside scenarios 85
Figure 6.7: Long-term PCU forecasts for Mahuvan including upside and downside scenarios 85
Figure 6.8: Long-term revenue forecasts for Mahuvan including upside and downside scenarios 86

Tables

Table 1-1: Scope of work and sources of data 1
Table 2-1: Summary of concession 7
Table 2-2: Vehicle-wise single toll rates on the Asset – applicable April 2025 to March 2026 8
Table 3-1: PCU factors 13
Table 3-2: Historical evolution in AADT by vehicle class at KM46 (Gadpuri) 14
Table 3-3: Historical evolution in Tollable AADT by vehicle class at KM46 (Gadpuri) 15
Table 3-4: Historical evolution in AADT by vehicle class at KM94 (Karman) 15
Table 3-5: Historical evolution in Tollable AADT by vehicle class at KM94 (Karman) 15
Table 3-6: Historical evolution in AADT by vehicle class at KM164 16
Table 3-7: Historical evolution in Tollable AADT by vehicle class at KM164 16
Table 3-8: Historical total revenue (INR Cr) and AADC (INR Lakhs): TP Gadpuri (KM46) 17
Table 3-9: Historical total revenue (INR Cr) and AADC (INR Lakhs): TP Karman (KM94) 17
Table 3-10: Historical total revenue (INR Cr) and AADC (INR Lakhs): TP Mahuvan (KM164) 18
Table 3-11: Typical ticket types sold at NHAI plazas 18
Table 3-12: Data collection schedule 22
Table 3-13: Sample rates for OD data 26
Table 3-14: Zone aggregations for zonal influence analysis 26
Table 3-15: Aggregate commodity categories 31
Table 3-16: Split of north-south traffic between Kherli Jita and Gadpuri 36
Table 4-1: CAGR of population in India 39
Table 4-2: Population Growth in Uttar Pradesh, Delhi and India (2012-2024) 40
Table 5-1: Seasonality correction factors for KM46 Gadpuri 53
Table 5-2: Seasonality correction factors for KM94 Karman 53
Table 5-3: Seasonality correction factors for KM164 Mahuvan 54
Table 5-4: Adopted base estimates: KM46 Gadpuri 54

Table 5-5: Adopted base estimates: KM94 Karman 54
Table 5-6: Adopted base estimates: KM164 Mahuvan 55
Table 5-7: Identified growth drivers to model traffic growth 56
Table 5-8: Derived elasticities from regression analysis and assumed forecast elasticities 61
Table 6-1: List of network/other developments 64
Table 6-2: Impact of the Delhi-Mumbai Expressway: KM46 Gadpuri 66
Table 6-3: Impact of the Delhi-Mumbai Expressway: KM94 Karman 66
Table 6-4: Impact of the Delhi-Mumbai Expressway: KM164 Mahuvan 66
Table 6-5: Impact due to upgrade of Palwal-Tappal-Aligarh: KM94 Gadpuri 67
Table 6-6: Impact due to upgrade of Palwal-Tappal-Aligarh: KM94 Karman 67
Table 6-7: Impact due to upgrade of Palwal-Tappal-Aligarh: KM164 Mahuvan 67
Table 6-8: Impact due to completion of Ganga Expressway: KM46 Gadpuri 69
Table 6-9: Impact due to completion of Ganga Expressway: KM94 Karman 69
Table 6-10: Impact due to completion of Ganga Expressway: KM164 Mahuvan 69
Table 6-11: Impact due to Yamuna-EPE connector-Northern ring: KM94 Karman 71
Table 6-12: Impact due to Yamuna-EPE connector-Northern ring: KM164 Mahuvan 71
Table 6-13: Summary of impact assessments 72
Table 6-14: WPI growth forecast assumptions 73
Table 6-15: Toll estimation overview 73
Table 6-16: Forecast toll segmentation, FY26 onwards: KM46 Gadpuri 74
Table 6-17: Forecast toll segmentation, FY26 onwards: KM94 Karman 74
Table 6-18: Forecast toll segmentation, FY26 onwards: KM164 Mahuvan 74
Table 6-19: Annual Pass Compensation for CJVs (in INR Crore) 75
Table 6-20: Trip factors for the forecast years for TP1 Gadpuri 75
Table 6-21: Trip factors for the forecast years for TP2 Karman 75
Table 6-22: Trip factors for the forecast years for TP3 Mahuvan 76
Table 6-23: Final traffic forecast: KM46 (Gadpuri) 76
Table 6-24: Background traffic growth rates (%), KM46 (Gadpuri) 77
Table 6-25: Final revenue forecast (INR crores): KM46 (Gadpuri) including AP Compensation for CJVs 77
Table 6-26: Revenue growth rates (%), KM46 (Gadpuri) including AP Compensation for CJVs 77
Table 6-27: Final traffic forecast: KM94 (Karman) 78
Table 6-28: Background traffic growth rates (%): KM94 (Karman) 78
Table 6-29: Final revenue forecast (INR crores): KM94 (Karman) including AP Compensation for CJVs 79
Table 6-30: Revenue growth rates (%): KM94 (Karman) including AP Compensation for CJVs 79
Table 6-31: Final traffic forecast: KM164 (Mahuvan) 79
Table 6-32: Background traffic growth rates (%): KM164 (Mahuvan) 80
Table 6-33: Final revenue forecast (INR crores): KM164 (Mahuvan) including AP Compensation for CJVs 80
Table 6-34: Revenue growth rates (%): KM164 (Mahuvan) including AP Compensation for CJVs 80

Table 6-35: Summary of Macro-economic Assumptions for upside and downside cases 81
Table 6-36: Summary of impacts on the Assets - Upside Case 81
Table 6-37: Summary of impacts on the Assets - Downside Case 82
Table 6-38: Percentage Difference Upside and Downside Case Forecasts vs. Base Case Forecasts - FY44 83

Appendices

A Top 10 OD Pairs

B Detailed Traffic and Revenue Forecasts

Disclaimer

This report has been produced for the sole benefit of Cube Highways Pvt. Ltd. This Report (the "Report") is confidential and disclosed only for information purposes, and it may not be relied upon by any party other than the Client or a Party to a Reliance Letter, and Steer: a) makes no warranty, expressed or implied, with respect to the use of any information or methods disclosed in this Report; and b) assumes no liability with respect to the use of any information or methods disclosed in this document. Any such party by its acceptance or use of this Report releases Steer from any liability for direct, indirect, consequential, or special loss or damage whether arising in contract, warranty, express or implied, tort or otherwise.

The Report is based on standard professional efforts, and information available to us at the time the review took place and is subject to time and budget constraints of the Report's scope of work. This Report, information and statements contained herein, are all based on third party data provided to us, or sourced by us, and Steer has not sought to establish the reliability of the data, except as specifically stated in the Report. Steer bears no responsibility for the results of any actions taken on the basis of third-party data.

Certain forward-looking statements in the Report are estimates based on interpretations or assessments of information available at the time of writing. The Report is thus to be viewed as an assessment that is time-relevant, specifically referring to conditions at the time of the review. Steer undertakes no obligation to update the Report for any reason.

While the estimates contained in the Report are not precise forecasts, they do represent, in our view a reasonable expectation of the future, based on information we have been provided with or sourced. However, the estimates necessarily rely on numerous assumptions and judgements, and circumstances may occur over the timeframe of the project that go counter to these assumptions and judgements and that affect the project's realized revenues. Actual events may differ from those assumed, and events are subject to change. Therefore, Steer makes or provides no warranty, whether implied or otherwise, as to the accuracy of forward-looking information presented. Further, it is important to note that forecasts presented represent long term growth profiles; the results for individual time periods may vary from forecasted values.

Traffic Consultant developed the relationships in the models used to produce the forecasts for the projects based on data available through February 2026. This report does not consider variations in traffic performance due to changing macro and force majeure events such (but not limited to) as global wars, economic uncertainty (high inflation, global recession), and changes in the regulatory environment. The situation remains dynamic and is subject to significant change in the short and medium term. In this challenging context, Traffic Consultant has produced base forecasts with a view on a possible scenario for the traffic forecasts. However, it is important to note that this is only one view, and there continues to remain uncertainty as to the short-term, intermediate or prolonged effects of and responses to such macro-economic/force majeure events. As a result, no assurance can be provided by Traffic Consultant that the scenarios and assumptions Traffic Consultant has identified will prove to be accurate. Given the uncertainty inherent in this scenario, Traffic Consultant advises that all readers of the Report consider the Report in the context of their own assessment of the impact of such events.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE ISSUE OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES.

Glossary Items

Acronym	Meaning
2A/ Truck	2 Axle/ Truck
3A	3 Axle
AADT	Annual Average Daily Traffic
BOT	Build Operate Transfer
CAGR	Compound Annual Growth Rate
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DPR	Detailed Project Report
ETC	Electronic Toll Collection, also referred to as FASTag
FY	Financial Year
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HAM	Hybrid Annuity Model
HCM/ EME	Heavy Commercial Vehicles/ Earth Moving Machinery
IE reports	Independent Engineers' reports
IHMCL	Indian Highway Management Company Limited
INR	Indian Rupees
InvIT	Infrastructure Investment Trust
KM	Kilometer
LCV/ LGV	Light Commercial Vehicles/ Light Goods Vehicle
LMV	Light motor vehicles
MADT	Monthly average daily traffic
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NSDP	National State Domestic Production
OD	Origin Destination
OSV	Oversized vehicles
PCU	Passenger Car Unit; it is a measure of standard vehicle unit to convert all vehicle classes to a single unit by using PCU factors to compute total traffic on an asset.
Q1	Quarter 1 of financial year, from April to June
Q2	Quarter 2 of financial year, from July to September
Q3	Quarter 3 of financial year, from October to December
Q4	Quarter 4 of financial year, from January to March
RNP	Registered Number Plate
SCF	Seasonality Correction Factor

Acronym	Meaning
SH	State Highway
T&R	Traffic and Revenue
TMS	Traffic Management System
TVC	Traffic Volume Count
WADT	Weekly average daily traffic
YTD	Year to Date

1 Introduction

The assignment

1.1 The Cube Highways Fund Advisors Private Limited (the "Client") has commissioned Steer Davies Gleave India Private Limited ("Steer") for a traffic due diligence to be carried out on the Delhi Agra Tollways Limited (hereafter called "Asset"). This report forms part of the annual fair market valuation (FMV) undertaken as part of the "Transit 11 project". It presents an update of the Asset's traffic and revenue forecasts over its remaining concession period based on actual traffic data available through February 2026 and latest macroeconomic, and network-related assumptions.

1.2 Our scope of work for the traffic and revenue forecasting process is presented in Table 1-1 below:

Table 1-1: Scope of work and sources of data

Scope of work	Data source
• Review of historical Traffic Management System (TMS) data, Origin-Destination (OD) data, Vendor reports and documents	• Provided by Client for the period between FY16 and Mar '26, with FY26 base AADT and forecasts considering data up to Feb'26
• Historical analysis and forecasts for baseline growth, including – Background growth, – Seasonality	• Historical toll plaza data provided by Client and benchmarks from Assets in the vicinity wherever long time series historical data was not available
• Validation of revenue reported in FY26YTD	• TMS data provided by Client • Revenue reconciliation using toll plaza traffic and ticket type data to calculate revenue and reconciling it with toll plaza reported revenue.
• OD analysis to understand growth drivers: – Zonal influence and Top OD pairs – Commodity distribution – Trip length distribution	• Origin Destination (OD) surveys undertaken by Steer in 2026
• Analysis of upcoming network improvements and other developments, that may have future impacts on traffic	• Secondary research and our in-house experience of working in the vicinity of the Asset. Impact analysis based on Generalised Journey Cost spreadsheet-based analysis

Scope of work	Data source
• Historical revenue analysis and forecasts for revenue estimation, including – Toll segmentation and trip factors, – Overloading shares,	• Calculated from historical data provided by Client
• Final traffic growth forecasts including baseline growth rates and potential future impacts	• Elasticity based base growth and potential impacts from secondary research, Asset historical traffic performance and Steer's in-house experience of working on toll roads on the corridor • Gross Domestic Product (GDP) forecast assumptions provided by Client
• Toll revenue estimation for the entire concession including toll evolution	• Toll evolution based on latest toll notification published by National Highway Authority of India (NHAI) and latest actual Wholesale Price Index (WPI) trends as shared by the Client. • Assumptions of WPI forecasts and future tolling length changes provided by Client • Revenues estimated as a product of traffic forecasts and toll evolution

Our approach

1.3 The approach adopted by Steer for the preparation of these forecasts was designed to leverage existing understanding of the Asset, together with data provided by the Client and information obtained from publicly available sources. The methodology follows well-established industry practices for forecasting traffic growth on an existing (brownfield) asset. The analysis focused on two key areas of consideration, namely

- Understanding the traffic that is currently using the Asset; and
- Identifying how and why that traffic is likely to change in the future.

1.4 To understand the current traffic on the Asset, we have analysed traffic data from multiple independent sources:

- Client-provided secondary data, including:
  - TMS data for KM46 and KM94 available from Jul'22 to Feb'26. The historical traffic and revenue presented in Chapter 3 considers information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.
  - TMS data for KM164 from FY13 to Feb '26
  - Concession agreement and toll notifications for FY25 and FY26
  - Previous T&R studies and reports.
  - Bid and Lender studies.

  - Steer-commissioned OD survey at two plazas on the Asset: TP1 Gadpuri (KM46) and TP3 Mahuvan (KM164) to validate any change in growth drivers and travel patterns. Surveys were conducted at TP1 and TP3 on 25th and 27th February 2026 respectively.
  - Steer-commissioned TVC surveys from 25th – 27th Feb on TP1 and 26th to 28th February 2026 on both TP1 and TP3.
- We undertook revenue reconciliation for FY26YTD, by building up revenue from the traffic reported by each of the toll plazas and subsequently matching it to the modelled revenue for FY26YTD using the prevailing toll rates and reported segmentation/toll-frequencies for FY26YTD. This is a key part of our analysis to validate the segmentation/toll-frequency assumptions and the Annual Average Daily Traffic (AADT) reported for each of the toll plazas.

1.5 The estimation of future traffic demand on the Asset was undertaken through:

- Estimating FY26 base year position. The FY25 AADT was calculated using the monthly traffic data for FY25. The annual FY25 AADT was then grown with elasticity linked GDP/GSDP growth to arrive at the FY26 expected traffic. To determine the adopted FY26, the expected FY26 traffic was validated against 11 months of actual traffic (Apr-Feb) and necessary adjustments were made where required.
- Secondary research to understand plans for new developments and progress of ongoing developments on the Asset.
- Steer independent primary surveys and site visits to validate our network and contextual understanding.
- Developing a bespoke growth model for each Asset/plaza/toll class to forecast year-on-year traffic growth from FY26 to the end of concession period.
- Investigating the elasticity of historical traffic growth compared to state (GSDP) and national (GDP) growth. Where historical data is limited, we have benchmarked the Asset against our Steer knowledge base (e.g., similar Asset types in the same state or on the same corridor), to derive appropriate elasticities.
- Applying our elasticities to independent GDP forecasts as provided by Client.
- Identifying and analysing the potential impacts of any relevant changes to the competitive position of each Asset – these include impacts of changes to road network including expressways and opening of competitive modes of travel.
- Identifying and analysing any other potential impacts to traffic and revenue on each Asset – these include axle load norms, axle shift for heavy goods, FASTag implementation.
- Considering changes in trends of segmentation over time and making suggestions for changes in exemptions in the future
- Preparing traffic and revenue forecast for the Asset for the remaining concession period. The analysis here includes the specific impacts of network-related developments, or other exogenous factors specific to the Asset. We have developed a set of forecasting assumptions for three scenarios: a base case, and upside and downside scenarios.

Contents of this report

1.6 The report has been divided into the following chapters:

- Chapter 1 introduces the methodology and approach to undertake the traffic and revenue due diligence.

- Chapter 2 describes the key characteristics of the Asset and its surrounding road network, primarily based on site visits.
- Chapter 3 summarises the current and historical traffic on the Asset, including results from the TMS, TVC, and OD analysis.
- Chapter 4 presents the socio-economic context of India, the corridor and region/state containing the Asset, along with our approach and results on estimating background growth, and our key forecasting assumptions.
- Chapter 5 presents our baseline year forecast and summarises our results on estimating background traffic demand growth.
- Chapter 6 summarises our assessment of network-related impacts and presents concession traffic and revenue forecasts for the Asset along with the assumptions for the upside and downside scenarios.

2 The Asset

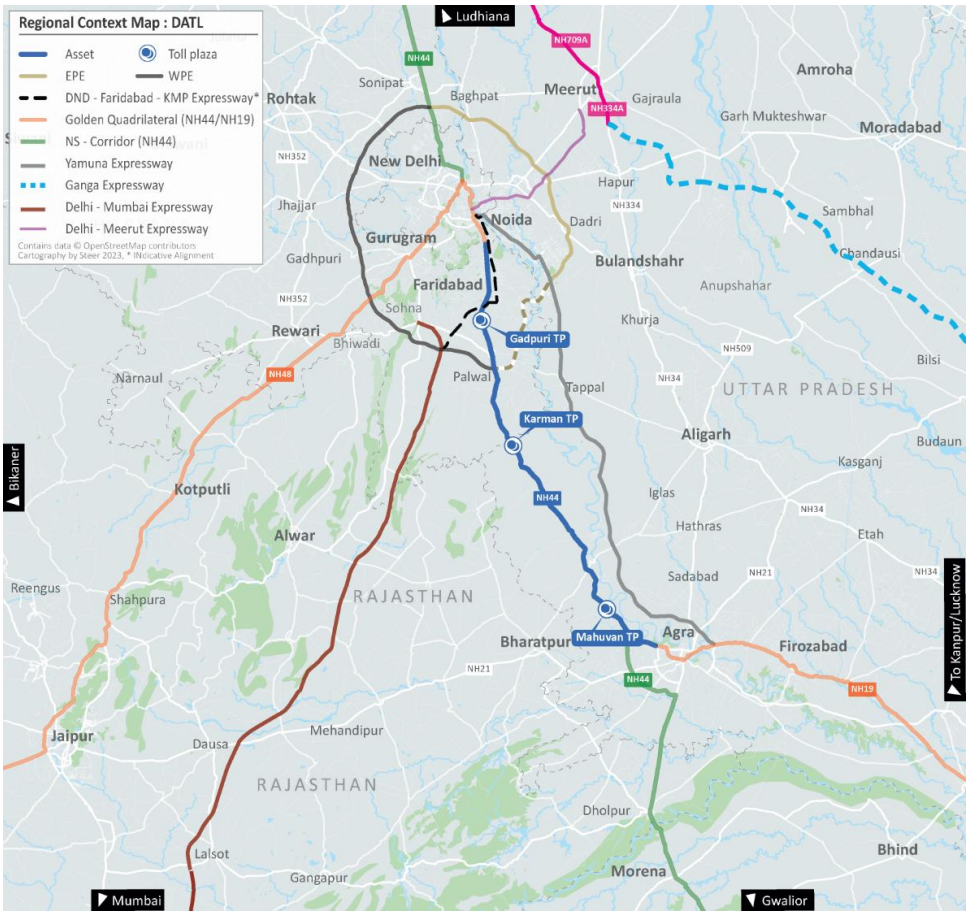
Introduction

2.1 This chapter provides a description of the Asset, based on both primary data (from site visits), and our understanding of the region and network surrounding the Asset. We cover the Asset's strategic network context, followed by key economic activities and network-related developments around the Asset.

Strategic Network Context

2.2 The Asset is situated in the states of Haryana (HR) and Uttar Pradesh (UP), connecting the Central National Capital Region (NCR; comprising Delhi) to Agra in the south, via Palwal (HR) and Mathura (UP). Figure 2.1 below presents the regional road network within which the Asset is located.

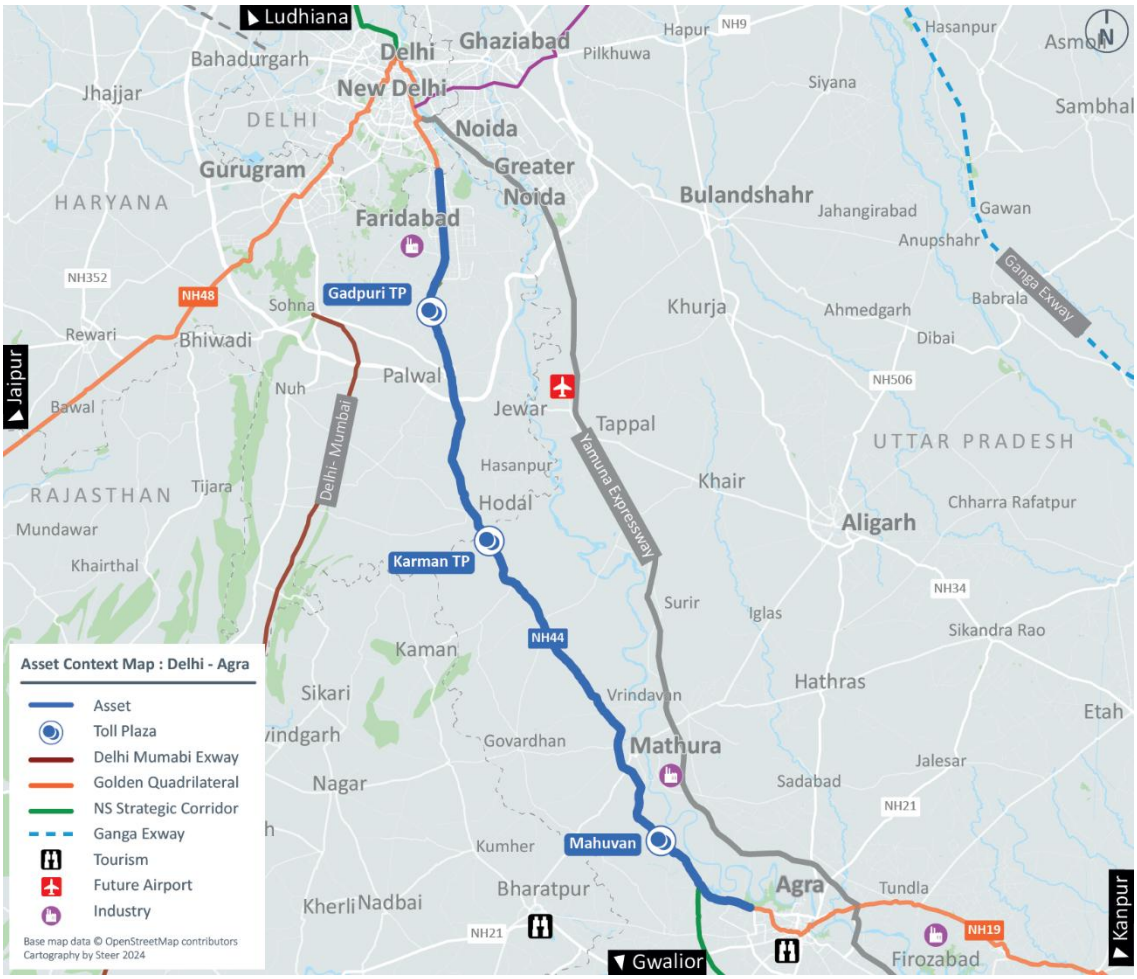
Figure 2.1: Regional Context



Source: Steer cartography using OpenStreetMap data

2.3 The Asset is a 179.5 km toll road between Delhi and Agra which forms part of the north-south NH44 corridor (Old NH2 in Haryana, and Uttar Pradesh). Previously, up to June 2022, the Asset operated two toll plazas i.e., Srinagar (KM74) and Mahuvan (KM164). On commencing full commercial operations (COD) from July 2022 onwards, the Asset began operating three toll plazas; Srinagar toll plaza (KM74) was split into two different toll plazas - Gadpuri (KM46), and Karman (KM94), which are now operational along with the existing plaza Mahuvan (KM164).

Figure 2.2: Asset context



Source: Steer cartography

2.4 The Asset forms part of the Grand Trunk Road – which is a part of the Asian Highway 1 (AH1). By virtue of its strategic location, it primarily caters to the following types of movements:

- **East-west long-distance movement** from Kashmir in North India to the India-Bangladesh border. This route originally connected Kabul in Afghanistan to Chittagong in Bangladesh. This movement caters traffic between northern parts of country and eastern states.
- **North-south long-distance movement** connecting Srinagar in Kashmir (northernmost state) to Kanyakumari in Tamil Nadu (southernmost state in mainland India). This movement caters traffic between northern parts of country (Delhi, Punjab) to the southern states of Karnataka, Telangana, etc.

- **Medium-distance movement** as a key corridor in this region, connecting Delhi with Lucknow, Kanpur, Indore etc. via Agra and Mathura.
- **Short-distance inter-urban movement** between towns and cities in and around Delhi, Palwal, Mathura and Agra.

Concession and tolling

2.5 The toll plazas on the Asset have been operational since December 2012, and the Client started the operations in FY20. There are still 13 years left in the concession period with FY39 being the last year of the concession. Table 2-1 below presents a summary of the concession.

Table 2-1: Summary of concession

Particulars	Details
State	Delhi, Haryana, Uttar Pradesh
Highway and lane configuration	• NH 19/NH 44 • Six-lane divided
Toll plazas	**Previously:** • KM74, Srinagar (till June 2022) • KM164, Mahuvan **Existing/Operational (July 2022 onwards):** • KM46, Gadpuri • KM94, Karman • KM196, Mahuvan
Length (KM) as per concession agreement, applicable	**Previously:** • KM74: 89.75 KM • KM164: 89.75 KM **Existing/Operational:** • KM46: 47.28 KM • KM94: 63.22 KM • KM164: 69.00 KM
Commencement of operations*	• KM46: July 2022 • KM94: July 2022 • KM164: December 2012
Operation by Client	FY20
Concession period	19 years
Last year of concession	FY39

Source: Concession agreement

2.6 Tolls are collected for toll categories including Single, Return, Local Commercial and Monthly Passes. Rates for Single Journey tickets on all three toll plazas are shown in Table 2-2 below.

2.7 All three toll plazas have dedicated ETC/FASTag lanes for electronic tolling. FY26 toll rates were revised in the start of FY26 fiscal year i.e., April 1, 2025.

Table 2-2: Vehicle-wise single toll rates on the Asset – applicable April 2025 to March 2026

Type of Vehicle	Single Journey Fee (INR)		
	KM46 – Gadpuri	KM94 - Karman	KM164 - Mahuvan
CJV	125	95	105
LCV	195	155	170
Bus/Truck	400	325	355
3A/MAV	615	510	555
HCM/EME/OSV	780	620	675

Source: NHAI Revision of User fee Rate w.e.f 01.04.2025

2.8 Figure 2.3 below illustrates a typical cross-section of the Asset and its associated toll plazas. Specifically, Pictures 1 and 2 depict the Gadpuri and Mahuvan toll plazas, while Pictures 3 and 4 showcase a cross-section and the quality of the Asset's road infrastructure.

Figure 2.3 (clockwise): Typical cross-section of the Asset and toll plaza

Source: Steer site visit

Key economic activities

2.9 The Asset connects the National Capital Territory (NCT) of Delhi at its northern end with the world-renowned tourist city of Agra at its southern end. Besides linking Agra to the national capital region, it also forms the initial section of a longer corridor that connects

Delhi and other parts of North India to Central, East and South India. As a result, the Asset observes significant volumes of all types of traffic, including, but not limited to:

- In terms of passenger movement, daily commuters travelling between Delhi and other smaller municipalities along the corridor (e.g., Palwal, Hodal, Mathura, Agra), and leisure travellers/tourists travelling to/from Agra and Delhi.
- In terms of commercial/goods movements, industry supplies and manufactured goods, as well as agricultural products, with a considerable share of consumption-based commodities.

Tourism

2.10 The Asset is surrounded by several major tourist attractions, with Delhi and Agra forming two of the three vertices of the Golden Triangle - one of India's most popular travel circuits for international tourists.[1] Delhi, Agra, Fatehpur Sikri and other towns in the region are home to several historical monuments and heritage sites, including the famed Taj Mahal (Agra). Religious tourism and pilgrimage sites include Surajkund, Badkhal Lake, Shivling at Hodal, ISKCON temple (all in and around Central NCR), and Banke Bihari and other major temples of Mathura and Vrindavan.

Industry

2.11 Major industrial and commercial centres are located at the northern end of the Asset, between Okhla, Badarpur, Faridabad[2], Ballabhgarh and Palwal[3], which are connected via the DND – KMP Expressway and the Asset. This includes North India's largest inland port and container transhipment terminal at Badarpur called ICD Tughlakabad[4]

2.12 Extending further south and east beyond the Asset, the Agra-Lucknow highway has historically been (and continues to be) an industrial corridor with leather and textile industries located in Agra[5] and Kanpur[6], and glassmaking industries located in Firozabad.

2.13 Mathura has an Indian Oil Corporation (IOCL) refinery with a capacity of 8.0 mmtpa[7]. Consequently, the Asset has a distinct industrial character, with a large share of traffic movements being good vehicles serving many of these industries.

[1] **Golden Triangle Tour: Official Website**

[2] **Faridabad Metropolitan Development Authority**

[3] **Brief Industrial Profile of Palwal**

[4] **Press Release: Press Information Bureau**

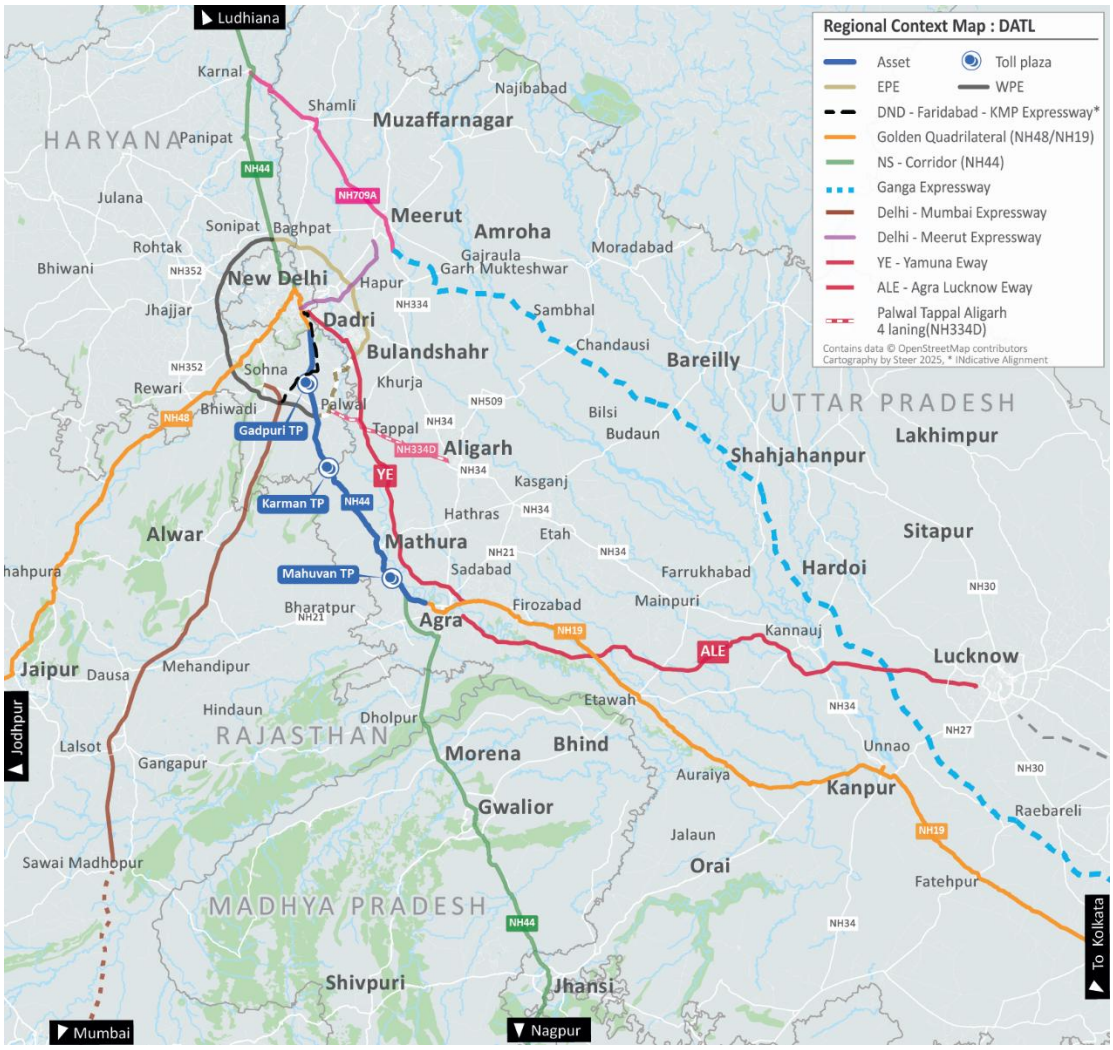
[5] **Department of MSME and Export Promotion - Agra**

[6] **Brief Industrial Profile of Kanpur**

[7] **Mathura Refinery | Petroleum Refinery | Indian Oil**

Alternate routes

Figure 2.4: Alternate routes to the Asset



Source: Steer Cartography

2.14 This Asset caters to the strategically important east-west movement - between Delhi and north-western India at one end, and Uttar Pradesh and eastern India at the other end – by virtue of its location and the linkage it provides between activity centres in the region. Figure 2.4 above illustrates other alternate routes available to users while travelling between Delhi and Lucknow. As shown in the map, the alternate routes are:

- **Asset route**: Delhi – Faridabad - Agra (via NH 44 – Kanpur - Lucknow
- **Alternate 1 route**: Delhi - Ghaziabad (via NH 34) – Aligarh – Kannauj - Lucknow
- **Alternate 2 route**: Palwal – Tappal – Aligarh – Kannauj - Lucknow (via NH334D)
- **Alternate 3 route**: Delhi - Yamuna Expressway (YE) - Agra Lucknow Expressway (ALE)- Lucknow

2.15 The Asset is also located on the strategically key north-south corridor, with NH44 traversing through Punjab, Haryana, Delhi, Rajasthan, Uttar Pradesh, Madhya Pradesh, Maharashtra, Telangana, Karnataka and Tamil Nadu. Currently there is one major alternative National Highway route for traffic with one trip end in northern India and other

in Maharashtra via NH48 corridor. Additionally, the upcoming the Delhi-Mumbai expressway will be another alternate for the traffic between Delhi NCR and Maharashtra.

Delhi-Mumbai Expressway

2.16 As aforementioned, the Asset currently connects traffic travelling between North Indian regions of Delhi, Agra, Punjab, Haryana, and beyond to regions located further south including Mumbai, and Indore, other parts of Maharashtra and beyond. In this context, a key alternative route that has materialized in recent years (since FY19) is the Delhi-Mumbai Expressway, upon expected completion by FY27, it will connect the Sohna Elevated Corridor to the Jawaharlal Nehru Port in Maharashtra, eventually becoming a key competing route to the Asset for north-west traffic movement.

2.17 The Delhi-Mumbai Expressway (DME) is a 1290-KM long greenfield expressway that has been developed to provide an improved 8-lane route to long-distance traffic between North/Western India to Mumbai[8]. Movements for which the DME serves as a directly competing alternative to the Asset route include the following:

- **Trips originating in Delhi/Punjab/Haryana/Agra destined to Indore**: For traffic to get to Indore, there is an alternate route through the expressway via Ratlam/Garoth-Ujjain.
- **Trips originating in Delhi/Punjab/Haryana/Agra destined to Mumbai**: This traffic currently uses either the NH8 corridor or NH44 and NH52 corridor. After the commencement of operations on the DME, users and commercial operators travelling this route will be presented with a cheaper, and faster alternative.
- **Trips originating in Punjab/north destined to Faridabad**: For traffic to access Faridabad from regions around Punjab, historically the preferred route passed through Palwal – Gadpuri – Faridabad. However, this movement has now shifted to the Western Peripheral in conjunction with the DME and the Faridabad spur. This shift only affects the Gadpuri (KM46) plaza.

2.18 A few sections of the greenfield expressway have been made operational with Sohna-Dausa-Lalsot section (Feb'23), Madhya Pradesh section (Sep'23), Vadodara-Bharuch section (Feb'24), Lalsot-Sawai-Madhopur section (Feb'24) and the Kota-Bundi Section (Dec'24) already being operationalised. The project is currently experiencing construction delays, mainly on the Gujarat stretch[9] and two packages near Sawai Madhopur and Mukundra hills. Once the remaining sections are made operational, the long-distance movement between Delhi/north and Mumbai/south currently appearing on the Asset could be at the risk of shifting to the alternate DME.

2.19 In addition to the DME, the 50 km stretch of the DND-KMP Flyway that will connect DND Flyway to KMP Expressway by FY27 (Package 1 is currently under construction whicle Package II and III are already operational) is expected to impact traffic growth on the Asset as part of the same broad network development. The DND-KMP Flyway was conceived as a 3-package 50 km stretch aimed to reduce congestion within Delhi NCR and Faridabad by connecting Kalindi Kunj to the DME directly for commercial vehicles travelling through Delhi and originating from the industrial clusters of Faridabad and other

[8] **Delhi - Mumbai Expressway (Times Now, April 2025)**

[9] **Delhi-Mumbai Expressway Update: Surat-Maharashtra stretch delayed,** (March 2025)

parts of NCT to the DME via Nuh in Haryana[10]. Package 3 of this development was completed in February 2023[11] and Package 2 was opened to traffic in November 2024[12]. Both these developments continue to impact Gadpuri plaza which has lost traffic over the past couple of years due to the increased access to the DME provided by these developments.

2.20 Package 1 of the DND-KMP Flyway i.e., 9km elevated corridor connecting Mithapur to DND Flyway is expected to be completed and operational by FY27[13]. Once this is completed, a further loss of traffic is expected across the NH44 corridor for the share of long-distance through traffic that continues to use the Asset between Faridabad and other locations further south, and also along the DME alignment.

[10] **DND - KMP Flyway Package Details**

[11] **DND - KMP Flyway Package 3 Opening** (February 2023

[12] **DND - KMP Package 2 Opening** (November 2024)

[13] **Project Details - NHAI**

3 Traffic Description

Introduction

3.1 This chapter presents historical and current traffic and revenue trends on the Asset, as well as analysis of origin-destination (OD) survey data and traffic count data. This covers data which was collected as a part of this study and in previous studies, as well as data provided by the Client.

3.2 Traffic demand data is generally collected and analysed to understand the volume and vehicle composition of demand currently using the Asset, while OD data is used to obtain a better understanding of travel patterns, trip lengths, trip purposes and areas of influence in the vicinity of the Asset, as well as the commodities being moved by goods vehicles. This analysis, combined with our understanding of the Asset (based on our site visits), enables us to identify the key drivers of demand on the Asset.

3.3 Actual toll plaza data is used as the basis from which the current/base year annual average daily traffic (AADT) is established. This data was provided by the Client and was independently analysed and validated using traffic volume count (TVC) information.

3.4 The below sections present historical traffic and revenue information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.

PCU factors considered for reporting.

3.5 The PCU factors considered in Table 3-1 below are as per IRC64 1990[14]. Based on discussions with the Client, for reporting purposes, Rigid and Trailer truck splits in the TVC counts have been used for calculating the effective PCU for MAV trucks. For Rigid trailer trucks a PCU factor of 3 has been assumed, whereas for Trailer trucks a PCU factor of 4.5 as defined in IRC64 1990 [15] has been adopted.

Table 3-1: PCU factors

Vehicle category	PCU Factor
CJV	1.0
Mini LCV	1.5
LCV	1.5
Bus	3.0
2A	3.0
3A/MAV	3.72 (Gadpuri) / 3.56 (Mahuvan and Karman)

[14] **IRC 064: Guidelines for Capacity of Roads in Rural Areas**

[15] On this Asset, we have 3A/MAV combined volumes. However, for PCU calculations, to maintain consistency, we have used the shares derived from the latest TVC on the Asset (conducted in February 2026)

Vehicle category	PCU Factor
OSV	4.5

Source: Steer analysis and IRC64,1990; this PCU factor is taken as the average of the PCU factors calculated for each of the three plazas on the Asset.

Historical trends

3.6 By virtue of its location, the Asset caters to both passenger traffic and goods vehicles as it connects two major cities in north India, i.e., the NCT of Delhi, Mathura and Agra, and also connects the northern regions of Delhi, Punjab, Haryana (and beyond) to the rest of the country, including states across central, east, and south India, and all their constituent cities, industrial hubs, and trade centres. As a result, the Asset carries a healthy mix of both passenger and commercial traffic.

3.7 CJVs account for the highest volume of total traffic on the Asset as major religious sites and tourist destinations in Mathura, Vrindavan and Agra witness high volume of both domestic and international tourist traffic every year. In addition to this, the large presence of leather and textile industries [5 6] , and the IOCL refinery in Mathura also contribute to the growth of commercial traffic on the Asset.

3.8 Table 3-2 through Table 3-7 below present historical variation in tollable and total (tollable + exemptions/violations) traffic volume at all three toll plazas on the Asset, both in terms of vehicle-wise AADT as well as total PCUs. Post June 2022, the earlier toll plaza (Srinagar; KM74) was split into two toll plazas i.e., Gadpuri (KM46) and Karman (KM94) that currently continue to operate on the Asset. Therefore, the data presented in the tables below for these two plazas are for the period July 2022 to the latest available period . For Mahuvan (KM164) the data has been presented from FY19.

Table 3-2: Historical evolution in AADT by vehicle class at KM46 (Gadpuri)

Vehicle Category	FY23*	FY24	FY25	FY26	FY24- FY26 CAGR
CJV	31,943	32,776	34,852	37,604	7.1%
LCV	1,750	1,803	1,636	1,672	(3.7%)
Bus	876	949	1,074	1,168	10.9%
2A	2,122	1,774	1,740	1,653	(3.5%)
3A/MAV	3,204	2,646	2,335	2,193	(9.0%)
OSV	10	2	1	1	
AADT	**39,906**	**39,951**	**41,638**	**44,292**	**5.3%**
PCU[1]	**55,531**	**53,510**	**54,441**	**56,742**	**3.0%**

Source: Steer analysis of the Client data; FY23* consists of data from Jul'22 to Mar'23; FY26 represents full year actual (April to March); PCU totals above consider PCU factor of ~3.72 for 3A/MAV combined traffic.

3.9 Between FY24 and FY26, KM46 witnessed a CAGR 5.3% increase in AADT and 3.0% in PCU terms, primarily driven by a 7.1% rise in CJV traffic and a CAGR 10.9% growth in buses during the same period. This growth reflects strengthened intra- and inter-urban connectivity between Faridabad, Palwal and the wider Delhi NCR, supported by the plaza's strategic positioning on key corridors linking major religious and tourism hubs such as Mathura and Agra.

3.10 As mentioned in paragraph 2.19, KM46 continues to be the most impacted by the Delhi-Mumbai Expressway and DND–KMP (148NA) access, which diverts short-distance 2A and MAV traffic, thereby constraining overall PCU growth. The provision of access to the Delhi–Mumbai Expressway via NH-148NA has diverted traffic originating from Faridabad and the surrounding regions, previously destined for Sohna, Rewari, and other parts of Haryana and Rajasthan, to this alternate route. Earlier, such movements were routed via the Gadpuri Toll Plaza; however, the new connectivity now allows these trips to directly access the KMP Expressway and the Delhi–Mumbai Expressway.

Table 3-3: Historical evolution in Tollable AADT by vehicle class at KM46 (Gadpuri)

Vehicle Category	FY23*	FY24	FY25	FY26	FY24- FY26 CAGR
CJV	27,219	29,242	31,066	33,531	7.1%
LCV	1,670	1,776	1,613	1,657	(3.4%)
Bus	839	939	1,064	1,165	11.4%
2A	2,010	1,746	1,719	1,636	(3.2%)
3A/MAV	3,160	2,617	2,320	2,183	(8.7%)
OSV	10	2	1	1	
Tollable AADT	**34,908**	**36,322**	**37,782**	**40,174**	**5.2%**
Tollable PCU[1]	**50,030**	**49,710**	**50,470**	**52,551**	**2.8%**

Source: Steer analysis of the Client data; FY23* consists of data from Jul'22 to Mar'23; FY26 represents full year actual (April to March); Tollable traffic excludes exemptions and violations; 1 PCU totals above consider PCU factor of ~3.72 for 3A/MAV combined traffic.

3.11 The following tables presents the historical total and tollable traffic on KM94, Karman toll plaza.

Table 3-4: Historical evolution in AADT by vehicle class at KM94 (Karman)

Vehicle Category	FY23*	FY24	FY25	FY26	FY24-FY26 CAGR
CJV	18,232	20,026	22,117	24,619	10.9%
LCV	1,380	1,373	1,476	1,552	6.3%
Bus	775	827	894	958	7.6%
2A	3,352	3,304	3,634	3,850	7.9%
3A/MAV	5,984	5,908	5,790	5,740	(1.4%)
OSV	5	4	3	3	
AADT	**29,728**	**31,442**	**33,914**	**36,723**	**8.1%**
PCU[1]	**54,003**	**55,524**	**58,535**	**61,818**	**5.5%**

Source: Steer analysis of the Client data; FY23* consists of data from Jul'22 to Mar'23; FY26 represents full year actual (April to March); 1 PCU totals above consider PCU factor of ~3.56 for 3A/MAV combined traffic.

Table 3-5: Historical evolution in Tollable AADT by vehicle class at KM94 (Karman)

Vehicle Category	FY23*	FY24	FY25	FY26	FY24-FY26 CAGR
CJV	16,125	18,337	20,388	22,823	11.6%
LCV	1,303	1,358	1,467	1,541	6.5%
Bus	740	820	891	954	7.9%
2A	3,100	3,270	3,611	3,826	8.2%
3A/MAV	5,908	5,884	5,782	5,730	(1.3%)

Vehicle Category	FY23*	FY24	FY25	FY26	FY24-FY26 CAGR
OSV	5	4	3	3	
Tollable AADT	**27,181**	**29,673**	**32,143**	**34,877**	**8.4%**
Tollable PCU[1]	**50,650**	**53,603**	**56,689**	**59,883**	**5.7%**

Source: Steer analysis of the Client data; FY23* consists of data from Jul'22 to Mar'23; FY26 represents full year actual (April to March); Tollable traffic excludes exemptions and violations; 1 PCU totals above consider PCU factor of ~3.56 for 3A/MAV combined traffic.

3.12 Table 3-6 and Table 3-7 below present historical traffic trends at Mahuvan (KM164).

Table 3-6: Historical evolution in AADT by vehicle class at KM164

Vehicle Category	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY19-FY26 CAGR
CJV	7,451	7,736	9,813	11,156	12,908	14,007	15,281	16,896	12.4%
LCV	1,505	1,348	1,080	1,294	1,372	1,358	1,485	1,540	0.3%
Bus	-	-	-	640	815	965	1,032	1,122	10.2%
2A	2,595	2,913	2,744	3,551	3,349	3,487	3,807	3,998	
3A/MAV	4,463	4,926	4,646	5,922	6,374	6,488	6,483	6,448	5.4%
OSV	-	-	-	-	2	3	3	3	
AADT	**16,014**	**16,924**	**18,282**	**22,562**	**24,820**	**26,308**	**28,091**	**30,007**	**9.4%**
PCU[1]	**33,378**	**36,032**	**36,199**	**46,745**	**50,152**	**52,505**	**55,113**	**57,532**	**8.1%**

Source: Steer analysis of the Client data (MAV includes 3A across all the years; 2A includes Bus from FY19-21; FY26 represents full year actual (April to March); 1 PCU totals above consider PCU factor of ~3.56 for 3A/MAV combined traffic.

Table 3-7: Historical evolution in Tollable AADT by vehicle class at KM164

Class	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY19-FY26 CAGR
CJV	7,451	7,734	7,919	9,931	11,867	13,084	14,265	15,840	11.4%
LCV	1,505	1,348	1,082	1,208	1,238	1,288	1,406	1,469	(0.3%)
Bus	2,595	2,913	3,020	637	838	962	1,028	1,116	10.1%
2A				2,879	3,351	3,460	3,774	3,968	
3A/MAV	4,463	4,926	5,335	5,893	6,414	6,478	6,474	6,438	5.4%
OSV	-	-	-	2	2	3	3	3	
Tollable AADT	**16,014**	**16,921**	**17,356**	**20,549**	**23,710**	**25,276**	**26,950**	**28,834**	**8.8%**
Tollable PCU[1]	**33,378**	**36,028**	**37,590**	**43,274**	**49,129**	**51,352**	**53,836**	**56,223**	**7.7%**

Source: Steer analysis of the Client data (MAV includes 3A across all the years; 2A includes Bus from FY19-21; FY26 represents full year actual (April to March).; tollable traffic excludes exemptions and violations; 1 PCU totals above consider PCU factor of ~3.56 for 3A/MAV combined traffic.

3.13 Since FY19, KM164 has observed strong PCU growth, posting an average annual growth rate of 8.1% per year over the period FY19-FY26. Much of this growth can be attributed to the rapid pace of development in and around Delhi NCR over the past several years where the Asset has benefitted from its strategic location, connecting Delhi NCR to other locations across the country. KM46 and KM94 have grown at rates of 3.0% and 5.5% respectively between FY24 and FY26 at a PCU level, driven majorly from steady growth

observed in CJVs, LCVs, and 2As. 3A/MAV traffic on the Asset has declined at all three toll plazas on the Asset in FY26 compared to FY25. Several factors have contributed to this, including:

- The secular decline of 3A traffic volumes – consistent with most national highway corridors in the country – due to updated axle load regulations, and a growing preference for 2As and MAVs. This contraction in 3A volumes is dampening the year-on-year growth rates for the combined total of 3A and MAV traffic volumes.
- The Delhi-Mumbai Expressway (DME) now observes a proportion of long-distance traffic which earlier used to appear on the Asset. Additionally (as detailed above in 2.19) the DND – KMP Flyway development has impacted long-distance movement appearing on the Asset by providing better access to the DME if passing through the inner areas of the National Capital.
- Upgrades to the Palwal – Tappal and Ghaziabad – Aligarh-Kanpur corridors have enhanced the Level of Service (LoS), leading to medium-distance traffic bound for Kanpur to favour the Ghaziabad – Aligarh – Kanpur route as an alternate to the asset.

Historical Revenue

3.14 Table 3-8, Table 3-9 and Table 3-10 illustrate the historical trends in total and average daily revenue collections at Gadpuri (KM46), Karman (KM94), and Mahuvan (KM164). In FY25, all three toll plazas recorded year-on-year growth in Average Annual Daily Collections (AADC) compared to FY24. AADC increased by 3.3% at KM46, 6.7% at KM94, and 5.3% at KM164 over FY24 levels. In FY26, revenue growth was 8%, 5.9%, and 6.0% at the toll plazas respectively. Gadpuri's revenue growth in FY26 was stagnant due to the diversion of traffic to the DME connector.

3.15 As explained in the historical traffic section, this growth has been driven primarily by the increase in CJVs, LCVs, and 2As, as consumption demand from the urban consumption hubs of Faridabad, Delhi, Mathura and Agra continues to grow. Delhi and Agra also continue to grow as major tourism destinations for both domestic and international travellers.

Table 3-8: Historical total revenue (INR Cr) and AADC (INR Lakhs): TP Gadpuri (KM46)

Toll Plaza	CJV	LCV	Bus	2A	3A/MAV	Total	AADC	AADC Growth (%)
FY23	46.7	6.6	6.4	17.0	42.4	119.2	43.5	
FY24	66.2	9.7	10.0	21.0	50.6	157.5	43.0	**(1.1%)**
FY25	74.5	9.0	11.5	21.0	46.1	162.2	44.4	**3.3%**
FY26	86.3	9.6	13.1	20.9	45.2	175.1	48.0	**8.0%**

Source: Steer analysis of Client data; FY26 consists of data from Apr'25 to Mar'26

Table 3-9: Historical total revenue (INR Cr) and AADC (INR Lakhs): TP Karman (KM94)

Toll Plaza	CJV	LCV	Bus	2A	3A/MAV	Total	AADC	AADC Growth (%)
FY23	31.0	4.5	4.9	23.9	72.2	136.5	49.8	
FY24	48.9	6.5	7.6	35.3	101.5	199.9	54.6	**9.6%**
FY25	56.2	7.2	8.3	39.8	101.1	212.6	58.3	**6.7%**
FY26	59.9	7.9	9.1	43.7	104.5	225.1	61.7	**5.9%**

Source: Steer analysis of Client data; FY26 consists of data from Apr'25 to Mar'26

Table 3-10: Historical total revenue (INR Cr) and AADC (INR Lakhs): TP Mahuvan (KM164)

Toll Plaza	CJV	LCV	Bus	2A	3A/MAV	Total	AADC	AADC Growth (%)
FY23	33.7	6.7	8.2	39.7	120.3	208.6	57.1	
FY24	38.0	6.9	9.6	40.7	120.8	216.0	59.0	**3.3%**
FY25	41.4	7.7	10.5	45.3	122.0	226.9	62.2	**5.3%**
FY26	45.1	8.3	11.5	49.3	126.1	240.4	65.9	**5.9%**

Source: Steer analysis of Client data; FY26 consists of data from Apr'25 to Mar'26

Toll Frequencies

3.16 Toll frequency or segmentation is typically the share of each ticket category recorded for a particular vehicle type. Each vehicle category has a different segmentation. As a part of historical analysis, we calculate the toll frequency for each vehicle category from the monthly data shared by the Client. The most common ticket categories observed on a typical National Highway concession are: Single, Return, Monthly, Local and Exempt. Given the local nature of traffic, some Assets offer custom made local passes to attract the local commuters to opt for these category passes instead of evading tolls. Brief descriptions of the different ticket types are provided in Table 3-11 below.

Table 3-11: Typical ticket types sold at NHAI plazas

Category	Description
Single	Allows the vehicle to cross the toll plaza once
Return	Daily pass for crossing the toll plaza multiple times within 24 hours. Charged 1.5 times the single toll
Monthly	Discounted entry ticket for users who undertake multiple trips within a month can buy the monthly pass.
Local Personal	Discounted monthly pass only for private cars of residents within 20KM radius of toll plaza
Local Commercial	50% discount on single trips for commercial vehicles registered in the local district
Exemptions	Officially exempted vehicles like ambulance, police cars, key political personnel etc.

3.17 Understanding the toll frequency gives insights into the nature of traffic plying on the Asset. CJVs generally have higher shares of return tickets or monthly passes as passenger vehicles typically travel shorter distances and are more regular/routine than commercial movements; heavy trucks mostly have single tickets as these trips are longer distance and vehicles may not be appearing on the same plazas as frequently given the nature of commercial transportation. Nonetheless, the exact shape and form of these ticket type distributions across different vehicle categories vary from Asset to Asset or even toll plaza to toll plaza. The Asset catering to short distance local traffic generally observes high share of return or other local, and monthly passes while an Asset catering to strategic long-distance traffic generally observes a high share of single ticket traffic.

Introduction of Annual pass for CJVs

3.18 The National Highway Authority of India launched the "The FASTag Annual Pass" on August 15, 2025, a prepaid facility that allows private CJVs to travel across designated National Highway and National Expressway toll plazas. The annual pass is worth INR 3,000. The pass is valid for one year or 200 trips, whichever occurs first and is applicable only to private, non-commercial vehicles (Car/Jeep/Vans).

Since this pass has been introduced by NHAI, it is not valid on

- state governed toll plazas on highways
- state governed toll plazas expressways
- Parking areas or other non-NHAI tolling locations

3.19 The pass can be activated via the RajmargYatra app or the NHAI website, and links directly to an existing FASTag.

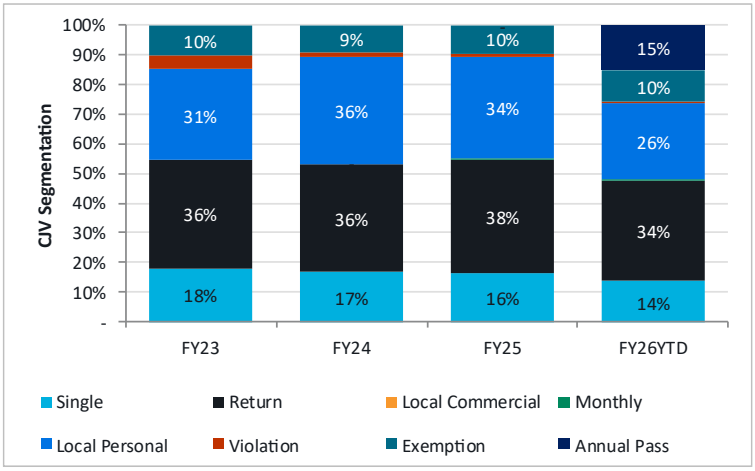
The Annual Pass aims to:

- Promote cashless and seamless travel on national highways.
- Reduce congestion and improve traffic flow at tolls
- Provide cost-effective travel for frequent users of NH/NE toll road

Share of traffic by payment type

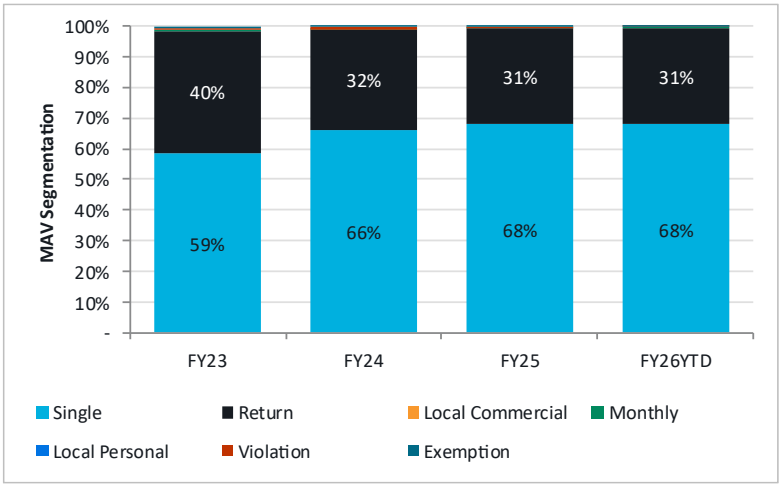
3.20 Figure 3.1 through Figure 3.4 below illustrate CJV and MAV ticket segmentations observed at KM46 (Gadpuri) and KM94 (Karman) toll plazas for the period FY23 (partial, July 2022-March 2023) through FY26YTD (April 2025- February 2026).

Figure 3.1: CJV Ticket-segmentation at KM46 (Gadpuri)



Source: Steer analysis of Client data; FY23 consists of data from Jul'22 to Mar'23; FY26YTD contains data thru Feb'26

Figure 3.2: MAV Ticket-segmentation at KM46 (Gadpuri)

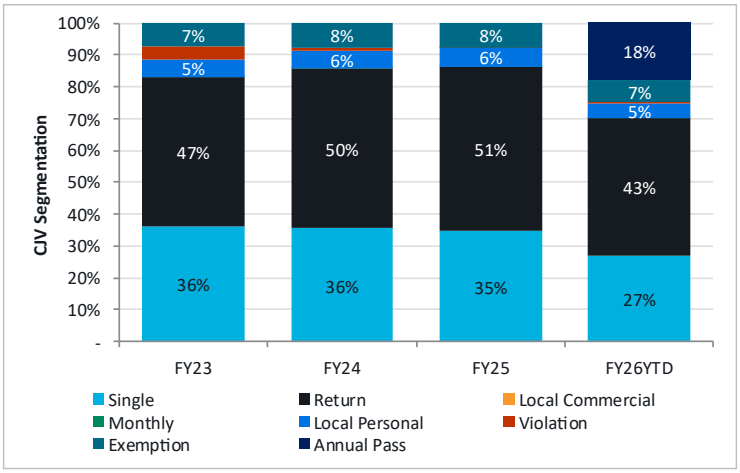


Source: Steer analysis of Client data; FY23 consists of data from Jul'22 to Mar'23; FY26YTD contains data thru Feb'26

3.21 As discussed earlier, two of the Asset toll plazas i.e., KM46 (Gadpuri), and KM94 (Karman), became operational after the original Srinagar toll plaza (prior KM74) was split into two different plazas in July 2022 (FY23). From graphs above, we see that ticket segmentation trends at both the plazas follow from their geographic locations along the Asset; KM46 (Gadpuri), the plaza located nearest to Delhi NCR and between the urban settlements of Delhi/Faridabad and Palwal, observes a high share of local traffic, or traffic volumes captive to the area. At KM46, commercial trucks (MAVs) also make short-distance trips within Delhi-NCR, as evidenced from the high share of MAV return tickets on this plaza (as compared to KM94 and KM164). As of FY26YTD, 31% of MAVs were return trips at KM46.

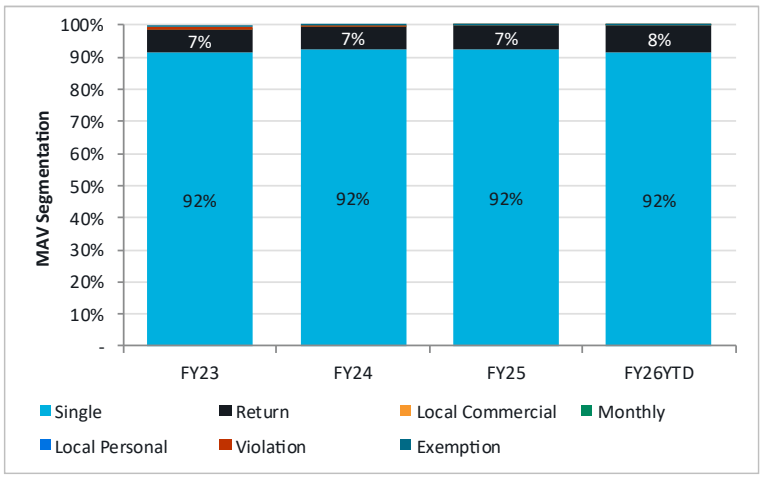
3.22 KM94 (Karman) observes more long-distance traffic than observed at KM46, largely because it is located farther away from urban centres on either end of the Asset, meaning most traveller crossing KM94 are likely longer-distance in nature. As shown in Figure 3.3 and Figure 3.4 below, this is supported by the significantly lower share of return tickets (and correspondingly higher share of single tickets) observed at KM94 relative to KM46. This observation is further validated by 2A/3A categories reporting a smaller share of return tickets in their segmentations at KM94.

Figure 3.3: CJV Ticket-segmentation at KM94 (Karman)



Source: Steer analysis of Client data; FY23 consists of data from Jul'22 to Mar'23; FY26YTD contains data thru Feb'26

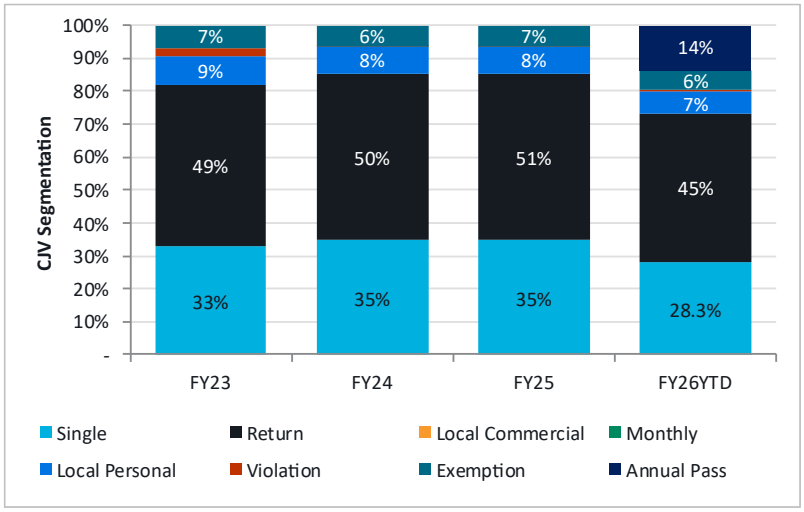
Figure 3.4: MAV Ticket-segmentation at KM94 (Karman)



Source: Steer analysis of Client data; FY23 consists of data from Jul'22 to Mar'23; FY26YTD contains data thru Feb'26

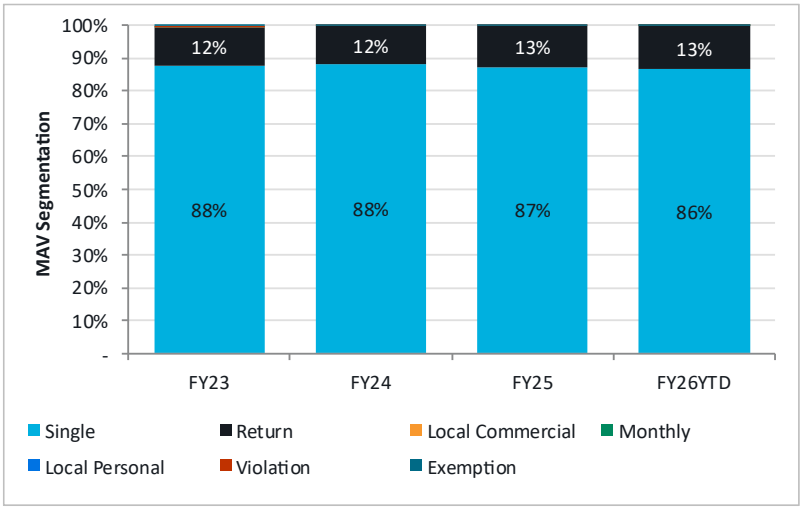
3.23 Figure 3.5 and Figure 3.6 below present ticket segmentation for CJVs and MAVs at KM164 (Mahuvan). Since the adoption of FASTag in FY21, the share of single tickets purchased by CJVs at KM164 (Mahuvan) has stabilized, and as of FY26YTD is 29%. The proximity of KM164 to Agra and nearby urban centres further explains the high share of return tickets for CJVs – which has been roughly 45-52% across the past four years.

Figure 3.5: Ticket-segmentation for CJV at KM164 (Mahuvan)



Source: Steer analysis of Client data; FY26YTD contains data thru Feb'26

Figure 3.6: Ticket-segmentation for MAV at KM164



Source: Steer analysis of Client data; FY26YTD contains data thru Feb'26

3.24 The share of single tickets at KM164 Mahuvan is high (86%, as of FY26YTD) implying MAVs observed on the asset are long-distance – significantly more than KM46 (68%). Additionally, the share of return tickets for MAVs are still higher than that observed at KM94 meaning that KM164's proximity to Agra and nearby urban centres also influence the nature of MAV trips observed at KM164 - where some proportion of commercial trucks are also short-distance - lower than KM46, but higher than KM94.

Data Collection exercise

3.25 As mentioned previously, to validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset, comprising the surveys listed in Table 3-12 below. OD survey data was collected on behalf of the Client, and TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas. TVC data collection involves video-graphic capture of traffic crossing the toll plazas, followed by manual counting.

Table 3-12: Data collection schedule

TP	3-day videography-based TVC			1-day OD survey	
	Start date	End date	Time (hrs)	Start date	Start time
KM46 Gadpuri	25th Feb 2026	27th Feb 2026	0000-2359	25th Feb 2026	0900 hours
KM164 Mahuvan	26th Feb 2026	28th Feb 2026	0000-2359	27th Feb 2026	0900 hours
Kherli Jita toll plaza (DME connector)	19th Mar 2026	21st Mar 2026	0000-2359	19th Mar 2026	0900 hours

Source: Steer

3.26 It should be noted that, in our experience, traffic on national highways shows variation across the week due to the economic activities surrounding each road. To derive a representative TVC count considering daily variation, three-day to seven-day traffic

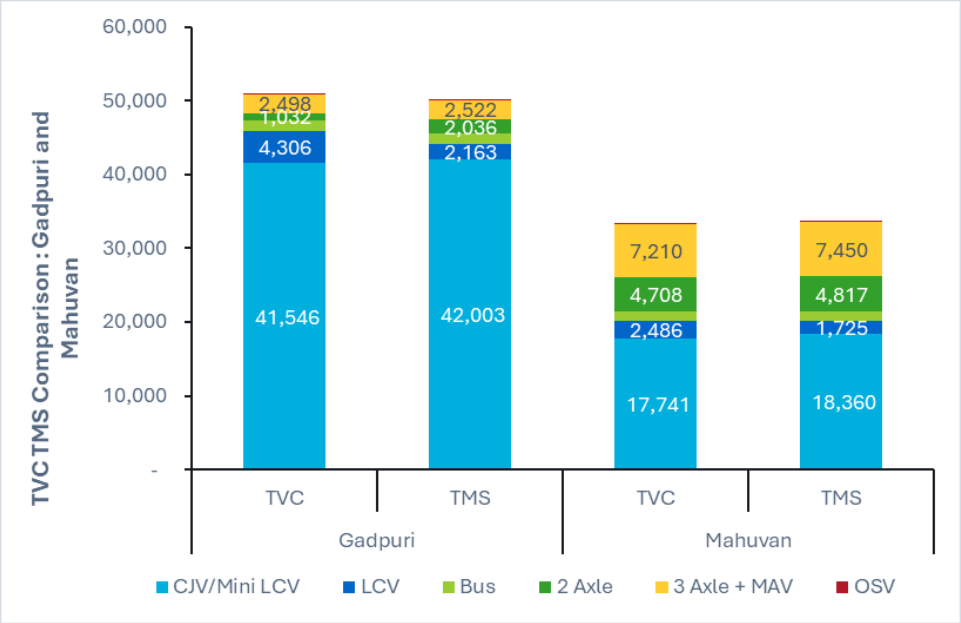
counts are generally recommended. Hence, in order to fully understand the impact of this weekly fluctuation on the Asset, we collected three-day counts at each toll plaza.

Key findings of the TVC data analysis

3.27 The results of the TVC study carried out by Steer in February 2026 are presented in this section. TVC surveys were conducted to help validate TMS data provided by the Client, and to inform various inputs used in our forecasting analysis.

3.28 Since we use the TMS data to estimate the base year AADT, we have used our overlapping TVC data to validate the TMS data on those days, as provided by the Client. In Figure 3.7 below, we observe that over the period (or days) for which the TVC data was collected, there existed little difference between the reported TMS traffic count data and the independently recorded TVC data. Based on this output, we independently validated the TMS count data provided by the Client, and no additional adjustment (in this respect) was made to estimate our Base year AADT from the TMS data provided by the Client.

Figure 3.7: TVC-TMS Comparison: KM46 Gadpuri & KM164 Mahuvan



Source: Steer analysis

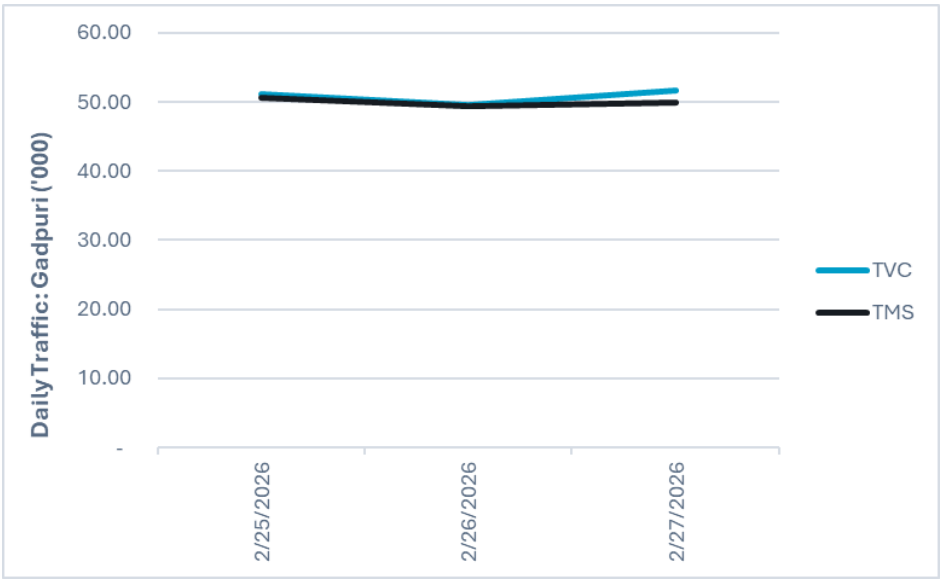
TVC-TMS analysis

3.29 Figure 3.8 and Figure 3.9 below present our analysis of the TVC data sourced via independent primary surveys and the TMS data provided by the Client over the same data collection period/days i.e., 25th February 2026 to 27th February 2026. We used our TVC data to validate the toll plaza data for the same days as supplied by the Client via their toll management system (TMS). This TMS data was then used as the base data, for our forecasting model.

3.30 The graphs show the comparison of TMS and TVC calculated Average Daily Traffic (ADT) levels at two of the plazas on which the surveys were conducted i.e., KM46 (Gadpuri) and KM164 (Mahuvan). The TMS data from the Client's operational systems at both plazas closely aligns with our third-party TVC data for the same days, showing a difference of 1.6% at Gadpuri and (1.0%) at Mahuvan toll plaza. This comparison provides confidence

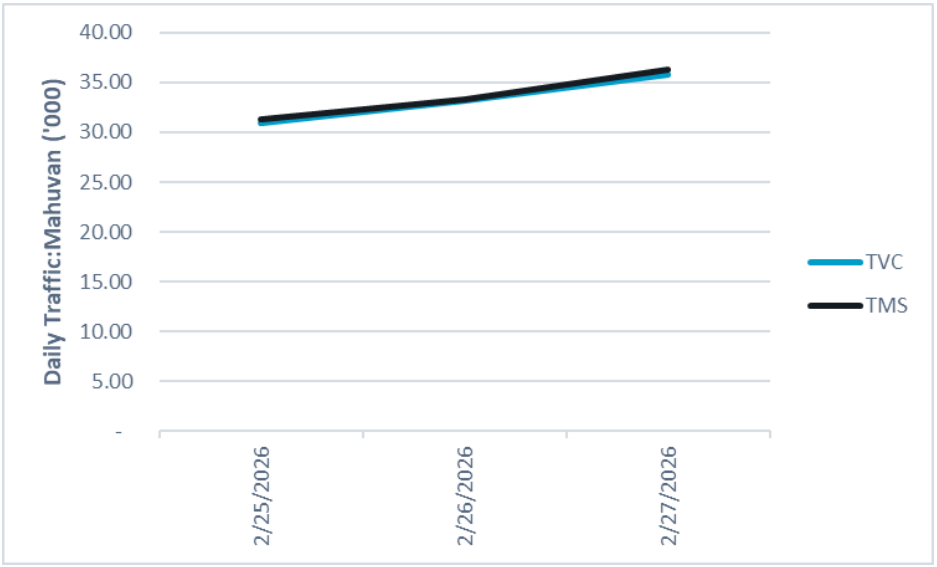
in the TMS data for forecasting purposes and ensures that the data being used to estimate the Base year AADT (and subsequent forecasts of traffic and revenue from that Base) is accurate and reflective of actual plaza volumes.

Figure 3.8: Daily TVC and TMS traffic comparison on KM46



Source: Steer analysis

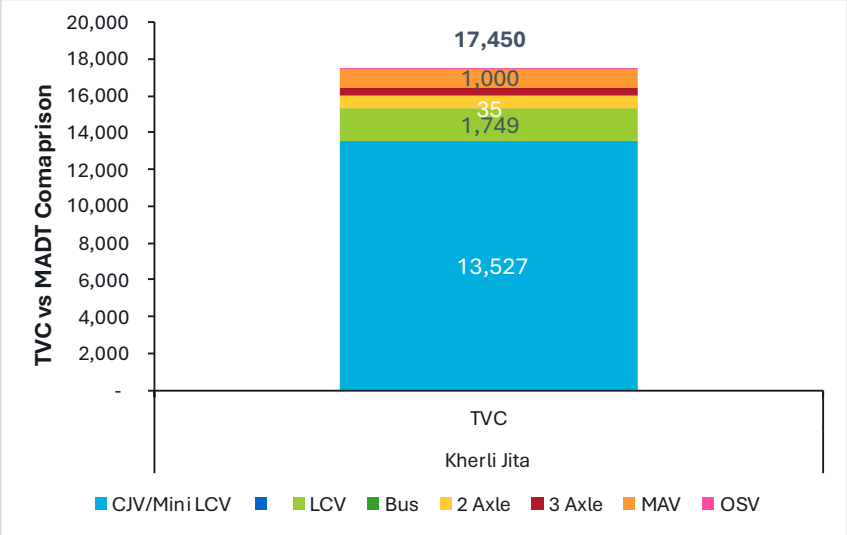
Figure 3.9: Daily TVC and TMS traffic comparison on K164



Source: Steer analysis

3.31 TVC survey was also conducted at Kherli Jita toll plaza on the DME connector. Due to lack of TMS data for Kherli Jita, a comparison with TMS data could not be undertaken. CJVs form about 78% of the traffic appearing on Kherli Jita, with 2As, 3As, and MAVs forming 13% combined.

Figure 3.10: TVC ADT for Kherli Jita (DME connector)



Source: Steer analysis

Key findings of origin-destination analysis

Overview

3.32 Origin-destination (OD) analysis enables us to understand the nature of traffic movement on the Asset. The OD analysis presented here is based on data collected on behalf of the Client in February 2025. OD surveys were conducted at two of the toll plazas on the Asset i.e., at KM46 (Gadpuri), and at KM164 (Mahuvan) owing to the difference in traffic trends and movements observed at both these plazas. Given the similarity in traffic profiles observed at KM94 and KM164, no additional OD survey was commissioned for KM94. The OD data collected as part of this study was analysed to derive the following key insights regarding the nature and profile of traffic plying the Asset:

- Zonal influence
- Commodity distribution
- Top OD pairs
- Trip length distribution

3.33 While zonal analysis and the list of top OD pairs help us to understand ‘where’ people and goods travel, commodity distribution sheds light on ‘what’ goods get transported. Trip length distribution show ‘how far’ vehicles and people travel, and goods get transported. This set of analyses is generally used to estimate the key drivers of traffic and to inform our key forecasting assumptions around traffic demand elasticities, growth drivers, and other exogenous factors that may impact future traffic growth on the Asset.

Sample rates

3.34 Sample rates help understand the reliability of OD data. They are calculated by dividing OD sample counts from the OD surveys by traffic counts (based on the TVC data) over the survey period. Table 3-13 below presents the sample rates for key vehicle categories at both the Asset toll plazas.

3.35 Sample rates at toll plazas are typically low for passenger vehicles due to shorter stoppage durations and reduced response times following the implementation of FASTag in FY22. On the contrary, sample rates for commercial vehicles are higher.

3.36 Table 3-13 below presents the sample rates recorded at KM46 Gadpuri and KM164 Mahuvan for both passenger and commercial vehicles.

Table 3-13: Sample rates for OD data

Vehicle type	KM46 Gadpuri	KM164 Mahuvan	Kherli Jita
Passenger	28.3%	20.7%	38.0%
Goods (2A+3A+MAV)	63.1%	34.7%	47.7%

Source: Steer analysis of OD data

Zone categories

3.37 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones, and influenced by various towns, cities, states and regions in the vicinity of the Asset, we have aggregated zonal data as described in Table 3-14 below. The methodology applied to aggregate zones vary based on the characteristics of different Assets.

Table 3-14: Zone aggregations for zonal influence analysis

Aggregate Zone	Description
Local	Local zones are those that fall on or very close to the Asset.
Immediate area of influence (IAOI)	IAOI zones are the locations which generate traffic and lie within approximately 75-150 KM distance from the Asset.
Rest of State	Rest of the cities/Districts in the state that Asset lies in (other than Local/IAOI)
Central NCR	Delhi, Gurgaon, Noida.
Rest of Haryana	Haryana
North India	Uttarakhand, Jammu & Kashmir, Himachal Pradesh
Madhya Pradesh	Madhya Pradesh
Rajasthan	Rajasthan
Punjab	Punjab
Uttarakhand	Uttarakhand
Gujarat	Gujarat
East and Northeast India	West Bengal, Orissa and Northeast Indian states
South India	Andhra Pradesh, Tamil Nadu, Karnataka, Kerala, Maharashtra, Goa

Source: Steer analysis

Zonal influence

3.38 Zonal influence measures the contribution of a zone or zonal aggregation/region to traffic volumes plying on the Asset, by vehicle type[16]. This section presents the zonal influence[17] of different zones (as described in Table 3-14 above) at both the toll plazas where OD surveys were conducted in February 2025 i.e., KM46 (Gadpuri) and KM164 (Mahuvan). Figure 3.11 and 'Local' trips on the Asset are mainly destined towards or originating from areas within a 20 km radius of the Asset, including locations such as Runakta, Sikandra, Mathura (all in Uttar Pradesh and Ballabhgarh (in Haryana).

3.39 As we can see in the figures below, commercial traffic at Gadpuri has more influence of short distance and medium distance trips as around 80% of MAV traffic has influcne of local zones and of Haryana and Delhi, while the same for Mahuvan reduces to around 60%, and the sahre of long distance traffic to zones such as South India, Rajasthan among others increases to 40% from around 15% on Gadpuri.

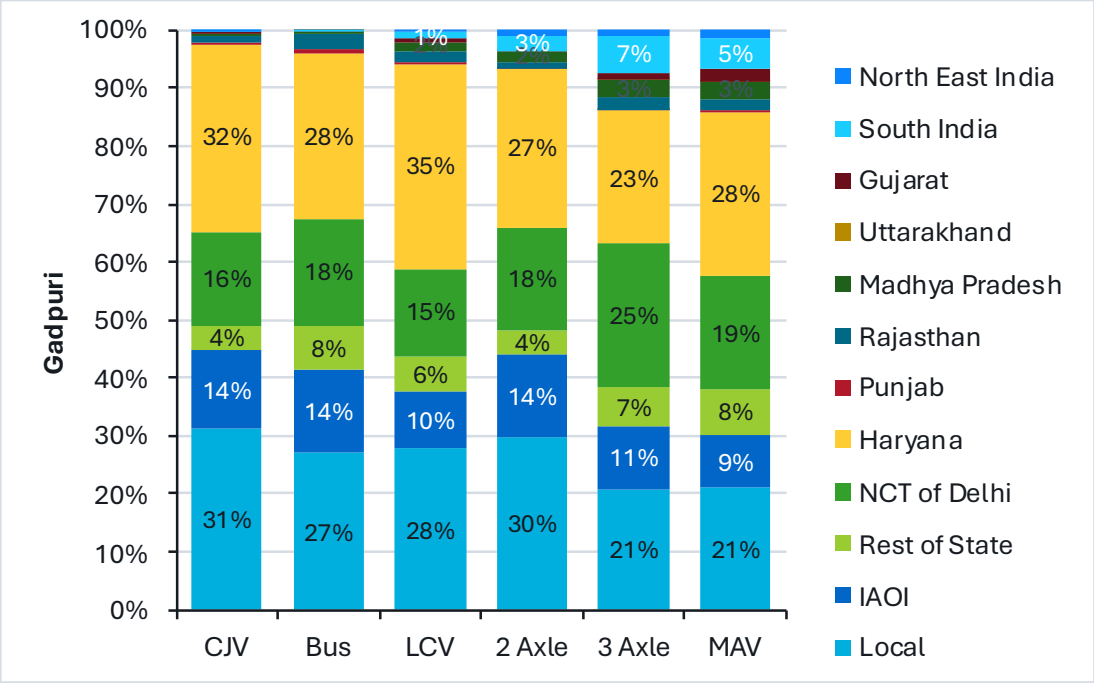
3.40 Figure 3.12 below present the zonal influence of different zones on traffic volumes of each vehicle category that cross both the toll plazas.

3.41 Long distance traffic destinated to destinations outside the state form a high share of trips for commercial traffic. Influence of local and IAOI zones ranges between 20-30% for MAV's on each these plazas, representing captive nature of the traffic. For inter-urban corridors, only smaller vehicles (CJVs and LCVs) see a higher share of local trips compared to trucks. However, since we see industrial zones located on the Asset itself, the influence of zones located in immediate regions (inclusive of parts of all three regions) is high even for heavy trucks like MAVs, which range from 25% at KM164 to 30% at KM46.

[16] Zonal influence is analysed on trip ends and not trips.

[17] For example, if out of 100 trips at a toll plaza on an Asset, 10 trips are between Hyderabad and Delhi and 90 trips are between Hyderabad and Chennai, then zonal influence of Hyderabad is 50% since one trip end of all trips are at Hyderabad. Likewise, zonal influence of Delhi and Chennai would be 5% and 45%, respectively.

Figure 3.11: Zonal influence, KM46 Gadpuri

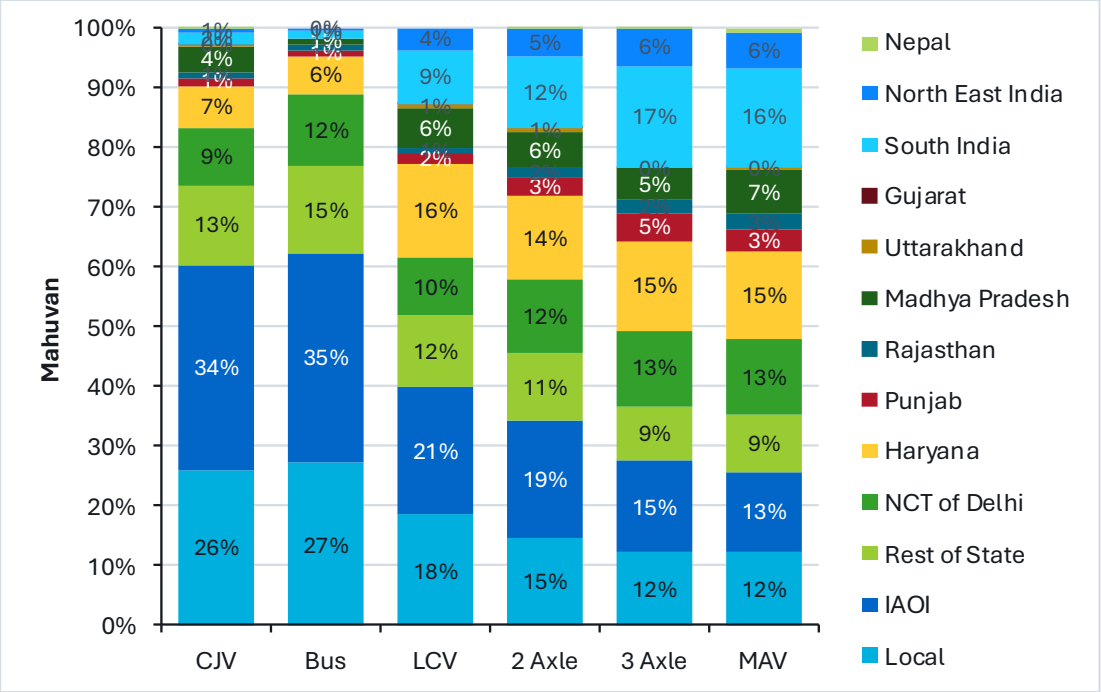


Source: Steer analysis of OD data

3.42 'Local' trips on the Asset are mainly destined towards or originating from areas within a 20 km radius of the Asset, including locations such as Runakta, Sikandra, Mathura (all in Uttar Pradesh and Ballabhgarh (in Haryana).

3.43 As we can see in the figures below, commercial traffic at Gadpuri has more influence of short distance and medium distance trips as around 80% of MAV traffic has influcne of local zones and of Haryana and Delhi, while the same for Mahuvan reduces to around 60%, and the sahre of long distance traffic to zones such as South India, Rajasthan among others increases to 40% from around 15% on Gadpuri.

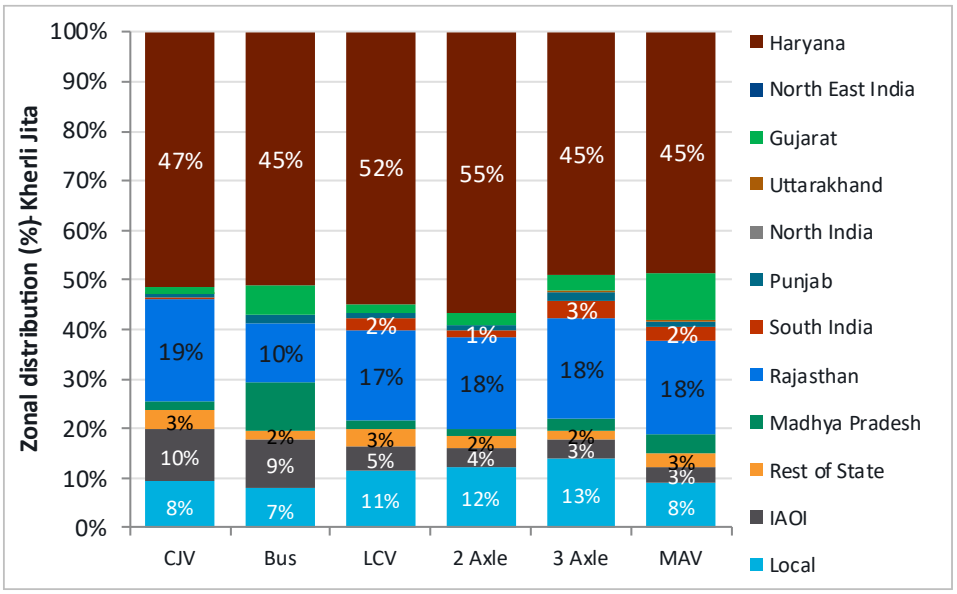
Figure 3.12: Zonal influence, KM164 Mahuvan



Source: Steer analysis of OD data

3.44 As we can see in the figures below, roughly half of the traffic appearing on Kherli Jita has one end in Haryana. Rajasthan forms ~18% of the 3A and MAV traffic each.

Figure 3.13: Zonal influence, Kherli Jita



Source: Steer analysis of OD data

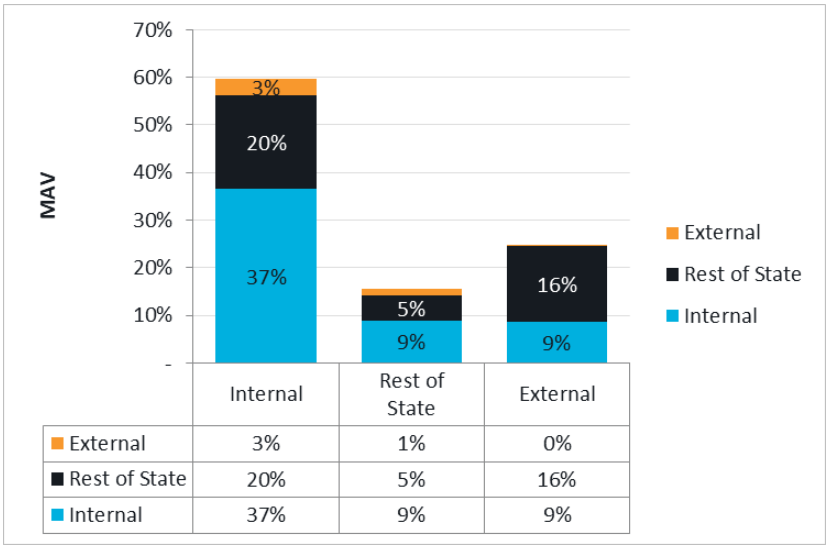
Internal External analysis

3.45 Internal-External analysis helps in identifying the trips which either have both the origin and destination within the regions close to the Asset, or any only one end in the region, or

if it is through-traffic (i.e., with both trip ends outside the immediate region of the Asset), that travel medium to long distances across the country.

3.46 Figure 3.14 and Figure 3.15 below present the outputs of the Internal-External analysis conducted on the latest OD survey data at both the Asset toll plazas i.e., KM46 (Gadpuri) and KM164 (Mahuvan). The plots help provide additional insight into the trip patterns of different vehicle types observed on the Asset.

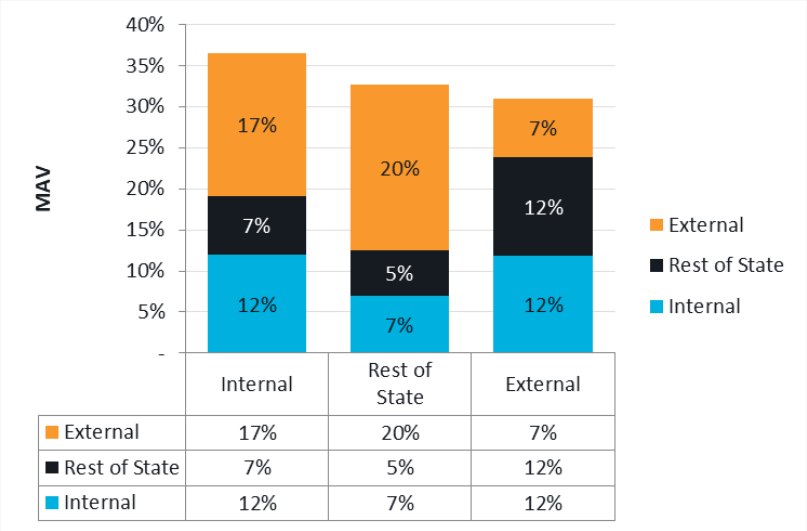
Figure 3.14: Internal-external distribution, KM46 Gadpuri



	Internal	Rest of State	External
External	3%	1%	0%
Rest of State	20%	5%	16%
Internal	37%	9%	9%

Source: Steer analysis of OD data

Figure 3.15: Internal-external distribution, KM164 Mahuvan



	Internal	Rest of State	External
External	17%	20%	7%
Rest of State	7%	5%	12%
Internal	12%	7%	12%

Source: Steer analysis of OD data

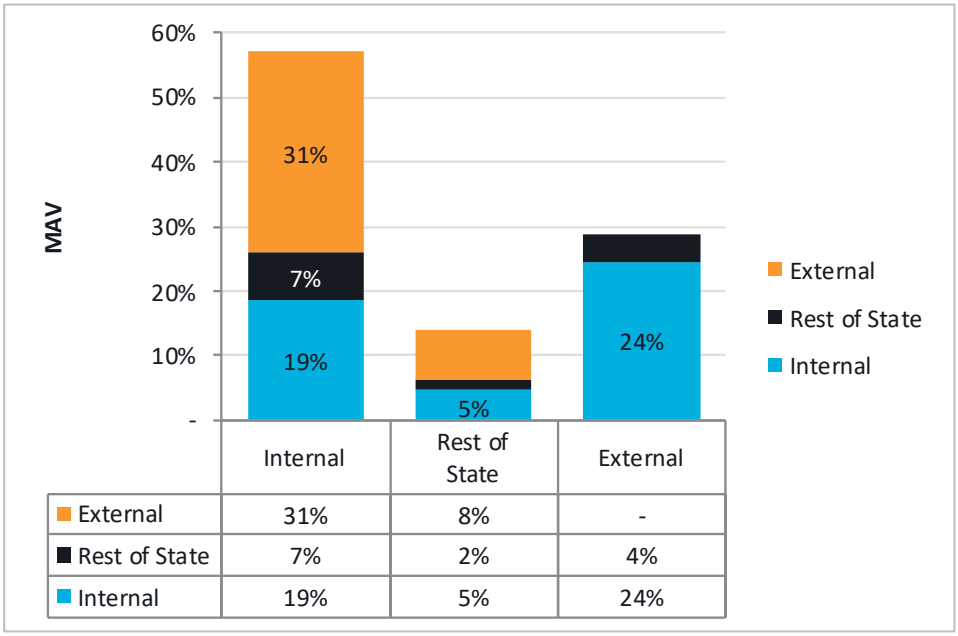
3.47 Figure 3.15 and Figure 3.17 above show that the influence of local and IAOI zones for MAVs reduces on the Asset, from the northern to the southern toll plazas. The external-external influence is lower at KM46 (almost 0%), while it has the higher (37%) share of I-I trips.

3.48 This difference in trip patterns of MAVs crossing either of the toll plazas is due to their relative locations along the Asset alignment. The KM46 plaza lies at the southern end of the NCR which is a major industrial and manufacturing region (with hubs such as Ballabhgarh, Okhla and Manesar), as well as being a large consumption centre. Thus, a large proportion of "Internal- Internal" MAV trips at this plaza are those between different industrial units across NCR as well as the traffic between industries and consumption centres in the region.

3.49 In contrast to Gadpuri, the E-E and I-I shares at KM164 (Mahuvan) are 7% and 12% respectively. KM164 lies closer to Agra and further away from Delhi resulting in a lower share of local trips for MAVs, as there are less industrial clusters in this region, and most traffic observed in this area will be medium-long distance traffic originating and destined for locations far away from where the plaza is located.

3.50 At Kherli Jita toll plaza, the share of trips with one end in external zone is relatively higher at ~70%, with trips that have one end in an internal zone forming 65% in MAVs.

Figure 3.16: Internal-external distribution, Kherli Jita



	Internal	Rest of State	External
External	31%	8%	-
Rest of State	7%	2%	4%
Internal	19%	5%	24%

Source: Steer analysis of OD data

Commodity distribution

3.51 For the commodity distribution analysis, we grouped various commodities into aggregate categories for ease of interpretation, as shown in Table 3-15 below. The charts in the following sub-section present information in terms of aggregate commodity categories.

Table 3-15: Aggregate commodity categories

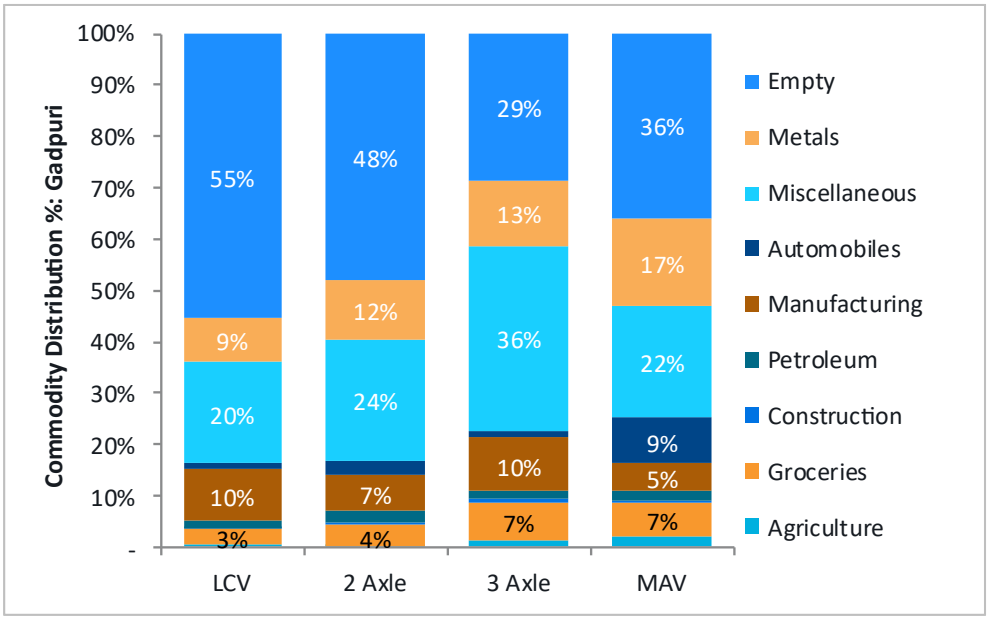
Commodity Description	Code	Combined codes used for charts
Agriculture Products / Cash crops (Wheat, Rice, Sugar cane, Maize etc.)	AGR	AGR
Cattle Food / Live Stock (sheep, goat, cow, cattle food etc)	LIV	

Commodity Description	Code	Combined codes used for charts
Perishable Items (Fruits, vegetables)	PER	GRO
Animal Products/Dairy/Eggs/Fish/Meat/Animals	DFM	
Groceries / Food items (Soap, Salt, Sugar, Pulses, Spices, Biscuits, bread, cold drinks, beer etc.)	GRO	
Building Material / Construction (Cement, Lime, Brick, fly ash, etc)	CNS	CNS
Sand/Clay	SND	
Stone (kota stone, marble, Granite, Aggregate stone etc.)	STN	
Mining Minerals (Coal, Gypsum, Cobalt etc.)	MIN	
Ceramic	CRM	
Petroleum Products (Oil, LPG, CNG, etc.)	PET	PET
Chemicals / Fertilizers (Acids, Fertilizers etc.)	CHM	
Electrical/Manufacturing items (Electronic items, Medicine, Leather, Wine, Rubber/ Tyre, Plastics, Cloth, Paper etc.)	MAN	MAN
Raw Wood, Cork & Wood Products, Furn	WUD	
Automobiles (Finished products, auto parts, Car/bike manufacturing, New Chassis)	AUT	AUT
Basic / Fabricated Metals (Iron, Steel / Metal)	MET	MET
Machinery / Spare parts	MAC	
Empty	EMT	EMT
Container	CTR	MSC
Miscellaneous (Parcel, Courier, House hold items etc.)	MSC	
Passengers	PAS	
Scrap	SCR	

Source: Steer analysis

3.52 Figure 3.17 and Figure 3.18 below present the commodity distribution for goods vehicles at both the toll plazas where the OD surveys were conducted. Analysis of the commodity distribution at both toll plazas reveals that construction items, groceries, manufactured products, miscellaneous goods (including parcels), agricultural products and metals represent the predominant categories. These commodity groups collectively account for approximately 62% and 61% of the traffic volume for 3-Axle vehicles (3A) and Multi-Axle Vehicles (MAV) at the Gadpuri toll plaza, and approximately 74.5% and 61.1% for 3As and MAVs at the Mahuvan toll plaza, respectively.

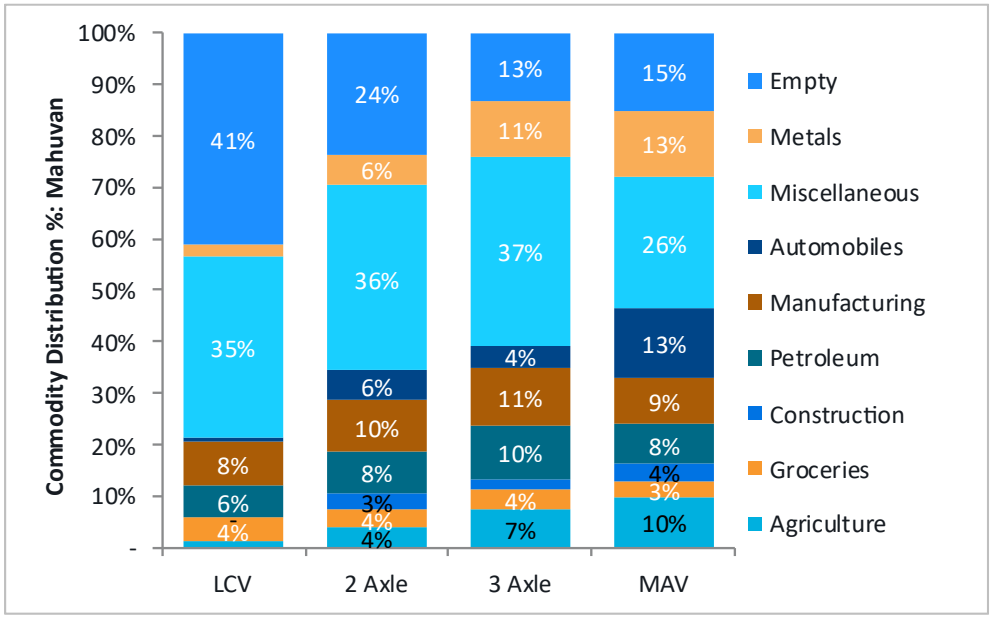
Figure 3.17: Commodity distribution, KM46 Gadpuri



Source: Steer analysis of OD data

3.53 Miscellaneous commodities (such as Parcel, Courier, House hold items etc), manufactured items (such as plastic, electronics and medicines), metals (iron and steel), and automobile have the highest share in terms of commodity distribution at both toll plazas. At KM46 Gadpuri, these categories have a combined share of 60% for 3A and 49% for MAVs, while at KM164 Mahuvan, these shares are found to be 62% for both 3A/MAVs.

Figure 3.18: Commodity distribution, KM164 Mahuvan



Source: Steer analysis of OD data

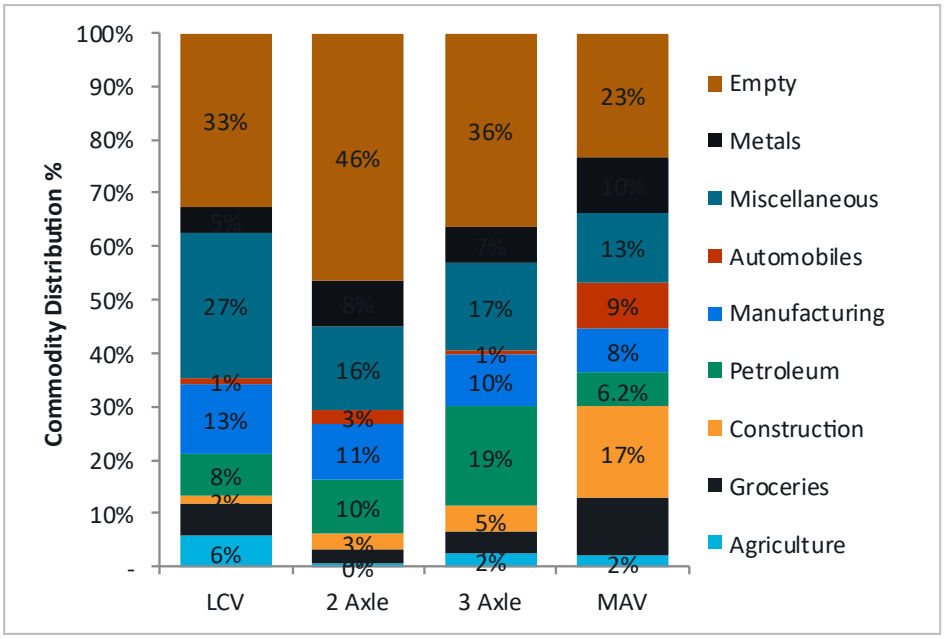
3.54 The share of empty vehicles is higher for LCVs and lower for 2A/3A/MAVs. Amongst 2A/3A/MAVs, the range of empty vehicle share is 30-48% at KM46 (Gadpuri), while at KM164 (Mahuvan) this range is observed to be 12-25%. This is expected as more local

truck movements at KM46 results in them making more trips for loading and unloading at warehouses.

3.55 Miscellaneous commodities (which include couriers and parcels) are observed to have a share of 20 -35% across all goods vehicle categories at KM46 (Gadpuri). This share is much higher at KM164 (Mahuvan), where 35-40% of LCV/2A/3As are observed to carry miscellaneous goods.

3.56 At Kherli Jita, the main commodity was found to be construction-related commodities such as cement, sand, and stone – forming about 17% of the MAV traffic. Agriculture and groceries contributed to 13% of the MAV traffic. Due to the toll plaza's proximity to urban centres, the share of miscellaneous traffic is also high at 13% in MAVs.

Figure 3.19: Commodity distribution, Kherli Jita



Source: Steer analysis of OD data

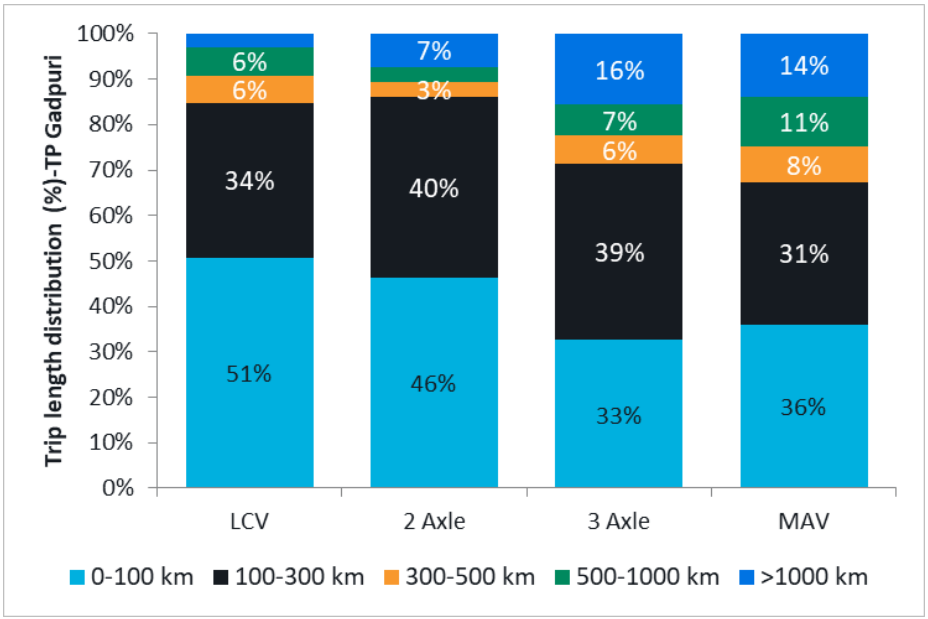
Trip length analysis

3.57 Trip-length distribution provides distance-based profiles of each vehicle category crossing either of the toll plazas. This insight, in addition to explaining trip patterns of traffic plying the Asset, also helps to validate our assumed macroeconomic drivers of traffic, outputs from the zonal influence analysis, and each plaza's toll segmentation trends.

3.58 Figure 3.20 and Figure 3.21 below present the outputs of the trip length analysis performed on the OD survey data from both the plazas. Each plot shows the distribution of total trips (by each vehicle category) across different trip distances. For ease of interpretation, we have categorised distances into five groups – local (0-100KM), short-distance (100-300 KM), medium-distance (300-500 KM), long-distance (500-1000 KM) and very-long-distance (+1,000 KM). The trip distances were derived as driving distances from Google

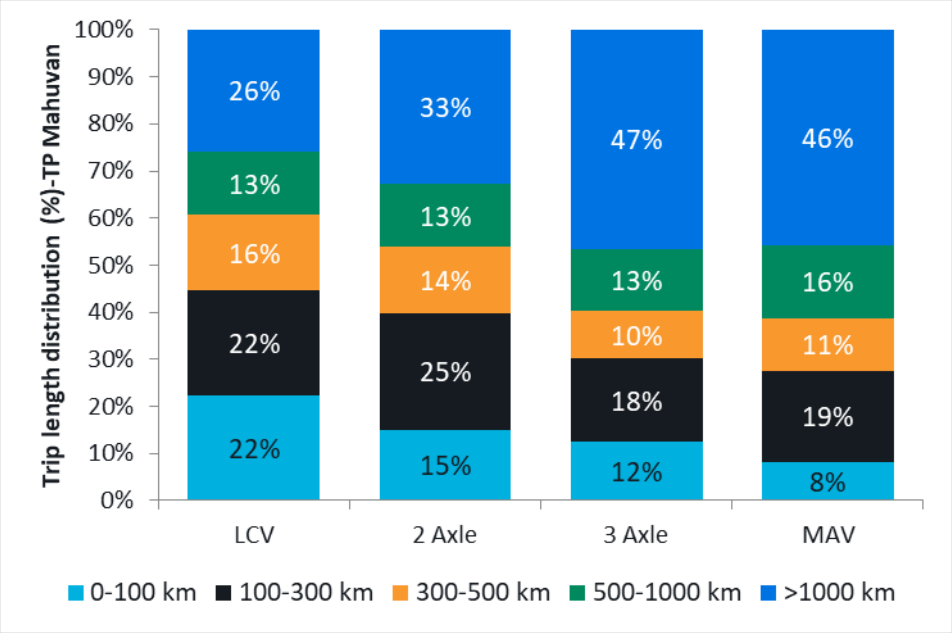
Distance Matrix Tool and is based on the zonal coordinates of each OD pair recorded during the OD surveys[18].

Figure 3.20: Trip length distribution, KM46 Gadpuri



Source: Steer analysis of OD data

Figure 3.21: Trip length distribution, KM164 Mahuvan



Source: Steer analysis of OD data

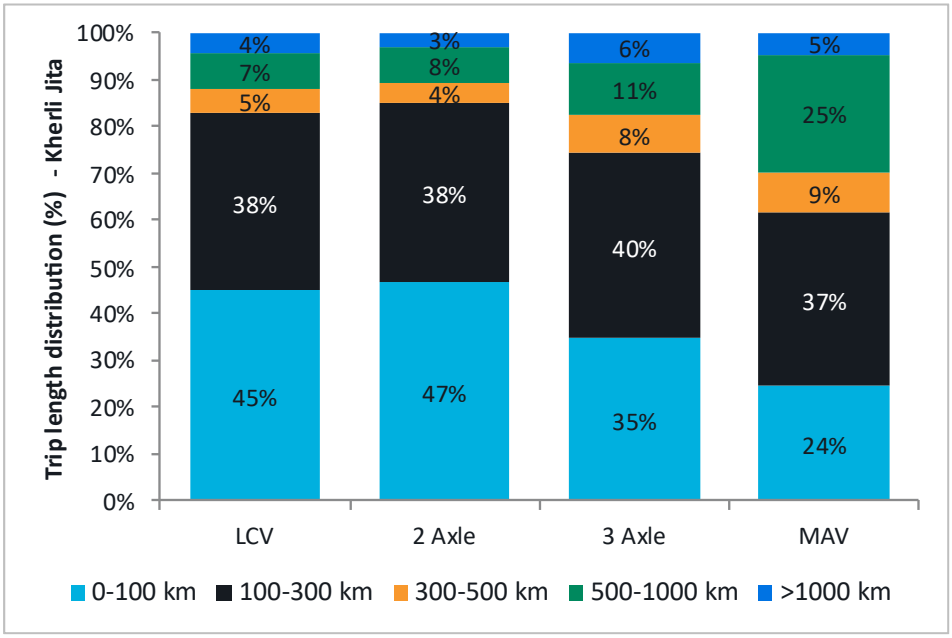
[18] Google Distance API is a tool that is available on a chargeable basis from Google Maps Platform. Link: https://developers.google.com/maps/documentation/distance-matrix/start. Travel distance and time information for driving/transit under various congestion scenarios can be extracted through this tool by using macro-enabled Excel, R, etc.

3.59 As discussed in the previous sections, KM46 (Gadpuri) and KM164 (Mahuvan) have distinct distributions of trip lengths by each vehicle category. As shown in Figure 3.20 above, KM46 (Gadpuri) observes a high share (64-85%) of trips below 300km in distance, across all goods vehicle categories. This is due to its proximity to the densely-populated NCR area, facilitating more local and IAOI movement.

3.60 In contrast, the trip distribution analysis at KM164 (Mahuvan) reflects more of its long-distance nature of traffic as observed at the toll plaza; 47% of 3As and 46% of MAVs crossing the plaza make trips more than 1000km in length, validating our observations from the zonal distribution and internal-external analyses. As we move from north to south along the Asset, the influence of states such as Madhya Pradesh, Rajasthan and regions in South India (Bengaluru, Hyderabad, Chennai) increases.

3.61 The trip length distribution of Kherli Jita is similar to Gadpuri toll plaza as it facilitates similar movements.

Figure 3.22: Trip length distribution, Kherli Jita



Source: Steer analysis of OD data

3.62 The primary objective of carrying out OD surveys at Kherli Jita and Gadpuri was to estimate the split of north-south traffic between the two toll plazas. This would help in understanding the extent to which diversion of traffic took place from Gadpuri to the DME connector and how much potential there is for further diversion of traffic to occur.

Table 3-16: Split of north-south traffic between Kherli Jita and Gadpuri

	Kherli Jita	Gadpuri
CJV	40%	60%
LCV	38%	62%
2 Axle	64%	36%
3 Axle	49%	51%
MAV	42%	58%

Source: Steer analysis of OD data

3.63 It can be seen that among CJVs, LCV, and MAVs the share of inscope traffic (north to south) lying on Kherli Jita is approximately 40%, while 60% still continues to use Gadpuri toll plaza.

Conclusions

3.64 The Asset is a 179.5 km toll road between Delhi and Agra which has historically been a part of NH44, which is a major National Highway facilitating north-south movement. It is also the longest national highway in the country.

3.65 The Asset consists of three toll plazas – KM46 (Gadpuri), KM94 (Karman) and KM164 (Mahuvan). KM46 and KM94 started operations in July 2022, while KM164 has been operational since FY13. In terms of total AADT, the growth rates at the plazas in FY26YTD compared to FY25 is 5.6%, 7.5% and 6.5% respectively. When considering the total PCUs, the plazas have grown at 3.7%, 5.1% and 4.1% respectively over the same period in FY25 to YTD FY26.

3.66 KM46 has observed muted growth overall and in PCU terms largely due to the impact of the DME as well as the DND KMP Flyway packages 2 and 3 that become operational in February 2023 and November 2024 resulting in decline in commercial vehicles originating from the industrial clusters of Faridabad and other parts of the NCT of Delhi, that previously crossed KM46. In contrast KM94 and KM164 have exhibited strong growth over FY25 levels despite the loss of long-distance traffic volumes due to partial commissioning of Delhi-Mumbai expressway, upgrade of Aligarh Kanpur (NH34) and though traffic previously coming from KM46 as these two plazas have always observed more long-distance traffic and also observe traffic that never crosses KM46 i.e., traffic that originates further north of Delhi, bypasses it using the EPE or WPE/KMP (including KM46) but then connects with the Asset at Palwal to continue on their journey's southbound or eastbound from Delhi.

3.67 The TVCs conducted by Steer in February 2026, at KM46 (Gadpuri) and KM164 (Mahuvan) toll plazas found that at the total level, TMS counts were 1.6% lower than TVC counts at KM46, and 1.0% higher than TVC counts at KM164. Although the difference between the TMS and TVC counts is slightly higher at KM164 than evaluated at KM46, the magnitude of variation may arise due to etc reconciliation as volume of traffic is quite high, allowing us to validate the TMS data with the independent TVC data collected as part of this study.

3.68 The OD analysis conducted by Steer in February 2026 found that KM46 (Gadpuri) exhibits a higher share of local trips compared to KM164 (Mahuvan) – expected given KM46's closer proximity to Delhi NCR and other nearby urban and commercial clusters relative to KM164, which is farther away and though closer to Agra, does not observe similar volumes of locally originating traffic. At both the plazas, a high share of local and IAOI trips were observed for both passenger and commercial vehicles due to the presence of urban clusters such as Agra, Mathura, Palwal, Ballabhgarh, Faridabad

3.69 An analysis of commodity distribution at Gadpuri and Mahuvan reveals that in terms of 3A/MAVs, the key commodities transported on the Asset include leather & textiles, manufactured items, fabricated metal sheets (as discussed above in 2.11), - which combined make up around 40-50% of the commodity share at both plazas, for 3A/MAVs .

3.70 When considering the internal-external analyses for MAVs at both the plazas, KM164 (Mahuvan) was found to have a greater share of External-External trips (7%) compared to

KM46 Gadpuri (0%). KM46, due to its proximity to Delhi, also observes 40% of MAV trips with both ends within an internal region. The trip length analysis supports these findings, with MAVs at KM46 having a large share (85-65%) of trips below 300km in length, while 62% of MAV trips at KM164 are more than 500km in length.

3.71 Among CJVs, LCV, and MAVs the share of inscope traffic (north to south) lying on Kherli Jita is approximately 40%, while 60% still continues to use Gadpuri toll plaza.

4 Socioeconomic context and traffic growth

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the Asset is in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions in the regions where the Asset is located and the country as a whole. These include:

1. Changes in factors such as population, economic growth (regional and national) and industrial production; and
2. Other local factors such as strategic port growth, and growth in local industries near the Assets.

4.2 In turn, the change in the competitive position of the Asset (and thus of the traffic capture it will achieve) derives from how the service offered and the prices charged on the Asset change in comparison to competing roads; and whether any new competing road facilities are available. In this chapter, we assess the socio-economic indicators relevant to traffic growth on the Asset.

Population growth

National Level

4.3 Table 4-1 below shows that the total population in India has grown at a Compound Annual Growth Rate (CAGR) of 1.5% since 2000, decreasing over the years, as shown in Table 4-1 below. The World Bank forecasts this growth to decrease to 0.6% CAGR by the 2030-45 period.

Table 4-1: CAGR of population in India

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
1970 - 1985	2.3%	1.9%	3.8%
1985 - 2000	2.0%	1.7%	2.9%
2000 - 2015	1.5%	1.0%	2.6%
2015 – 2030*	1.0%	0.3%	2.3%
2030 – 2045*	0.6%	-0.3%	1.9%

Source: World Bank Data on Health Nutrition and Population Statistics, *forecast population growth

State Level

4.4 Table 4-2 below shows the evolution of population in the states of Uttar Pradesh and Delhi (containing the Asset), compared to that of the country.

4.5 As Table 4-2 shows, the populations of both Uttar Pradesh and Delhi have grown at a faster pace compared to that of India, between FY12 and FY24. As of FY24, Uttar Pradesh holds an 8.1% share in India's population, while Delhi has a 1.5% share.

Table 4-2: Population Growth in Uttar Pradesh, Delhi and India (2012-2024)

State	2012 Population (m)	2024 Population (m)	CAGR (2012 – 2024)
Uttar Pradesh	201.5	237.0	1.4%
Delhi	17.0	21.6	2.0%
India	1,210	1,395	1.2%

Source: Ministry of Statistics and Program Implementation estimates

4.6 Due to the complexities of patterns of urbanisation, and the very dynamic nature of local population migration (which are very difficult to forecast with accuracy), we do not use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide the underlying socio-economic context of the state/trends in the regions in which the Asset is located.

Economic Indicators

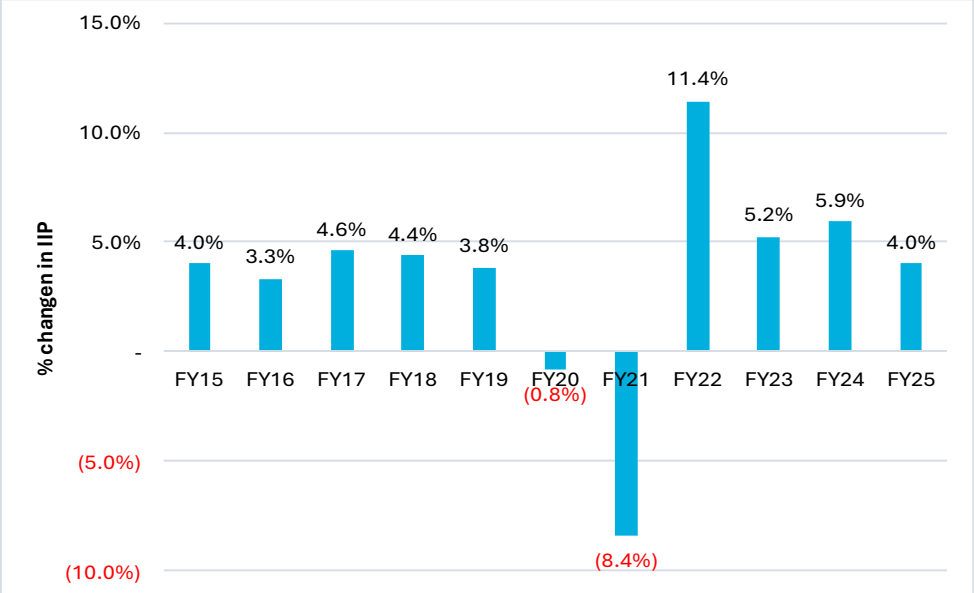
Industrial Production

4.7 The Index of Industrial Production (IIP) is a composite indicator that measures the short-term changes in the volume of production for a basket of industrial products. The IIP data tracks the manufacturing activity in different sectors of an economy, with mining, manufacturing, and electricity being the three broad sectors constituting the IIP.

4.8 Figure 4.1 shows that at an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20. In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. Post the immediate recovery in FY22, IIP growth has since stabilised, with FY25 recording 4%, and FY26YTD (till February 2026) recording 3.3% growth over FY25.

4.9 Since state-level IIP data is not as readily available as national level IIP, we have presented national IIP here to indicate nationwide activity in key industrial sectors like power, manufacturing, and mining, all of which influence long-distance commercial movements across the nation, and not unique to this asset. However, we do not use it to forecast future travel demand growth since long-term forecast for IIP is not available through official sources such as MOSPI, RBI or through multilateral organisations like WB, or the IMF.

Figure 4.1: Annual growth – Index of Industrial Production



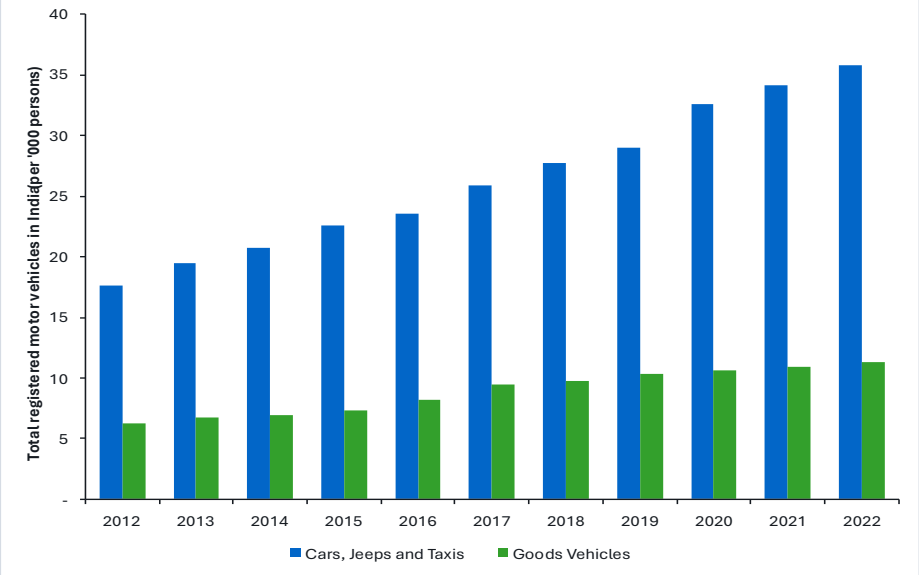
Source: Steer Analysis of MoSPI data

Vehicle ownership

4.10 The gap in car ownership between India and developed nations remains substantial – with 36 cars/jeeps/taxis and 11 commercial vehicles per thousand people, as of FY22 (the latest year for which official data is available). However, with increasing per capita income levels, a booming economy and the subsequent increase in demand for mobility, the number of registered vehicles has been on a gradual upward trend

4.11 Overall, India still stands at a very nascent stage in the vehicle saturation curve, offering huge potential for growth going forward. Between FY12 and FY22, the CAGR for CJV and goods' vehicles registered in India was 8.6% and 7.3% respectively

Figure 4.2: Car Ownership in India per 1,000 population



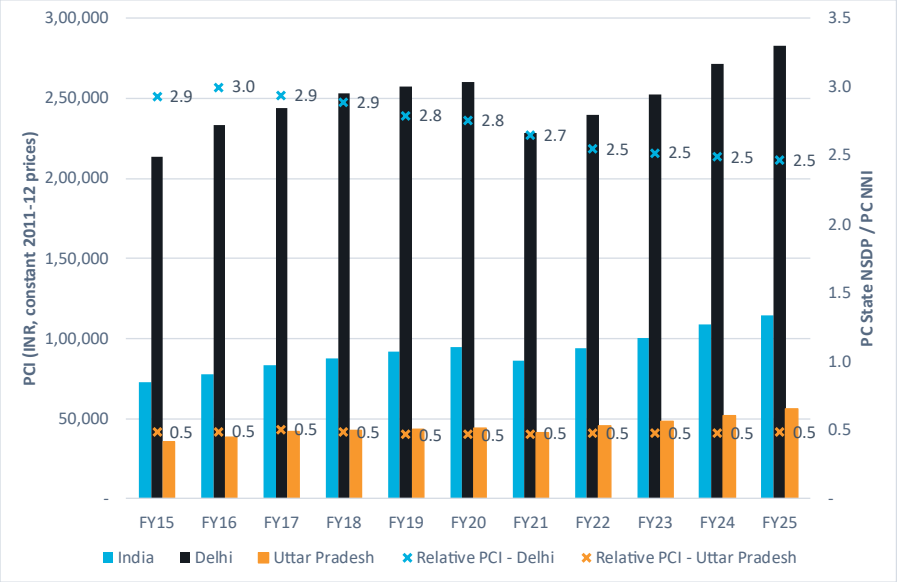
Source: International Energy Agency (IEA)

Per Capita Income (PCI)

4.12 The Asset lies in Uttar Pradesh and Delhi. As shown in Figure 4.3 below, the per capita income of Uttar Pradesh is lower as compared to that of India - it has historically been at roughly 40-50% of the national average since FY15 through present day. On the other hand, the per capita income of Delhi has consistently been higher than that of India – it was 2.5 times higher than the national average, as of FY25.

4.13 Traffic on the Asset is influenced by both Delhi and Uttar Pradesh – specifically, the western region of UP, which has grown at a faster rate than the rest of the state in recent years and is expected to continue this trajectory. The higher per capita income of Delhi and the higher growth in western UP indicates sustained economic growth in the region, driving traffic growth on the Asset over time.

Figure 4.3: Relative Per Capita Income (FY15-FY25)



Source: Steer Analysis of MoSPI data

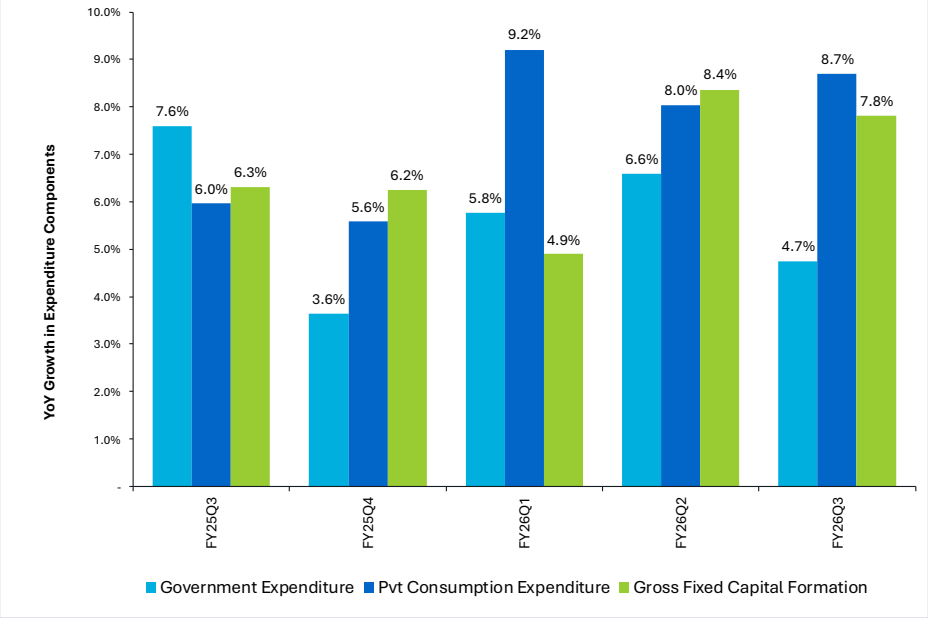
Economic Growth

India's Performance

Despite a slowdown in the economy during H1FY25, the Indian economy has observed strong growth each quarter since FY25Q2, with the latest published estimates for FY26Q3 GDP at 7.8% over FY25Q3. This performance has been driven by strong growth in investment and consumption expenditures and higher consumer optimism for the year ahead .

The figure below, we present quarterly Y-o-Y growth in three major components of GDP – government expenditures, consumption expenditures, and business investment (gross fixed capital expenditure) over the past year (FY25Q3-FY26Q3).

Figure 4.4: YoY Growth in Government, Consumption and Business Expenditures

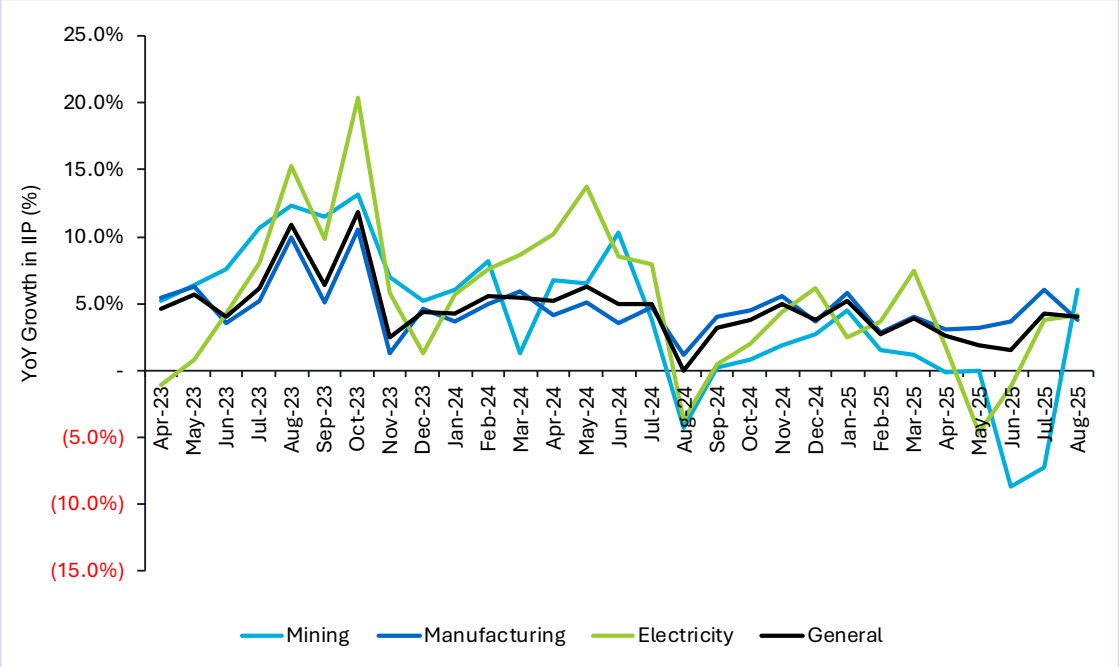


Source: Steer Analysis of MOSPI Data

While consumption and investment expenditures have continued to show consistent growth over the past two quarters, government expenditures observed a marginal decline in FY25Q4. In FY26Q1, government expenditures rebounded, recording 5.8% growth over FY25Q1 levels.

4.14 Performance across different types of industrial activities (such as Mining, Manufacturing, and Power Generation) directly impact freight movement and commercial traffic volume growth across the country, including on the Asset. In the figure below, we present growth trends in IIP – a measure that tracks the performance of the economy across these activities. As of FY26YTD (Apr'25-Feb '26), the Manufacturing sector continues to perform strongly, recording positive y-o-y growth since FY25Q3. While industrial activity across the two other sectors (i.e., Power Generation and Mining) dropped between May and Jun/Jul '25, they have since rebounded and show signs of continued growth going forward.

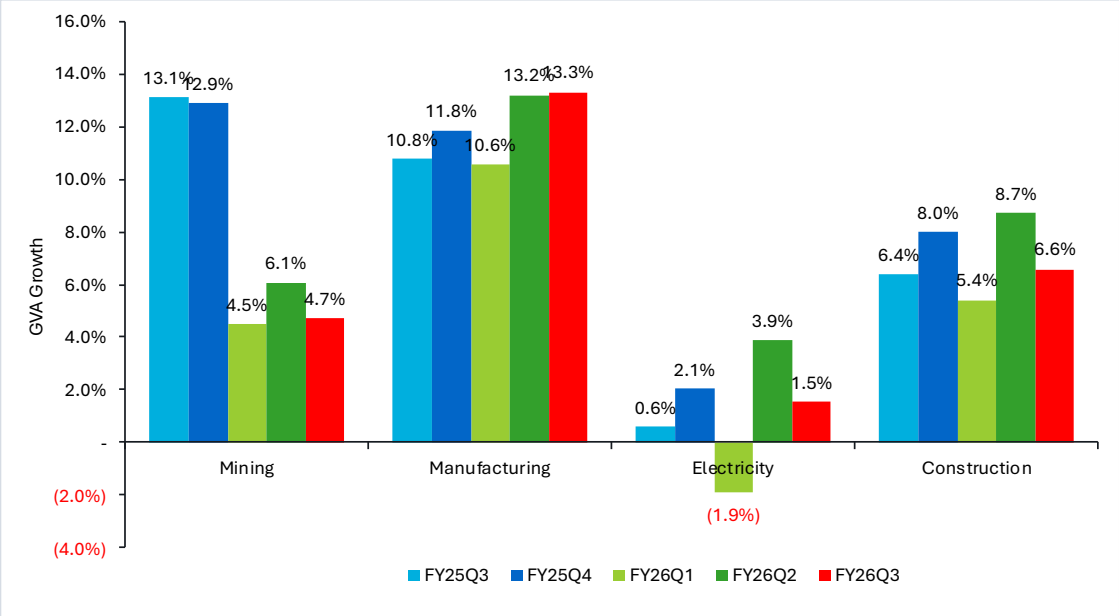
Figure 4.5: Month on Month IIP performance



Source: Steer Analysis of MOSPI Data

4.15 In addition to monthly trends in IIP, the figure below presents y-o-y growth of quarterly GVA in four industrial sectors - Mining (& Quarrying), Manufacturing, Electricity (and other Utilities), and Construction. While the Mining and Power sectors observed decline and muted growth in FY26Q1, the Manufacturing and Construction sectors experienced strong growth. While overall economic growth has remained resilient as of FY26YTD, performance across industries have varied, impacting economic growth across different regions and on the Asset as well.

Figure 4.6: Industrial components of GVA



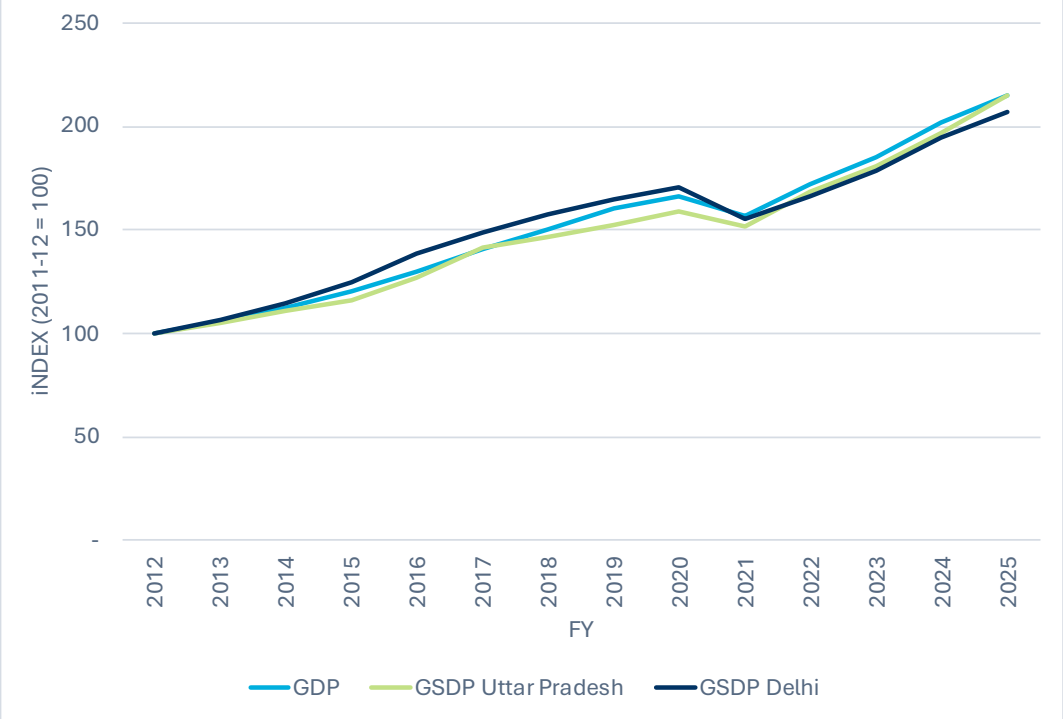
Source: Steer Analysis of MOSPI Data

GDP and GSDP Growth

4.16 Figure 4.7 below presents historical growth in Delhi and Uttar Pradesh GSDP, and the GDP of India. Between the period of FY12 and FY25, the Indian economy grew at a CAGR of 6.1% per year – aided by strong growth in the services/tertiary sector, which grew at a CAGR of 6.9%per year over the same period. UP GSDP and Delhi GSDP grew at 6.1% and 5.8% per year (respectively) between FY12 and FY25 – in step with the national economy.

4.17 As shown in Table 4-2 above, Delhi and UP respectively accounted for 1.5% and 17% of national population in FY24. In terms of national economic contribution, Delhi and Uttar Pradesh contributed approximately 4% and 8% respectively to India's GDP in FY24. Therefore, Delhi's per capita GDP contribution in FY24 far exceeded the same for UP statewide, highlighting the importance of the region in driving consumption demand and regional traffic growth near the Asset.

Figure 4.7: Evolution of Delhi's and Uttar Pradesh's state GDP and national GDP



Source: Steer Analysis of MoSPI data

Economic activity in the state

Uttar Pradesh

4.18 Uttar Pradesh is the most populous state in India with a population of ~237 million people (as of FY24). The state has a large pool of skilled, semi-skilled and unskilled labour. A shown in Figure 4.8 below, the tertiary sector has the highest sectoral contribution (49%) to the state GSVA followed by the secondary (28%) and primary (23%) sectors, as of FY25.

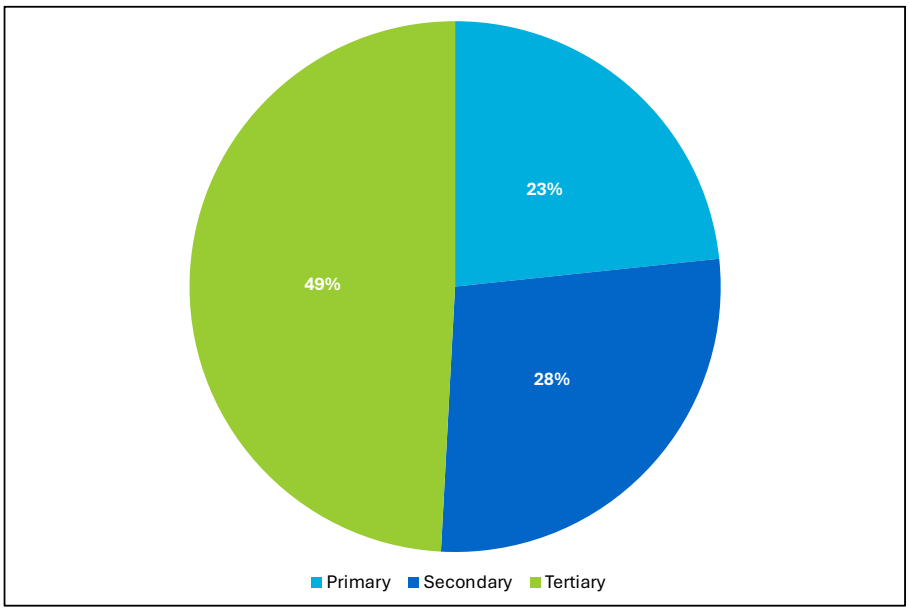
4.19 Uttar Pradesh is considered one of the primary tourist destinations in India, with key tourist attractions being Agra, Varanasi, Mathura and Prayagraj. The state recorded a

tourist footfall of 64.9 crore in 2024, a significant increase of over 17 crore compared to 2023, as per Union Ministry of Tourism[19]

4.20 In terms of secondary sector, the state has key industrial areas in Khurja (Ceramic); Moradabad (Metals); Meerut, Bareilly, Mirzapur and Lucknow (Handloom & Handicrafts); and Kanpur and Noida (Leather and tannery). The state also has an oil refinery in Mathura, operated by the Indian Oil Corporation (IOCL).

4.21 Uttar Pradesh has very fertile Gangetic land with a large share of population dependent upon agriculture for the livelihood. The state is mainly known for production of wheat, sugarcane, potato and mango. As of FY25, the state contributes approximately 13% to India's GVA in terms of the 'Agriculture, forestry and fishing' sub-sector

Figure 4.8: Sectoral contribution to Uttar Pradesh's GSDP as of FY25



Source: Steer Analysis of MoSPI data

Western UP vs UP GSDP Growth

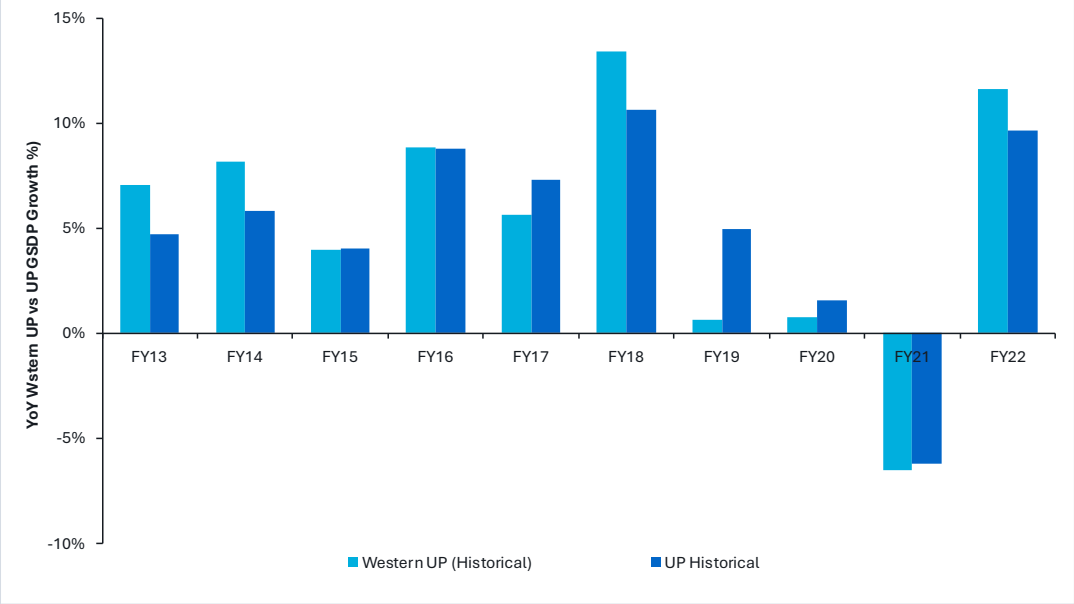
4.22 Since FY13, growth of Western UP GSDP[20] has remained relatively stable, and in line with UP statewide GSDP growth. In Figure 4.9 below, we see that between FY13 and FY22, GSDP growth in Western UP exceeded that of UP overall in 5 of the 10 years (FY13, FY14, FY18, FY21 and FY22), was consistent with UP in 2 of the 10 years (FY15 and FY16), and was below UP GSDP growth in 3 of the 10 years (FY17, FY19 and FY20). While UP statewide growth is largely influenced by Western UP, in recent years (FY21-22), Western UP GSDP has exhibited growth more sensitive than statewide trends.[21]

[19] up-sees-65-crore-tourists-in-2024-over-17-crore-more-from-2023

[20] The Western UP region consists of 30 districts, prominent among which are Ghaziabad, Gautam Budh Nagar, Agra, Meerut, Mathura and Bareilly. Historically, this collective region has been the more economically developed part of Uttar Pradesh, and as of FY22 accounted for half of the statewide total GSDP.

[21] Steer analysis of data sourced from the Directorate of Economics and Statistics, Uttar Pradesh (**UPDES website**)

Figure 4.9: Western UP vs UP GSDP Growth



Source: Directorate of Economics and Statistics, Uttar Pradesh

4.23 This can be explained due to a combination of policy- and market-driven factors which have contributed to higher growth in the Western region of the state in recent years. Some of these major developments pertaining to large-scale infrastructure investments in the region include:

- Delhi – Meerut Expressway[22]
- Ganga Expressway [23]
- Noida International Airport (Jewar Airport) [24]
- Logistics hub in Agra, by the Agra Development Authority [25]
- 'New Noida' initiative by the Uttar Pradesh government [26]

4.24 Between FY12–FY25, the GSDP of Uttar Pradesh grew at a CAGR of 6.1% per year. Over the same period, national GDP grew at 6.1%[27] per year, implying that the long-term elasticity factor of UP GSDP growth to national GDP growth is roughly 1. In this context, since Western UP has exhibited more elastic growth relative to UP state overall in recent years, and expectations of strong near-term growth in the Western UP region remain, we have assumed the near-term growth forecast for Western UP to be similarly elastic to

[22] https://timesofindia.indiatimes.com/city/meerut/gadkari-lays-foundation-of-highway-projects-worth-rs-11595-crore-in-west-up/articleshow/68086587.cms

[23] 28 Flyovers, 126 Bridges, 600km In 6 Hours: Ganga Expressway Set To Open Soon; Check Route - News18

[24] Noida's Jewar Airport, Set To Be Asia's Largest, Will Open In April 2025; PM Modi To Inaugurate | Times Now

[25] Proposal for Rs 570 crore state-of-the-art logistics hub in Agra approved - India Today

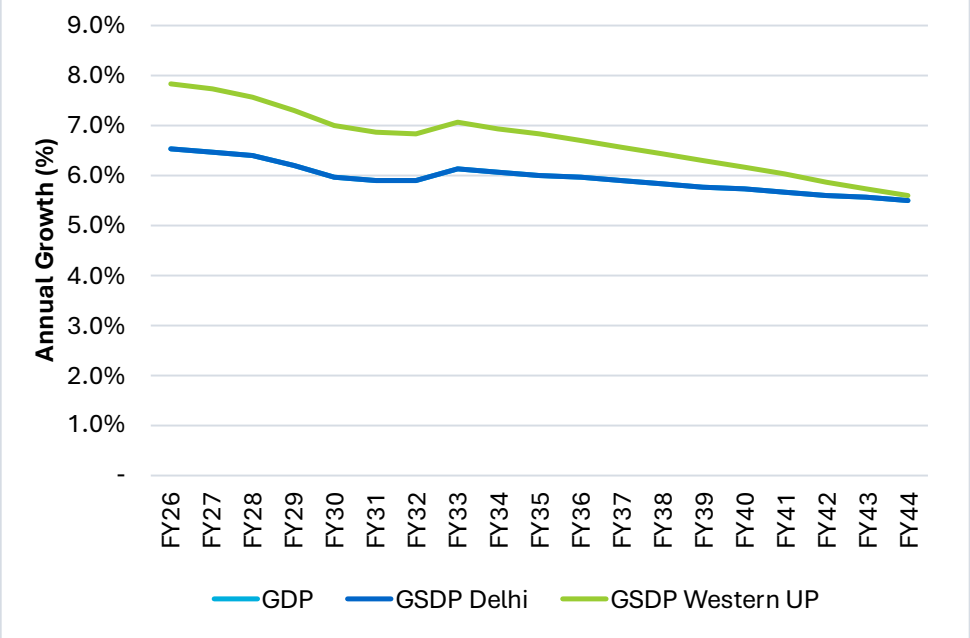
[26] New Noida: UP govt approves massive housing and infrastructure development plan | Key details | Business News – India TV

[27] Steer analysis of MoSPI data

India's GDP growth forecast (as it has been with respect to UP statewide GSDP growth in recent years).

4.25 Figure 4.10 below presents the Client-provided forecasts of national (India) GDP growth from FY26 to FY44, and our assumed GSDP forecast for Western Uttar Pradesh over the same period. In the short term, we have assumed GSDP of Western UP to grow at 1.2 times that of national GDP growth forecast, eventually tapering down to a factor of 1.00 over time as it converges to the national growth rate forecast by FY44.

Figure 4.10: GSDP Western UP vs GDP India Forecast



Source: Steer Analysis

Delhi

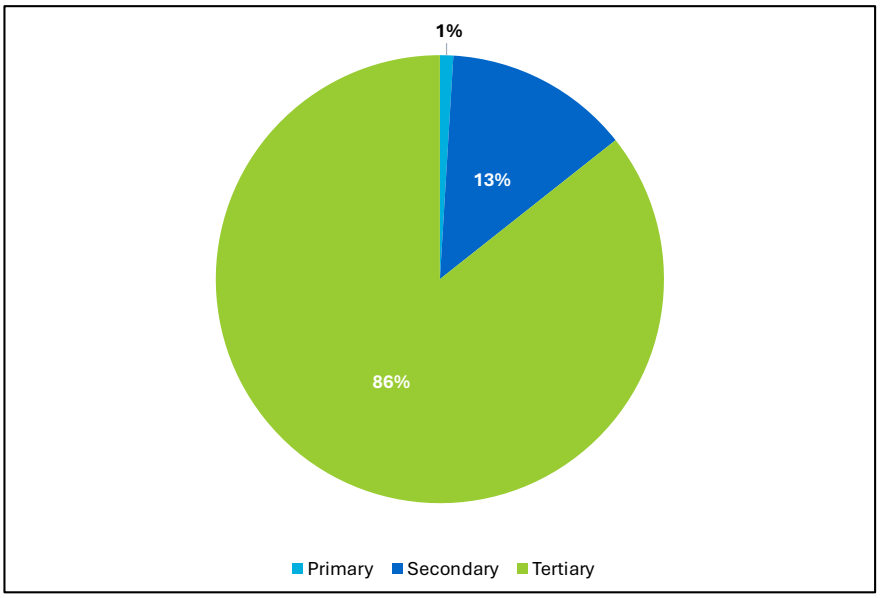
4.26 Delhi, the capital city of India, is one of the largest metropolises in the country. In terms of the GSVA composition of Delhi, as shown in Figure 4.11, the tertiary sector has the highest share (86%) followed by the secondary sector (13%) as of FY25.

4.27 The biggest contributors to the tertiary sector in Delhi are tourism, trade, financial services and real estate. Owing to its location, connectivity and rich cultural history, Delhi has always been a prime tourist attraction of the country with key tourist places being India Gate, Lotus Temple, Humayun's Tomb and Akshardham. The Indira Gandhi International Airport of Delhi serves both domestic and international passengers and as of 2024, it was the tenth-busiest airport in the world[28], catering to approximately 72.2 million passengers.

4.28 In terms of secondary sector, the region has key industrial clusters at Narela, Naraina, Okhla and Mayapuri. The primary/agricultural sector accounts for a small share of Delhi's GSVA.

[28] **Delhi's IGI airport is the 10th busiest airport in the world: Report | World News - The Indian Express**

Figure 4.11: Sectoral contribution to Delhi's GSDP in FY25



Source: Steer Analysis of MoSPI data

Forecasts for growth drivers

4.29 Following the discussion in Chapter 4 on the nature of economic activity in the state of Western Uttar Pradesh and in Delhi, in this section, we describe the assumptions in relation to forecasts of the key macro-economic drivers of traffic growth on the Asset.

4.30 We have based our forecasts of the GSDPs for Western Uttar Pradesh and Delhi based on the forecasts of the GDP of India as provided by the client.

National GDP

4.31 After the last period of economic slowdown in FY11-12, the country experienced an economic downturn again in late FY19 with FY20 having reported a GDP growth of 4% (relative to an average growth rate of 7% per year between FY13 and FY19). India's GDP growth declined as domestic investment and consumption demand were already under stress because of the liquidity crunch before Covid-19. Other factors that contributed to the economic slowdown included reduced growth rates in automobile sales and production, liquidity crunch in credit markets and rising number of Non-Performing Assets (NPAs) within the banking sector, as well as lower manufacturing production and lower rural consumption[29].

4.32 The Covid-19 outbreak had a significant impact on the Indian economy during the first two quarters of FY21 as government mandated lockdowns across the country effectively stalled economic activity and growth. The growth momentum eventually picked up in Q3 of FY21, with a sharp rebound in the economy in FY22 (GDP recorded 9.7% growth over FY21) and has since observed a consistent growth of 7.6% in FY23 and 9.2% in FY24, before showing signs of slowdown again in FY25 due to several domestic and external

[29] Data | India's GDP was on a downward slope even before COVID-19 wreaked havoc - The Hindu (September 2020)

factors. Since H2FY25, the economy has shown strong growth, driven by improved consumer optimism, and growing consumption and investment demand.

4.33 Figure 4.12 below shows the Client-provided GDP projections for India. The forecast projects the GDP of India to grow at an average of 6.3% between FY26-FY30 and 5.8% between FY31-FY44, gradually tapering down to 5.2% by FY50. The GDP growth forecast is broadly in line with other independent forecasts available from reliable sources such as IMF, World Bank and RBI[30] in the medium term.

4.34 We assume the GSDP growth of Delhi to be in line with India's GDP growth throughout the concession period. For our forecast of the GSDP growth of Uttar Pradesh, we have considered the growth expectations for the western region of UP – as opposed to UP state-wide, due to the location of the Asset in the western region of UP. Additionally, we have assumed the GSDP growth of western UP to higher than that of the GDP of India going forward, across the concession period.

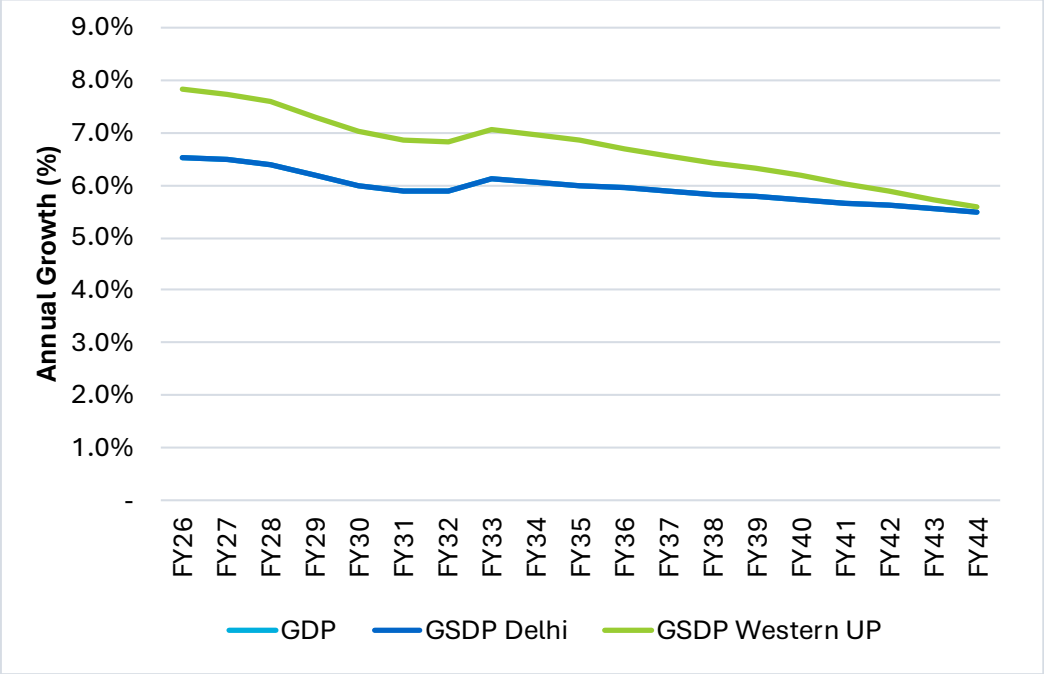
4.35 In particular, we expect it to grow at 1.2 times the GDP of India in the short-term, tapering down to be in line with national GDP growth by FY44. This assumption is based on the recent performance of the GSDP of western UP relative to statewide GSDP growth (as discussed in detail in 4.22 above), as well as expectations of continued investment and economic growth in the region owing to a variety of factors

4.36 There are significant investments expected to take place as part of the Delhi and Uttar Pradesh state/regional government plans over the near to medium term (as described in 4.23 above). Given its leading position in industrial investments, western UP is expected to benefit significantly from these future investment plans. In this context, we believe it is reasonable to assume that Western UP will observe more robust economic growth over the near and medium term relative to UP state overall, and by extension, relative to national GDP growth as well.

4.37 Figure 4.12 below shows the assumed growth forecasts for Western UP and Delhi GSDP, and the GDP of India.

[30] **Survey of Professional Forecasters on Macroeconomic Indicators – Results of the 96th Round (Oct 2025)**

Figure 4.12: GDP-GSDP forecast



Source: GDP forecast provided by Client, GSDP analysis by Steer based on historical GDP and GSDP relationships

5 FY26 Base year AADT and Traffic growth analysis

Introduction

5.1 In this chapter, we present our approach, assumptions, and results for baseline (or background) traffic growth for each vehicle category on the Asset. Traffic growth is commonly related to a variety of macro-economic and industry- or commodity-specific factors (hereafter referred to as 'traffic growth drivers'). These growth drivers are typically identified from the results of the OD data analysis and the site visits that help us appreciate the nature of traffic movement – 'what' travels 'where' and 'why'.

5.2 In the absence of long-term historical data on KM46 (Gadpuri) and KM94 (Karman) toll plazas, the option of running statistical models to estimate background growth relationships was not possible for these two plazas, and therefore we have undertaken a detailed benchmarking exercise, coupled with trip length and OD analysis to estimate the traffic growth elasticities for these two plazas. While regression analysis was conducted for KM164 (Mahuvan), the final growth elasticities used to forecast traffic growth at the plazas were also based on benchmarking analysis from other comparable assets and studies conducted by Steer. The estimated elasticities helped inform our final assumptions for use in the forecasting models. These are discussed in detail below.

5.3 Typically, passenger and light commercial vehicle traffic like cars, buses, LCVs and 2-axle trucks grow in line with the GSDP of the state in which the toll road is located. Heavy vehicle traffic like 3-axle trucks and MAVs grow in line with the national GDP. This is because the majority of light vehicles tend to travel shorter distances within the state, whereas a significant proportion of heavy vehicles carry commodities for long-distances across the country. These commodities also tend to be part of industry ecosystems whose demand-supply relationships are scattered across the country and therefore relate more with GDP growth.

FY26 Base year AADT estimates

5.4 The base year is the year on which long-term background forecast growth rates are applied to derive year-wise average annual daily traffic (AADT) estimates for the forecast years. This is therefore an important aspect of our forecasting approach as traffic and ultimately revenue forecasts for future years are built on top of the base year traffic estimate. We have used FY26 as the base year for AADT estimates for the forecast years.

5.5 As described previously in Chapter 3, to establish the base year (FY26) traffic position, we utilised information from various sources – including from the Client and our contextual knowledge, to assess demand on the corridor.

Methodology

5.6 The base traffic for FY26 has been estimated using 11 months of actual traffic data (April to February). Each toll plaza's seasonality correction factors were applied on the actual MADTs of Apr-25 to Feb-26 to obtain seasonally corrected estimates for FY26 traffic. An average of these estimates was considered to be the FY26 base traffic.

Seasonality Correction factors

5.7 Traffic on any Asset varies on a month-on-month level. Such variations maybe due to monsoons (typically Jul to Sept) or due to festivals in the region. For e.g. It is observed that typically the truck traffic during the first half of the financial year (April-September) is generally lower than the annual average, mainly because of peak summer season followed by monsoons affecting the freight movement patterns in large parts of the country in the July-September period. In addition to these there may be other seasonal variations specific to the Asset.

5.8 In order to normalise for these variations across the year to provide an AADT estimate, Seasonality Correction Factors (SCF) are used. SCFs are estimated to convert the monthly traffic numbers to an AADT level while accounting for seasonal variation due to local/national festivals, weather changes and/or temporary external impacts. These are typically estimated using historical data for each plaza and vehicle category over multiple years. An SCF >1 means that the traffic for the month is lower than the annual average and vice-versa.

5.9 Therefore, we studied the monthly seasonality of traffic on the Asset by analysing the seasonality trends between monthly average daily traffic (MADT) and AADT for data during the historical years of tolling (excluding years impacted by non-normal events e.g. FY21 COVID). The averaged seasonality trend is then applied to the monthly traffic to obtain our FY26 Base AADT.

5.10 Table 5-1 through Table 5-3 below present the SCFs used for the estimation of the FY26 base year AADT at KM46 (Gadpuri), KM94 (Karman) and KM164 (Mahuvan) toll plazas.

Table 5-1: Seasonality correction factors for KM46 Gadpuri

Vehicle Type	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.01	1.00	1.01	1.11	1.10	1.05	1.07	0.95	0.94	0.98	0.89	0.92
LCV	1.04	0.97	1.05	1.05	0.88	0.93	0.92	0.94	1.08	1.11	1.04	1.05
Bus	1.07	1.06	1.03	1.05	1.06	0.97	0.99	0.99	0.99	1.03	0.94	0.87
2A	0.94	0.99	1.03	1.06	1.08	0.98	0.95	1.01	1.02	1.08	0.90	0.99
3A/MAV	0.89	0.95	1.02	1.04	0.97	0.95	0.94	1.10	1.05	1.11	0.99	1.03

Source: Steer analysis of Client historical TMS data

Table 5-2: Seasonality correction factors for KM94 Karman

Vehicle Type	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	0.97	0.99	0.92	1.14	1.13	1.06	1.13	0.90	0.93	1.09	0.96	0.87
LCV	1.01	1.05	1.10	1.10	1.11	0.97	0.92	1.00	0.96	1.00	0.90	0.93

Bus	0.98	1.04	1.03	1.05	1.07	0.98	0.97	0.96	1.00	1.11	0.96	0.88
2A	1.04	1.03	1.07	1.09	1.08	0.96	0.89	1.01	0.98	1.02	0.93	0.94
3A/MAV	0.99	1.02	1.07	1.08	1.07	0.99	0.90	0.96	0.95	1.03	0.97	0.99

Source: Steer analysis of Client historical TMS data

Table 5-3: Seasonality correction factors for KM164 Mahuvan

Vehicle Type	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.04	1.01	0.93	1.11	1.07	1.10	1.13	0.89	0.91	1.06	0.94	0.90
LCV	1.05	1.05	1.06	1.09	1.09	0.99	0.91	1.00	0.94	1.01	0.91	0.95
Bus	1.00	1.02	1.01	1.03	1.04	0.99	1.01	0.95	0.98	1.14	0.97	0.89
2A	1.03	1.04	1.06	1.09	1.08	0.97	0.89	1.01	0.98	1.02	0.93	0.95
3A/MAV	1.00	1.00	1.04	1.09	1.09	1.02	0.94	0.98	0.94	1.03	0.94	0.96

Source: Steer analysis of Client historical TMS data

Adopted base estimates

5.11 Based on the above methodology and inputs, the adopted FY26 base for the three toll plazas on the Asset are presented in Table 5-4 through Table 5-6 below:

Table 5-4: Adopted base estimates: KM46 Gadpuri

Category	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	34,852	37,326	37,599	**7.9%**
LCV	1,636	1,665	1,668	**1.9%**
Bus	1,074	1,166	1,184	**10.3%**
2A	1,740	1,650	1,654	**(5.0%)**
3A/MAV	2,335	2,196	2,197	**(5.9%)**
OSV	1	1	0	-
Total	**41,638**	**44,004**	**44,302**	**6.4%**
PCU[1]	**54,441**	**56,448**	**56,789**	**4.3%**

Source: Steer analysis. FY26YTD includes 11 months of FY26 (Apr-Feb '26); 1 PCU totals above consider PCU factor of ~3.60 for 3A/MAV combined traffic.

Table 5-5: Adopted base estimates: KM94 Karman

Vehicle Type	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	22,117	24,230	24,635	**11.4%**
LCV	1,476	1,548	1,562	**5.9%**
Bus	894	950	963	**7.7%**
2A	3,634	3,842	3,869	**6.5%**
3A/MAV	5,790	5,742	5,745	**(0.8%)**
OSV	3	3	4	-
Total	**33,914**	**36,314**	**36,778**	**8.4%**
PCU[1]	**58,535**	**61,378**	**61,937**	**5.8%**

Source: Steer analysis. FY26YTD includes 11 months of FY26 (Apr-Feb '26), FY26A is adopted base for FY26; 1 PCU totals above consider PCU factor of ~3.60 for 3A/MAV combined traffic.

Table 5-6: Adopted base estimates: KM164 Mahuvan

Vehicle Type	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	15,281	16,817	17,035	**11.5%**
LCV	1,485	1,545	1,556	**4.8%**
Bus	1,032	1,112	1,126	**9.1%**
2A	3,807	3,995	4,022	**5.6%**
3A/MAV	6,483	6,434	6,460	**(0.4%)**
OSV	3	3	0	**-**
Total	**28,091**	**29,907**	**30,200**	**7.5%**
PCU[1]	**55,113**	**57,372**	**57,807**	**4.9%**

Source: Steer analysis. FY26YTD includes 11 months of FY26 (Apr- Feb '26); 1 PCU totals above consider PCU factor of ~3.60 for 3A/MAV combined traffic.

5.12 Except for 3A/MAV, all other vehicle categories have exhibited strong growth in FY26YTD over FY25. 3A/MAV volumes across the NH44 corridor continue to be impacted by the access provided by the DME (primarily) in addition to other network changes that have and continue to divert traffic away from the Asset -most significantly at km46 (Gadpuri). Our base estimates for FY26 reflect the assumption that traffic performance for the remainder of the year will broadly continue the trend observed through FY26YTD i.e., Apr-Feb '26. At a PCU level, KM46 is estimated to grow at 4.3%, while KM94 and KM164 are estimated to grow at 5.8% and 4.9% (respectively) over FY25. PCU growth across the Asset is primarily driven by the CJV category, which carries the highest weighting among all vehicle classes. Additionally, 2-Axle vehicles have recorded strong growth at Karman and Mahuvan toll plazas, reflecting a gradual adoption of containerised 2-axle trucks for ecommerce traffic and other high value low volume cargo.

5.13 The lower growth at KM46 Gadpuri stems from the shift of short-distance traffic (between Faridabad/Delhi and southwestern Haryana and Rajasthan) to 148NA which earlier used to appear at KM46. The Faridabad bypass (148NA) connecting to DME and KMP has continued to impact commercial traffic growth on the Asset with both 2A and 3A/MAV volumes observing declines on KM46 due to the direct access to the DME. Given the more long-distance nature of commercial volumes on KM94 and KM164, 2A trucks on both the plazas recorded strong growth as of FY26YTD. 3A/MAV volumes however showed some decline across both the plazas. Our FY26A Base AADT estimates incorporate these differences in growth trends across the three plazas.

5.14 CJV traffic is projected to grow by approximately 7.9%, 11.4%, and 11.6% at Gadpuri, Karman, and Mahuvan toll plazas, respectively, between FY25 and FY26A at the Asset level. This growth is primarily driven by expanding urban clusters such as Delhi NCR, Agra, Mathura, and Faridabad. These regions are expected to witness increasing urban density and sustained economic growth, with travel demand related to employment, education, and medical purposes continuing to support traffic growth across the Asset.

5.15 A common trend observed across the Asset is the flatlining of 3A/MAV growth in FY26A:

- **Preference shift from 3As to 2A's, MAVs**: As discussed in detail in Section 3.13, the 3A performance over the last three years has been muted. While this Asset does not report 3A trucks separately, evidence from other Assets in the region (based on Steer studies) suggest that 3As have either declined or shown little y-o-y growth since FY22.

- **Shift of medium distance movements to Delhi Mumbai Expressway**: While the full impact of the DME has not yet materialised on KM164 and KM94, a share of short/medium distance movement till Jaipur, Indore have seen a diversion towards the expressway.
- **Shift of Kanpur bound movement to Ghaziabad/Palwal – Aligarh – Kanpur**: Recent upgradation of the Ghaziabad-Aligarh-Kanpur sections have improved the overall LoS of the alternate route for traffic bound to/originating in Kanpur/Lucknow and beyond. This share of traffic earlier used to appear on the Asset but has now started to prefer the alternate route.

Estimation of background elasticities

5.16 Traffic growth elasticities measure the relationship between traffic growth on the Asset and growth in the underlying macroeconomic and regional economic drivers that influence traffic growth on the Asset. Multiplied with forecasts of growth drivers like GDP or GSDP, they provide forecasts of background traffic growth rates.

5.17 The Asset observes CJVs making shorter trips across all the three toll plazas, whereas the commercial traffic trends vis a vis the trip lengths differ from plaza to plaza. These differences can be attributed to the changing proximity of each of the toll plazas to urban centres in the region. These observations have been validated by the results of the OD analysis as well, which show a greater percentage of I-I trips for passenger vehicles, and a growing share of E-E trips for commercial vehicles as we move from KM46 (nearest to Delhi NCR) down to KM164 (nearest to Agra).

5.18 As a result, growth drivers for each vehicle category were selected based on these traffic profiles and trip patterns observed across all three toll plazas (from the OD survey analysis of the two toll plazas from February 2026 and from prior OD surveys conducted on KM94 in prior studies). Table 5-7 below presents the growth drivers identified to model the forecast background traffic growth rates for each vehicle category at all three plazas.

Table 5-7: Identified growth drivers to model traffic growth

Vehicle type	GDP India	GSDP Western Uttar Pradesh	GSDP Delhi
Car		25% - KM46 Gadpuri 50% - KM74 Karman and KM164 Mahuvan	75% - KM46 Gadpuri 50% - KM74 Karman and KM164 Mahuvan
LCV		50%	50%
Bus		50%	50%
2A	100%		
3A	100%		
MAV	100%		

Source: Steer analysis of Client data

5.19 The recent historical period of tolling is chequered with variations in traffic growth between years for certain vehicle types. As discussed in detail in Chapter 2 and 3, the Asset has seen several network and regulatory related impacts affecting traffic growth over the years, such as:

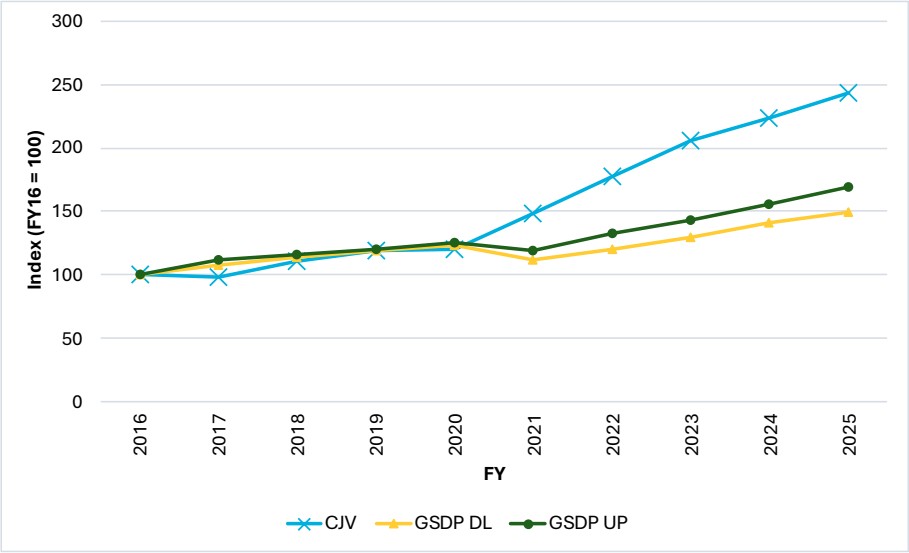
- The splitting of the KM74 toll plaza in FY23 resulted in a change in traffic profiles observed at the two new plazas (relative to the prior plaza). Traffic profiles and trip patterns observed at KM164 have remained more stable since it was not affected by the splitting KM74 in FY23.
- Due to the partial commissioning of Delhi-Mumbai Expressway (DME), we have seen further variations in traffic as different sections of it have gotten operational.

5.20 In our regression analysis for KM164, we have used combined traffic for specific toll/vehicle categories as data for historical years were available only in combined form for those categories (e.g., 3A/MAV), or to estimate more stable models as mandatory FASTag implementation since FY22 resulted in large variations in certain vehicle categories (traffic volumes were redistributed into different vehicle types e.g. Bus/2A).

CJV

5.21 We see from the OD data that the CJVs primarily cater to regional movements between NCR, Faridabad, Mathura/Vrindavan, Agra and other towns lying on the Asset. Apart from the local and IAOI influence seen from towns and cities in Uttar Pradesh, we also observed a considerable influence from Central NCR and Faridabad. We have therefore taken a 50:50 combined GSDP growth of Western UP and Delhi to be the growth driver to model the growth of CJV traffic. Historically, the CJV traffic at Mahuvan toll plaza observed a healthy CAGR of 10% per year between FY16 and FY25, while the GSDP of Delhi and Uttar Pradesh grew by 5% and 6% (respectively) over the same period. Figure 5.1 below shows the relationship between indexed values of CJV traffic at KM164 (Mahuvan) and Western UP/Delhi GSDP.

Figure 5.1: Relationship between CJV traffic and Uttar Pradesh/Delhi GSDP (KM164 Mahuvan)



Source: Steer analysis of Client TMS data and publicly available GSDP data

5.22 Considering the robust growth in CJV traffic observed over the operational historical period with trips largely seen between urban areas in and around the Asset, we have assumed a forecast background elasticity of 1.20 at KM94 (Karman) and KM164 (Mahuvan), with respect to the GSDPs of Delhi and Western Uttar Pradesh. This elasticity is tapered down to 1.10 by FY35 at both KM94 and KM164. At KM46 (Gadpuri), we have assigned an elasticity of 1.10 which dampens to 1.0 by FY35. This is in line with

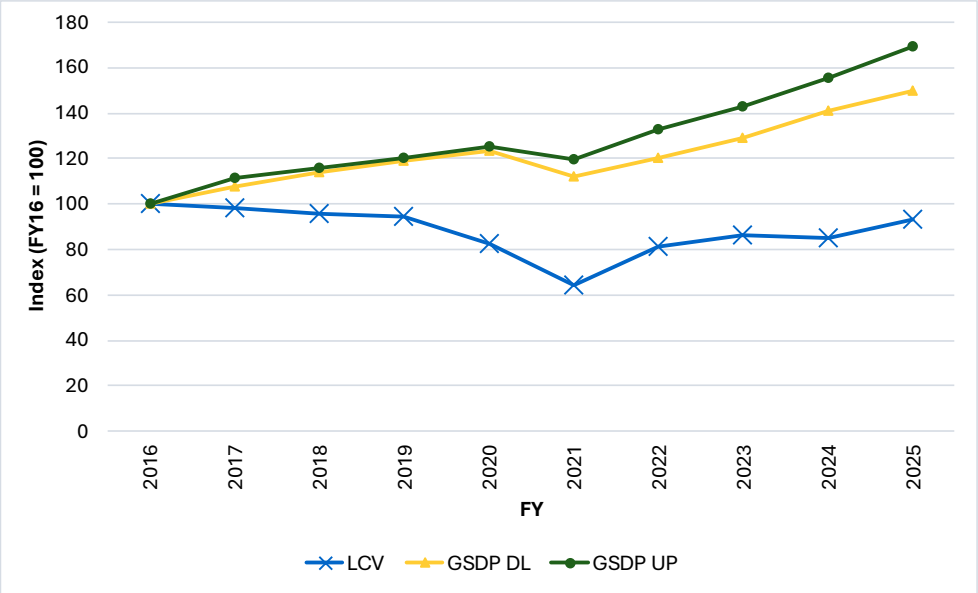
benchmarks we have observed at other toll roads across the country, which have a considerable concentration of inter-urban areas along their alignment.

LCV, Bus and 2A

LCV

5.23 As noted in the OD analysis above, LCVs have more regional movements within the state - UP and Delhi in the case of the Asset- than heavier vehicles like 3As and MAVs. As a result, we used Western UP/Delhi GSDP growth as the growth driver to predict LCV traffic growth going forward. However, after FY20, the axle load regulations switched in favour of 2A to carry higher tonnage which has influenced the LCV volumes observed on the Asset. As a result, we see a downward trend in LCV relative to GSDP. Figure 5.2 below depicts the link between indexed values of LCV traffic observed at KM164 (Mahuvan) and Western UP/Delhi GSDP.

Figure 5.2: Relationship between LCV traffic and Uttar Pradesh/Delhi GSDP (KM164 Mahuvan)



Source: Steer analysis of Client TMS data and publicly available GSDP data

5.24 Based on the above observations and our experience across other toll roads in the country, we conclude that LCV will continue to grow at a modest elasticity of 0.30 to Western UP/Delhi GSDP growth. This is consistent across all three toll plazas on the Asset.

Bus & 2A

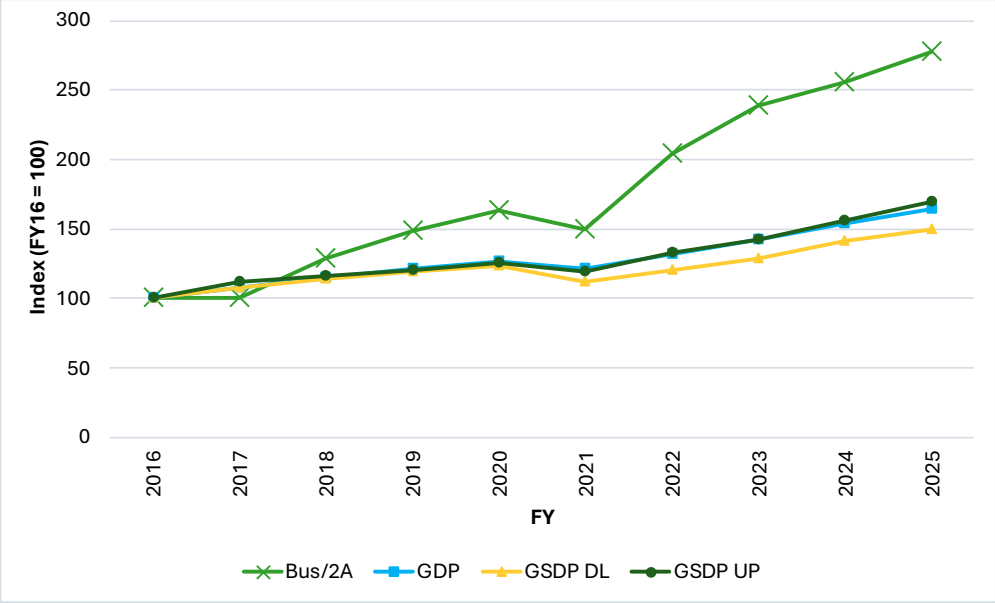
5.25 Bus growth tends to be largely supply-driven in many parts of the country, with new buses being bought and deployed by the government at different intervals of time. Based on our experience across the country, buses on inter-urban corridors show moderate elasticities of 0.4 to 0.6 with respect to the regional/state GSDP in which the asset is located.

5.26 The Bus/2A category at KM164 (Mahuvan) has recorded steady growth since FY18, with combined Bus/2A volumes registering a CAGR of approximately 12% between FY18 and FY25. In the post-COVID period, Bus+2A volumes have grown at a CAGR of around 8% per annum between FY23 and FY25 at this toll plaza.

5.27 However, analysis of historical trends and benchmarking against assets with characteristics comparable to DATL indicates that this growth has been driven largely by the 2-Axle (2A) segment, while Bus volumes have exhibited a comparatively muted growth profile over the same period. Accordingly, we have assumed a relatively conservative elasticity of 0.50 for Buses (with respect to Western UP/Delhi GSDP) at the Karman and Mahuvan toll plazas, and a slightly higher elasticity of 0.60 at Gadpuri.

5.28 For the 2A category, a higher elasticity of 0.90 has been assumed across Karman and Mahuvan toll plazas, reflecting stronger underlying growth fundamentals. However, at Gadpuri toll plaza, we have adopted a more conservative elasticity, assuming a lower initial elasticity of 0.70, tapering gradually to 0.65 by FY35. This reflects the relatively weaker growth outlook for 2As at Gadpuri, driven by the opening of NH-148NA and the continued diversion of traffic towards the Delhi-Mumbai Expressway.

Figure 5.3: Relationship between Bus/2A traffic with GSDP Delhi, GSDP UP and GDP (KM164 Mahuvan)



Source: Steer analysis of Client TMS data and publicly available GSDP data

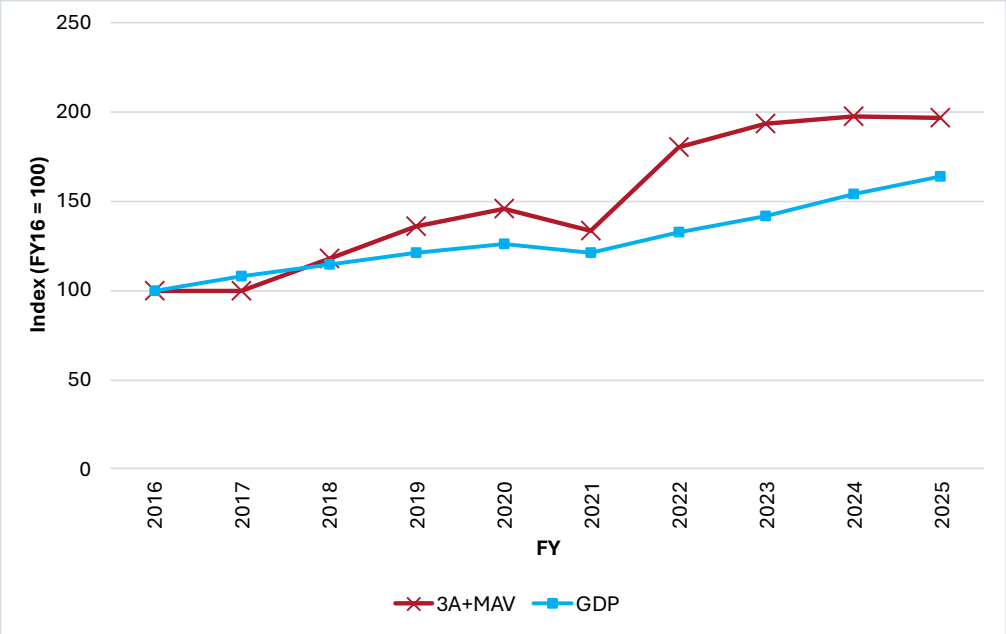
3A/MAV Trucks

5.29 Compared to lighter trucks like LCVs and 2As, 3As and MAVs have more national or long-distance movements covering several states. Given that manufacturing-related commodities tend to take prominence in their commodity distribution, growth in 3A and MAV traffic is dependent on industry demand-supply ecosystems spread across the country. Thus, we have taken GDP as the growth driver to model the traffic growth in 3A and MAVs on the Asset. Figure 5.4 below shows the relationship between indexed values of 3A+MAV traffic at KM164 (Mahuvan) and national GDP over the period FY16-25.

5.30 Historically, 3A+MAV combined traffic has observed robust growth from FY18 onwards. From FY18 to FY25, the combined traffic grew at an 8% CAGR on Mahuvan TP. This growth has been observed due to network-related improvements and continued economic growth in the region within the vicinity of the Asset e.g., Delhi NCR. Over the same period, national GDP grew at a CAGR of 5% per year while UP GSDP grew at a CAGR of 6% per year. Thus 3A/MAV growth at KM164 appears to have shown stronger growth relative to

the growth observed in both the state GSDP and India GDP, highlighting the importance of this corridor in facilitating long-distance commercial movements across the country.

Figure 5.4: Relationship between 3A+MAV combined traffic and India's GDP (KM164 Mahuvan)



Source: Steer analysis of Client TMS data and publicly available GDP

5.31 Based on the results of the regression analysis for KM164 (Mahuvan), insights from the OD analyses presented in Chapter 3 - particularly relating to trip length patterns and commodity distributions - and the Asset's historical growth performance relative to comparable corridors, we have adopted conservative elasticity assumptions for the 3A category. Specifically, an elasticity of 0.20 (with respect to national GDP) has been assumed for 3As at the Karman and Mahuvan toll plazas, while a lower elasticity of 0.10 has been applied at Gadpuri.

5.32 The lower elasticity assumed for 3As at Gadpuri reflects the sustained negative growth observed at this plaza for the category, driven by significant network developments, including the opening of NH-148NA and the operationalisation of the Delhi–Mumbai Expressway, which have continued to divert freight traffic away from the corridor.

5.33 For MAVs, an elasticity of 1.10 has been assumed at KM94 (Karman) and KM164 (Mahuvan), reflecting stronger underlying demand and longer-haul freight characteristics at these locations. In contrast, a lower elasticity of 0.90 has been assumed at KM46 (Gadpuri), consistent with the continued diversion relative underperformance of the 3A/MAV category at this toll plaza.

Forecasts for background elasticities

5.34 Table 5-8 below presents a summary of the results of the regression analysis carried out on the historical toll plaza data for KM164 (Mahuvan) and the various macroeconomic (GDP/GDSP) drivers assumed to influence traffic growth on the Asset, along with the assumed forecast elasticities we used to forecast background traffic growth on the Asset.

5.35 The forecast elasticities are projected to remain constant over the majority of the concession period, with gradual tapering down over the long-term for specific plaza-vehicle category combinations. This assumption is grounded in historical trends and a long-term perspective on regional and national growth, suggesting market maturity is still several years away.

5.36 The 6-lane configuration on NH corridors is designed to handle up to 120,000 PCUs. Once the Asset exceeds its 6-lane designed capacity, we anticipate that the year-over-year growth of the Asset will be constrained due to growing congestion and declining Level of Service (LoS).

5.37 From our projections, the Asset is expected to reach its design capacity of 120,000 daily PCUs in FY41 (average across all three plazas). As the traffic levels on the Asset get closer to this level, the increasing congestion and deterioration in the level of service (LoS) results in a slowdown of growth as the prospective users look for alternative routes and a proportion of them shift towards the alternatives.. Our elasticity recommendations are presented in Table 5-8 below.

Table 5-8: Derived elasticities from regression analysis and assumed forecast elasticities

Vehicle Type	Growth Driver	History		Forecast	
		Derived elasticity	Period considered	Assumed forecast elasticity	Evolution of elasticity
KM164 Mahuvan					
Car	GSDP Western Uttar Pradesh/Delhi	1.27	FY16-FY24	1.20	Decreasing to 1.1 by FY35
LCV	GSDP Western Uttar Pradesh/Delhi	N/A	FY16-FY24	0.30	No change
(Bus + 2A)*	GSDP Western Uttar Pradesh/Delhi	2.13	FY16-FY24	0.50	No Change
2A	GDP			1.00	Decreasing to 0.90 by FY35
(3A + MAV)*	GDP	1.13	FY16-FY25	0.20	No change
				1.10	Decreasing to 1.00 by FY35
KM46 Gadpuri					
Car	GSDP Western Uttar Pradesh/Delhi	-	-	1.10	Decreasing to 1.0 by FY35
LCV*	GSDP Western Uttar Pradesh/Delhi	-	-	0.30	No change
Bus	GSDP Western Uttar Pradesh/Delhi	-	-	0.60	No Change

Vehicle Type	Growth Driver	History		Forecast	
		Derived elasticity	Period considered	Assumed forecast elasticity	Evolution of elasticity
2A*	GDP	-	-	0.70	Decreasing to 0.65 by FY35
3A	GDP	-	-	0.10	No change
MAV	GDP	-	-	0.90	No Change
KM94 Karman					
Car	GSDP Western Uttar Pradesh/Delhi	-	-	1.20	Decreasing to 1.1 by FY35
LCV*	GSDP Western Uttar Pradesh/Delhi	-	-	0.30	No change
Bus	GSDP Western Uttar Pradesh/Delhi	-	-	0.50	No Change
2A*	GDP	-	-	1.00	Decreasing to 0.90 by FY35
3A	GDP	-	-	0.20	No change
MAV	GDP	-	-	1.10	Decreasing to 1.00 by FY35

Source: Steer analysis; *regressions were run on Bus+2A and 3A+MAV aggregated volumes and elasticities estimated reflect the relationship of growth in the aggregated volumes w.r.t the underlying driver. However, our forecast models assume separate elasticities for each of the vehicle categories w.r.t to the underlying driver variables; Bus + 2A model was run on Western UP/Delhi GSDP variable rather than India GDP, but forecasts assume that 2A traffic is driven by GDP growth

6 Forecast: Network overlays and forecasts

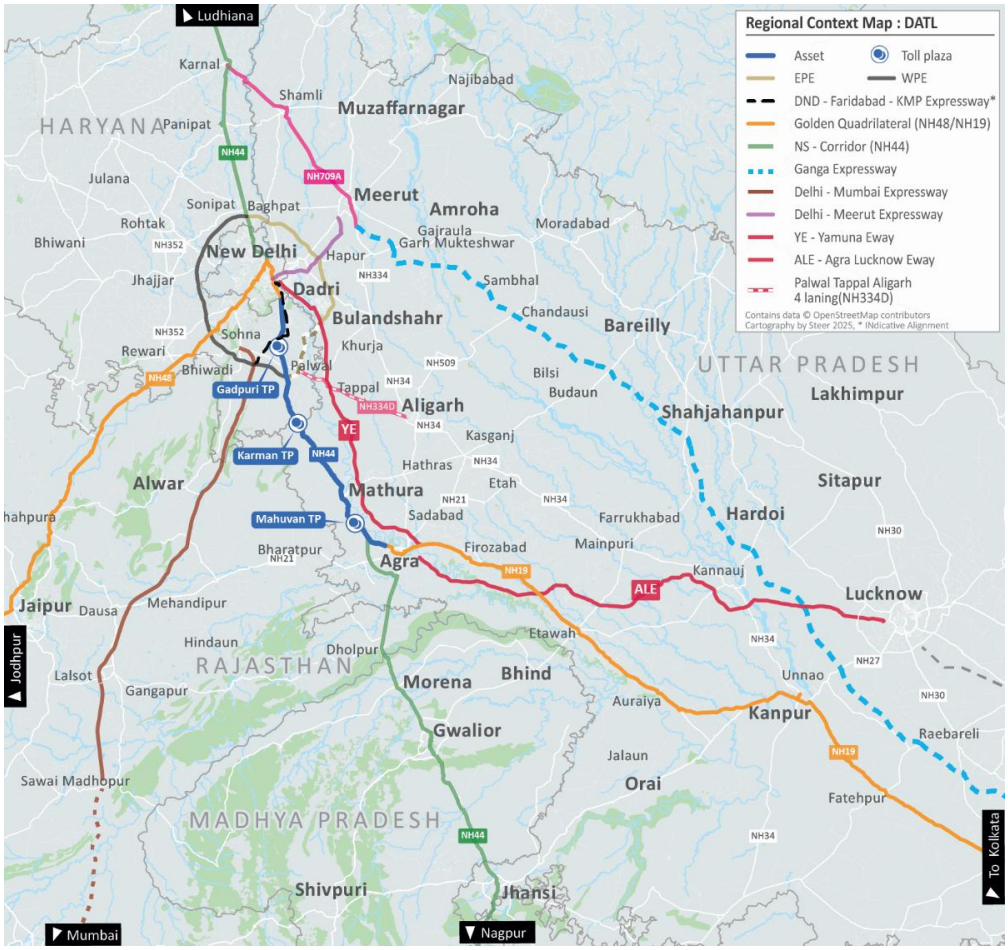
Introduction

6.1 Following the discussion on estimated and assumed forecast background growth rates in the previous chapter, this chapter first deals with the forecasting assumptions around base year AADT and potential impacts on traffic growth on the Asset. Later, it also presents the assumed toll segmentation, trip factors and evolution of toll rates for the forecast period which are used to estimate the forecasted revenue based on the forecasted traffic. In the final section, the chapter summarises the traffic growth rates for the forecast years.

Analysis of potential impacts

6.2 Figure 6.1 below shows a map of the regional transportation road network surrounding the Asset, along with various key feeder and competing routes in the region.

Figure 6.1: Alternate routes and Asset route shown against the regional network context



Source: Steer analysis and cartography

Alternate routes and improvements

6.3 Table 6-1 below presents the upcoming network/other developments, corresponding alternate/feeder routes, year of completion and indicative direction of impact on the Asset. To assess these types of future impacts on the Asset, whether they be positive or negative, we have studied developments (alternate roads, feeder roads and regulatory changes) that are relevant to the Asset within the context of its surrounding road network.

6.4 Apart from the Delhi-Mumbai Expressway becoming fully operational by FY27[31], other major network developments that could potentially have an impact on future traffic growth on the Asset include four-laning of Aligarh-Kannauj and Palwal-Tappal-Aligarh Road sections, the Ganga Expressway, as well as the completion of the Yamuna Expressway (YE) – Eastern Peripheral Expressway (EPE) connector.

6.5 The commissioning of the proposed Ganga Expressway will directly compete with a considerably sized long-distance traffic plying on the Asset. Also, the Yamuna Expressway connection to EPE is expected to provide a positive impact on two plazas of the Asset (KM94 and KM164) as it will provide long-distance traffic travelling to and from regions farther north of Delhi improved access to the Asset as they can bypass Delhi NCR before joining (or after exiting) the Asset.

Table 6-1: List of network/other developments

S. No.	Development	Route affected	Year of impact	Impact (+/-)
1.	Palwal-Tappal-Aligarh 4-laning	Asset route: East-west NH 2 corridor connecting Delhi and Lucknow via Agra Alternate route: Palwal region connected to Aligarh-Lucknow via Palwal-Tappal-Aligarh Road section	FY27: 50%; FY27: 80%'; FY29 onwards: 100%	-ve
2.	Delhi-Mumbai Expressway	Asset route: North-south NH19 – NH52 corridor Alternate route: Market 1: Delhi-Ratlam-Indore Market 2: Delhi-Mumbai via Delhi-Mumbai Expressway	FY27: 50%; FY28 onwards: 100%	-ve
3.	Ganga Expressway	Asset route: Delhi-Agra-Lucknow through NH2/NH19 Alternate route: East-west expressway between Meerut and Prayagraj	FY27: 70% FY28 onwards: 100%	-ve
4.	Yamuna Eway-EPE Connector – + Agra Northern bypass	Traffic between Greater Noida industrial area and Agra/beyond currently using the Yamuna expressway	FY28: 20% FY30 onwards: 100%	+ve

Source: Steer analysis

[31] Delhi-Mumbai Expressway Update: Surat-Maharashtra stretch delayed, (March 2025)

Impact assessment for network/other developments

6.6 The section below includes a narrative for each of the network improvements or developments, as listed in Table 6-1 above, that are expected to have a material impact on future traffic growth on the Asset. Please note that all traffic volumes for impacts were estimated as impact rates applied on FY26 base AADT.

Delhi-Mumbai Expressway

6.7 The Delhi-Mumbai Expressway is a 1290-KM long greenfield expressway being developed to provide improved level of service to long-distance traffic between North and Western India compared to the existing national highways that are already operating at high-capacity utilisation. Competing with the traditional north-south NH corridors - NH 2 corridor containing the Asset and the NH 8 corridor part of the Golden Quadrilateral, the upcoming Delhi-Mumbai Expressway could provide faster and unhindered connectivity, as illustrated in Figure 6.1 above.

6.8 As discussed earlier, we have considered two types of north-south movements for this impact, as these have distinct cost comparisons between the Asset corridor and the upcoming expressway:

- **Indore region**: The route through the expressway via Ratlam/Garoth-Ujjain provides an alternate route for long-distance traffic to reach Indore.
- **Mumbai region and South India**: This traffic currently use either NH 8 or NH 2 to ply between Mumbai region, Kerela, and western parts of Karnataka in the south, and Delhi and regions in north. While Central and Eastern parts of Karnataka, Andhra Pradesh traffic already is part of the NH 44 route and therefore out of scope, we have not included Tamil Nadu in the in-scope traffic as we have observed recent shifts from other corridors to the NH 44 route. Overall, the route through expressway provides cost savings through unhindered, seamless, and quicker travel with potentially competitive toll costs.

6.9 A few sections of the greenfield expressway have been made operational with Sohna-Dausa-Lalsot section (Feb'23), Madhya Pradesh section (Sep'23), Vadodara-Bharuch section (Feb'24), Lalsot-Sawai-Madhopur section (Feb'24) and the Kota-Bundi Section (Dec'24) already being operationalised. Subsequently, additional stretches in Gujarat - particularly between Bharuch and Navsari (Jan'26) and the wider Vadodara–Navsari corridors[32] - have also been operationalised.

6.10 The project is currently suffering from construction delays, mainly on the Sawai-Madopur and Mukundra stretch between Delhi and Kota and Gujarat stretch on the Delhi-Vadodara section. The timeline for completion of the expressway has been revised several times and is now expected to be completed by of H1FY27 as per reports[31]. This partial construction completion has already started resulting in negative variance on account of the DME, as discussed in the earlier sections of the report.

6.11 We have estimated impacts as shown in tables below, using a GJC-based logit model. We have staged the impact over two years to account for a phased completion of various sections and gradual unfolding of the impacts.

[32] **Delhi-Mumbai Expressway: Latest package-wise update on Gujarat section | DeshGujarat**

Table 6-2: Impact of the Delhi-Mumbai Expressway: KM46 Gadpuri

Vehicle type	FY27	FY28 onwards
Staging	**50%**	**100%**
CJV	(0.2%)	(0.4%)
LCV	(0.5%)	(1.1%)
2A	(0.4%)	(0.9%)
3A	(1.0%)	(2.0%)
MAV	(0.6%)	(1.3%)

Source: Steer analysis

Table 6-3: Impact of the Delhi-Mumbai Expressway: KM94 Karman

Vehicle type	FY27	FY28 onwards
Staging	**50%**	**100%**
CJV	(0.4%)	(0.7%)
LCV	(0.4%)	(0.8%)
2A	(2.2%)	(4.3%)
3A	(2.9%)	(5.7%)
MAV	(3.1%)	(6.3%)

Source: Steer analysis

Table 6-4: Impact of the Delhi-Mumbai Expressway: KM164 Mahuvan

Vehicle type	FY27	FY28 onwards
Staging	**50%**	**100%**
CJV	(0.5%)	(1.0%)
LCV	(0.4%)	(0.8%)
2A	(2.1%)	(4.1%)
3A	(2.8%)	(5.6%)
MAV	(2.6%)	(5.3%)

Source: Steer analysis

Palwal-Tappal-Aligarh

6.12 The Palwal-Tappal-Aligarh Road is a two-lane/Four-lane section section that is a key connection between the region south of Central NCR and Aligarh-Lucknow corridor. The road is currently under expansion to 4-lane tolled road[33]. For long-distance traffic between Central NCR, west and northwest, and Lucknow and east, this upgrade would improve the level of service of the alternate corridor connecting the regions west and northwest of Central NCR with the region east of Lucknow.

[33] **Aligarh-Palwal Highway: UP Govt To Acquire 160 Hectares Of Land Across 21 Villages For Expansion;** (December 2024)

There are two bypasses, Khair and Jattari, that are not progressing as per the schedule and are experiencing delays. Further access near Aligarh is restricted due to congestion near the Aligarh bypass, hence smooth movement of traffic is currently affected. Site visit suggests that the traffic has to take a diversion after Khair (towards Gabhana toll plaza on Ghaziabad Aligarh section) to access Aligarh via local roads. Considering the slow pace of construction, it is anticipated that the construction will take an additional year, resulting in an assumed impact from FY28[33]. However, since commercial traffic is still moving on this section, the impact is assumed starting FY27.

6.13 Due to the discussed, diversion at Aligarh bypass, some of the traffic orginating east of Aligarh and destined to Palwal/Faridabad is currently appearing on the Ghaziabad Aligarh Asset. Once the completion of Palwal tappal 4 lane, it is expected that the traffic will start to reappear on KM46, and hence be a positive, while it continues to remain a negative for KM94 and KM164

6.14 Table 6-6 and Table 6-7 below presents the estimated impact on KM46 (Gadpuri), KM94 (Karman) and KM164 (Mahuvan), derived using a GJC-based logit model.

Table 6-5: Impact due to upgrade of Palwal-Tappal-Aligarh: KM94 Gadpuri

Vehicle type	FY27	FY28	FY29 onwards
Staging	***50%***	***80%***	***100%***
CJV	0.2%	0.3%	0.4%
LCV	0.8%	1.3%	1.6%
2A	0.3%	0.4%	0.5%
3A	0.7%	1.1%	1.4%
MAV	2.2%	3.6%	4.5%

Source: Steer analysis

Table 6-6: Impact due to upgrade of Palwal-Tappal-Aligarh: KM94 Karman

Vehicle type	FY27	FY28	FY29
Staging	***50%***	***80%***	***100%***
CJV	(0.9%)	(1.4%)	(1.8%)
LCV	(2.1%)	(3.4%)	(4.2%)
2A	(1.6%)	(2.6%)	(3.3%)
3A	(1.1%)	(1.8%)	(2.3%)
MAV	(1.3%)	(2.0%)	(2.5%)

Source: Steer analysis

Table 6-7: Impact due to upgrade of Palwal-Tappal-Aligarh: KM164 Mahuvan

Vehicle type	FY27	FY28	FY29
Staging	***50%***	***80%***	***100%***
CJV	(1.3%)	(2.1%)	(2.7%)
LCV	(2.1%)	(3.4%)	(4.3%)
2A	(1.6%)	(2.5%)	(3.2%)

Vehicle type	FY27	FY28	FY29
3A	(1.1%)	(1.8%)	(2.2%)
MAV	(1.1%)	(1.7%)	(2.1%)

Source: Steer analysis

Ganga Expressway

6.15 The Ganga Expressway is a 596-KM long greenfield expressway being developed to provide improved level of service to long-distance traffic between western and eastern India. Competing with the traditional east-west NH corridors - NH 2 corridor containing the Asset and the Delhi-Agra-Lucknow and Purvanchal Expressways, the upcoming Ganga Expressway could provide faster and unhindered connectivity for long-distance east-west movement across the country, as illustrated in Figure 6.1 above.

6.16 We have considered two types of east-west movements for this impact, as these have distinct cost comparisons between the Asset corridor and the upcoming expressway:

- **Delhi region**: The route through the expressway provides a competitive route for long-distance traffic from Delhi and west to reach Lucknow and east. While toll costs are favourable for the Asset route, distance and time costs are lower on the expressway.
- **Northwest of Delhi**: The trips which are originating from Northwest of Delhi, including Karnal, Punjab, etc. and destined to Lucknow could also potentially prefer this route.

6.17 Assuming successful implementation of all the sections of the expressway, we have estimated impacts as shown Table 6-8 through Table 6-10 below, using a GJC-based logit model. We have staged the impact over two years to account for a phased completion of various sections and gradual unfolding of the impacts. The staging is to account for the gradual network shift expected to start in FY27[34]and materialise into the full impact as the network stabilises with completion of all sections of the Ganga Expressway.

[34] Ganga Expressway Nears Completion: Check Route Of 594-km Corridor

Table 6-8: Impact due to completion of Ganga Expressway: KM46 Gadpuri

Vehicle type	FY27	FY28
Staging	***60%***	***100%***
CJV	(0.8%)	(1.4%)
LCV	(0.8%)	(1.3%)
2A	(1.3%)	(2.1%)
3A	(2.2%)	(3.6%)
MAV	(1.6%)	(2.7%)

Source: Steer analysis

Table 6-9: Impact due to completion of Ganga Expressway: KM94 Karman

Vehicle type	FY27	FY28
Staging	***60%***	***100%***
CJV	(1.9%)	(3.1%)
LCV	(2.3%)	(3.9%)
2A	(2.7%)	(4.5%)
3A	(3.9%)	(6.4%)
MAV	(3.3%)	(5.5%)

Source: Steer analysis

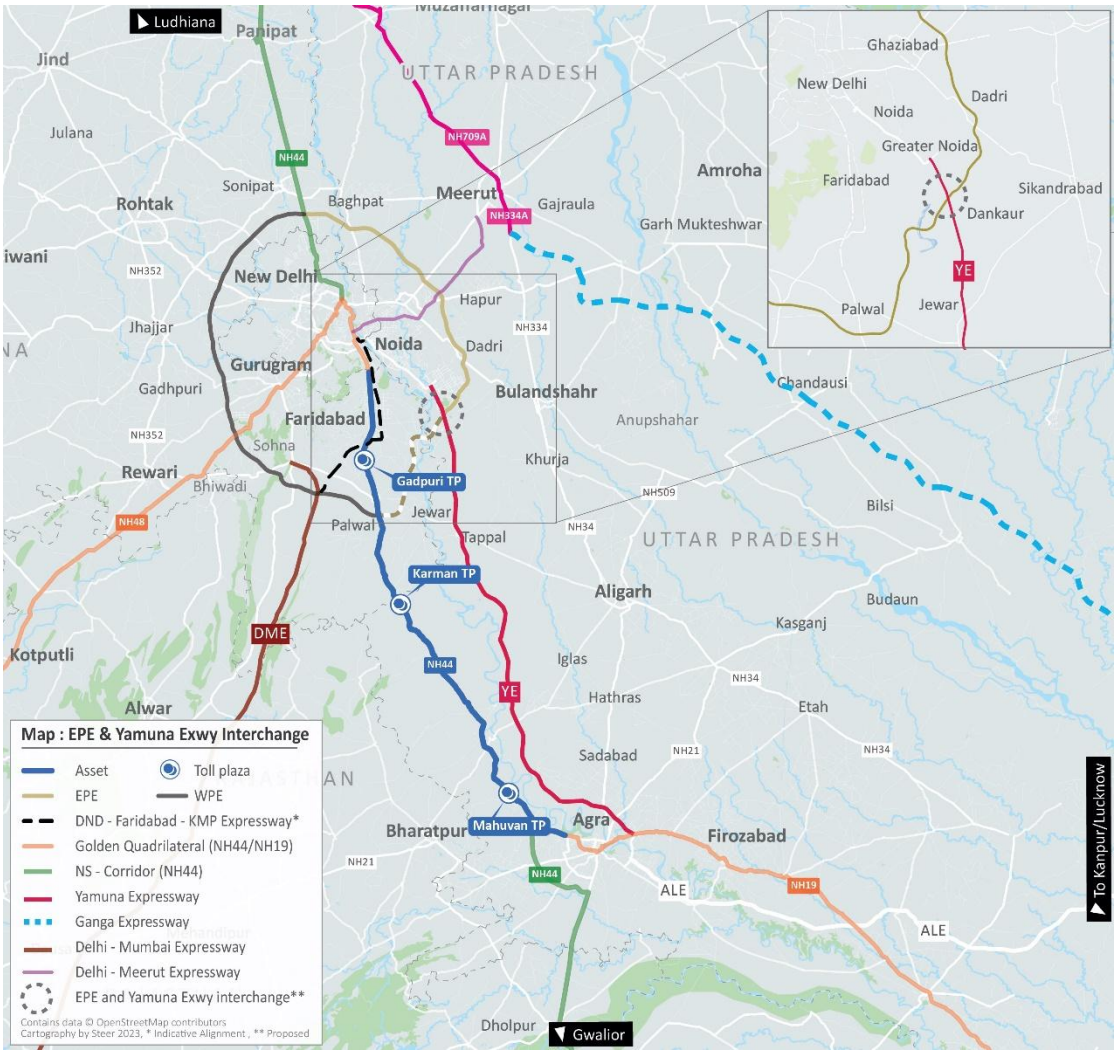
Table 6-10: Impact due to completion of Ganga Expressway: KM164 Mahuvan

Vehicle type	FY27	FY28
Staging	***60%***	***100%***
CJV	(2.8%)	(4.7%)
LCV	(2.3%)	(3.9%)
2A	(2.6%)	(4.3%)
3A	(3.7%)	(6.2%)
MAV	(2.8%)	(4.6%)

Source: Steer analysis

Yamuna Expressway- EPE connector – Northern ring

Figure 6.2: Yamuna - EPE connector – Northern ring



Source: Steer analysis and cartography

6.18 The existing alignment of the Eastern Peripheral Expressway runs from Sonipat to Palwal and does not intersect with the Yamuna Expressway. However, recently construction of the cloverleaf loop connecting EPE to Yamuna Expressway near Jewar has commenced. The connection will result in improving connectivity between parts of Noida, Greater Noida, Delhi NCR and Agra. As a result, the traffic which currently originates in the industrial corridor near Greater Noida and is destined to Agra/beyond will have an alternative via the EPE-Asset route who would have otherwise been using the Yamuna expressway currently.

6.19 As per the latest data available for Yamuna Expressway approximately 1000 trucks currently use the Yamuna Expressway. Since the Yamuna Expressway operates at toll rates of approx. more than 14 Rs/Km (compared to the approx. 10 Rs/km on the Asset for Multi Axle vehicles [35], once the connector between Yamuna Expressway and EPE

[35] Toll rates hiked on Yamuna Expressway from October 1 - Hindustan Times (September 2024)

becomes operational this volume of traffic will be able to access Agra via the Asset which will be characterized by toll saving, and a marginal time saving. Therefore, it is expected that a small proportion of the trucks will divert towards the Asset from Yamuna expressway. The positive impact of this development is expected to appear on the Asset starting FY28 in our forecasts. The estimated impact of this development on KM94 and KM164 toll plazas are presented below.

Table 6-11: Impact due to Yamuna-EPE connector-Northern ring: KM94 Karman

Vehicle type	FY28	FY29	FY30 onwards
Staging	***20%***	***80%***	***100%***
2A	0.5%	2.1%	2.6%
3A	0.5%	1.8%	2.3%
MAV	0.6%	2.3%	2.8%

Source: Steer analysis

Table 6-12: Impact due to Yamuna-EPE connector-Northern ring: KM164 Mahuvan

Vehicle type	FY28	FY29	FY30 Onwards
Staging	***20%***	***80%***	***100%***
2A	0.5%	2.0%	2.5%
3A	0.4%	1.8%	2.2%
MAV	0.5%	1.9%	2.4%

Source: Steer analysis

Capacity Constraints

6.20 As per the concession agreement, the Asset's design capacity is set at 120,000 PCU's (an average of all three plazas). As congestion increases on the road, the level of service offered by the Asset reduces resulting in traffic either diverting to other alternates or a suppression in local trips takes place primarily in passenger vehicles due to the perceived congestion profile of the Asset.

6.21 Our forecasts suggest that the Asset will start reaching design capacity FY41 onwards, and in this scenario, we believe that will reduce the frequency of short to medium-distance passenger trips on the Asset. We have incorporated this impact into our projections by introducing a growth dampener from FY35 onwards, that results in a slowing year-over-year growth rate of passenger vehicles post FY35.

Summary of impact assessments

6.22 Table 6-13 below summarises the potential impacts on the Asset due to the several ongoing and foreseen improvements on the alternate routes, the Asset route, and other regulatory developments.

Table 6-13: Summary of impact assessments

Impact	Year of impact	Probability/ scale of impact	In-scope traffic	Direction of impact (+/-)
Delhi-Mumbai Expressway Diversion impact from competing under-construction north-south expressway connecting Delhi to Mumbai	FY27 onwards	High	Traffic plying between Indore region and Delhi/north	**-ve**
			Traffic plying between Mumbai region and South India at one end, and Delhi/north at the other	**-ve**
Palwal-Tappal-Aligarh Diversion impact due to improved feeder route to alternate corridor	FY27 onwards	High	Trips between Delhi/west/northwest at one end and Lucknow and east at the other	**+ve for Gadpuri; -ve for Mahuvan and Karman**
Ganga Expressway Diversion impact from upcoming and competing east-west expressway connecting Delhi to Mumbai	FY27 onwards	Medium	Trips between northwest of Delhi, and Lucknow and east	**-ve**
			Trips between Delhi and west, and Lucknow and east	**-ve**
Yamuna-EPE connector – Northern Ring	FY28 onwards	Medium		**+ve**
Capacity induced constraints	FY35 onwards	High	Passenger traffic (CJVs) at the breach of capacity	**-ve**

Source: Steer analysis of OD data, Client TMS data and publicly available information

Revenue forecasting assumptions

6.23 To forecast the revenues for a forecast year, the traffic forecast for each vehicle type is converted into tickets sold, which is then multiplied with the corresponding toll rate. While toll segmentation provides the breakup of trips paying each ticket type, trip factors provide the conversion factor to convert from traffic (trips) to tickets sold. This section discusses assumptions related to toll segmentation, trip factors and toll rates for the forecast period.

Toll evolution

6.24 Based on the concession agreement and the gazetted toll notification, we understand that base toll rates increase every year (revision month is April) based on WPI-linked inflation (as of December 2024). These are rounded up to the nearest five to estimate the final toll rate charged to users.

6.25 We have used actual toll rates from the FY25 toll notifications and FY26 WPI to validate the modelling of future toll evolution. Increase in WPI was calculated based on the Client's WPI forecasts, as shown in Table 6-14 below. These forecasts provided by the

Client. The WPI forecasts available from other independent forecasting agencies may vary from this assumption and could be lower or higher than that provided by the client.

Table 6-14: WPI growth forecast assumptions

Financial year	WPI growth (%)
FY26	2.6%
FY27	0.96%
FY28	5.0%
FY29	5.1%
FY30	4.9%
FY31	4.4%
FY32 onwards	4.1%

Source: FY27 onwards WPI as per Client input.

6.26 Table 6-15 below provides an overview of toll estimation method as per the FY25 & FY26 toll notifications, and the concession agreement.

Table 6-15: Toll estimation overview

Toll fee escalation	Revision date	Nearest rounding
Linked to 100% WPI increase	April	5

Source: Concession agreement and toll notification

Toll segmentation and trip factors

6.27 The Ministry of Road Transport & Highways has finalized a compensation formula for existing toll concessionaires to offset revenue loss from the Annual Pass scheme for non-commercial vehicles[36].

6.28 CJV Segmentation for FY26 has been developed using the pre annual pass segmentation till 14th August 2025, and post-annual pass segmentation from 15th August 2025 till 28th February 2026. The share of annual pass trips in March 2026 has been assumed to be the same as the share of annual pass trips in the last 10 days of February 2026.

6.29 The segmentation for CJVs in FY27 has been assumed to be the same as the estimated March 2026 segmentation as trends suggest that the share of annual pass trips have stabilised.

6.30 For other vehicle categories we have analysed the historical TMS data split by ticket categories, to understand trends, as highlighted in Chapter 3. For the traffic and revenue forecast of other vehicle categories, FY26YTD (Apr- Feb) as discussed in the earlier sections, can be considered a normal period. Therefore, we believe the FY26YTD segmentation is representative of the travel patterns on the Asset and the same has been assumed for forecast years as well. This is presented below.

[36] Finalization-Concessionaire-Annual-Pass-Facility-on-NHs-01092025.pdf

6.31 The table below provides the toll segmentation assumed for the period of forecast.

Table 6-16: Forecast toll segmentation, FY26 onwards: KM46 Gadpuri

Ticket Type	CJV		Mini LCV	LCV	Bus	2A	3A/MAV	OSV
	FY26	FY27 onwards	FY26 onwards					
Single	14%	11%	16%	29%	7%	52%	68%	57%
Return	33%	27%	41%	63%	85%	47%	31%	43%
Monthly	0%	0%	0%	8%	8%	1%	0%	-
Local personal	25%	19%	31%	-	-	-	-	-
Exemption	10%	9%	11%	1%	0%	1%	0%	-
Violation	1%	1%	1%	0%	0%	0%	0%	-
Annual Pass	**16%**	**33%**	**-**	**-**	**-**	**-**	**-**	**-**

Source: Steer analysis of Client TMS data

Table 6-17: Forecast toll segmentation, FY26 onwards: KM94 Karman

Ticket Type	CJV		Mini LCV	LCV	Bus	2A	3A/MAV	OSV
	FY26	FY27 onwards	FY26 onwards					
Single	27%	20%	33%	61%	21%	85%	92%	85%
Return	43%	31%	54%	37%	79%	14%	8%	15%
Monthly	0%	0%	0%	1%	0%	-	0%	-
Local personal	5%	3%	6%	-	-	-	-	-
Exemption	7%	7%	7%	1%	0%	1%	0%	-
Violation	0%	0%	0%	0%	0%	0%	0%	-
Annual Pass	**19%**	**38%**	**-**	**-**	**-**	**-**	**-**	**-**

Source: Steer analysis of Client TMS data

Table 6-18: Forecast toll segmentation, FY26 onwards: KM164 Mahuvan

Ticket Type	CJV		Mini LCV	LCV	Bus	2A	3A/MAV	OSV
	FY26	FY27 onwards	FY26 onwards					
Single	28%	23%	33%	63%	20%	83%	86%	96%
Return	44%	36%	53%	32%	79%	16%	13%	4%
Monthly	-	-	-	0%	0%	0%	0%	-
Local personal	7%	6%	8%	-	-	-	-	-

Ticket Type	CJV		Mini LCV	LCV	Bus	2A	3A/MAV	OSV
	FY26	FY27 onwards	FY26 onwards					
Exemption	6%	6%	6%	5%	1%	1%	0%	-
Violation	0%	0%	0%	0%	0%	0%	0%	-
Annual Pass	**14%**	**29%**	**-**	**-**	**-**	**-**	**-**	**-**

Source: Steer analysis of Client TMS data

6.32 The Annual pass compensation is separately calculated using the formula prescribed by NHAI in the same circular. Table 6-19 below presents the Annual pass compensation computed for the toll plaza.

Table 6-19: Annual Pass Compensation for CJVs (in INR Crore)

Toll Plaza	FY26	FY28	FY30	FY35	FY40	FY44
KM 46	21.0	52.6	66.5	112.2	186.9	277.9
KM 94	12.5	31.5	39.8	69.0	123.4	183.3
KM 164	7.0	16.7	20.9	37.0	64.7	97.1

Source: Steer Analysis

Trip factors

6.33 Trip factors are used to calculate the revenue for the trips made on passes such as return, local personal, monthly passes. The trip factors assumed are based on the latest FY26YTD data available and listed in the table below:

Table 6-20: Trip factors for the forecast years for TP1 Gadpuri

Vehicle category	CJV/ Mini LCV	LCV	Bus	2A	3A	MAV	OSV
Single	1	1	1	1	1	1	1
Return	2	2	2	2	2	2	2
Monthly	50	50	43	50	50	30	45
Local Commercial	1	1	1	1	1	1	1
Local Personal	20	1	1	1	1	1	1
Exemptions	1	1	1	1	1	1	1
Violations	1	1	1	1	1	1	1

Source: Steer analysis of Client TMS data

Table 6-21: Trip factors for the forecast years for TP2 Karman

Vehicle category	CJV/Mini LCV	LCV	Bus	2A	3A	MAV	OSV
Single	1	1	1	1	1	1	1
Return	2	2	2	2	2	2	2

Vehicle category	CJV/Mini LCV	LCV	Bus	2A	3A	MAV	OSV
Monthly	72	42	39	45	30	50	45
Local Commercial	1	1	1	1	1	1	1
Local Personal	20	1	1	1	1	1	1
Exemptions	1	1	1	1	1	1	1
Violations	1	1	1	1	1	1	1

Source: Steer analysis of Client TMS data

Table 6-22: Trip factors for the forecast years for TP3 Mahuvan

Vehicle category	CJV/Mini LCV	LCV	Bus	2A	3A	MAV	OSV
Single	1	1	1	1	1	1	1
Return	2	2	2	2	2	2	2
Monthly	159	45	45	45	45	45	45
Local Commercial	1	1	1	1	1	1	1
Local Personal	29	1	1	1	1	1	1
Exemptions	1	1	1	1	1	1	1
Violations	1	1	1	1	1	1	1

Source: Steer analysis of Client TMS data

Traffic and Revenue forecasts

6.34 Based on the traffic and revenue-related forecast assumptions discussed above, we have modelled the traffic and revenue forecasts for the Asset over its remaining concession period i.e., FY26-44. Table 6-23 and Table 6-24 below present the AADT/PCU forecast growth rates and CAGRs for KM46 (Gadpuri). Table 6-27 and Table 6-28 below present AADT/PCU forecasts and associated growth rates for KM94 (Karman), and Table 6-31 and Table 6-32 present the same for KM164 (Mahuvan). In addition, Appendix B presents detailed forecasts of AADT and revenues for all three toll plazas on the Asset over the forecast period.

Table 6-23: Final traffic forecast: KM46 (Gadpuri)

Vehicle Type	FY26	FY27	FY30	FY35	FY40	FY44
CJV	34,363	36,629	44,608	60,989	81,539	1,01,376
Mini LCV	3,236	3,368	3,775	4,535	5,412	6,182
LCV	1,668	1,695	1,795	1,976	2,165	2,317
Bus	1,184	1,236	1,394	1,685	2,020	2,311
2A	1,654	1,704	1,910	2,313	2,771	3,181
3A	706	693	694	715	736	753
MAV	1,491	1,577	1,865	2,426	3,133	3,812
OSV	1	1	1	1	1	2

Vehicle Type	FY26	FY27	FY30	FY35	FY40	FY44
AADT	**44,303**	**46,904**	**56,043**	**74,640**	**97,776**	**1,19,933**
PCU	**56,109**	**59,128**	**69,796**	**91,374**	**1,18,073**	**1,43,507**

Source: Steer analysis

Table 6-24: Background traffic growth rates (%), KM46 (Gadpuri)

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY40	FY40-FY44	FY26-FY44
CJV	6.6%	6.8%	6.5%	6.0%	5.6%	6.2%
Mini LCV	4.1%	3.9%	3.7%	3.6%	3.4%	3.6%
LCV	1.6%	1.9%	1.9%	1.8%	1.7%	1.9%
Bus	4.4%	4.1%	3.9%	3.7%	3.4%	3.7%
2A	3.0%	3.9%	3.9%	3.7%	3.5%	3.7%
3A	(1.8%)	0.0%	0.6%	0.6%	0.6%	0.5%
MAV	5.8%	5.8%	5.4%	5.3%	5.0%	5.3%
OSV	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
AADT	**5.9%**	**6.1%**	**5.9%**	**5.6%**	**5.2%**	**5.7%**
PCU	**5.4%**	**5.7%**	**5.5%**	**5.3%**	**5.0%**	**5.4%**

Source: Steer analysis

Table 6-25: Final revenue forecast (INR crores): KM46 (Gadpuri) including AP Compensation for CJVs

Vehicle Type	FY26	FY27	FY30	FY35	FY40	FY44
CJV	87.3	105.7	148.7	252.1	421.5	627.7
Mini LCV	7.5	8.1	10.5	15.6	23.4	32.1
LCV	9.6	10.0	12.2	17.0	23.1	29.6
Bus	13.3	14.2	18.6	28.0	41.9	57.5
2A	21.2	22.4	29.1	44.0	65.9	90.5
3A	14.7	14.8	17.2	22.2	28.5	34.8
MAV	31.2	33.8	46.3	75.4	121.7	176.7
OSV	0.0	0.0	0.0	0.1	0.1	0.1
Total	**184.8**	**209.0**	**282.6**	**454.3**	**726.2**	**1,049.0**

Source: Steer analysis

Table 6-26: Revenue growth rates (%), KM46 (Gadpuri) including AP Compensation for CJVs

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY40	FY40-FY44	FY26-FY44
CJV	21.1%*	12.0%	11.1%	10.8%	10.5%	11.6%
Mini LCV	7.3%	9.0%	8.4%	8.4%	8.2%	8.4%

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY40	FY40-FY44	FY26-FY44
LCV	4.7%	6.8%	6.8%	6.4%	6.3%	6.5%
Bus	7.0%	9.4%	8.5%	8.4%	8.2%	8.5%
2A	5.6%	9.1%	8.6%	8.4%	8.3%	8.4%
3A	0.5%	5.1%	5.2%	5.2%	5.1%	4.9%
MAV	8.3%	11.1%	10.3%	10.1%	9.8%	10.1%
OSV	3.2%	5.6%	5.2%	5.2%	5.2%	5.1%
Total	**13.1%**	**10.6%**	**10.0%**	**9.8%**	**9.6%**	**10.1%**

Source: Steer analysis, * High increase in revenue due to annual pass compensation

Table 6-27: Final traffic forecast: KM94 (Karman)

Vehicle Type	FY26	FY27	FY30	FY35	FY40	FY44
CJV	22,953	24,134	29,592	42,176	58,476	74,456
Mini LCV	1,682	1,754	1,975	2,389	2,863	3,275
LCV	1,562	1,519	1,544	1,699	1,862	1,992
Bus	963	997	1,101	1,291	1,502	1,680
2A	3,869	3,853	4,448	5,834	7,536	9,168
3A	2,194	2,048	2,026	2,150	2,279	2,382
MAV	3,550	3,512	4,091	5,528	7,340	9,121
OSV	4	4	4	4	4	4
AADT	**36,778**	**37,820**	**44,780**	**61,071**	**81,861**	**1,02,079**
PCUs	**60,865**	**61,529**	**71,362**	**94,872**	**1,24,543**	**1,53,291**

Source: Steer analysis

Table 6-28: Background traffic growth rates (%): KM94 (Karman)

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY40	FY40-FY44	FY26-FY44
CJV	5.1%	7.0%	7.3%	6.8%	6.2%	6.8%
Mini LCV	4.3%	4.0%	3.9%	3.7%	3.4%	3.8%
LCV	(2.8%)	0.6%	1.9%	1.8%	1.7%	1.4%
Bus	3.6%	3.4%	3.2%	3.1%	2.8%	3.1%
2A	(0.4%)	4.9%	5.6%	5.3%	5.0%	4.9%
3A	(6.7%)	(0.4%)	1.2%	1.2%	1.1%	0.5%
MAV	(1.1%)	5.2%	6.2%	5.8%	5.6%	5.4%
OSV	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
AADT	**2.8%**	**5.8%**	**6.4%**	**6.0%**	**5.7%**	**5.8%**
PCUs	**1.1%**	**5.1%**	**5.9%**	**5.6%**	**5.3%**	**5.3%**

Source: Steer analysis

Table 6-29: Final revenue forecast (INR crores): KM94 (Karman) including AP Compensation for CJVs

Vehicle Type	FY26	FY27	FY30	FY35	FY40	FY44
CJV	60.2	66.7	93.7	164.5	290.2	435.8
Mini LCV	6.7	7.3	9.4	14.2	21.3	29.1
LCV	8.0	8.0	9.4	12.9	17.6	22.7
Bus	9.1	9.7	12.4	18.2	26.4	35.4
2A	44.2	45.4	60.3	98.7	159.6	233.0
3A	40.1	38.5	43.9	58.2	77.4	96.7
MAV	64.9	66.1	88.7	149.6	249.3	370.3
OSV	0.1	0.1	0.1	0.1	0.2	0.2
Total	**233.4**	**241.9**	**317.9**	**516.4**	**841.9**	**1,223.3**

Source: Steer analysis

Table 6-30: Revenue growth rates (%): KM94 (Karman) including AP Compensation for CJVs

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY40	FY40-FY44	FY26-FY44
CJV	10.9%	12.0%	11.9%	12.0%	10.7%	11.6%
Mini LCV	8.4%	8.6%	8.6%	8.4%	8.1%	8.5%
LCV	(0.0%)	5.4%	6.5%	6.4%	6.6%	6.0%
Bus	6.8%	8.5%	7.9%	7.7%	7.6%	7.8%
2A	2.6%	9.9%	10.3%	10.1%	9.9%	9.7%
3A	(3.9%)	4.5%	5.8%	5.9%	5.7%	5.0%
MAV	1.8%	10.3%	11.0%	10.8%	10.4%	10.2%
OSV	3.1%	5.6%	5.2%	5.2%	5.2%	5.2%
Total	**3.7%**	**9.5%**	**10.2%**	**10.3%**	**9.8%**	**9.6%**

Source: Steer analysis

Table 6-31: Final traffic forecast: KM164 (Mahuvan)

Vehicle Type	FY26	FY27	FY30	FY35	FY40	FY44
CJV	15,342	15,874	19,197	27,361	37,934	48,301
Mini LCV	1,693	1,765	1,989	2,405	2,882	3,297
LCV	1,556	1,512	1,537	1,692	1,853	1,983
Bus	1,126	1,166	1,288	1,510	1,757	1,966
2A	4,022	4,015	4,641	6,088	7,864	9,567
3A	2,263	2,118	2,098	2,227	2,360	2,467
MAV	4,197	4,205	4,932	6,664	8,849	10,996

Vehicle Type	FY26	FY27	FY30	FY35	FY40	FY44
OSV	3	3	3	3	4	4
AADT	**30,203**	**30,659**	**35,685**	**47,950**	**63,504**	**78,582**
PCUs	**56,739**	**56,969**	**65,357**	**85,804**	**1,11,438**	**1,36,208**

Source: Steer analysis

Table 6-32: Background traffic growth rates (%): KM164 (Mahuvan)

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY40	FY40-FY44	FY26-FY44
CJV	3.5%	6.5%	7.3%	6.8%	6.2%	6.6%
Mini LCV	4.3%	4.0%	3.9%	3.7%	3.4%	3.8%
LCV	(2.8%)	0.5%	1.9%	1.8%	1.7%	1.4%
Bus	3.6%	3.4%	3.2%	3.1%	2.8%	3.1%
2A	(0.2%)	4.9%	5.6%	5.3%	5.0%	4.9%
3A	(6.4%)	(0.3%)	1.2%	1.2%	1.1%	0.5%
MAV	0.2%	5.5%	6.2%	5.8%	5.6%	5.5%
OSV	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%
AADT	**1.5%**	**5.2%**	**6.1%**	**5.8%**	**5.5%**	**5.5%**
PCUs	**0.4%**	**4.7%**	**5.6%**	**5.4%**	**5.1%**	**5.0%**

Source: Steer analysis

Table 6-33: Final revenue forecast (INR crores): KM164 (Mahuvan) including AP Compensation for CJVs

Vehicle Type	FY26	FY27	FY30	FY35	FY40	FY44
CJV	43.3	45.8	65.3	116.3	202.1	306.0
Mini LCV	4.7	5.0	6.6	10.0	15.0	20.5
LCV	8.4	8.4	9.8	13.5	18.6	23.8
Bus	11.6	12.3	15.7	23.1	33.6	44.9
2A	49.6	50.9	67.8	111.2	179.6	261.7
3A	44.3	42.5	48.8	64.7	85.9	107.2
MAV	82.1	84.4	114.7	193.6	322.0	477.8
OSV	0.1	0.1	0.1	0.1	0.2	0.2
Total	**244.0**	**249.5**	**328.7**	**532.6**	**856.9**	**1,242.1**

Source: Steer analysis

Table 6-34: Revenue growth rates (%): KM164 (Mahuvan) including AP Compensation for CJVs

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY40	FY40-FY44	FY26-FY44
CJV	5.9%	12.5%	12.3%	11.7%	10.9%	11.5%
Mini LCV	6.1%	9.7%	8.7%	8.4%	8.1%	8.5%
LCV	(0.2%)	5.2%	6.6%	6.7%	6.2%	5.9%
Bus	6.5%	8.4%	8.0%	7.8%	7.5%	7.8%
2A	2.6%	10.0%	10.4%	10.1%	9.9%	9.7%
3A	(3.9%)	4.7%	5.8%	5.8%	5.7%	5.0%
MAV	2.9%	10.7%	11.0%	10.7%	10.4%	10.3%
OSV	3.6%	5.7%	5.2%	5.2%	5.1%	5.2%
Total	**2.3%**	**9.6%**	**10.1%**	**10.0%**	**9.7%**	**9.5%**

Source: Steer analysis

Upside and Downside cases

Upside and Downside scenario assumptions

6.35 We have developed our base case scenario considering a balanced view on the risks associated with input assumptions around GDP growth and traffic growth elasticities. There is always a risk that the outturn values of these inputs will vary as compared to the assumptions taken due to exogenous impacts, e.g. GDP growth could be influenced both positively and negatively by the impact of monsoons, export-import balances, political changes etc.

6.36 Similarly, traffic growth elasticities could be influenced by increased efficiencies achieved by technology, large shifts in commodity prices globally, changes in local manufacturing practices. However, at this stage we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

6.37 To account for the possible variations in the growth drivers, we also present an Upside (optimistic) and a Downside (pessimistic) scenario. These scenarios are defined by the following variations from the base assumptions:

Table 6-35: Summary of Macro-economic Assumptions for upside and downside cases

Input	Upside	Downside
Macro Assumptions		
GDP/GSDP	+1% every year	-1% every year
WPI	+1% every year	-1% every year
Elasticities	+ 10%	- 10%

Source: Steer analysis

6.38 Further, network developments are highly dependent on governmental directions, policies, legal and financial measures which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside (pessimistic) case for our network-related impacts as well. However, consistent with our macro-economic assumptions, we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

Impacts-Upside Case

6.39 The upside case impacts included in forecasts are summarised in Table 6-36 below.

Table 6-36: Summary of impacts on the Assets - Upside Case

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact		
			TP1 Gadpuri	TP2 Karman	TP3 Mahuvan
Delhi-Mumbai Expressway	FY27: 50%; FY27: 80%'; FY29 onwards: 100%	+25% of base case	CJV: (0.3%) LCV: (0.8%) 2A: (0.7%) 3A: (1.5%) MAV: (1.0%)	CJV: (0.5%) LCV: (0.6%) 2A: (3.2%) 3A: (4.3%) MAV: (4.7%)	CJV: (0.8%) LCV: (0.6%) 2A: (3.1%) 3A: (4.2%) MAV: (4.0%)

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact		
			TP1 Gadpuri	TP2 Karman	TP3 Mahuvan
Ganga Expressway	FY27: 50%; FY28 onwards: 100%		CJV: (1.1%) LCV: (1.0%) 2A: (1.6%) 3A: (2.7%) MAV: (2.0%)	CJV: (2.3%) LCV: (2.9%) 2A: (3.4%) 3A: (4.8%) MAV: (4.1%)	CJV: (3.5%) LCV: (2.9%) 2A: (3.2%) 3A: (4.7%) MAV: (3.5%)
Palwal-Tappal-Aligarh 4-laning	FY27: 70% FY28 onwards: 100%		CJV: 0.4% LCV: 2.0% Bus: 0.3% 2A: 0.7% 3A: 1.8% MAV: 5.6%	CJV: (1.4%) LCV: (3.1%) 2A: (2.5%) 3A: (1.7%) MAV: (1.9%)	CJV: (2.0%) LCV: (3.2%) 2A: (2.4%) 3A: (1.7%) MAV: (1.6%)
Yamuna - EPE Connector – Northern Ring	FY28: 20% FY30 onwards: 100%		-	2A: 3.2% 3A: 2.8% MAV: 3.5%	2A: 3.1% 3A: 2.8% MAV: 3.0%

Source: Steer analysis; *Same as base case timeline

Impacts-Downside Case

6.40 The downside case impacts included in forecasts are summarised in Table 6-37 below.

Table 6-37: Summary of impacts on the Assets - Downside Case

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact		
			TP1 Gadpuri	TP2 Karman	TP3 Mahuvan
Delhi-Mumbai Expressway	FY27: 50%; FY27: 80%'; FY29 onwards: 100%	-25% of base case	CJV: (0.5%) LCV: (1.4%) 2A: (1.1%) 3A: (2.5%) MAV: (1.6%)	CJV: (0.9%) LCV: (1.0%) 2A: (5.4%) 3A: (7.1%) MAV: (7.9%)	CJV: (1.3%) LCV: (1.0%) 2A: (5.1%) 3A: (7.0%) MAV: (6.6%)
Ganga Expressway	FY27: 50%; FY28 onwards: 100%		CJV: (1.8%) LCV: (1.6%) 2A: (2.6%) 3A: (4.5%) MAV: (3.4%)	CJV: (3.9%) LCV: (4.9%) 2A: (5.6%) 3A: (8.0%) MAV: (6.9%)	CJV: (5.9%) LCV: (4.9%) 2A: (5.4%) 3A: (7.8%) MAV: (5.8%)
Palwal-Tappal-Aligarh 4-laning	FY27: 70% FY28 onwards: 100%		CJV: 0.3% LCV: 1.2% Bus: 0.2% 2A: 0.4% 3A: 1.1% MAV: 3.4%	CJV: (2.3%) LCV: (5.3%) 2A: (4.1%) 3A: (2.9%) MAV: (3.1%)	CJV: (3.4%) LCV: (5.4%) 2A: (4.0%) 3A: (2.8%) MAV: (2.6%)
Yamuna - EPE Connector – Northern Ring	FY28: 20% FY30 onwards: 100%		-	2A: 1.6% 3A: 1.4% MAV: 1.7%	2A: 1.9% 3A: 1.7% MAV: 1.8%

Source: Steer analysis; *Same as base case timeline

Upside and Downside Case Forecasts

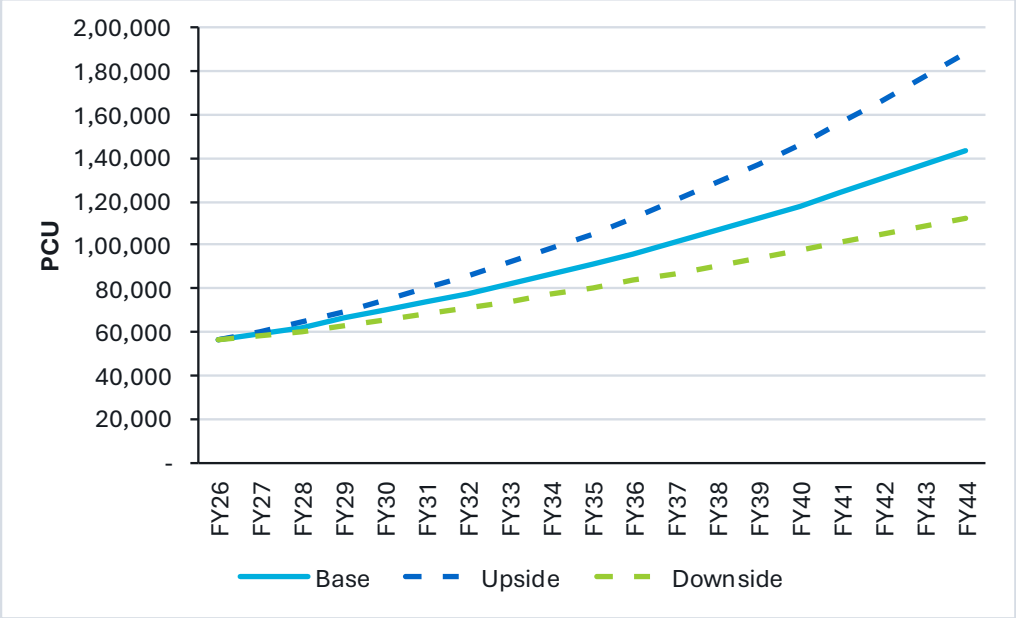
6.41 The table below presents the difference between the Upside and Downside Case forecasts relative to the Base Case forecasts in FY44 (i.e., the concession end year) for both Asset toll plazas. The charts below plot the Upside and Downside Case forecasts relative to the Base Case forecasts for each Asset toll plaza over the full concession period (FY26-FY44).

Table 6-38: Percentage Difference Upside and Downside Case Forecasts vs. Base Case Forecasts - FY44

Case	Measure	TP1 Gadpuri	TP2 Karman	TP3 Mahuvan
Upside Case	Traffic (PCU)	31.4%	36.4%	35.7%
Downside Case		(21.6%)	(24.3%)	(23.9%)
Upside Case	Revenue	48.9%	55.5%	54.4%
Downside Case		(30.7%)	(33.2%)	(32.7%)

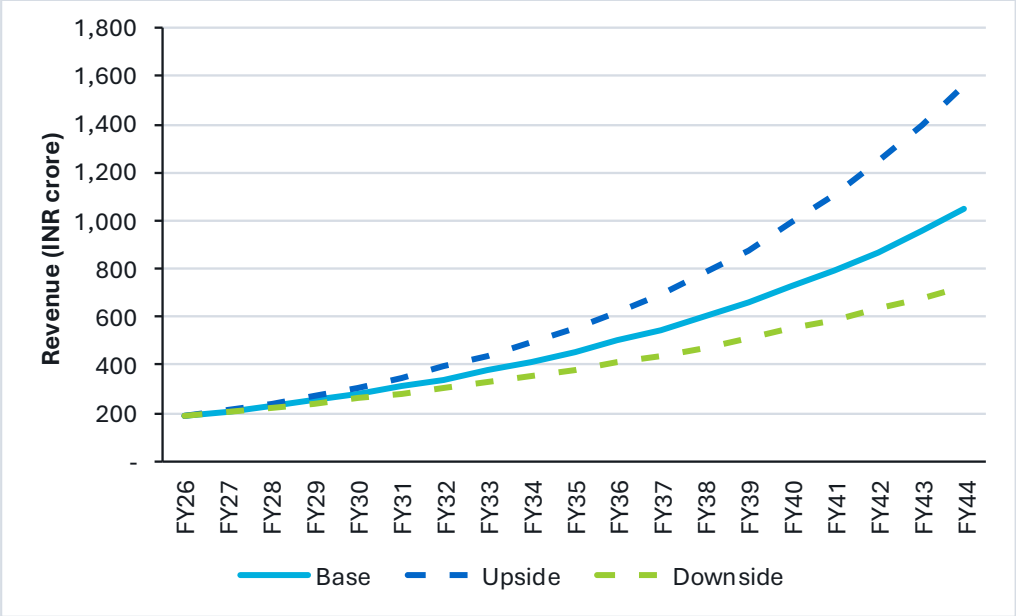
Source: Steer analysis

Figure 6.3: Long-term PCU forecasts for Gadpuri including upside and downside scenarios



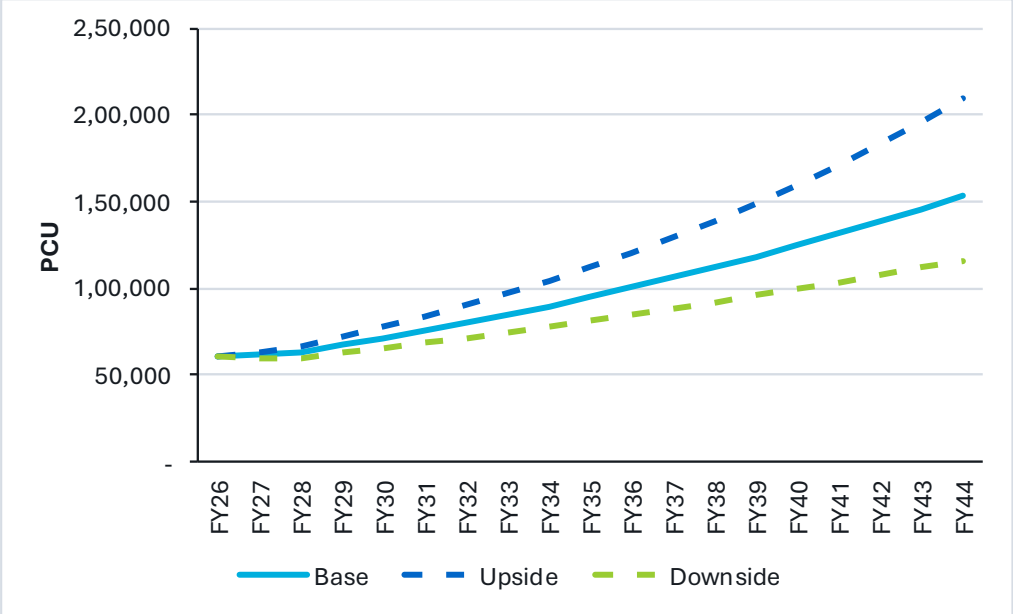
Source: Steer analysis

Figure 6.4: Long-term revenue forecasts for Gadpuri including upside and downside scenarios



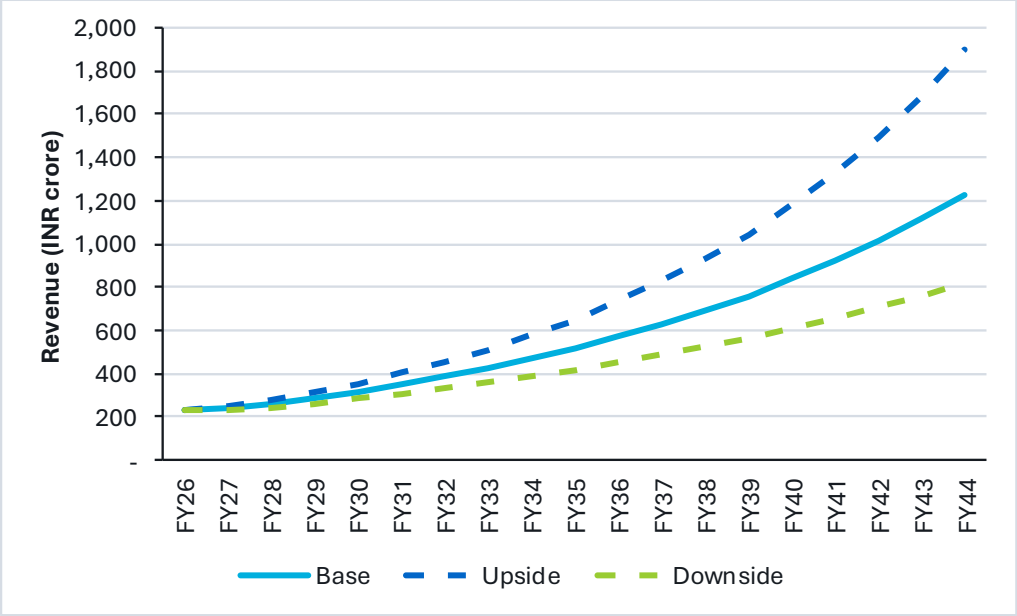
Source: Steer analysis

Figure 6.5: Long-term PCU forecasts for Karman including upside and downside scenarios



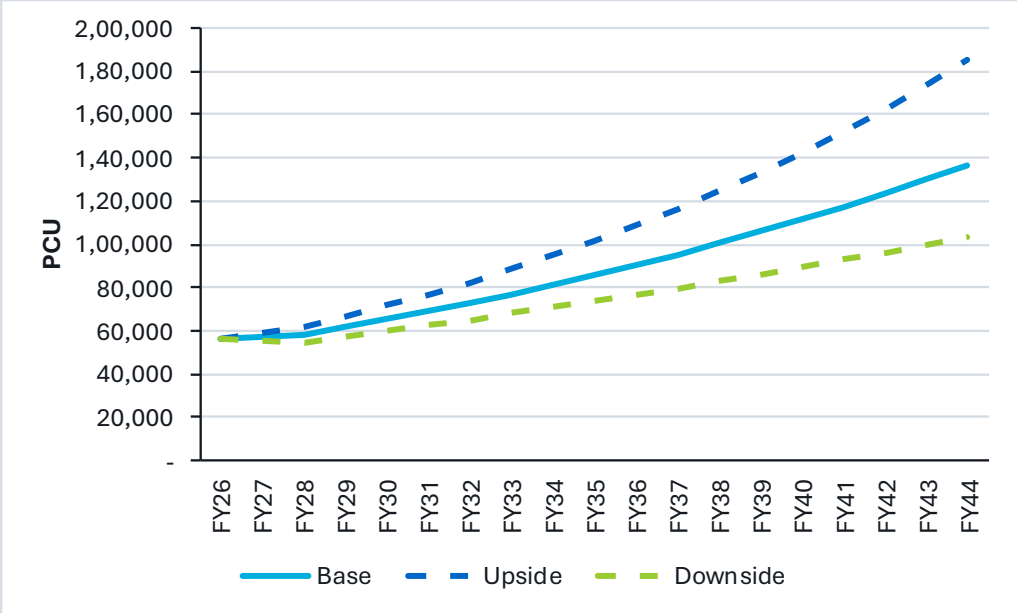
Source: Steer analysis

Figure 6.6: Long-term revenue forecasts for Karman including upside and downside scenarios



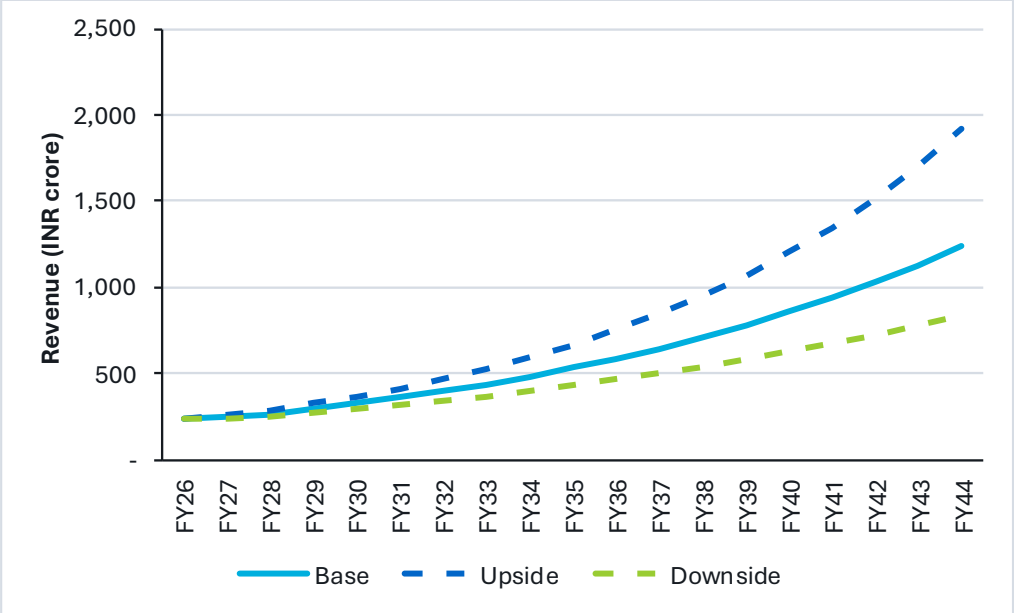
Source: Steer analysis

Figure 6.7: Long-term PCU forecasts for Mahuvan including upside and downside scenarios



Source: Steer analysis

Figure 6.8: Long-term revenue forecasts for Mahuvan including upside and downside scenarios



Source: Steer analysis

Summary outlook

6.42 The Asset is a 179.5 km toll road between Delhi and Agra which forms a part of the NH44. The Asset forms part of the Grand Trunk Road – which is part of the prominent Asian Highway 1 (AH1) - that forms part of a wider longer strategic corridor that connects Delhi NCR and other regions in North India with other regions in the country.

6.43 The Asset consists of three toll plazas – KM46 Gadpuri, KM94 Karman and KM164 Mahuvan. The Asset's strategic and geographic location is a significant advantage as it offers seamless connectivity to users via the upgraded expressway network in the form of KMP and EPE. It is the preferred route for north-south and north-east movement, connecting regions such as Jammu and Kashmir, Punjab, Haryana to Karnataka, Tamil Nadu, Telangana, Andhra Pradesh, Eastern Uttar Pradesh, and Bihar.

6.44 The Asset serves a significant volume of local passenger traffic, as it connects densely populated areas such as Palwal, Faridabad, New Delhi to Mathura, Vrindavan, and Agra over short-to-medium distances. We anticipate a healthy growth in car usage on the Asset due to the shift away from public transport by users, and the increasing ownership of cars in the National Capital Region.

6.45 The Asset's provide improved Level of Service (LoS) due to its six-lane configuration. The steady growth in traffic in recent years is expected to continue in the future. Although some of this growth can be attributed to network shifts, we expect a significant share of natural traffic growth to characterise the Asset’s performance going forward.

6.46 We see a positive outlook for the region and the Asset as it serves significant urban centres such as Delhi NCR, Faridabad, Palwal, Agra, Mathura, and Vrindavan. Furthermore, it caters to long-distance movements to/from Chennai, Bangalore, Hyderabad, etc. The underlying growth drivers of the corridor are strong, which we believe will deliver sustained long-term traffic growth on the Asset.

6.47 Our observations, analysis and conclusions in this report are based on thorough analysis of primary and secondary data, site visits, feedback from Client meetings, and macroeconomic assumptions prescribed by the Client. While there may be both positive and negative risks associated with these assumptions and forecasts, the broad growth outlook for the Asset remains positive owing to its strategic position as a key link between Delhi and North India and the rest of the country, including the East, Central and Southern parts of the country. It's proximity to Delhi NCR and other industrial clusters in and around the region also bode well for the Asset as it will continue to observe traffic flows that originate from or are destined to these production and consumption centres, and will continue to experience the indirect impacts of general economic growth in the region and the country despite network related improvements and developments that may also impact traffic growth on the Asset over time.

Appendices

A Top 10 OD Pairs

A.1 Further to the OD analysis presented in Chapter 3 this appendix presents the top 10 OD pairs at each toll plaza. Please see this data for both CJVs and MAVs and OSVs combined below.

KM46 Gadpuri

Table A.1: CJV and Bus top 10 OD pair shares at KM46 Gadpuri

	OD Pair	Share
1.	Palwal city-Faridabad City	11%
2.	Mathura-Central Delhi (inside ring road)	8%
3.	Central Delhi (inside ring road)-Palwal city	8%
4.	Mathura-Faridabad City	7%
5.	South West Agra including Agra City-Central Delhi (inside ring road)	6%
6.	Palwal city-Ballabgarh	5%
7.	South West Agra including Agra City-Faridabad City	4%
8.	Faridabad City-Pirthala, Bhagola	4%
9.	Mathura-Ballabgarh	3%
10.	Mathura-Bhangel, Noida	2%

Source: Steer analysis of OD data

Table A.2: 3A and MAV top 10 OD pair shares at KM46 Gadpuri

	OD Pair	Share
1.	South West Agra including Agra City-Central Delhi (inside ring road)	6%
2.	Palwal city-Faridabad City	6%
3.	Central Delhi (inside ring road)-Palwal city	6%
4.	Mathura-Central Delhi (inside ring road)	5%
5.	Palwal city-Ballabgarh	4%
6.	Faridabad City-Pirthala, Bhagola	3%
7.	Mathura-Faridabad City	3%
8.	South West Agra including Agra City-Faridabad City	3%
9.	Central Delhi (inside ring road)-Telangana	2%
10	Pirthala, Bhagola-Ballabgarh	2%

Source: Steer analysis of OD data

KM164 Mahuvan

Table A.3: CJV top 10 OD pair shares at KM164 Mahuvan

	OD Pair	Share
1.	South West Agra including Agra City-Mathura	26%
2.	South West Agra including Agra City-Central Delhi (inside ring road)	10%
3.	Mainpuri, Etah, Firozabad-Mathura	3%
4.	South West Agra including Agra City-Bhangel, Noida	3%
5.	Kanpur-Mathura	3%
6.	Mathura-North Madhya Pradesh	2%
7.	South West Agra including Agra City-Palwal city	2%
8.	Kanpur-Central Delhi (inside ring road)	2%
9.	South West Agra including Agra City-Vrindavan, Raya	2%
10	South West Agra including Agra City-South West Haryana (Rewari)	2%

Source: Steer analysis of OD data

Table A.4: MAV and OSV top 10 OD pair shares at KM164 Mahuvan

	OD Pair	Share
1.	South West Agra including Agra City-Mathura	8%
2.	South West Agra including Agra City-Central Delhi (inside ring road)	3%
3.	Mathura-North Madhya Pradesh	2%
4.	Central Delhi (inside ring road)-Karnataka	2%
5.	Central Delhi (inside ring road)-Tamil nadu	2%
6.	Central Delhi (inside ring road)-West Maharashtra	2%
7.	Kanpur-Central Delhi (inside ring road)	2%
8.	Central Delhi (inside ring road)-Odisha	2%
9.	Central Delhi (inside ring road)-Bihar	1%
10	Central Delhi (inside ring road)-North Madhya Pradesh	1%

Source: Steer analysis of OD data

Kherli Jita

Table A.3: CJV top 10 OD pair shares at Kherli Jita

	OD Pair	Share
1.	South West Haryana (Gurugram)-Faridabad City	16%
2.	Faridabad City-Jaipur City	9%
3.	Bhangel, Noida-South West Haryana (Gurugram)	6%

4.	Bhangel, Noida-Jaipur City	5%
5.	Central Delhi (inside ring road)-Jaipur City	5%
6.	Central Delhi (inside ring road)-South West Haryana (Gurugram)	5%
7.	South West Haryana (Gurugram)-Ballabgarh	3%
8.	Faridabad City-East Rajasthan (Alwar, Dausa(NH11), Bharartpur, Sawai Madhopur)	3%
9.	South West Haryana (Rewari)-Faridabad City	2%
10	Jaipur City-Ballabgarh	2%

Source: Steer analysis of OD data

Table A.4: MAV and OSV top 10 OD pair shares at Kherli Jita

	OD Pair	Share
1.	Faridabad City-Jaipur City	12%
2.	South West Haryana (Gurugram)-Faridabad City	11%
3.	Faridabad City-Gujarat	10%
4.	Faridabad City-East Rajasthan (Alwar, Dausa(NH11), Bharartpur, Sawai Madhopur)	5%
5.	Jaipur City-Ballabgarh	4%
6.	Central Delhi (inside ring road)-Jaipur City	3%
7.	Rothak-Faridabad City	3%
8.	South West Haryana (Gurugram)-Ballabgarh	3%
9.	Faridabad City-West Madhya Pradesh	3%
10	South West Haryana (Rewari)-Faridabad City	2%

Source: Steer analysis of OD data

B Detailed Forecasts

B.1 Further to the summary of forecasts presented in Chapter 6, this appendix presents detailed forecasts.

Traffic forecasts

B.2 This section presents the detailed traffic forecasts for the forecast period until FY44. The following tables show the forecast AADT for operational toll plazas.

Table B.1: Forecasts for final (background+impacts) AADT, KM46 (Gadpuri)

FY	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total	PCU
FY27	36,629	3,368	1,695	1,236	1,704	693	1,577	1	**46,904**	**59,128**
FY28	39,056	3,503	1,720	1,289	1,759	684	1,662	1	**49,674**	**62,328**
FY29	41,814	3,639	1,761	1,341	1,836	690	1,770	1	**52,852**	**66,078**
FY30	44,608	3,775	1,795	1,394	1,910	694	1,865	1	**56,043**	**69,796**
FY31	47,509	3,914	1,830	1,447	1,985	698	1,964	1	**59,349**	**73,641**
FY32	50,569	4,058	1,864	1,502	2,062	702	2,068	1	**62,827**	**77,681**
FY33	53,916	4,213	1,901	1,562	2,145	706	2,182	1	**66,626**	**82,088**
FY34	57,413	4,372	1,938	1,623	2,229	711	2,301	1	**70,588**	**86,676**
FY35	60,989	4,535	1,976	1,685	2,313	715	2,426	1	**74,640**	**91,374**
FY36	64,737	4,702	2,013	1,749	2,400	719	2,555	1	**78,878**	**96,278**
FY37	68,662	4,874	2,051	1,815	2,489	723	2,691	1	**83,306**	**1,01,395**
FY38	72,767	5,049	2,089	1,882	2,580	728	2,832	1	**87,929**	**1,06,730**
FY39	77,058	5,228	2,127	1,950	2,674	732	2,980	1	**92,751**	**1,12,287**
FY40	81,539	5,412	2,165	2,020	2,771	736	3,133	1	**97,776**	**1,18,073**
FY41	86,208	5,599	2,203	2,091	2,870	740	3,293	2	**1,03,004**	**1,24,083**
FY42	91,068	5,789	2,241	2,163	2,971	744	3,459	2	**1,08,437**	**1,30,323**
FY43	96,123	5,984	2,279	2,236	3,075	749	3,632	2	**1,14,079**	**1,36,797**
FY44	1,01,376	6,182	2,317	2,311	3,181	753	3,812	2	**1,19,933**	**1,43,507**

Source: Steer analysis.

Table B.2: Forecasts for final (background+impacts) AADT, KM94 (Karman)

FY	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total	PCU
FY27	24,134	1,754	1,519	997	3,853	2,048	3,512	4	**37,820**	**61,529**
FY28	25,567	1,827	1,498	1,032	3,903	1,947	3,533	4	**39,310**	**63,030**
FY29	27,499	1,901	1,514	1,067	4,181	1,991	3,820	4	**41,976**	**67,167**
FY30	29,592	1,975	1,544	1,101	4,448	2,026	4,091	4	**44,780**	**71,362**
FY31	31,783	2,051	1,573	1,136	4,698	2,050	4,346	4	**47,640**	**75,518**
FY32	34,112	2,129	1,603	1,172	4,959	2,074	4,614	4	**50,668**	**79,903**
FY33	36,680	2,214	1,635	1,211	5,242	2,099	4,908	4	**53,993**	**84,703**
FY34	39,384	2,300	1,667	1,251	5,535	2,125	5,214	4	**57,480**	**89,720**
FY35	42,176	2,389	1,699	1,291	5,834	2,150	5,528	4	**61,071**	**94,872**
FY36	45,119	2,480	1,731	1,332	6,147	2,176	5,856	4	**64,844**	**1,00,275**
FY37	48,216	2,573	1,764	1,373	6,473	2,201	6,201	4	**68,805**	**1,05,936**

FY	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total	PCU
FY38	51,471	2,667	1,796	1,415	6,813	2,227	6,563	4	**72,958**	**1,11,863**
FY39	54,890	2,764	1,829	1,458	7,167	2,253	6,943	4	**77,308**	**1,18,063**
FY40	58,476	2,863	1,862	1,502	7,536	2,279	7,340	4	**81,861**	**1,24,543**
FY41	62,223	2,964	1,894	1,546	7,920	2,304	7,756	4	**86,611**	**1,31,301**
FY42	66,134	3,066	1,927	1,590	8,320	2,330	8,191	4	**91,562**	**1,38,341**
FY43	70,211	3,170	1,960	1,635	8,736	2,356	8,646	4	**96,717**	**1,45,669**
FY44	74,456	3,275	1,992	1,680	9,168	2,382	9,121	4	**1,02,079**	**1,53,291**

Source: Steer analysis.

Table B.3: Forecasts for final (background+impacts) AADT, KM164 (Mahuvan)

FY	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total	PCU
FY27	15,874	1,765	1,512	1,166	4,015	2,118	4,205	3	**30,659**	**56,969**
FY28	16,619	1,839	1,492	1,207	4,076	2,017	4,274	3	**31,527**	**58,008**
FY29	17,839	1,914	1,508	1,248	4,364	2,063	4,611	3	**33,549**	**61,664**
FY30	19,197	1,989	1,537	1,288	4,641	2,098	4,932	3	**35,685**	**65,357**
FY31	20,618	2,065	1,566	1,329	4,902	2,123	5,239	3	**37,846**	**68,986**
FY32	22,129	2,144	1,596	1,372	5,175	2,148	5,563	3	**40,130**	**72,808**
FY33	23,795	2,228	1,628	1,417	5,470	2,174	5,917	3	**42,633**	**76,982**
FY34	25,549	2,315	1,660	1,463	5,776	2,201	6,286	3	**45,254**	**81,338**
FY35	27,361	2,405	1,692	1,510	6,088	2,227	6,664	3	**47,950**	**85,804**
FY36	29,269	2,496	1,724	1,558	6,414	2,253	7,060	3	**50,779**	**90,482**
FY37	31,278	2,590	1,756	1,607	6,754	2,280	7,476	3	**53,745**	**95,378**
FY38	33,390	2,685	1,788	1,656	7,109	2,307	7,913	3	**56,852**	**1,00,498**
FY39	35,608	2,783	1,821	1,706	7,479	2,333	8,370	4	**60,104**	**1,05,849**
FY40	37,934	2,882	1,853	1,757	7,864	2,360	8,849	4	**63,504**	**1,11,438**
FY41	40,365	2,984	1,886	1,808	8,265	2,387	9,351	4	**67,049**	**1,17,263**
FY42	42,902	3,087	1,919	1,860	8,682	2,414	9,875	4	**70,742**	**1,23,329**
FY43	45,547	3,191	1,951	1,913	9,116	2,440	10,423	4	**74,586**	**1,29,643**
FY44	48,301	3,297	1,983	1,966	9,567	2,467	10,996	4	**78,582**	**1,36,208**

Source: Steer analysis.

Revenue forecasts

B.3 The following table presents the year-wise annual revenue forecasts (including Annual Pass Compensation Amount within CJV revenues) for the forecast period until FY44.

Table B.4: Revenue Forecasts, (INR crores), KM46 (Gadpuri) including AP Compensation for CJVs

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total
FY27	105.7	8.1	10.0	14.2	22.4	14.8	33.8	0.0	**209.0**
FY28	117.9	8.8	10.7	15.5	24.3	15.5	37.6	0.0	**230.4**
FY29	131.2	9.6	11.5	17.0	26.7	16.3	41.8	0.0	**254.1**
FY30	148.7	10.5	12.2	18.6	29.1	17.2	46.3	0.0	**282.6**
FY31	164.4	11.3	13.1	20.1	31.7	18.1	51.1	0.0	**309.9**

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total
FY32	183.1	12.4	14.1	21.9	34.5	19.1	56.4	0.0	**341.5**
FY33	205.3	13.4	14.9	23.7	37.4	20.0	61.9	0.0	**376.8**
FY34	225.9	14.4	15.8	25.7	40.6	21.1	68.4	0.1	**412.1**
FY35	252.1	15.6	17.0	28.0	44.0	22.2	75.4	0.1	**454.3**
FY36	282.8	17.1	18.1	30.4	47.8	23.4	83.1	0.1	**502.7**
FY37	309.6	18.5	19.2	33.0	51.8	24.4	91.0	0.1	**547.6**
FY38	342.5	19.9	20.4	35.6	56.1	25.7	100.2	0.1	**600.5**
FY39	379.9	21.6	21.8	38.7	60.8	27.1	110.4	0.7	**660.9**
FY40	421.5	23.4	23.1	41.9	65.9	28.5	121.7	0.1	**726.2**
FY41	463.8	25.2	24.5	45.3	71.2	29.9	133.1	0.1	**793.1**
FY42	512.6	27.4	26.1	49.0	77.1	31.5	146.4	0.1	**870.2**
FY43	569.5	29.6	27.8	53.0	83.3	33.0	160.5	0.1	**956.8**
FY44	627.7	32.1	29.6	57.5	90.5	34.8	176.7	0.1	**1,049.0**

Source: Steer analysis

Table B.5: Revenue Forecasts, (INR crores), KM94 (Karman) including AP Compensation for CJVs

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total
FY27	66.7	7.3	8.0	9.7	45.4	38.5	66.1	0.1	**241.9**
FY28	74.1	7.9	8.2	10.6	48.2	38.5	69.8	0.1	**257.4**
FY29	83.7	8.7	8.8	11.4	54.4	41.1	78.7	0.1	**286.9**
FY30	93.7	9.4	9.4	12.4	60.3	43.9	88.7	0.1	**317.9**
FY31	105.5	10.3	10.1	13.4	66.9	46.6	98.9	0.1	**351.8**
FY32	117.8	11.0	10.6	14.5	73.6	49.2	109.5	0.1	**386.3**
FY33	131.9	12.0	11.3	15.5	81.2	51.9	121.4	0.1	**425.4**
FY34	147.6	13.1	12.1	16.8	89.6	55.2	135.5	0.1	**470.0**
FY35	164.5	14.2	12.9	18.2	98.7	58.2	149.6	0.1	**516.4**
FY36	187.7	15.6	13.8	19.6	109.5	61.8	166.3	0.1	**574.4**
FY37	207.4	16.8	14.6	21.1	119.7	65.1	183.4	0.1	**628.1**
FY38	234.2	18.2	15.7	22.7	131.9	69.0	203.5	0.1	**695.3**
FY39	258.1	19.6	16.6	24.5	145.1	72.7	224.0	1.5	**762.1**
FY40	290.2	21.3	17.6	26.4	159.6	77.4	249.3	0.2	**841.9**
FY41	319.3	23.0	18.8	28.4	175.6	81.4	273.8	0.2	**920.5**
FY42	355.8	24.8	20.0	30.4	191.9	86.0	302.4	0.2	**1,011.5**
FY43	397.1	27.0	21.3	32.8	212.1	91.2	334.6	0.2	**1,116.2**
FY44	435.8	29.1	22.7	35.4	233.0	96.7	370.3	0.2	**1,223.3**

Source: Steer analysis

Table B.6: Revenue Forecasts, (INR crores), KM164 (Mahuvan) including AP Compensation for CJVs

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total
FY27	45.8	5.0	8.4	12.3	50.9	42.5	84.4	0.1	**249.5**
FY28	52.1	5.6	8.6	13.4	54.1	42.8	90.6	0.1	**267.3**

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total
FY29	58.5	6.1	9.1	14.5	60.7	45.8	102.3	0.1	**297.1**
FY30	65.3	6.6	9.8	15.7	67.8	48.8	114.7	0.1	**328.7**
FY31	73.2	7.2	10.5	17.0	75.0	51.6	127.4	0.1	**362.0**
FY32	82.2	7.8	11.2	18.4	83.0	55.0	142.4	0.1	**400.2**
FY33	91.8	8.5	11.9	19.8	91.3	57.8	157.4	0.1	**438.6**
FY34	104.7	9.3	12.7	21.4	101.4	61.2	174.9	0.1	**485.8**
FY35	116.3	10.0	13.5	23.1	111.2	64.7	193.6	0.1	**532.6**
FY36	129.3	10.8	14.4	25.0	123.0	68.5	214.6	0.1	**585.7**
FY37	145.3	11.8	15.4	26.8	135.0	72.3	237.0	0.1	**643.7**
FY38	160.3	12.6	16.3	28.9	148.3	76.4	262.1	0.1	**705.0**
FY39	180.6	13.8	17.4	31.1	163.7	80.9	290.4	1.5	**779.5**
FY40	202.1	15.0	18.6	33.6	179.6	85.9	322.0	0.2	**856.9**
FY41	225.4	16.3	19.8	36.1	196.9	90.4	354.1	0.2	**939.2**
FY42	247.7	17.5	20.9	38.8	217.2	95.7	391.4	0.2	**1,029.2**
FY43	275.4	18.9	22.3	41.7	237.7	101.0	431.5	0.2	**1,128.7**
FY44	306.0	20.5	23.8	44.9	261.7	107.2	477.8	0.2	**1,242.1**

Source: Steer analysis

Control Information

Prepared by

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002, India
+91 124 441 8650
www.steergroup.com

Prepared for

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1,
Sector 16, Noida- 201301 (UP, India)

Steer project/proposal number

Our ref: 23741311

Client contract/project number

Client ref: Transit 11.0

Author/originator

Vineet Karlapalem

Reviewer/approver

Vaibhav Gupta

Other contributors

Shipra Bhatia, Ayushman Rai, Harshit Garg, Samridha Kalaiyan

Distribution

Client: Steer:

Version control/issue number

Date

April 2026

steer

steergroup.com

Final Report
April 2026

Project Transit: Traffic Due Diligence Farakka - Raiganj Highways Limited

c

Cube Highways Fund Advisors Private Limited
Our Ref: 23741311
Clint Ref: Transit 11

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence Farakka - Raiganj Highways Limited

Prepared by:	Prepared for:
Steer Suite No. S3,Vatika Business Centre, Vatika Triangle, MG Road, Gurgaon, Haryana, 122002, India	Cube Highways Fund Advisors Private Limited 1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1, Sector 16, Noida- 201301 (UP, India)
+91 124 441 8650	Clint Ref: Transit 11
www.steergroup.com	Our Ref: 23741311

Steer has prepared this material for Cube Highways Fund Advisors Private Limited. This material may only be used within the context and scope for which Steer has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer shall be deemed to confirm their agreement to indemnify Steer for all loss or damage resulting therefrom. Steer has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

steer

Contents

Disclaimer		**i**
Glossary Items		**i**
1	**Introduction**	**1**
	Our approach	2
	Contents of this report	3
2	**The Asset**	**5**
	Introduction	5
	Strategic network	5
	Asset context	6
	Concession and tolling details	7
	Key economic activities	9
	Alternate and feeder routes	11
	Overloading	12
3	**Traffic Description**	**13**
	Introduction	13
	Historical trends	14
	Data Collection exercise	23
	Key findings of the TVC data analysis	23
	Key findings of origin-destination analysis	26
	Conclusions	33
4	**Socio-economic context and traffic growth**	**35**
	Introduction	35
	Population growth	35
	Economic Indicators	36
	Economic growth	39
	Forecasts for growth drivers	43
5	**FY26 Base year AADT and Traffic growth Analysis**	**45**
	Introduction	45
	FY26 Base year AADT estimates	45
	Estimation of background elasticities	47
	Forecasts for background elasticities	52
6	**Forecast: Network overlays and forecasts**	**54**
	Introduction	54
	Analysis of potential network impacts	54
	Overloading	58
	Revenue forecasting assumptions	59
	Traffic and Revenue forecasts	61
	Upside and Downside cases	65
	Summary outlook	69

Figures

Figure 2.1: Asset location in the regional road network 5
Figure 2.2: Asset context 7
Figure 2.3 (clockwise): TP1 Lakshmipur, TP2 Gazole, Farakka bridge, Movement of stone in Mahadipur 8
Figure 2.4: 3A+MAV Growth vs. Bangladesh-bound Export Growth (FY24-FY26YTD) 10
Figure 3.1: Ticket-segmentation for CJV (TP1 Lakshmipur) 19
Figure 3.2: Ticket-segmentation for MAV (TP1 Lakshmipur) 19
Figure 3.3: Ticket-segmentation for CJV, TP2 Gazole 20
Figure 3.4: Ticket Segmentation for MAV, TP2 Gazole 20
Figure 3.5: Comparison between TVC and TMS daily traffic data, TP1 Lakshmipur 24
Figure 3.6: Comparison between TVC and TMS daily traffic data, TP2 Gazole 24
Figure 3.7: Comparison between vehicle shares from TVC and TMS WADTs for TP1 25
Figure 3.8: Comparison between vehicle shares from TVC and TMS WADTs for TP2 25
Figure 3.9: Zonal influence, TP1 Lakshmipur 28
Figure 3.10: Zonal influence, TP2 Gazole 28
Figure 3.11: Internal-External distribution, TP1 Lakshmipur 29
Figure 3.12: Internal-External distribution, TP2 Gazole 29
Figure 3.13: Commodity distribution, TP1 Lakshmipur (Total) 31
Figure 3.14: Commodity distribution, TP2 Gazole (Total) 31
Figure 3.15: Trip length distribution, TP1 Lakshmipur 33
Figure 3.16: Trip length distribution, TP2 Gazole 33
Figure 4.1: Annual growth – Index of Industrial Production (FY16-FY26YTD) 37
Figure 4.2: Total number of registered motor vehicles in India (per 1000 population 38
Figure 4.3: Historical Growth in Per Capita Incomes – West Bengal vs. India (FY15-FY25) 38
Figure 4.4: YoY growth in expenditure components of GDP 39
Figure 4.5: Month on Month IIP performance 40
Figure 4.6: Industrial components of GVA 41
Figure 4.7: Evolution of West Bengal's state GDP and national GDP, FY12-25 41
Figure 4.8: Sectoral contribution to West Bengal's GSDP in FY25 42
Figure 4.9: GDP-GSDP forecast 44
Figure 5.1: Relationship between CJV traffic GSDP of West Bengal – TP1 & TP2 49
Figure 5.2: Relationship between LCV traffic and GSDP of West Bengal – TP1 & TP2 50
Figure 5.3: Relationship between Bus and 2A traffic with GSDP West Bengal and GDP – TP1 & TP2 51
Figure 5.4: Relationship between 3A and MAV traffic with GSDP West Bengal and GDP – TP1 & TP2 52
Figure 6.1: Asset route shown against the regional network context 54
Figure 6.2: Impact of 6-laning LOS improvement 56
Figure 6.3: Forecast traffic and growth rates in PCUs - Background and final, TP1 65

Figure 6.4: Forecast traffic and growth rates in PCUs - Background and final, TP2 65
Figure 6.5: Long-term PCU forecasts for TP1 Lakshmipur including upside and downside scenarios 67
Figure 6.6: Long-term revenue forecasts for TP1 Lakshmipur including upside and downside scenarios 68
Figure 6.7: Long-term PCU forecasts for TP2 Gazole including upside and downside scenarios 68
Figure 6.8: Long-term revenue forecasts for TP2 Gazole including upside and downside scenarios 69

Tables

Table 1.1: Scope of work and sources of data 1
Table 2.1: Key concession details 7
Table 2.2: Single toll rates on the Asset (INR), applicable April 2025 to March 2026 8
Table 3.1: PCU factors 13
Table 3.2: Traffic levels at TP1 Lakshmipur 14
Table 3.3: Tollable Traffic levels at TP1 Lakshmipur 14
Table 3.4: Traffic levels at TP2 Gazole 15
Table 3.5: Tollable Traffic levels at TP2 Gazole 15
Table 3.6: Total revenue (INR Crores) and AADC (annual average daily collection) in INR Lakhs at TP1 Lakshmipur 16
Table 3.7: Total revenue (INR Crores) and AADC in INR Lakhs at TP2 Gazole 16
Table 3.8: Typical ticket types sold at NHAI plazas 17
Table 3.9: Ticket-segmentation for LCV, Bus and 2As at TP1 Lakshmipur and TP2 Gazole (FY26YTD) 20
Table 3.10: Overloading shares between FY21-FY26YTD 21
Table 3.11: Data collection schedule 23
Table 3.12: WADT from TVC counts 23
Table 3.13: Sample rates for OD data 26
Table 3.14: Zone aggregations for zonal influence analysis 26
Table 3.15: Aggregate commodity categories 30
Table 4.1: CAGR of population in India 35
Table 4.2: Population Growth in West Bengal and India (2012 – 2024) 36
Table 5.1: Adopted SCF for the Asset for TP1 Lakshmipur 46
Table 5.2: Adopted SCF for the Asset for TP2 Gazole 46
Table 5.3: Adopted base estimates: TP1 Lakshmipur 47
Table 5.4: Adopted base estimates: TP2 Gazole 47
Table 5.5: Identified growth drivers to model traffic growth 48
Table 5.6: Assumed forecast elasticities for background growth 53
Table 6.1: List of network/other developments 55
Table 6.2: Impact of completion of Completion of Sahibganj Bridge 55
Table 6.3: Impact of 6 laning LOS improvement for TP1 Lakshmipur 57

Table 6.4: Impact of 6 laning LOS improvement for TP2 Gazole	57
Table 6.5: Impact of Bangladesh Recovery on TP1	58
Table 6.6: Impact of Bangladesh Recovery on TP2	58
Table 6.7: Overloading assumptions for forecast years (FY26 onwards)	58
Table 6.8: Toll segmentation at TP1 Lakshmipur	59
Table 6.9: Toll segmentation at TP2 Gazole	60
Table 6.10: Trip factors at TP1 Lakshmipur	60
Table 6.11: Trip factors at TP2 Gazole	60
Table 6.12: WPI growth forecast assumptions	61
Table 6.13: Revenue reconciliation summary (AADC INR lakhs)- FY26YTD	61
Table 6.14: Final Traffic forecast for TP1 Lakshmipur	62
Table 6.15: Final Traffic CAGR (%) for TP1 Lakshmipur	62
Table 6.16: Final Revenue forecast (INR Crores) for TP1 Lakshmipur	62
Table 6.17: Final Revenue CAGR (%) for TP1 Lakshmipur	63
Table 6.18: Final Traffic forecast for TP2 Gazole	63
Table 6.19: Final Traffic CAGR (%) for TP2 Gazole	63
Table 6.20: Final Revenue forecast (INR Crores) for TP2 Gazole	64
Table 6.21: Final Revenue CAGR (%) for TP2 Gazole	64
Table 6.22: Summary of Macro-economic Assumptions for upside and downside cases	66
Table 6.23: Summary of impacts on the Assets – upside case	66
Table 6.24: Summary of impacts on the Assets - downside case	66
Table 6.25: Percentage Difference Upside and Downside Case Forecasts vs. Base Case Forecasts - FY42	67

Appendices

A	**Top 10 OD Pairs**
B	**Data Collection Exercise**
C	**Detailed Forecasts**

Disclaimer

This report has been produced for the sole benefit of Cube Highways Pvt. Ltd ("the Client"). The report may only be relied upon by Approved Addressees in accordance with the terms of our engagement letter. The report is confidential and disclosed only for information purposes, and it may not be relied upon by any party other than the Client or a Party to a Reliance Letter, and Steer: a) makes no warranty, expressed or implied, with respect to the use of any information or methods disclosed in this Report; and b) assumes no liability with respect to the use of any information or methods disclosed in this document. Any such party by its acceptance or use of this Report releases Steer from any liability for direct, indirect, consequential, or special loss or damage whether arising in contract, warranty, express or implied, tort or otherwise.

The Report is based on standard professional efforts, and information available to us at the time the review took place and is subject to time and budget constraints of the Report's scope of work. This Report, information and statements contained herein, are all based on third party data provided to us, or sourced by us, and Steer has not sought to establish the reliability of the data, except as specifically stated in the Report. Steer bears no responsibility for the results of any actions taken on the basis of third-party data.

Certain forward-looking statements in the Report are estimates based on interpretations or assessments of information available at the time of writing. The Report is thus to be viewed as an assessment that is time-relevant, specifically referring to conditions at the time of the review. Steer undertakes no obligation to update the Report for any reason.

While the estimates contained in the Report are not precise forecasts, they do represent, in our view a reasonable expectation of the future, based on information we have been provided with or sourced. However, the estimates necessarily rely on numerous assumptions and judgements, and circumstances may occur over the timeframe of the project that go counter to these assumptions and judgements and that affect the project's realized revenues. Actual events may differ from those assumed, and events are subject to change. Therefore, Steer makes or provides no warranty, whether implied or otherwise, as to the accuracy of forward-looking information presented. Further, it is important to note that forecasts presented represent long term growth profiles; the results for individual time periods may vary from forecasted values.

Traffic Consultant developed the relationships in the models used to produce the forecasts for the projects based on data available through February 2026. This report does not consider variations in traffic performance due to changing macro and force majeure events such (but not limited to) as global wars, economic uncertainty (high inflation, global recession), and changes in the regulatory environment. The situation remains dynamic and is subject to significant change in the short and medium term. In this challenging context, Traffic Consultant has produced base forecasts with a view on a possible scenario for the traffic forecasts. However, it is important to note that this is only one view, and there continues to remain uncertainty as to the short-term, intermediate or prolonged effects of and responses to such macro-economic/force majeure events. As a result, no assurance can be provided by Traffic Consultant that the scenarios and assumptions Traffic Consultant has identified will prove to be accurate. Given the uncertainty inherent in this scenario, Traffic Consultant advises that all readers of the

Report consider the Report in the context of their own assessment of the impact of such events.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE ISSUE OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES.

Glossary Items

Acronym	Meaning
2A/ Truck	2 Axle/ Truck
3A	3 Axle
AADT	Annual Average Daily Traffic
BOT	Build Operate Transfer
CAGR	Compound Annual Growth Rate
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DPR	Detailed Project Report
ETC	Electronic Toll Collection, also referred to as FASTag
FY	Financial Year
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HAM	Hybrid Annuity Model
HCM/ EME	Heavy Commercial Vehicles/ Earth Moving Machinery
IE reports	Independent Engineers' reports
IHMCL	Indian Highway Management Company Limited
INR	Indian Rupees
InvIT	Infrastructure Investment Trust
km	Kilometer
LCV/ LGV	Light Commercial Vehicles/ Light Goods Vehicle
LMV	Light motor vehicles
MADT	Monthly average daily traffic
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NSDP	Net State Domestic Production
OD	Origin Destination
OSV	Over sized vehicles
PCU	Passenger Car Unit; it is a measure of standard vehicle unit to convert all vehicle classes to a single unit by using PCU factors to compute total traffic on an Asset.
Q1	Quarter 1 of financial year, from April to June
Q2	Quarter 2 of financial year, from July to September
Q3	Quarter 3 of financial year, from October to December
Q4	Quarter 4 of financial year, from January to March
RNP	Registered Number Plate
SCF	Seasonality Correction Factor

Acronym	Meaning
SH	State Highway
T&R	Traffic and Revenue
TMS	Traffic Management System
TVC	Traffic Volume Count
WADT	Weekly average daily traffic
YTD	Year to Date

1 Introduction

1.1 The Cube Highways Fund Advisors Private Limited (the "Client") has commissioned Steer Davies Gleave India Private Limited ("Steer") for a traffic due diligence to be carried out on the Farakka-Raiganj Tollway Road (hereafter called "Asset"). This report forms part of the annual fair market valuation (FMV) undertaken as part of the "Transit 11 project". This report presents an update of the traffic and revenue forecasts based on actual traffic data available up to February 2026 and latest macro-economic assumptions.

1.2 The Asset Farakka-Raiganj consists of a single stretch of toll road with two toll plazas. For the purpose of this report, we hereafter call the toll plazas present on the Asset as TP1 and TP2 respectively as:

- TP1 – Lakshmipur
- TP2 – Gazole

1.3 Our scope of work for the traffic and revenue forecasting process includes:

Table 1.1: Scope of work and sources of data

Scope of work	Data source
• Review of historical Traffic Management System (TMS) data, Vendor reports and documents	• Provided by client for the period between Oct'20 and Mar '26, with FY26 base AADT and forecasts considering data up to Feb'26
• Historical analysis and forecasts for baseline growth, including; — Background growth, and — Seasonality trends	• Historical data provided by the Client and benchmarking using plazas in the vicinity or of similar nature of the Asset has been done wherever sufficient data was unavailable.
• Validation of revenue reported in FY26YTD	• TMS data provided by Client • Revenue reconciliation using toll plaza traffic and ticket type data to calculate revenue and reconciling it with toll plaza reported revenue
• Origin Destination (OD) analysis to understand growth drivers: — Zonal influence and Top OD pairs — Commodity distribution — Trip length distribution	• Origin Destination (OD) surveys undertaken by Steer in 2026 at TP1 and TP2.
• Analysis of upcoming network improvements and other developments, that may have future impacts on traffic	• Secondary research and our in-house experience of working in the vicinity of the Asset. Impact analysis to be conducted by Steer based on Generalised Journey Cost spreadsheet-based analysis

Scope of work	Data source
• Historical revenue analysis and forecasts for revenue estimation, including — Toll segmentation and trip factors, — Overloading shares	• Calculated from historical data provided by Client
• Final traffic growth forecasts including baseline growth rates and potential future impacts	• Elasticity based base growth and potential impacts from secondary research, Asset historical traffic performance and Steer's in-house experience of working on toll roads on the corridor • Gross Domestic Product (GDP) forecast assumptions provided by Client
• Toll revenue estimation for the entire concession, including toll evolution	• Toll evolution based on latest toll notification published by National Highway Authority of India (NHAI) and latest actual Wholesale Price Index (WPI) trends as shared by the Client. • Assumptions of WPI forecasts and future tolling length changes provided by Client • Revenues estimated as a product of traffic forecasts and toll evolution

Our approach

1.4 Our approach follows well-established practices for forecasting ongoing traffic growth on an existing/brownfield Asset. The analysis has essentially focused on two sets of issues, namely:

- understanding the traffic that is currently using the Asset; and
- identifying how and why that traffic is likely to change in the future.

1.5 To understand the current traffic on the Asset, we have analysed traffic data from multiple independent sources:

- Client-provided secondary data, including:
  - TMS data starting October 2020 to February 2026. The historical traffic and revenue presented in Chapter 3 considers information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.
  - Concession agreement and toll notifications for FY25 and FY26
  - Previous studies related to traffic and revenue
  - Bid documents and studies by lenders
  - In this study, Steer-commissioned OD surveys at TP1 on 6th March 2026 and at TP2 on 10th March 2026. TVC was conducted at TP1 between 4th-6th March 2026 and at TP2 between 6th–9th March 2026.
- We undertook revenue reconciliation on FY26YTD by building up revenue from the traffic reported by each of the toll plaza and subsequently match it to the reported

revenue for FY26YTD using the prevalent toll rates and reported segmentation/toll-frequencies for FY26YTD, this is a key part of our analysis to validate the segmentation/toll-frequency assumptions and the Annual Average Daily Traffic (AADT) reported for each of the toll plaza.

1.6 The estimation of future traffic demand on the Asset was undertaken through:

- Estimating FY26 base year position by applying seasonality correction factors (SCFs) on the 11 months of actual traffic data available (April to February).
- Secondary research to understand plans for new developments and progress of ongoing developments on the Asset.
- Steer independent primary surveys and site visits to validate our network and contextual understanding.
- Developing a bespoke growth model for each Asset/plaza/toll class to forecast year-on-year traffic growth from FY26 to the end of concession period.
- Investigating the elasticity of historical traffic growth compared to state (GSDP) and national (GDP) growth. Where historical data is limited, we have benchmarked the Asset against our Steer knowledge base (e.g., similar Asset types in the same state or on the same corridor), to derive appropriate elasticities.
- Applying our elasticities to independent GDP forecasts as provided by client.
- Identifying and analysing the potential impacts of any relevant changes to the competitive position of each Asset – these include impacts of changes to road network including expressways and opening of competitive modes of travel.
- Identifying and analysing any other potential impacts to traffic and revenue on each Asset – these include axle load norms, axle shift for heavy goods, FASTag implementation.
- Considering changes in trends of segmentation over time and making suggestions for changes in exemptions in the future
- Preparing traffic and revenue forecast for the Asset for the complete length of concession. The analysis here includes the specific impacts of network, or other exogenous factors specific to the Asset. We have developed a set of forecasting assumptions for three scenarios: a base case and upside and downside scenarios.

Contents of this report

1.7 The report has been divided into the following chapters, including Chapter 1 providing an introduction:

- Chapter 1 introduces the methodology and approach to undertake the traffic and revenue due diligence;
- Chapter 2 describes the key characteristics of the Asset and its surrounding road network, primarily based on site visits;
- Chapter 3 summarises the current and historical traffic trends on the Asset, including results from the TMS, TVC and OD analysis;
- Chapter 4 presents the socio-economic context of India, the corridor and region/state containing the Asset, along with our approach and results on estimating background along with our key forecasting assumptions,
- Chapter 5 presents our baseline year forecast and summarises our results on estimating background traffic demand growth

- Chapter 6 summarises our assessment of network impacts and presents concession traffic and revenue forecasts for the Asset along with the assumptions for upside and downside cases.

2 The Asset

Introduction

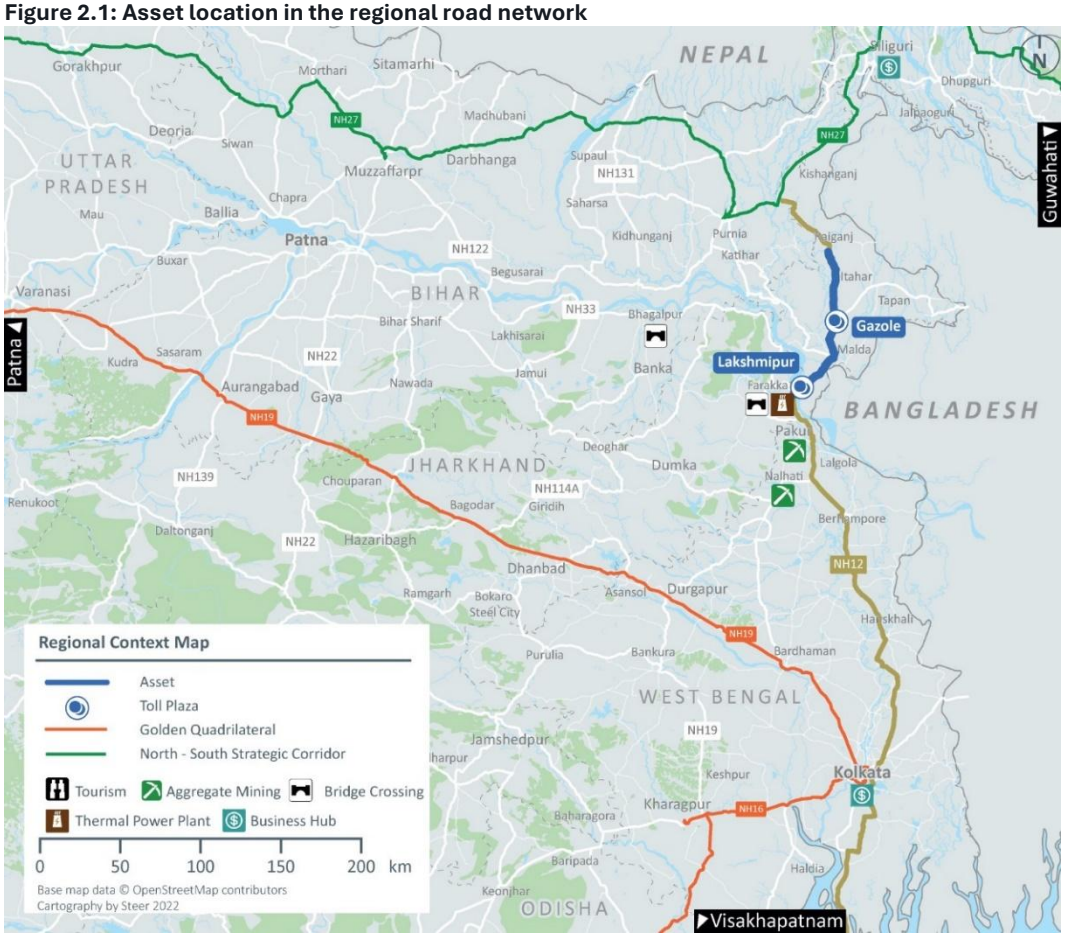
2.1 This chapter provides a description of the Asset, based on both primary data (from site visits), and our understanding of the region and network surrounding the Asset. We cover the strategic network context, followed by key economic activities and network developments around the Asset.

Strategic network

2.2 The Asset is situated in the state of West Bengal, connecting the cities of Farakka and Raiganj and provides connectivity to the city of Malda. The Asset is also located very close to the international border of Bangladesh

2.3 The figure below shows the regional road network in which the Asset is located.

Figure 2.1: Asset location in the regional road network



Source: Steer cartography using OpenStreetMap data.

2.4 As the Asset sits near the border, it also provides connectivity to international land ports on India-Bangladesh border at Mahadipur and Hili (via NH512) connected to the Asset at Malda and Gazole respectively.

2.5 Traffic on the project road is primarily commercial traffic carrying goods to/from different parts of the state of West Bengal, the north-eastern states, adjoining western states (Bihar and Jharkhand) and some southern states (such as Andhra Pradesh and Tamil Nadu).

2.6 The Asset primarily caters to three different types of strategic movements:

- **Short-distance trips** between Malda and other towns in Malda and Murshidabad districts.
- **Medium-distance** trips between southern and northern parts of West Bengal, including movements between Pakur district of Jharkhand, Malda, and Bangladesh.
- **Long-distance trips** between South and East India including Kolkata, and Northeast India. Kolkata is the largest urban agglomeration and one of the four older metropolitan cities of India and is both a large attractor and generator of consumption-linked commodities in East and Northeast India.

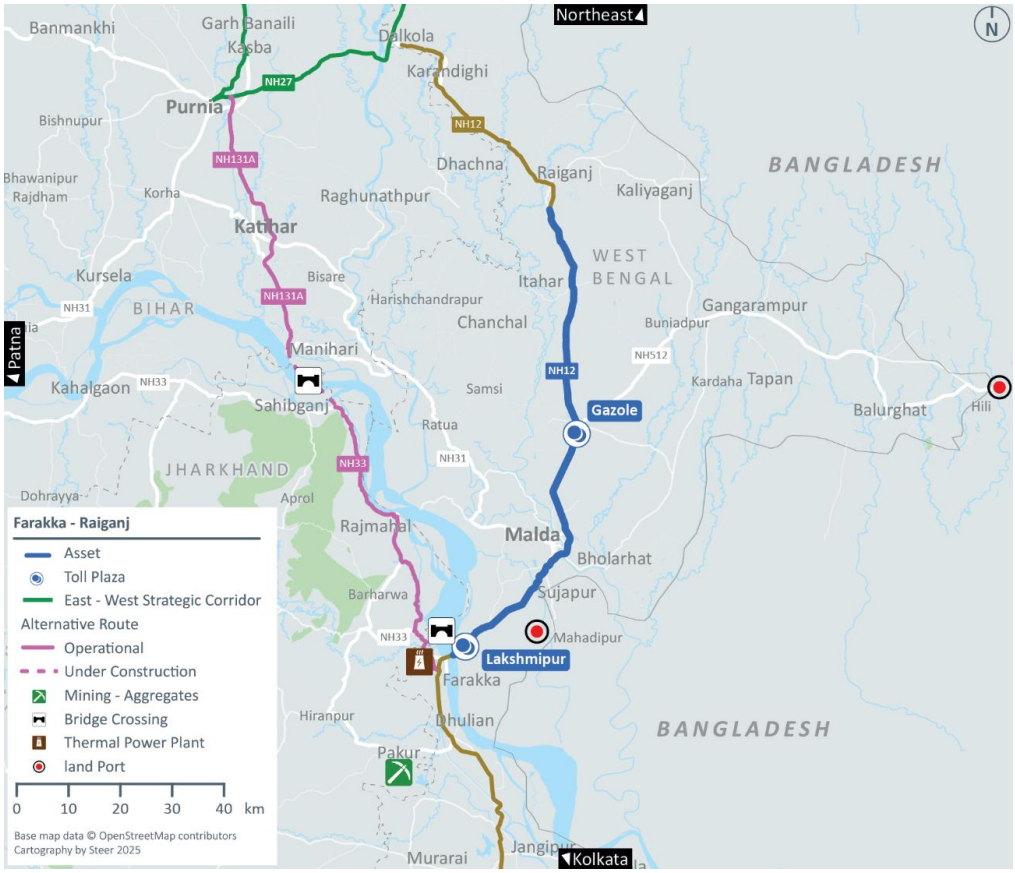
2.7 Essentially, both medium-distance and long-distance movements need to cross the two-lane Farakka Barrage, on the Ganges River, located just at the southern end of the Asset which makes the Asset a crucial funnelling link between southern and northern parts of West Bengal state. Traffic between Kolkata/Durgapur/Bardhhaman and Kishanganj/northeast regions use this barrage, and it is the only bridge crossing available in the region or on this route along the NH12. As a result, the Asset forms part of a strategic corridor that primarily serves long distance commercial traffic.

Asset context

2.8 The Asset is a 100 km toll road section of the NH12 that is the main north-south highway in West Bengal. It is a four-lane highway with two toll plazas, namely, Lakshmipur (TP1) at Km 297.9 (nearer to Farakka) and Gazole (TP2) at Km 351.4 (nearer to Raiganj).

2.9 Malda and Gazole are major settlements situated along the Asset and serve as trip generators / attractors of short – medium distance passenger and commercial traffic that are observed crossing one or both toll plazas on the Asset. Figure 2.2 below provides a closer view of the Asset in the context of its immediate surroundings.

Figure 2.2: Asset context



Source: Steer cartography using Open Street Map data

Concession and tolling details

2.10 Both toll plazas on the Asset have been operational since October 2016, and the Client assumed operations in September 2020. Currently, FY42 is expected to be the last year of the concession, implying 16 years remaining in its concession life. Table 2.1 below summarises key aspects of the concession.

Table 2.1: Key concession details

Particulars	Details
State	West Bengal
Highway and lane configuration	NH12, four-laned
Toll plazas	• TP1: Lakshmipur • TP2: Gazole
Appointed date	February 2011
Commencement of operations*	October 2016
Operated by Client since	September 2020
Concession period	30 years
Last year of concession	FY42
Tollable length (Km) as per concession agreement, applicable	TP1: 56.715 km (including 9.05 km Malda Bypass)

Particulars	Details
	TP2: 43.375 km

Source: Client Data

2.11 Figure 2.3 below shows a typical cross-section of the Asset and its toll plazas.

Figure 2.3 (clockwise): TP1 Lakshmipur, TP2 Gazole, Farakka bridge, Movement of stone in Mahadipur

Source: Steer site visit

2.12 Tolls are collected for the following ticket categories: Single, Return, Local Commercial, and Monthly tickets. The toll plazas have dedicated ETC/FASTag lanes for electronic tolling.

2.13 Table 2.2 below presents single journey toll rates for FY26 at both the toll plazas.

Table 2.2: Single toll rates on the Asset (INR), applicable April 2025 to March 2026

Type of Vehicle	Single Journey Fee	
	TP1 Lakshmipur	TP2 Gazole
CJV	145	65
LCV	230	105
Bus/Truck	470	225
HCM/EME/3A/MAV	720	350
OSV	915	425

Source: NHAI Revision of User fee

Key economic activities

2.14 Traffic on the Asset is primarily commercial traffic carrying agricultural commodities, and construction materials to/from different areas within the state of West Bengal, the north-eastern states, neighbouring states of Bihar and Jharkhand and some southern states (such as Andhra Pradesh and Tamil Nadu). It also serves traffic originating from or destined to neighbouring countries of Nepal, Bhutan and Bangladesh. West Bengal is regarded as the gateway for India's Act East Policy[1], which aims to strengthen India's strategic, economic, and cultural ties with the Southeast Asian countries, including Bangladesh. In this context, the Asset can be classified as providing critical infrastructure connecting India to Bangladesh via land ports at Mahadipur and Hili.

2.15 Pakur district (JH), located 25 km south of the Asset, is an important region for the production and transportation of stone aggregate to Bangladesh via land ports at Mahadipur, Hili, and other locations further north and along the India-Bangladesh international border. As of January 2018, there were 246 operative and non-operative stone mines across the full district[2] and 255 stone-crushing units[3] that process stone mined from quarries into stone chips/aggregates that are transported to serve construction demand both domestically and across the border in Bangladesh. Seasonal changes, mining regulation, and govt. policies such as vehicle overloading restrictions all have direct and indirect impacts on commercial traffic growth on the Asset as they relate to the productivity and operations of these mines.

2.16 Thus, key economic activities in the region include agriculture and related activities (cotton, rice, and vegetables being the major commodities) and stone (aggregate) mining. Agricultural commodities that are produced and transported via the asset from local farms and cold storages vary by season, and specific externalities. Mining output and materials carried on the asset are impacted by market demand dynamics in both domestic and international markets (primarily Bangladesh), government policies and regulation, as well as seasonal variation. The extent to which these factors do and could continue to impact traffic growth on the Asset is discussed briefly in Chapter 6 below.

Influence of Bangladesh Economy and Domestic Policies on Asset Performance

2.17 As aforementioned, international demand for construction material, particularly stone chips/aggregate demand in Bangladesh serves as an important driver of commercial traffic growth on the Asset. Given the strategic significance of Bangladesh’s economy to the Asset, it is important to review how economic conditions in Bangladesh over the past year have evolved and impacted traffic growth on the Asset:

2.18 In FY24, the country's commercial banks had struggled to meet their import payment obligations, which reduced their foreign exchange reserves[4] and made it more challenging

[1] **Bangladesh corridor vital to India’s ‘Act East’ policy (World Bank blog, September 2017)**

[2] **(PAKUR) DISTRICT SURVEY REPORT FOR STONE MINING (2016-2017)**

[3] **https://dcmsme.gov.in/dips/Pakur.pdf**

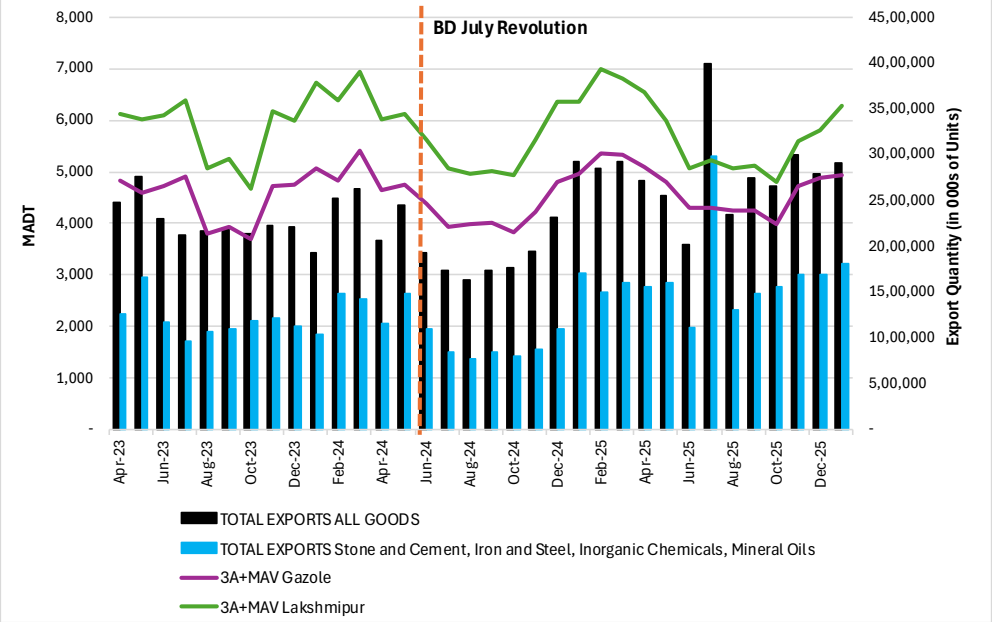
[4] **Major challenges for Bangladesh economy in 2023 | The Financial Express**

to get "Letters of Credit". This continued through the early part of FY25 as well before significantly improving over the past five months[5].

2.19 According to a report published by the Asian Development Bank[6], the downturn in the Bangladesh economy in FY23 and early months of FY24 reflected falling private and public investment tied to high inflation and lower export demand. In FY24, GDP growth in Bangladesh slowed further and expectations of growth in FY25 were also qualified given impact of global supply chain disruption and political transition.

2.20 In addition to the above, which has affected construction activity in Bangladesh and subsequently reduced stone chip/aggregate exports from India (see Figure 2.4 below), domestic policies such as the crackdown on illegal stone mining and quarrying in Jharkhand (and across the wider nation) and other market factors[7] have also impacted production of stone chips/aggregate in Pakur district over the past few years. Both these developments have contributed to suppressed growth of commercial volumes on the Asset. However, a recovery Bangladesh-bound exports can be seen from October 2025, with the political situation in Bangladesh stabilising. With fresh elections and a new government being formed in February 2026, Bangladesh-bound traffic is expected to stabilise from FY27 onwards. Based on this, expectations of future growth in commercial traffic on the asset is discussed in more detail in Chapter 6.

Figure 2.4: 3A+MAV Growth vs. Bangladesh-bound Export Growth (FY24-FY26YTD)



Source: Steer Analysis of Client data, and Ministry of Commerce (Government of India) Data

[5] Overdue import bills down to $88m from $445m in five months | The Business Standard

[6] Asian Development Outlook (ADO) April 2024: Bangladesh

[7] Mechanisation, shutting down of stone quarries push Pakur's workers to the brink - Daijiworld.com

Alternate and feeder routes

Alternate routes

2.21 Following from the strategic network context of the Asset (as described above), this section details alternate routes that are either currently available or may be potentially available (in future) to users of the Asset. As part of this study, we have conducted an extensive review of these alternate routes and network developments and have incorporated the impact of those that we believe would impact the Asset significantly into our final traffic and revenue forecasts. These impacts can be summarized as follows:

- Ro-Ro service between Rajmahal and Manikcha[8] : For north-south movements on road, the NH12 (Asset) is the only option for medium-distance traffic between Pakur district (JH) and Malda (WB) or Bangladesh. However, according to truck driver interviews conducted during our site inspections, the unofficial Ro-Ro service between Rajmahal (JH) on the southern bank, and Manikchak (WB) on the northern bank of the Ganges offers an alternative north-south route to the Asset. This route is typically used during times of severe traffic congestion on the Asset, generally due to roadworks and construction activity on the Farakka Barrage. Based on our site visit observations and general understanding of travel patterns within the regional network, the service provided by the Ro-Ro route is currently of an informal set-up, and unlikely to form a competing alternative to the asset for medium-distance commercial volumes carrying stone chip/aggregate materials to/from Pakur to other parts of WB and into Bangladesh. Therefore, we have excluded any potential impact of this route alternative on future traffic growth on the Asset.
- New bridge over Ganga River in Sahibganj, Bihar: A four-lane bridge of length 6km on the Ganges River near Sahibganj, is currently under construction between Sahibganj and Manihari. It is expected to be completed by second half of FY27. This would provide a route choice to the OD pairs including but not limited to, south of Farakka (including Kolkata, Bardhhaman, Pakur) and North of Raiganj (area between Kishanganj and Supaul including Purnia, Katihar). This impact is evaluated in Chapter 6 below.

Feeder routes

2.22 Over the past few years, several sections of the NH12 highway have been upgraded over time and have significantly improved the overall Level of Service provided by the highway for vehicular traffic travelling both short and long-distances between north, central, and south WB, as well as from/to neighbouring states. While the 4-laning of Farakka-Raiganj section of the NH12 (i.e., the Asset) was completed in FY22[9], the upgrade of the highway extending further north and south of the Asset generally bodes well for traffic growth on the Asset as overall Level of Service (LoS) across a longer stretch of the NH12 is improved and made more attractive to users travelling both short and longer distances. Some of these improvements considered in our network analysis include the following:

- The Dalkhola bypass on the NH12 that was completed in FY22.

[8] **What Is RoRo Shipping? A Guide for Businesses & Individuals**

[9] **AS172.pdf**

- By March '24, the section of the NH12 north of the Asset between Raiganj and Dalkhola had also been fully upgraded to 4-lanes, along with the opening of the Raiganj Bypass and ROB in May 2024.
- 4-laning of the Krishnanagar-Behrampore section of the NH12.
- The new Farakka Setu, which is a ~2.6km 4-lane road bridge connecting Farakka to Baishnabnagar across the Ganga is under construction. Construction is expected to get completed by the second half of FY27.

2.23 We understand that the new bridge will act as a replacement to the existing Farakka Barrage where road traffic will be fully restricted post completion of the new bridge. Plans to construct a rail bridge alongside the completed road bridge have been voiced but not officially sanctioned.

2.24 Based on the network developments listed above, we believe the impact of the improved LoS of the NH12 highway due to completion of the Dalkhola Bypass, Raiganj Bypass and ROB, as well as 4-laning of the full Farakka to Dalkhola section of the NH12 is already being observed on the Asset. The construction of the New Farakka Setu over the past several years and expected construction of the rail bridge beside it is expected to keep construction related traffic growth on the Asset consistent over the near to medium-term. In our analysis, we have not included any additional LoS impact due to the New Farakka Setu as it is meant to replace the access currently being provided by the Farakka Barrage. Given that the Krishnanagar-Behrampore section of the NH12 is still not full upgraded to 4-lane configuration, we have incorporated the impact of this improved LoS on NH12 in our future traffic growth forecasts on the Asset.

Overloading

2.25 Given the nature of commodities carried by commercial vehicles on the Asset, which primarily comprise heavy weight high-volume items such as construction materials - particularly stone chips/aggregates - overloading of commercial vehicles has been historically prevalent on this corridor. Overloaded vehicles are charged through a staggered overloading penalty system, where truckers pay up to 10 times the toll as a penalty.

2.26 Due to historical prevalence of overloading on the corridor, several truckers using the NH12 to transport commodities have also become accustomed to paying overloading penalties and have pre-determined routes that account for the various hidden and apparent transaction costs of transporting goods in overloaded vehicles.

3 Traffic Description

Introduction

3.1 This chapter presents historical traffic and revenue growth trends on the Asset, as well as our analysis of origin-destination (OD) data and traffic count data sourced from primary surveys. This covers data which was collected as a part of this study and previous studies, as well as data provided by the Client.

3.2 Traffic count data is generally collected and analysed to understand the volume and vehicle composition of demand currently using the Asset, while OD data is used to obtain a better understanding of travel patterns, trip lengths, trip purposes and areas of influence in the vicinity of the Asset, as well as the commodities being moved by goods vehicles. This analysis, combined with our understanding of the Asset (based on our site visits), enables us to identify the key drivers of demand on the Asset.

3.3 Toll plaza data is used as the primary basis from which the current/base year annual average daily traffic (AADT) is established. This data is typically provided by the Client and independently analysed and validated by us using traffic volume count (TVC) information.

3.4 The below sections present historical traffic and revenue information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.

PCU Factor assumption for Forecasts

3.5 The PCU factors considered in Table 3.1 below are as per IRC64 1990[10]. Based on the discussion with the Client, we have referred to the rigid and trailer splits from the TVC data collected earlier for calculating the effective PCU for MAVs. For Rigid trailer trucks we have assumed a PCU factor of 3, whereas for Trailer trucks we have assumed a PCU factor of 4.5 as defined in IRC64 1990

Table 3.1: PCU factors

Vehicle Category	PCU Factor
CJV	1.0
Mini LCV	1.0
LCV	1.5
Bus	3.0
2A	3.0
3A	3.0

[10] IRC 064: Guidelines for Capacity of Roads in Rural Areas

Vehicle Category	PCU Factor
MAV	3.3
OSV	4.5

Source: Steer analysis

Historical trends

3.6 The table below presents the historical traffic evolution for each of the Asset toll plazas. Historical traffic data on the Asset is available from October 2016 through FY26YTD (February 2026). However, since the data for the complete FY17 is not available, Table 3.2 to Table 3.5 below present the data between FY18 and FY26YTD.

Table 3.2: Traffic levels at TP1 Lakshmipur

Class	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY18-26
CJV	2,536	2,479	2,822	3,659	3,661	3,680	3,887	4,082	4,252	6.7%
LCV	800	868	861	743	421	375	400	477	554	(4.5%)
Bus	1,293	1,350	1,317	1,298	411	434	420	420	434	2.7%
2A*					875	923	974	1,070	1,164	
3A	1,770	954	1,039	956	774	781	757	737	689	(11.1%)
MAV	3,515	3,216	4,347	3,960	4,436	4,767	5,001	5,077	5,048	4.6%
Total	**9,915**	**8,867**	**10,385**	**10,616**	**10,578**	**10,961**	**11,438**	**11,864**	**12,143**	**2.6%**
PCU	**24,358**	**21,151**	**25,316**	**24,413**	**24,897**	**26,164**	**27,201**	**27,992**	**28,365**	**1.9%**

Source: Steer analysis of Client data; FY26 AADT represents the full year actual (April to March); *2A includes Buses till March 2021.

Table 3.3: Tollable Traffic levels at TP1 Lakshmipur

Class	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY18-26
CJV	2,390	2,322	2,603	3,393	3,413	3,454	3,646	3,795	3,942	6.5%
LCV	750	810	800	687	403	345	365	441	521	(4.4%)
Bus	1,268	1,308	1,268	1,278	395	429	413	406	429	2.7%
2A*					85	905	954	1,049	1,143	
3A	1,767	942	1,030	936	770	780	756	736	689	(11.1%)
MAV	3,512	3,187	4,325	4,019	4,421	4,761	4,999	5,074	5,045	4.6%
Tollable AADT	**9,687**	**8,570**	**10,026**	**10,314**	**10,255**	**10,676**	**11,133**	**11,502**	**11,769**	**2.5%**
Tollable PCU	**24,041**	**20,651**	**24,762**	**24,135**	**22,145**	**25,804**	**26,822**	**27,532**	**27,914**	**1.9%**

Source: Steer analysis of Client data; FY26 AADT represents the full year actual (April to March); Tollable traffic excludes exemption and violation; *2A includes Buses till March 2021.

Table 3.4: Traffic levels at TP2 Gazole

Class	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY18-26
CJV	3,498	3,895	4,283	4,796	5,097	5,308	5,616	5,820	6,449	7.9%
LCV	651	637	658	543	319	323	361	427	540	(2.3%)
Bus	1,655	1,658	1,679	1,536	557	666	658	659	693	2.6%
2A*					1,034	1,113	1,147	1,213	1,339	
3A	1,321	851	999	913	789	799	763	756	739	(7.0%)
MAV	2,452	2,501	3,337	3,167	3,290	3,621	3,664	3,755	3,941	6.1%
Total	**9,577**	**9,541**	**10,956**	**10,955**	**11,088**	**11,831**	**12,210**	**12,630**	**13,702**	**4.6%**
PCU	**21,376**	**20,509**	**24,157**	**23,256**	**23,419**	**25,307**	**25,781**	**26,557**	**28,390**	**3.6%**

Source: Steer analysis of Client data; FY26 AADT represents the full year actual (April to March); *2A includes Buses till March 2021

Table 3.5: Tollable Traffic levels at TP2 Gazole

Class	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY18-26
CJV	3,253	3,618	3,912	4,377	4,758	4,939	5,235	5,408	5,979	7.9%
LCV	633	617	628	499	315	320	355	419	536	(2.1%)
Bus	1,630	1,632	1,632	1,498	547	663	652	648	689	2.7%
2A*					1,031	1,099	1,133	1,195	1,324	
3A	1,316	845	991	885	785	782	762	754	738	(7.0%)
MAV	2,446	2,491	3,312	3,140	3,290	3,607	3,659	3,748	3,936	6.1%
Tollable AADT	**9,279**	**9,206**	**10,476**	**10,401**	**10,727**	**11,410**	**11,796**	**12,172**	**13,203**	**4.5%**
Tollable PCU	**20,995**	**20,075**	**23,494**	**22,486**	**23,019**	**24,784**	**25,308**	**26,018**	**27,838**	**3.6%**

Source: Steer analysis of Client data; FY26 AADT represents the full year actual (April to March); Tollable traffic excludes exemption and violation; *2A includes Buses till March 2021

3.7 TP1 (Lakshmipur) observed a CAGR of 1.9% in terms of PCU between FY18 and FY26, while TP2 grew by CAGR 3.6% in the same period. The increase in CJV volumes at both toll plazas in FY25 and FY26 can be attributed to an increased LoS offered by the completion of the Raiganj Bypass and ROB north of the Asset as well as the completion of the 4-laning of the Dalkhola-Raiganj section of the NH12 by March 2024 making CJV travel more attractive.

3.8 TP2 (Gazole) carries more CJV traffic compared to TP1, as TP2 is closer to the town of Malda which contributes to higher passenger traffic on the Asset. Additionally, 2A+Bus

account for a considerable share of total traffic at both plazas, at around 1,500 and 2,000 AADT in FY26 at TP1 and TP2 (respectively).

3.9 The growth trend of tollable traffic on the Asset has been at the same level as that of total traffic. For the period of FY18-26, TP1 Lakshmipur recorded an average annual growth of 1.9% per year for its tollable PCU (same as total PCU growth in the same period). Over the same period, TP2 recorded an annual growth of 3.6% per year for its tollable PCU.

3.10 3A category has shown a negative trend historically. The reduction in 3A volume is a result of the declining demand for 3A vehicles, which are being replaced by 2As and MAVs – a trend not unique to the Asset or region. MAVs offer higher tonnage capacity making them more cost-effective for transporters with the Asset primarily catering to construction traffic, movement towards MAV's is more favourable for users. While the increase in 2A volume reflects the growing preference for these vehicles due to favourable changes in the legal permissible loads for 2As and their suitability for e-commerce-related freight, particularly high-value, low-volume goods over medium to long distances. This is consistent with our discussion with various transporters and OEMs across the country who are favouring 2A and 5A vehicles for commodity movement due to better unit economics.

3.11 The decline in commercial volume especially in FY25 and part of FY26 has been contributed by decline in exports to Bangladesh, due to the recent economic and political turmoil the country has seen (refer chapter 2). It is expected that the Bangladesh economy should revive in the medium term resulting in improved traffic performance on the Asset.

3.12 Table 3.6 and Table 3.7 below present total annual revenue (in INR Cr) and AADC (in INR Lakhs) at TP1 and TP2 respectively over the period FY21-FY26.

Table 3.6: Total revenue (INR Crores) and AADC (annual average daily collection) in INR Lakhs at TP1 Lakshmipur

Year	TP1 (INR Crores)	AADC	AADC Growth (%)
FY21	88.3	24.2	-
FY22	140.2	38.4	58.8%
FY23	155.6	42.6	10.9%
FY24	162.2	44.3	4.0%
FY25	165.8	45.4	2.5%
FY26	175.5	48.1	5.9%

Source: Steer analysis of the Client data; FY26 represents full year actual (April to March).

Table 3.7: Total revenue (INR Crores) and AADC in INR Lakhs at TP2 Gazole

Time Period	TP2 (INR Crores)	AADC	AADC Growth (%)
FY21	78.4	21.5	-
FY22	63.2	17.3	(19.4%)
FY23	69.7	18.7	7.9%
FY24	70.5	19.3	3.1%
FY25	72.9	20.0	3.6%

Time Period	TP2 (INR Crores)	AADC	AADC Growth (%)
FY26	80.4	22.0	10.3%

Source: Steer analysis of the Client data; FY26 represents full year actual (April to March)

3.13 As of FY26, TP1 Lakshmipur has reported an AADC of INR 48.1 Lakhs – significantly higher than the INR 22.0 Lakhs reported by TP2 Gazole.

Toll Frequencies

3.14 Toll frequency or ticket segmentation is typically the share of each ticket category recorded for a particular vehicle type. This is based on the toll policy which forms a part of the concession agreement. Each vehicle category has a different ticket segmentation. As a part of our historical data analysis, we calculate toll frequencies for each vehicle category from the latest monthly traffic data shared by the Client. The most common ticket categories observed on a typical National Highway concession are: Single, Return, Monthly, Local and Exempt. Given the local nature of traffic, some toll plazas offer custom made local passes to attract local commuters to opt for these category passes instead of evading toll. Further, the toll plazas also record violations which are non-paying users, who are not officially allowed under exemptions category but are forced exemptions. For the Asset, the segmentation discussed below reports Exemptions and Violations together.

3.15 Understanding toll frequencies provide us insights into the nature of traffic using the Asset. CJVs generally have higher shares of return passes or local monthly passes because they travel for short to medium distances, while heavy trucks mostly have single tickets since they travel longer distances. The Asset catering to short distance local traffic generally observes high share of return or other local monthly passes while the Asset catering to strategic long-distance traffic generally observes high share of single ticket traffic. Table 3.8 below presents ticket types currently sold at both the Asset plazas.

Table 3.8: Typical ticket types sold at NHAI plazas

Category	Description
Single	Allows the vehicle to cross the toll plaza once
Return	Allows the vehicle to cross the plaza twice in a day at discounted rates.
Monthly Pass	Discounted ticket for all road users issued at toll plaza who intend to undertake multiple single trips using the toll plaza. 50 trips are allowed on a discounted rate to be used within 30 days of issue.
Local Personal	Discounted single entry pass only for private cars of residents within 20km radius of toll plaza
Local Commercial	50% discount on single trips for commercial vehicles registered in the local district. This pass allows single entry only
Exemptions	Officially exempted vehicles like ambulance, police cars, key political personnel etc.

Source: Client data

3.16 As a general pattern, the shares of single/return/monthly tickets tend to stabilise within 2-3 years of the commencement of Asset operations. Only in the cases where trip patterns are expected to change significantly due to urban expansion is where we expect these shares to change over the period or due to some external events impacting the trip

patterns. During FY21 and FY22, however, two key events impacted the traffic patterns throughout the country: COVID-19 and FASTag implementation.

3.17 FY21 had multiple disruptions in traffic patterns related to the pandemic. In February 2021, there was also significant change in ticket segmentation observed across several toll roads around the country due to the imposition of the use of FASTag, the electronic toll payment system mandated by the National Highway Authority of India (NHAI). This mandate significantly changed ticket patterns in FY21 and FY22 across most (if not all) toll road assets across the country including the Asset. However, by FY23, travel patterns had stabilised, following which they can be considered to follow normal travel behaviours on the Asset.

Introduction of Annual pass for CJVs

3.18 The National Highway Authority of India launched the "The FASTag Annual Pass" on August 15, 2025, a prepaid facility that allows private CJVs to travel across designated National Highway and National Expressway toll plazas. The annual pass is worth INR 3,000. The pass is valid for one year or 200 trips, whichever occurs first and is applicable only to private, non-commercial vehicles (Car/Jeep/Vans).

Since this pass has been introduced by NHAI, it is not valid on

- state governed toll plazas on highways
- state governed toll plazas expressways
- Parking areas or other non-NHAI tolling locations

3.19 The pass can be activated via the RajmargYatra app or the NHAI website, and links directly to an existing FASTag.

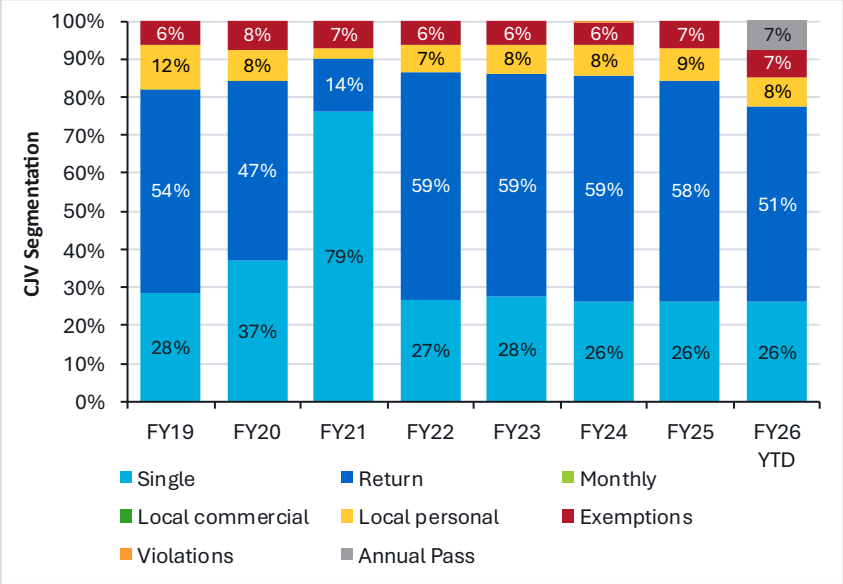
The Annual Pass aims to:

- Promote cashless and seamless travel on national highways.
- Reduce congestion and improve traffic flow at tolls
  Provide cost-effective travel for frequent users of NH/NE toll roads

Share of traffic by payment type

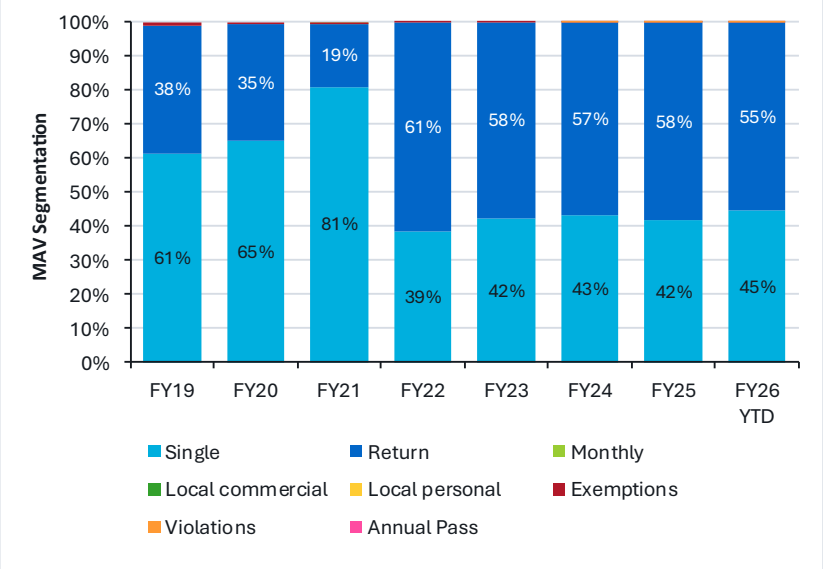
3.20 In our forecasted segmentation we have used the average ticket distribution by vehicle category observed in FY26YTD (Apr'25 – Feb'26) and held that constant through the end of the forecast. Figure 3.1 through Figure 3.4 below present historical changes in toll segmentation at both TP1 and TP2 for CJVs and MAVs.

Figure 3.1: Ticket-segmentation for CJV (TP1 Lakshmipur)



Source: Steer analysis of the Client data; FY26YTD includes data till Feb'26

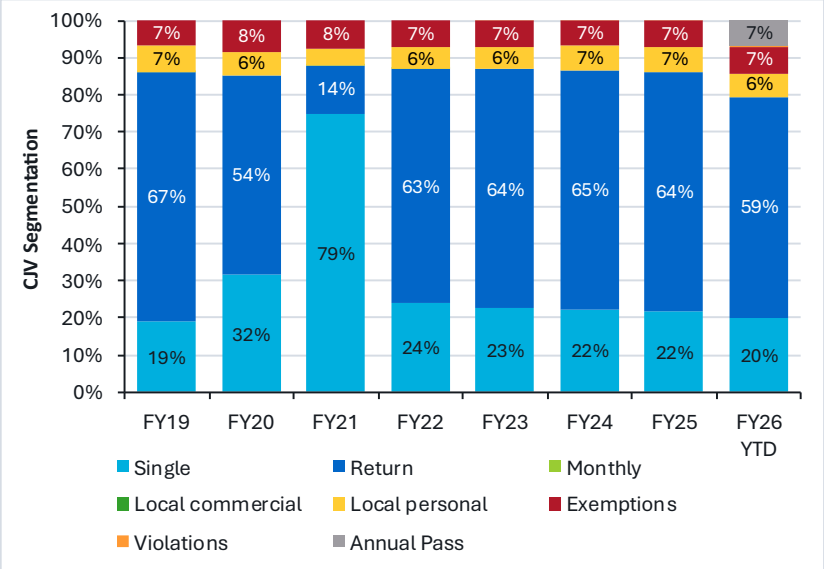
Figure 3.2: Ticket-segmentation for MAV (TP1 Lakshmipur)



Source: Steer analysis of the Client data; FY26YTD includes data till Feb'26

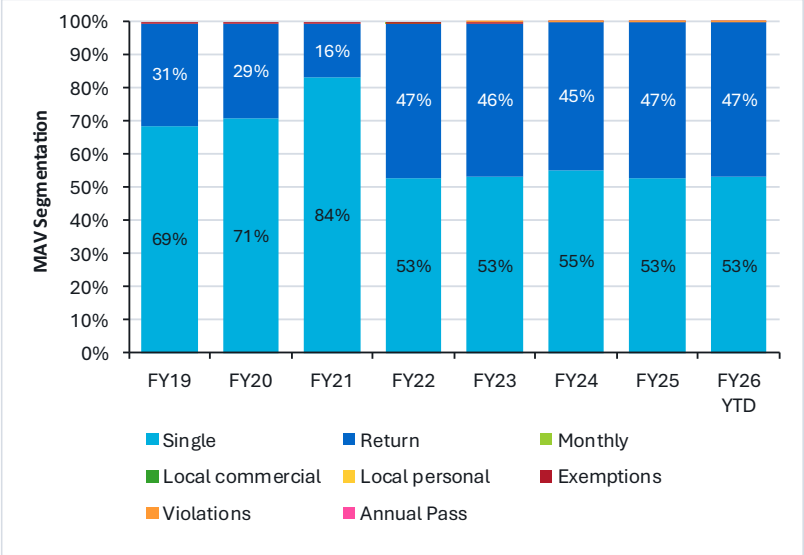
3.21 Ticket segmentations for both CJVs and MAVs at TP1 in FY26YTD are consistent with FY24 and FY25 segmentations. Return tickets remain as the dominant ticket category in FY26YTD accounting for more than 51% of tickets in both CJVs and MAVs. At TP1, the share of local personal tickets and exemptions for CJVs are 8% and 7% (respectively) as of FY26YTD and comparable to FY25 shares of the same tickets. This indicates stability in the travel patterns with no major differences. The high share of return tickets in MAVs (at 55% in FY26YTD) reflects the prevalence of short-medium distance commercial trips.

Figure 3.3: Ticket-segmentation for CJV, TP2 Gazole



Source: Steer analysis of the Client data; FY26YTD includes data till Feb'26

Figure 3.4: Ticket Segmentation for MAV, TP2 Gazole



Source: Steer analysis of the Client data; FY26YTD includes data till Feb'26

3.22 At Gazole, travel patterns are like Lakshmipur for CJVs where return remains the dominant ticket category. For MAVs however, the share of single tickets at TP2 is higher than observed at TP1.

3.23 The ticket segmentation across all vehicle categories except CJVs in FY26YTD is consistent with FY25 levels. The introduction of annual passes in August 2025

3.24 Table 3.9 below depicts the FY26YTD segmentation (Apr'25-Feb'26) for LCV, Bus and 2As at TP1 Lakshmipur and TP2 Gazole.

Table 3.9: Ticket-segmentation for LCV, Bus and 2As at TP1 Lakshmipur and TP2 Gazole (FY26YTD)

Ticket Category	TP1 Lakshmipur				TP2 Gazole			
	LCV	Bus	2A	3A	LCV	Bus	2A	3A
Single	42%	17%	75%	78%	42%	10%	63%	73%

Ticket Category	TP1 Lakshmipur				TP2 Gazole			
	LCV	Bus	2A	3A	LCV	Bus	2A	3A
Return	52%	81%	23%	22%	57%	90%	36%	26%
Monthly	-	-	-	-	-	-	-	-
Local commercial	-	-	-	-	-	-	-	-
Exemption	6%	1%	2%	0%	1%	0%	1%	0%

Source: Steer analysis of Client data

Overloading

3.25 Based on our analysis of the historical data as shown in **Error! Reference source not f ound.** and **Error! Reference source not found.** below, the Asset shows a notable share of overloaded vehicles, especially for 2As, 3As and MAVs. This is due to the high share of denser commodities like aggregate and stone being carried on commercial vehicles on the Asset. FY26YTD overloading trends (compared to FY25) show a decline in LCVs and a rise in MAVs. The below figure and table layout the historical levels of observed overloading on the Asset.

3.26 As observed in Table 3.10 below, due to strict restriction on overloading, the shares have consistently declined across all vehicles categories since FY21.

Table 3.10: Overloading shares between FY21-FY26YTD

Vehicle type	FY21	FY22	FY23	FY24	FY25	FY26 YTD
TP1						
LCV	6.2%	11.2%	5.1%	2.5%	1.8%	1.1%
2A	4.6%	0.8%	0.5%	0.3%	0.5%	0.4%
3A	3.6%	0.3%	0.2%	0.2%	0.2%	0.1%
MAV	15.1%	2.0%	2.4%	1.7%	5.6%	6.5%
TP2						
LCV	4.3%	8.7%	5.2%	3.4%	2.3%	2.2%
2A	2.5%	0.7%	0.5%	0.5%	0.6%	0.7%
3A	3.0%	0.4%	0.4%	0.3%	0.3%	0.6%
MAV	10.7%	1.5%	1.4%	0.0%	2.4%	2.9%

Source: Steer review of Client TMS data; FY26YTD includes data till February'26

3.27 The share of overloaded 3A and MAV vehicles at both plazas (TP1 and TP2) show a consistent drop since FY21. Historical overloading shares show large variations due to exogenous impacts - local authority restrictions leading to the drops in overloaded traffic from Jan-18 to Jul-18 and Jul-19; monsoons; repair works of Farakka Barrage and COVID-19.

3.28 Overloaded MAV traffic at both plazas as of FY26YTD has observed growth over FY25 levels. Between FY22 and FY24, the share of overloaded vehicles observed on the Asset was low due to the strict enforcement of government restrictions on overloaded vehicles across the state. This trend showed signs of abatement late FY24 onwards as non-compliance increased. In September 2024, the Federation of West Bengal Truck

Operators Association (WBTOA) called for a three-day strike[11] demanding stronger enforcement across the state. As a result, the Asset observed a drop in the share of overloaded commercial traffic briefly during that time. However, as time progressed, the share of overloaded vehicles continued to increase with January 2025 observing 7.8% overloaded MAVs relative to 1.5% observed the previous year (January 2024). The table above present historical growth in the share of overloaded 3As and MAVs at both plazas on the Asset.

3.29 In our forecasting models, to avoid high variability in overloading revenues going forward, and to reflect the assumption that growth in overloaded vehicles will not sustain, we have assumed overloading to remain constant at the average shares (by vehicle category at both plazas) observed over the period Apr-Feb '26. Any increase in overloading from current levels will be an upside on revenue on this Asset.

3.30 Historically, overloaded vehicles were charged a flat nine-times penalty of the Single fee for the vehicle type, on the Asset. However, based on an NHAI circular[12] dated 25 September 2018, the Client has been charging overloading penalties as per the staggered penalty system presented in Table 3.9 below. It is important to note that as per the information available 75% of the overloaded revenue is allocated to the old Concessionaire[13] and 25% of the overloaded revenue will be allocated to the new concessionaire.

Table 3-9: Overloading penalties on Asset

Percentage of excess load over Maximum Permissible Gross Vehicular Weight	Multiplying factor to Single rate of fees (including normal fees)	Penalty
0% to 20%	2	Single fee multiplied by multiplying factor
>20% to 40%	4	
>40% to 60%	6	
>60% to 80%	8	
>80% and above	10	

Source: NHAI circular [F. No. H-25016/1/2018-Toll]

3.34 Aside from the NHAI rules on overloading and penalties for the same, the local administration around the Asset has introduced bans on overloading at various times and lifted them later in the history of the Asset's operation. This reflects in the swinging shares of overloading observed on the Asset. As changes in the ability to overload change the number of trucks required to operate a certain payload, we observe associated swings in truck volumes as well during these periods. We discuss this in further detail in Chapter 6.

[11] **West Bengal truckers announce 72-hour strike over overloading and illegal fees | Kolkata News - Times of India**

[12] NHAI circular numbered F. No. H-25016/1/2018-Toll

[13] HCC is the old Concessionaire and the Client is the new Concessionaire

Data Collection exercise

3.35 As aforementioned, to validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset, comprising the surveys listed in Table 3.11 below. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas, which Steer also commissioned with a third party. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

Table 3.11: Data collection schedule

Toll Plaza	3-day videography based TVC			1-day OD survey	
	Start date	End date	Time (hrs)	Start date	Start time
TP1	4th Mar 2026	6th Mar 2026	00:00-23:59	6th Mar 2026	0900 hours
TP2	6th Mar 2026	9th Mar 2026	0000-2359	10th Mar 2026	0900 hours

Source: Steer analysis

3.36 It should be noted that, in our experience, traffic on national highways shows variation across the week due to the economic activities surrounding each road. To derive a representative TVC count considering daily variation, three-day to seven-day traffic counts are generally recommended, and hence, in order to fully understand the impact of this weekly fluctuation on the Asset, we had collected seven-day counts at each toll plaza.

Key findings of the TVC data analysis

WADT estimates

3.37 Taking an average of the TVC counts, we obtained the following weekly average daily traffic (WADT) for each toll plaza. This WADT excludes non-tollable vehicle such as tractors, two-wheelers, bullock-carts, etc., but includes officially exempt vehicles such as police cars, ambulances, emergency response vehicle, government vehicle and other vehicle types officially allowed as 'exempted' under the concession agreement.

3.38 As presented in Table 3.12 below, CJVs are largest vehicle category at TP1 (3,716), closely followed by MAVs at 6,662. However, at TP2, CJVs are the largest vehicle category (6,934), followed by MAVs 5,679. Lower truck volumes at TP1 and TP2 can be attributed to ongoing economic slowdown in Bangladesh. TP1 being closer to Bangladesh border Mahadipur observes heavy export items of stone chips/aggregate carried to Bangladesh. However, with the economic slowdown and reduced exports, total traffic has reduced on both plazas reflecting lower growth. Higher CJV volumes at TP2 is due to its proximity to more urban and densely populated town of Malda (as compared to Farakka for TP1).

Table 3.12: WADT from TVC counts

Toll Plaza	CJV/Mini LCV	LCV	Bus/2A	3A/MAV	Total
TP1 Lakshmipur	3,716	1,229	1,136	6,662	**12,743**
TP2 Gazole	6,934	1,430	1,657	5,679	**15,701**

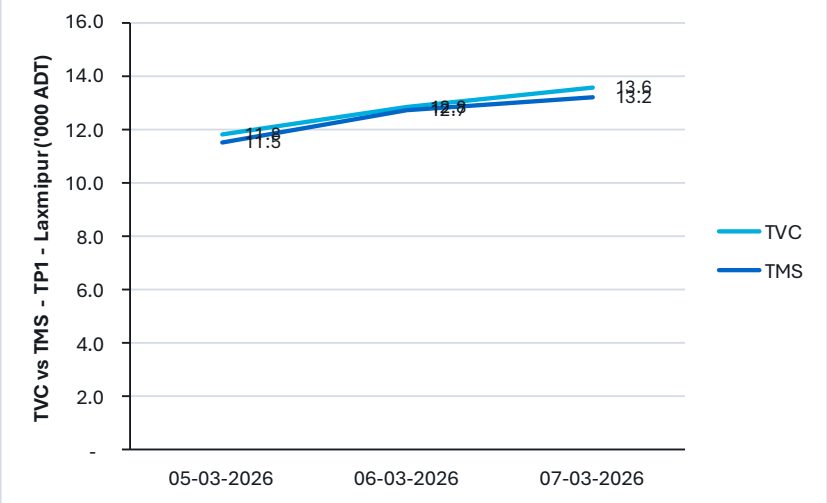
Source: Steer analysis

TVC v/s TMS analysis

3.39 We used our TVC data to validate the toll plaza data for the same days, as supplied by the Client via their toll management system (TMS). This TMS data was then used as the base data, for our forecasting model.

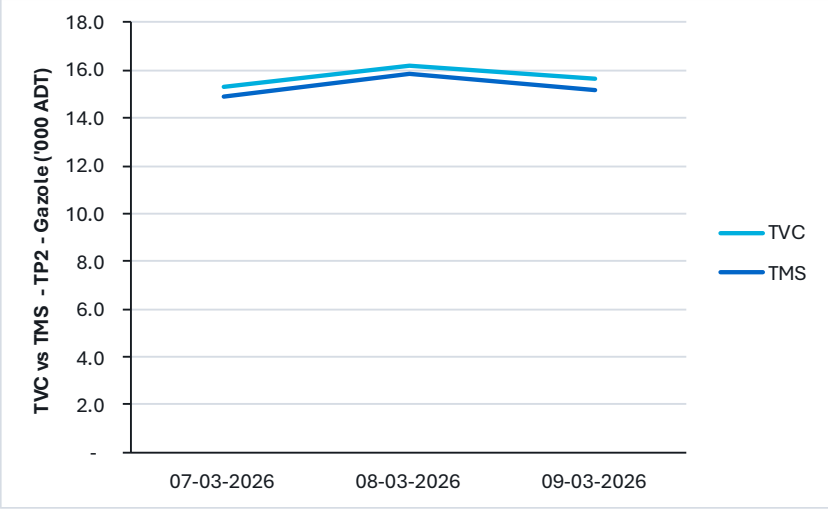
3.40 The following figures show the comparison between the daily traffic observed by TVC and TMS for the two toll plazas.

Figure 3.5: Comparison between TVC and TMS daily traffic data, TP1 Lakshmipur



Source: Steer analysis of TVC and Client TMS data

Figure 3.6: Comparison between TVC and TMS daily traffic data, TP2 Gazole

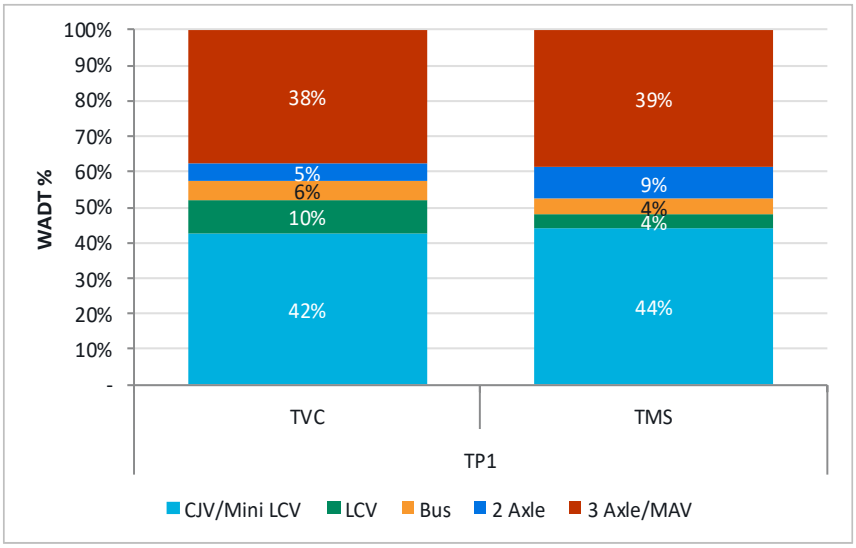


Source: Steer analysis of TVC and Client TMS data

3.41 Figure 3.5 through Figure 3.8 show the comparison between daily traffic data and shares of vehicle categories in TVC and TMS for the two toll plazas. As presented in Figure 3.5 and Figure 3.6 above, the difference between daily traffic from both sources is minimal at both TP1 and TP2. However, in both cases, the TVC is ~2% higher than the TMS across the week. These differences can be attributed to technical differences between the two independent traffic counting systems.

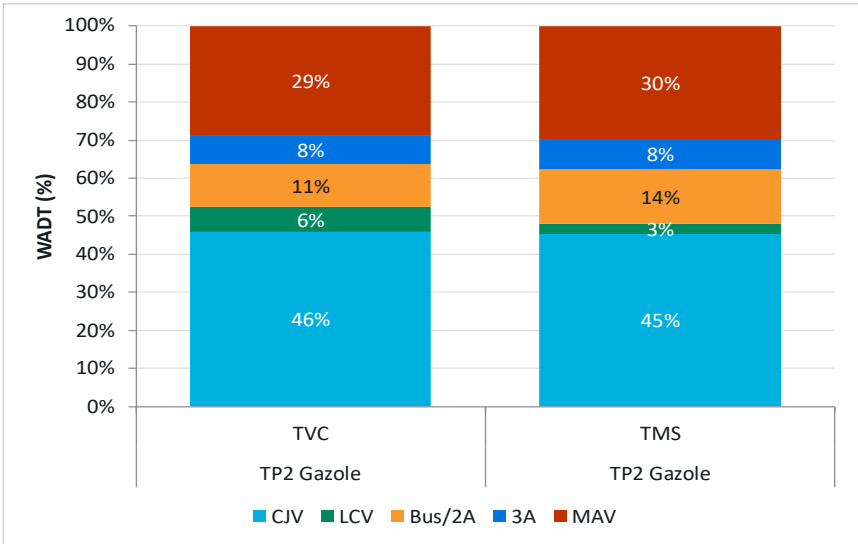
3.42 Further, Figure 3.7 and Figure 3.8 below compare the shares of vehicle types at both plazas, between TVC and TMS data. As seen below, there is a good fit between TVC and TMS data in terms of proportions, except for LCV and Buses/2A. However, as we have observed in several toll roads across the country, this can be attributed to classification differences in different counting systems, especially as often observed for LCV and Buses/2A.

Figure 3.7: Comparison between vehicle shares from TVC and TMS WADTs for TP1



Source: Steer analysis of TVC and client TMS data

Figure 3.8: Comparison between vehicle shares from TVC and TMS WADTs for TP2



Source: Steer analysis of TVC and client TMS data

3.43 Upon combining vehicle categories into two super-categories (light and heavy vehicles), we see that for light vehicles (including CJV, LCV, 2A and Buses), the difference comes down to about 6% and 3% at TP1 and TP2 respectively. Heavy vehicles comprising 3A and MAVs show minimal differences at less than 2%. Given this, we believe the base year traffic calculated using the Client TMS data forms a reasonable estimate.

Key findings of origin-destination analysis

Overview

3.44 Origin-destination (OD) analysis enables us to understand the nature of traffic movement on the Asset. The OD analysis presented here is based on data collected on behalf of the Client in July 2023 and March 2026. More recent OD surveys were not undertaken as this Asset has a long operational history and we did not believe material changes in these patterns would have occurred in this period.

3.45 We have analysed the regional drivers of demand based on the following analyses:

Zonal influence
Commodity distribution
Top OD pairs
Trip length distribution

3.46 While zonal analysis and list of top OD pairs help us to understand 'where' people and goods travel, commodity distribution sheds light on 'what' goods get transported. Trip length distribution show 'how far' vehicles and people travel, and goods get transported. This set of analyses is generally used to estimate the key drivers of traffic and aid the making of informed forecasting assumptions around traffic demand elasticities, growth drivers and exogenous impacts.

Sample rates

3.47 Sample rates help understand the reliability of OD data. They are calculated by dividing OD samples captured by the traffic counts (based on the TVC data) during the same period. Table 3.13 below presents the sample rates for key vehicle type aggregations at both the toll plazas. We believe that the sample rates of the OD data are reasonable.

Table 3.13: Sample rates for OD data

Vehicle type	TP1 Lakshmipur	TP2 Gazole
Passenger (CJV + Bus)	69%	49%
Goods (LCV+ 2A + 3A + MAV)	59%	51%

Source: Steer analysis of OD data

Zone categories

3.48 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones, and influenced by various towns, cities, states, and regions in the vicinity of the Asset, we have aggregated zonal data as described in the following table.

Table 3.14: Zone aggregations for zonal influence analysis

Aggregate Zone	Description
Local	On or very close to the Asset.
Immediate area of influence (IAOI)	IAOI zones are the locations which generate traffic and lie within approximately 75-150 km distance from the Asset.
Rest of State	Rest of the cities/Districts in the state that Asset lies in (other than Local/IAOI)

Aggregate Zone	Description
Odisha	All the trips that originate or end in the neighbouring state of Odisha
Bihar	Bihar
Northeast India	Northeast Indian states
Chhattisgarh	Chhattisgarh
Jharkhand	Jharkhand
Madhya Pradesh	Madhya Pradesh
West India	Rajasthan, Gujarat
Maharashtra	Maharashtra (including Mumbai)
North India	Uttarakhand, Jammu and Kashmir, Delhi NCR, Uttar Pradesh, Punjab
South India	Andhra Pradesh, Tamil Nadu, Karnataka, Kerala
Rest of India	Rest of Indian states.
Outside India	Nepal, Bhutan, Bangladesh.

Source: Steer analysis

Zonal influence

3.49 The zonal influence is the contribution of the zone or the zonal aggregation to trips by a vehicle type. This section presents the zonal influence[14] at each toll plaza of each Asset, aggregated based on zonal aggregation listed in the previous sub-section. Please note that zonal influence is analysed on trip ends and not trips.

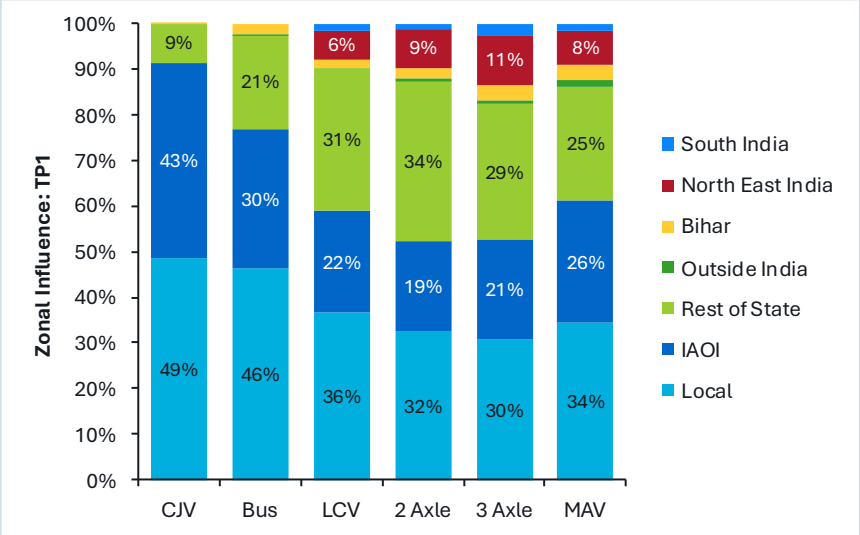
3.50 Figure 3.9 and Figure 3.10 below presents the zonal influence of different regions on all types of vehicular traffic observe at each of the toll plazas. We can see that 'Local' trips consistently account for the largest share of trips across all vehicle types. This follows from the earlier observation of the high share of 'return' trips observed at both plazas on the Asset. We observe the highest share of Local trips for CJVs (49% at TP1, and 58% at TP2). Trips between Farakka and Malda are the largest contributor to the CJV traffic on TP1, whereas Malda and Gazole contribute to almost 36% of the total CJV trips at TP2.

3.51 In case of 3A/MAVs too, we see a very high share of Local trips at 34% and 31% respectively, at TP1 and TP2. Rest of West Bengal contributes to about 25% of traffic volume. The trip ends with highest zonal influence for 3A/MAV on the Asset are Farakka, Raiganj, Kolkata and Darjeeling, with each of these contributing to about 10-15% of the total trips on the Asset. The state's influence including local and IAOI and rest of state is more than 80% in MAVs on both toll plazas.

3.52 Other contributors are North-east India with about 7-11% share in 3A/MAV vehicles and South India with about 2-3% share in 3A/MAV category.

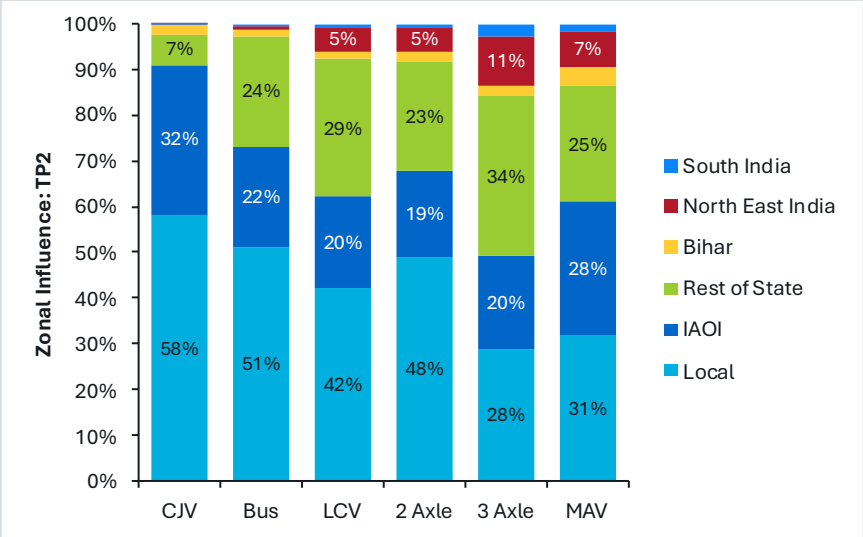
[14] For example, if out of 100 trips at a toll plaza on an Asset, 10 trips are between Hyderabad and Delhi and 90 trips are between Hyderabad and Chennai, then zonal influence of Hyderabad is 50% since one trip end of all trips are at Hyderabad. Likewise, zonal influence of Delhi and Chennai would be 5% and 45%, respectively.

Figure 3.9: Zonal influence, TP1 Lakshmipur



Source: Steer analysis of OD data

Figure 3.10: Zonal influence, TP2 Gazole



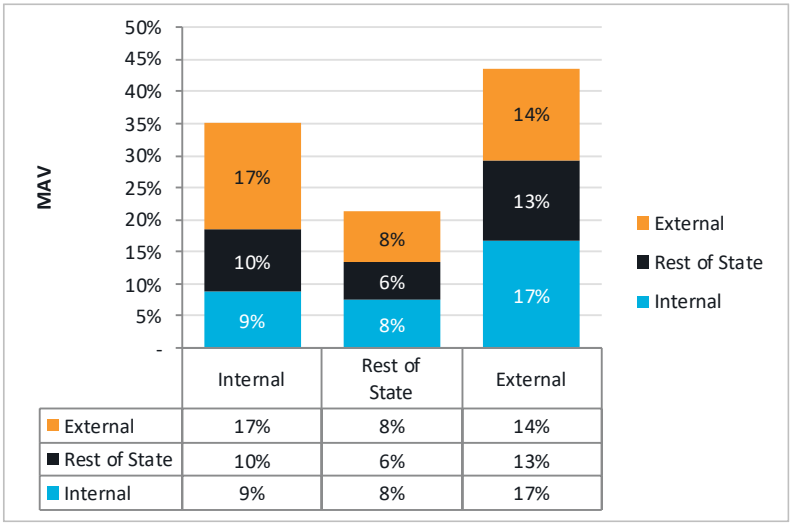
Source: Steer analysis of OD data

Internal External analysis

3.53 Internal-External analysis helps in identifying the trips which have both the origin and destination on or near the Asset i.e., local/IAOI zones (Internal-Internal or I-I), any one end on the Asset (Internal-External or I-E), or neither end on the Asset i.e., through trips (External-External or E-E). RoS (Rest of State) here represents areas within the state which are neither local nor IAOI. 'Internal' zones are those that were analysed as 'local' and 'IAOI' in the zonal influence analysis, i.e. lying on the Asset, while 'External' zones are areas lying outside the state. The graphs below show the distribution of trips based on these categories. These reflect observations from the zonal influence analysis presented earlier, except at a higher level of aggregation and at a trip level.

3.54 As evidenced in Figure 3.11 and Figure 3.12 below, a significant share of trips with one end in internal zone is observed across all vehicle categories at both toll plazas due to significant generators of economic activity like Pakur located relatively near the Asset. The share of E-E movements in heavy goods vehicles is also low, reflecting the local/regional nature of the movements facilitated by the Asset.

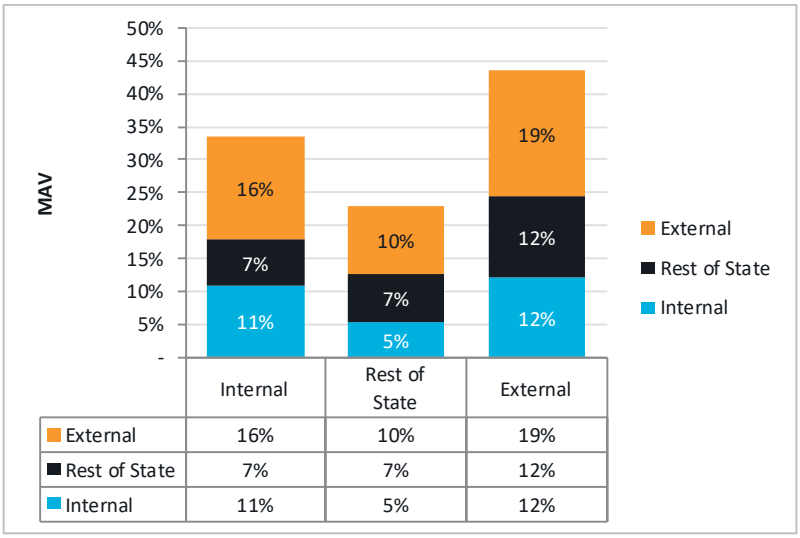
Figure 3.11: Internal-External distribution, TP1 Lakshmipur



	Internal	Rest of State	External
External	17%	8%	14%
Rest of State	10%	6%	13%
Internal	9%	8%	17%

Source: Steer analysis of OD data

Figure 3.12: Internal-External distribution, TP2 Gazole



	Internal	Rest of State	External
External	16%	10%	19%
Rest of State	7%	7%	12%
Internal	11%	5%	12%

Source: Steer analysis of OD data

Commodity distribution

3.55 We have grouped various commodities into aggregate categories for ease of interpretation, as shown in Table 3.4 below. The charts in the following sub-section present information in terms of aggregate commodity categories.

Table 3.15: Aggregate commodity categories

Commodity Description	Code	Combined codes used for charts
Agriculture Products / Cash crops (Wheat, Rice, Sugar cane, Maize etc.)	AGR	AGR
Cattle Food / Livestock (sheep, goat, cow, cattle food etc)	LIV	
Perishable Items (Fruits, vegetables)	PER	GRO
Animal Products/Dairy/Eggs/Fish/Meat/Animals	DFM	
Groceries / Food items (Soap, Salt, Sugar, Pulses, Spices, Biscuits, bread, cool drinks, beer etc.)	GRO	
Building Material / Construction (Cement, Lime, Brick, fly ash, etc)	CNS	CNS
Sand/Clay	SND	
Stone (kota stone, marble, Granite, Aggregate stone etc.)	STN	
Ceramic	CRM	
Petroleum Products (Oil, LPG, CNG, etc.)	PET	PET
Chemicals / Fertilizers (Acids, Fertilizers etc.)	CHM	
Electrical/Manufacturing items (Electronic items, Medicine, Leather, Wine, Rubber/ Tyre, Plastics, Cloth, Paper etc.)	MAN	MAN
Raw Wood, Cork & Wood Products, Furn	WUD	
Machinery / Spare parts	MAC	
Automobiles (Finished products, auto parts, Car/bike manufacturing, New Chassis)	AUT	AUT
Basic / Fabricated Metals (Iron, Steel / Metal)	MET	MET
Mining Minerals (Coal, Gypsum, Cobalt etc.)	MIN	
Empty	EMT	EMT
Container	CTR	MSC
Miscellaneous (Parcel, Courier, Household items etc.)	MSC	
Passengers	PAS	
Scrap	SCR	

Source: Steer analysis

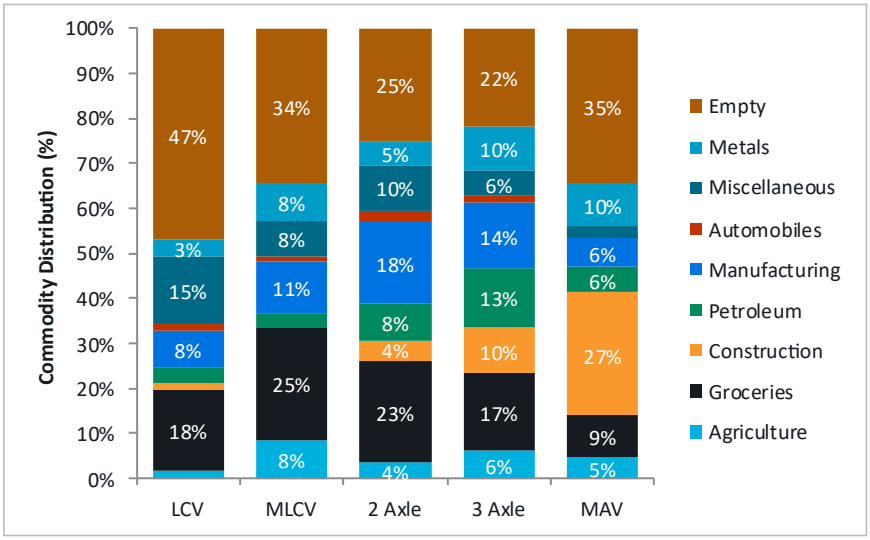
3.56 Figure 3.13 and Figure 3.14 below show the commodity distribution at each toll plaza, at the total level. The commodity distribution for goods vehicles, indicates the importance of stone quarries and crushers in the immediate vicinity of the Asset; about 27% of MAVs carry construction material, primarily stones and aggregates at TP1 Lakshmipur. Based on the analysis of the OD movements of the CNS category, we observe the movement of stone and other building material originating from the nearby towns of Pakur and Nalhati to the Bangladesh border and parts of North Bengal.

3.57 5% of the MAVs carry agricultural and grocery products at TP1 Lakshmipur. These trips are generally between agricultural areas of northern West Bengal, including tea plantations in

Darjeeling, and large urban consumption centres like Kolkata and cities in the southern states.

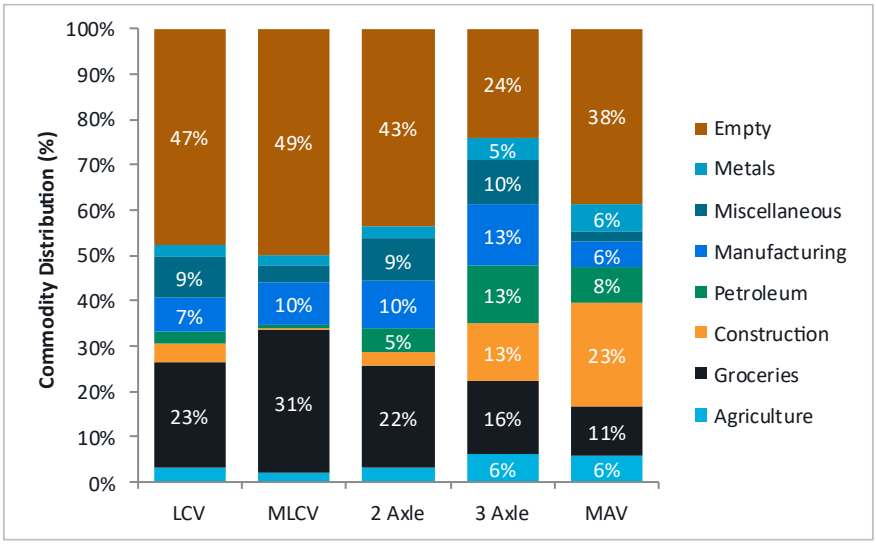
3.58 The share of empty vehicles is high at 35% and 38% for MAVs at TP1 and TP2 respectively. This is mainly due to the high share of trucks carrying aggregate material at TP1, which tend to return empty in the other direction. We also observe a 6-8% of share of petroleum-related products in MAVs across both plazas. The remaining commodities are a heterogeneous mix, comprising of machinery, automobile, cotton, jute, petroleum products and containers.

Figure 3.13: Commodity distribution, TP1 Lakshmipur (Total)



Source: Steer analysis of OD data

Figure 3.14: Commodity distribution, TP2 Gazole (Total)



Source: Steer analysis of OD data

Trip length analysis

3.59 Trip-length distribution provides us the distance-based profile of various vehicle types. This helps to validate our assumptions on the influence of macro-economic variables on

traffic growth on the Asset, as well as our outputs from the zonal influence and toll segmentation analyses. For ease of interpretation, we have categorised distances into 5 groups — local (0-100km), short-distance (100-300 km), medium-distance (300-500 km), long-distance (500-1000 km) and very-long-distance (+1,000 km). The trip distances were derived as driving distances from Google Distance Matrix Tool based on zonal coordinates for OD pairs.[15]

3.60 Traffic on the project road is primarily commercial traffic carrying goods to/from different parts of the state of West Bengal, the north-eastern states, adjoining western states (Bihar and Jharkhand) and some southern states (such as Andhra Pradesh and Tamil Nadu). In addition, a significant proportion of this commercial traffic is cross-border (into/out of Bangladesh) and a small share of traffic carries goods to Nepal and Bhutan.

3.61 Travel patterns of vehicles crossing both the Asset plazas are also dependent on various factors including local market conditions for stone chips and aggregates as well as external demand for the same in Bangladesh. After consultations with local truckers, toll plaza managers and other stakeholders during our site visit, we noted that demand for Pakur stone in West Bengal is weaker that it is in Northeast India. To support this, we reviewed the outputs of our trip length analysis from the OD surveys conducted at both the plazas (as shown in Figure 3.15 and Figure 3.16 below), and found that there was a marked difference in the trip lengths observed at both the plazas.

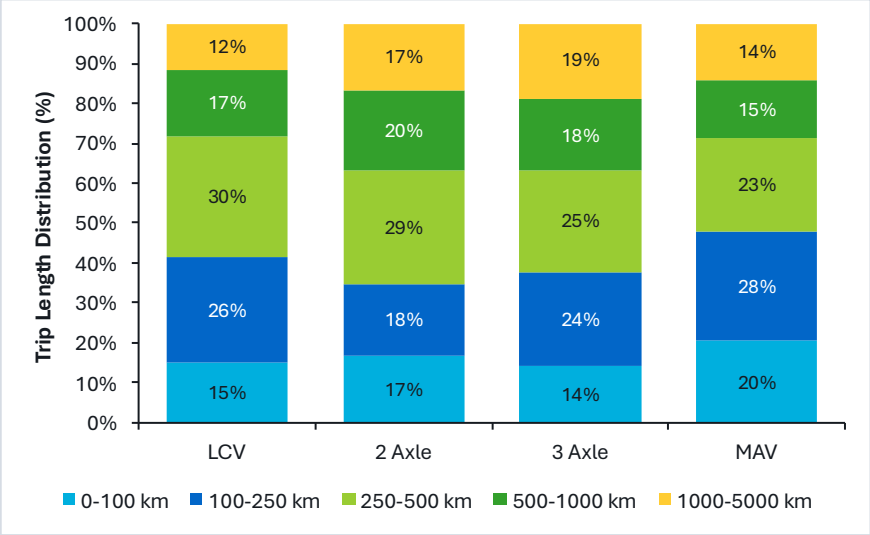
3.62 At TP1, we find that the trip lengths are more evenly distributed, where the majority of 3A trips (~61%) are short-medium distance (<500 km), and MAVs also show a similar distribution where the proportion of trips shorter than 500 km is high (~71%).

3.63 Generally, smaller vehicles have shorter-distance trips as compared to goods-carrying heavy vehicles, but in case of TP2, we see that trips distances in the range of 100-300 km are most common. These trips pre-dominantly constitute movements between stone-mining sites in the Pakur region and the India-Bangladesh border-crossing site at Mahadipur, as well as sand-distribution hubs located near Malda.

3.64 MAVs have a considerable share at 15% and 16% respectively at TP1 and TP2, of vehicles undertaking long-distance trips covering more than 500 km but less than 1000 km. Share of vehicles undertaking very long-distance trips of greater than 1000 km, including those with trip ends in the southern states, is 14% at TP1 and 13% at TP2, respectively.

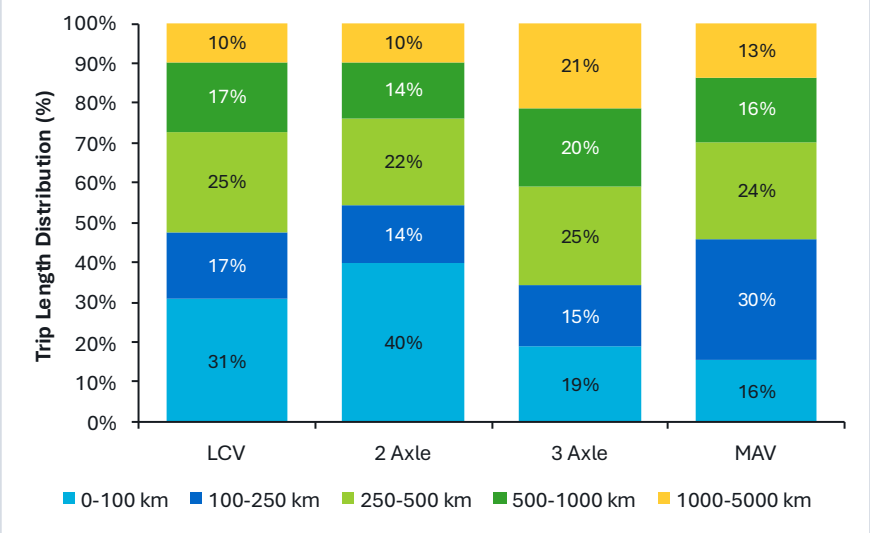
[15] Google Distance API is a tool that is available on a chargeable basis from Google Maps Platform. Link: **https://developers.google.com/maps/documentation/distance-matrix/start**. Travel distance and time information for driving/transit under various congestion scenarios can be extracted through this tool by using macro-enabled Excel, R, etc.

Figure 3.15: Trip length distribution, TP1 Lakshmipur



Source: Steer analysis of OD data

Figure 3.16: Trip length distribution, TP2 Gazole



Source: Steer analysis of OD data

Conclusions

3.65 The historical traffic trends reveal that over the period FY18 to FY26, both toll plazas have observed growth. Over this period, TP1 Lakshmipur's total AADT grew by CAGR of 2.6% and PCU grew by CAGR of 1.9%, while the corresponding growth for TP2 Gazole were 4.6% and 3.6%, respectively.

3.66 When considering ticket segmentation, return tickets remain the dominant category at both plazas in terms of CJV traffic. The introduction of annual passes for CJVs in August 2025 has led to a fall in return shares from 58% to 51% at TP1 and 64% to 59% at TP2.

3.67 The TVC counts show minimal variation from the TMS data; at the total level, TVC counts were ~2% higher than TMS counts at TP1 and TP2. The difference in the vehicle shares of the two dominant categories, CJVs and MAVs, is also minimal.

3.68 The OD analysis found that in terms of zonal influence, 'Local' trips make up the largest share for all vehicle types. This follows from the earlier observation of the high share of 'return' trips across all vehicle categories. Local + IAOI trips make up 60% of the MAV share at TP1 and 59% at TP2, corroborating the trends observed in the ticket segmentation.

3.69 The commodity distribution analysis highlights the Asset's vicinity to stone quarries and crushers (and their consequent influence on the Asset), with construction materials accounting for 27% and 23% of commodities carried by MAVs at TP1 and TP2 respectively. Agricultural products and groceries also accounted for a considerable share of total commodities carried at both plazas. TP1 and TP2 has a high share of empty goods vehicles (35-38%) and can be attributed to the high share of trucks carrying stone chips/aggregate material at TP1 in one direction and return empty in the opposite direction.

3.70 When considering the internal and external distribution, internal trips are dominant at both plazas for all vehicle categories. It is important to note from the zonal influence analysis that through trips observed at both plazas are not very long distance, and are primarily IAOI trips. The trip length analysis outputs support this, with the dominant trip length across all vehicle categories being shorter distance trips (<500km) specially at TP2.

4 Socio-economic context and traffic growth

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the Asset is in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions of the region where the Asset is located and conditions on a national scale. These include:

Changes in factors such as population, economic growth (regional and national) and industrial production; and,

Other local factors such as strategic port growth, and growth in local industries near the Assets.

4.2 In turn, the change in the competitive position of the Asset (and thus of the traffic capture it will achieve) derives from how the service offered and the prices charged on the Asset change in comparison to competing roads; and whether any new competing road facilities are available.

4.3 In this chapter, we assess the socio-economic indicators relevant to traffic growth on the Asset.

Population growth

4.4 We have analysed the key socioeconomic drivers of the background traffic demand in the state of West Bengal where the Asset is located.

National Level

4.5 Table 4.1 below shows that the total population in India has grown at a Compound Annual Growth Rate (CAGR) of 1.5% since 2000, decreasing over the years, as shown in Table 4.1 below. The World Bank forecasts this growth to decrease to 0.6% CAGR by the 2030-45 period.

Table 4.1: CAGR of population in India

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
1970 - 1985	2.3%	1.9%	3.8%
1985 - 2000	2.0%	1.7%	2.9%
2000 - 2015	1.5%	1.0%	2.6%

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
2015 – 2030*	1.0%	0.3%	2.3%
2030 – 2045*	0.6%	-0.3%	1.9%

Source: World Bank Data on Health Nutrition and Population Statistics, *forecast population growth

State Level

4.6 Table 4.2 below shows the historical population growth in the state of West Bengal compared to national population growth. Overall, the population of West Bengal has grown at a slower rate than observed across the country; between FY12 and FY24, the state's population grew at a CAGR of 0.7% per year, while the corresponding growth for the country was 1.2% per year.

Table 4.2: Population Growth in West Bengal and India (2012 – 2024)

State	2012 Population (m)	2024 Population (m)	CAGR (2012 – 2024)
West Bengal	91.8	99.3	0.7%
India	1210	1395	1.2%

Source: MoSPI estimates

4.7 Due to the complexities of urbanisation, and the dynamic nature of local population migration (both of which are very difficult to forecast with accuracy), we do not use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide the underlying socio-economic context of the state/trends in the regions in which the Asset is located.

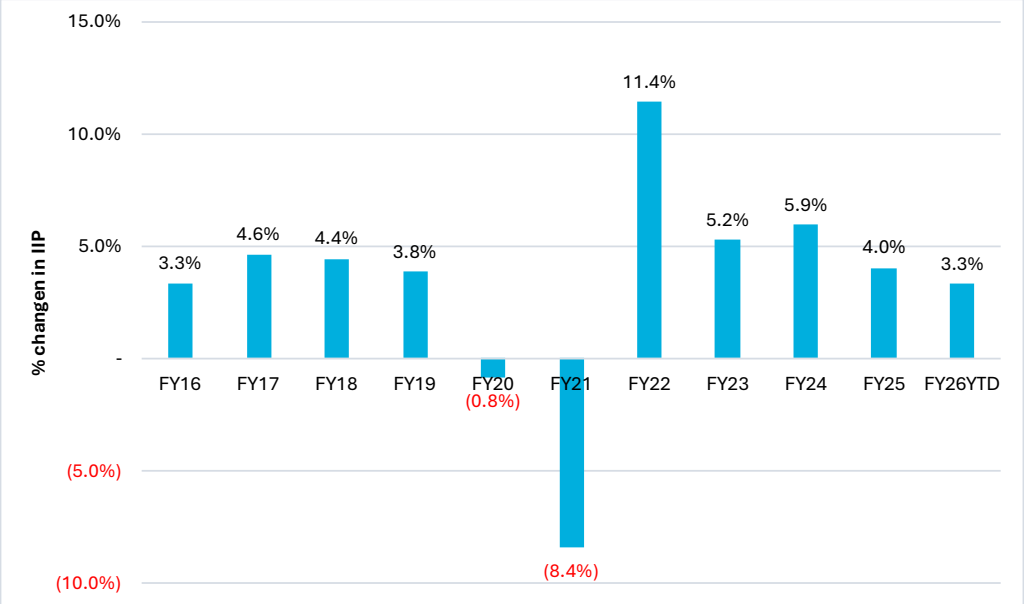
Economic Indicators

Industrial Production

4.8 The Index of Industrial Production (IIP) is a composite indicator that measures the short-term changes in the volume of production for a basket of industrial products. The IIP data tracks the manufacturing activity in different sectors of an economy, with mining, manufacturing, and electricity being the three broad sectors constituting the IIP.

4.9 The figure below shows that at an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20. In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. Post the immediate recovery in FY22, IIP growth has since stabilised, with FY25 recording 4%, and FY26YTD (till February 2026) recording 3.3% growth over FY25

Figure 4.1: Annual growth – Index of Industrial Production (FY16-FY26YTD)



Source: Ministry of Statistics and Program Implementation (MoSPI). FY26YTD represents data till Feb'26

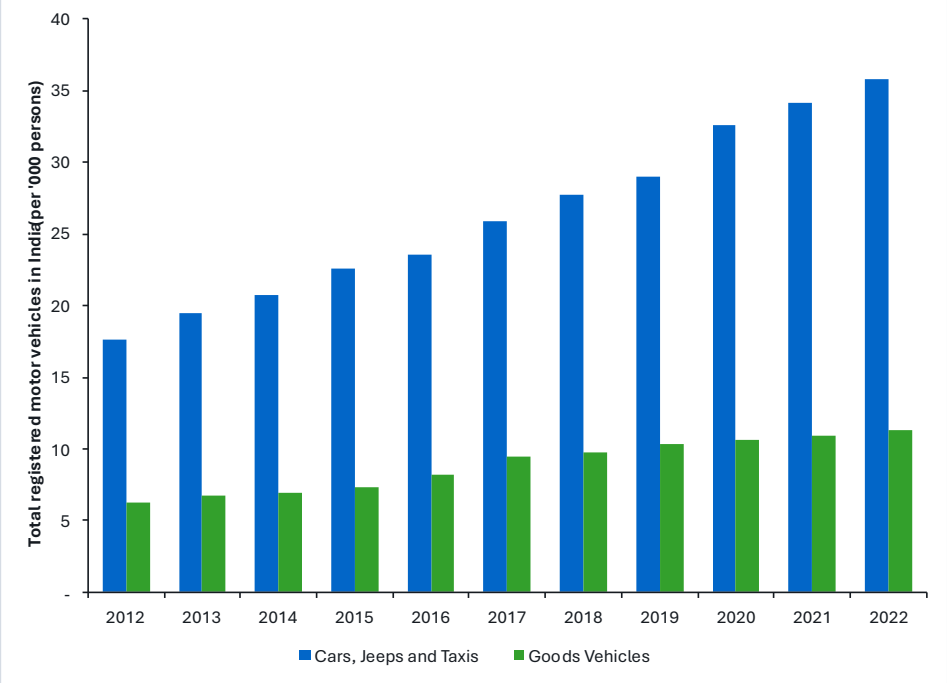
4.10 Since state-level IIP data is not as readily available as national-level IIP, we have presented national IIP here to indicate nationwide activity in key industrial sectors like power, manufacturing, and mining, all of which influence long-distance commercial movements across the nation, and not unique to this asset. We however, do not use it to forecast future travel demand growth since long-term forecast for IIP is not available through official sources such as MoSPI, RBI or through multilateral organisations like WB, or the IMF.

Vehicle Ownership

4.11 The gap in car ownership between India and developed nations remains substantial – with 36 cars/jeeps/taxis and 11 commercial vehicles per thousand people, as of FY22 (the latest year for which official data is available). However, with increasing per capita income levels, a booming economy and the subsequent increase in demand for mobility, the number of registered vehicles has been on a gradual upward trend

4.12 Overall, India still stands at a very nascent stage in the vehicle saturation curve, offering huge potential for growth going forward. Between FY12 and FY22, the CAGR for CJV and goods' vehicles registered in India was 8.6% and 7.3% respectively

Figure 4.2: Total number of registered motor vehicles in India (per 1000 population



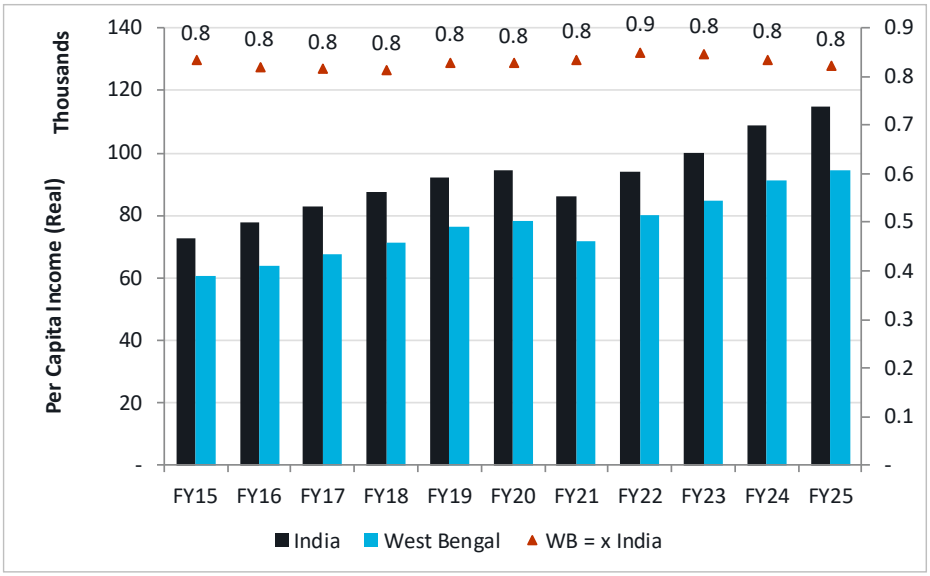
Source: Ministry of Road Transport and Highways (MoRTH)

Per Capita Income (PCI)

4.13 As shown in Figure 4.3 below, the per capita income of the state where the Asset lies, i.e., West Bengal, has historical been lower than the national average, and has been at about 80% of the national level over the past few years. During the period 2015-2025, India's average PCI has grown at a rate of 4.7% whereas that of West Bengal has grown at rate of 4.5%.

4.14 Though lower than the national average, per capita incomes have grown at about 4.0% per year between FY15 and FY24 - consistent with national trends over the same period.

Figure 4.3: Historical Growth in Per Capita Incomes – West Bengal vs. India (FY15-FY25)



Source: Ministry of Statistics and Program Implementation (MoSPI)

4.15 Given the difficulty in obtaining granular district level PCI data, it is not advisable to use this as a growth driver in our forecasts. Additionally, long-term forecasts for PCI are not available from official sources and we therefore refrain from using it to forecast traffic growth.

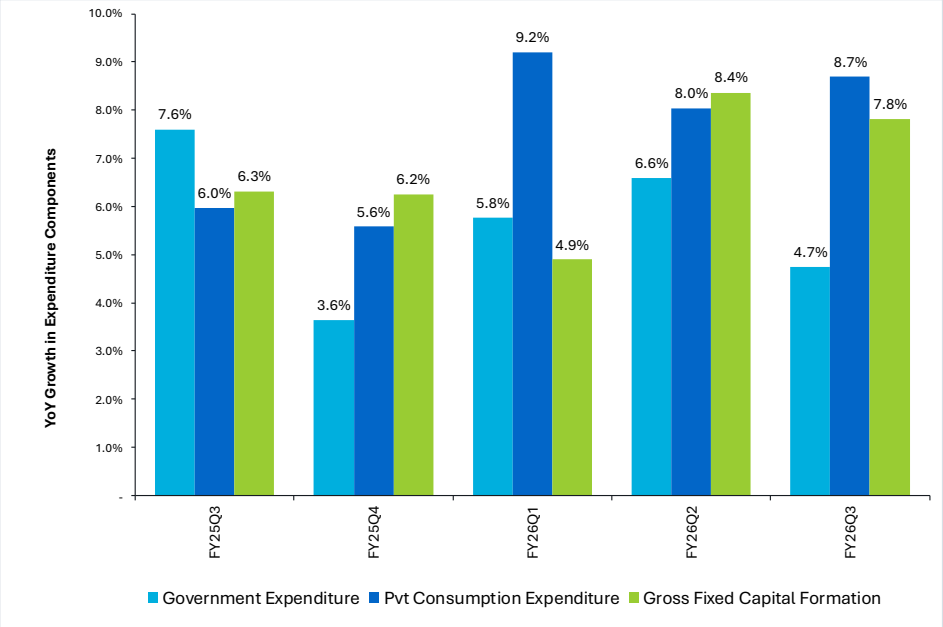
Economic growth

India's Performance

4.16 Despite a slowdown in the economy during H1FY25, the Indian economy has observed strong growth each quarter since FY25Q2, with the latest published estimates for FY26Q3 GDP at 7.8% over FY25Q3. This performance has been driven by strong growth in investment and consumption expenditures and higher consumer optimism for the year ahead[16].

4.17 The figure below, we present quarterly Y-o-Y growth in three major components of GDP – government expenditures, consumption expenditures, and business investment (gross fixed capital expenditure) over the past year (FY25Q3-FY26Q3).

Figure 4.4: YoY growth in expenditure components of GDP



Source: Steer Analysis of MOSPI Data

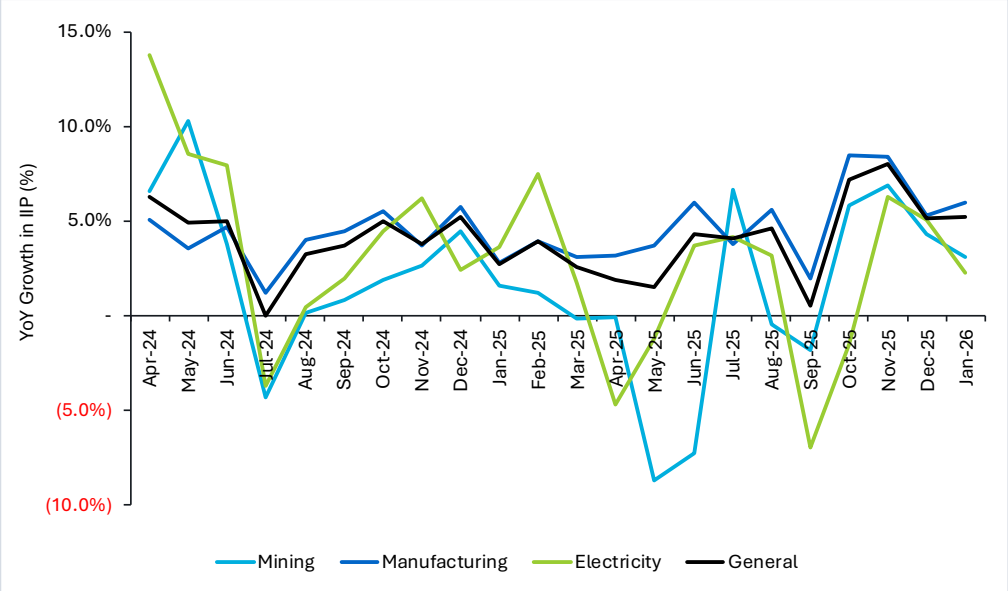
4.18 While consumption and investment expenditures have continued to show consistent growth over the past two quarters, government expenditures observed a marginal decline in FY25Q4. In FY26Q1, government expenditures rebounded, recording 5.8% growth over FY25Q1 levels.

4.19 Performance across different types of industrial activities (such as Mining, Manufacturing, and Power Generation) directly impact freight movement and commercial traffic volume

[16] Gov**ernment of India PIB Release (27th February 2026)**

growth across the country, including on the Asset. In the figure below, we present growth trends in IIP – a measure that tracks the performance of the economy across these activities. As of FY26YTD (Apr'25-Feb '26), the Manufacturing sector continues to perform strongly, recording positive y-o-y growth since FY25Q3. While industrial activity across the two other sectors (i.e., Power Generation and Mining) dropped between May and Jun/Jul '25, they have since rebounded and show signs of continued growth going forward.

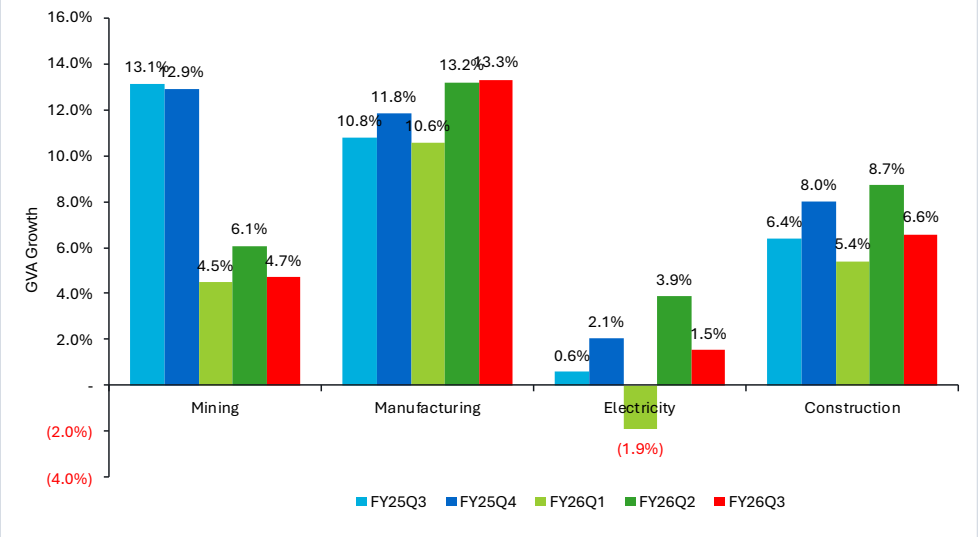
Figure 4.5: Month on Month IIP performance



Source: Steer Analysis of MOSPI Data

4.20 In addition to monthly trends in IIP, the figure below presents y-o-y growth of quarterly GVA in four industrial sectors - Mining (& Quarrying), Manufacturing, Electricity (and other Utilities), and Construction. While the Mining and Power sectors observed decline and muted growth in FY26Q1, the Manufacturing and Construction sectors experienced strong growth. While overall economic growth has remained resilient as of FY26YTD, performance across industries have varied, impacting economic growth across different regions and on the Asset as well.

Figure 4.6: Industrial components of GVA



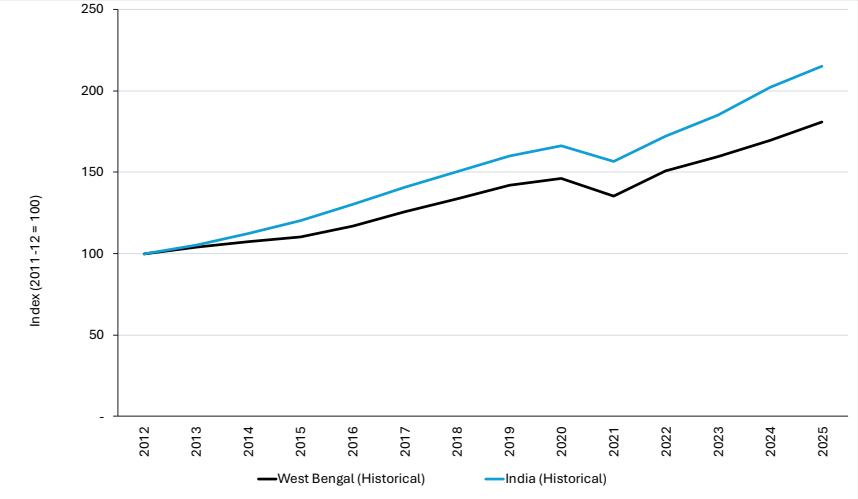
Source: Steer Analysis of MOSPI Data

GDP and GSDP Growth

4.21 Over the period FY12-FY24, the Indian economic has grown at a CAGR of approx. 6% aided by growth in the tertiary sector which grew at a CAGR of approx. 6.9% over the same period. Over the same period, economic growth of West Bengal has been slower than the country overall; between FY12-24, the state's GSDP grew at a 4.7% CAGR.

4.22 The state contributes approximately 5.1% to India's GDP, and has a 7.1% share in India's population in FY24. It is the fourth-most populated state in the country, with a population of 99.3 million in FY24. Figure 4.7 below shows historical growth in West Bengal GSDP compared to India GDP.

Figure 4.7: Evolution of West Bengal's state GDP and national GDP, FY12-25



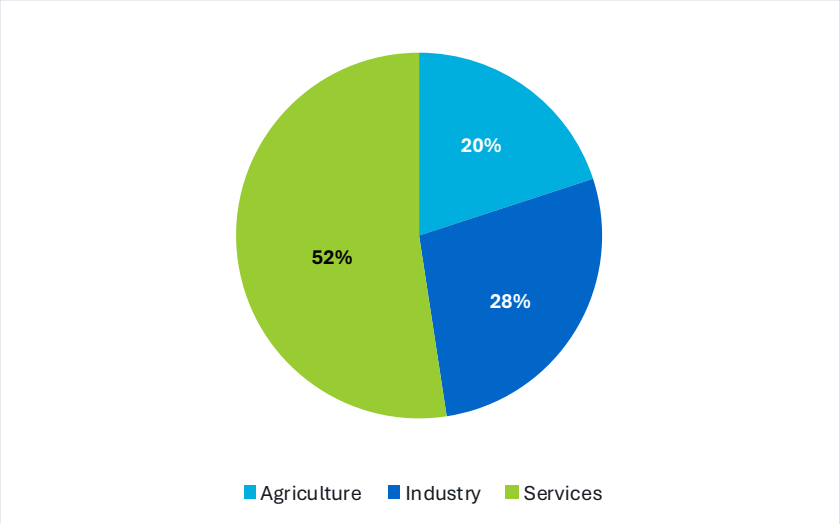
Source: Ministry of Statistics and Program Implementation (MoSPI)

4.23 As can be seen in Figure 4.8, the state economy is largely driven by the tertiary sector which contributed approximately 52% to state GSVA as of FY24.[17] The tertiary sector is followed by the secondary and primary sectors, which account for 28% and 20% of statewide GSDP (respectively).

4.24 Within the secondary/industrial sector, Chittaranjan, Dankuni, Kharagpur (railway locomotive manufacturing), Haldia (petrochemical) and Durgapur (steel and iron ore) constitute the key industrial regions within the state. The state is also home to the Shyama Prasad Mookherjee Port – one of the 12 major ports under the aegis of the Government of India, and an Indian Oil Corporation's refinery at Haldia.

4.25 The key primary industries in the state include agro and food processing and crop production. The state is mainly known for production of tea (in Darjeeling and Jalpaiguri) and rice.

Figure 4.8: Sectoral contribution to West Bengal's GSDP in FY25



Source: Ministry of Statistics and Program Implementation

4.26 The official historical GDP and GSDP data for India are released by the Ministry of Statistics and Program Implementation (MoSPI). The GDP forecasts for India are available from various reliable sources such as Oxford Economics and Consensus Economics[18], but state-specific GSDP forecasts are not published by any such sources. To derive state GSDP forecasts, we rely on past trends of the relationship between GDP and GSDP, and develop GSDP forecasts as a function of our assumed GDP forecasts[19].

4.27 For any indicator to be used as a growth driver to forecast traffic, a reliable source of historical and forecast data availability for that indicator is the key requirement. Of the key socioeconomic indicators discussed above, GDP was assessed to be the only growth

[17] **GSVA/NSVA by economic activities | Ministry of Statistics and Program Implementation | Government Of India**

[18] **Consensus Economics - Economic Forecasts and Indicators**

[19] Assuming that the historical long-term relationship between GSDP and GDP sustains over the short-term, we project future growth in GSDP as a function of our GDP growth forecast. We taper the relationship of GSDP growth to converge to GDP growth gradually over the long-term.

driver for which reliable data is available both in terms of historical and forecast data. Therefore, to forecast traffic, we use GDP/GSDP as our key growth drivers.

Forecasts for growth drivers

4.28 Following the discussion in Chapter 4 on the nature of economic activity in the state of Uttar Pradesh and in Delhi, in this section, we describe the assumptions in relation to forecasts of the key macro-economic drivers of traffic growth on the Asset.

4.29 We have based our forecasts of West Bengal GSDP using forecasts of GDP provided by the Client.

National GDP

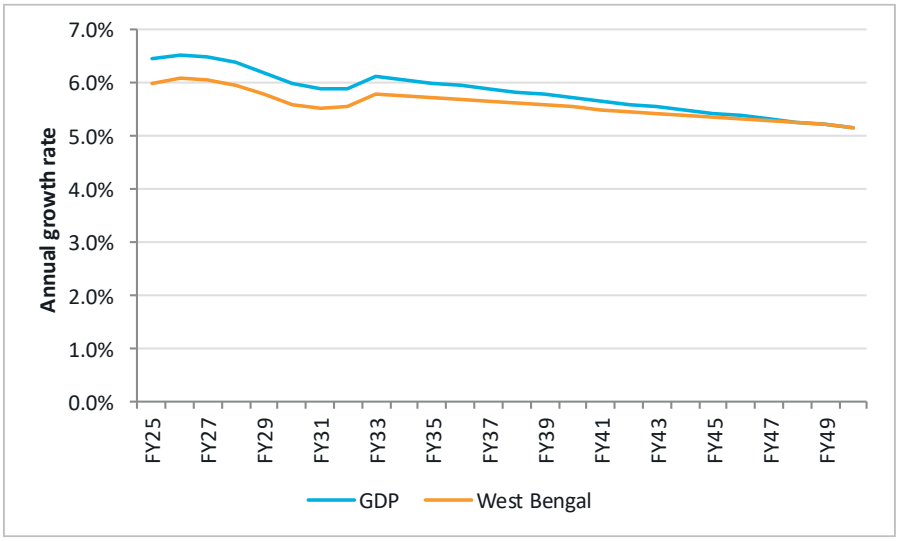
4.30 After the last period of economic slowdown in FY11-12, the country experienced an economic downturn again in late FY19 with FY20 having reported a GDP growth of 4% (relative to an average growth rate of 7% per year between FY13 and FY19). India's GDP growth declined as domestic investment and consumption demand were already under stress because of the liquidity crunch before Covid-19. Other factors that contributed to the economic slowdown included reduced growth rates in automobile sales and production, liquidity crunch in credit markets and rising number of Non-Performing Assets (NPAs) within the banking sector, as well as lower manufacturing production and lower rural consumption.[20]

4.31 The Covid19 outbreak had a significant impact on the Indian economy during the first two quarters of FY21 as government mandated lockdowns across the country effectively stalled economic activity and growth. The growth momentum eventually picked up in Q3 of FY21, with a sharp rebound in the economy in FY22 (GDP recorded 9.7% growth over FY21) and has since observed a consistent growth of 7.6% in FY23, 9.2% in FY24.

4.32 Figure 4.9 below shows Client-provided GDP projections for India. The forecast provided expects the Indian GDP to grow at 6.5% between FY27-FY28 and gradually tapering down to 5.2% by FY50. The India GDP growth forecast is broadly in line with other independent forecasts available from reliable sources such as IMF, World Bank and RBI in the medium term.

[20] **Data | India's GDP was on a downward slope even before COVID-19 wreaked havoc - The Hindu** (September 2020)

Figure 4.9: GDP-GSDP forecast



Source: GDP forecast provided by Client, GSDP forecast based on client GDP data

5 FY26 Base year AADT and Traffic growth Analysis

Introduction

5.1 In this chapter, we present our approach, assumptions and results for base (or background) traffic growth for each vehicle category on the Asset.

5.2 Traffic growth is commonly related to a variety of macro-economic and industry- or commodity-specific factors (hereafter referred to as 'traffic growth drivers'). These growth drivers are typically identified from the results of the OD data analysis and the site visits that help us appreciate the nature of traffic movement – 'what' travels 'where' and 'why'.

5.3 To understand historical traffic trends observed on the Asset in relation to these underlying growth drivers, we carry out regression analyses to determine the historical relationship between traffic growth (by vehicle category) and the underlying macroeconomic driver assumed to influence its growth on the Asset. The dynamics of traffic demand is the dependent variable while the dynamics of one or more identified growth drivers are the independent or explanatory variables.

5.4 Typically, passenger and light commercial vehicle traffic like cars, buses, LCVs and 2-axle trucks grow in line with the GSDP of the state in which the toll road is located. Heavy vehicle traffic like 3-axle trucks and MAVs grow in line with the national GDP. This is because most light vehicles tend to travel shorter distances within the state, whereas heavy vehicles typically carry commodities over long-distances across the country. These commodities also tend to be part of industry ecosystems whose demand-supply relationships are scattered across the country and therefore relate more with GDP growth than more local or regional growth drivers.

FY26 Base year AADT estimates

5.5 The base year is the year on which long-term background forecast growth rates are applied to derive year-wise average annual daily traffic (AADT) estimates for forecast years. This is therefore an important aspect of our forecasting approach as traffic and ultimately revenue forecasts for future years are built on top of the base year traffic estimate. For this traffic study, we have used FY26 as the base year for generating or future year traffic forecasts for the Asset.

5.6 To establish the base year (FY26) traffic position, we utilised information from various sources including historical traffic data from the Client (FY25 and FY26YTD), latest information on FY26 estimated GDP and GSDP growth (as published by official sources), as well as our own contextual knowledge of the region and wider economy, and transportation network the Asset forms a part of.

Methodology

The base traffic for FY26 has been estimated using 11 months of actual traffic data (April to February). Each toll plaza's seasonality correction factors were applied on the actual MADTs of Apr-25 to Feb-26 to obtain seasonally corrected estimates for FY26 traffic. An average of these estimates was considered to be the FY26 base traffic.

Seasonal Correction Factors

5.7 Traffic on any Asset varies on a month-on-month level. Such variations maybe due to monsoons (typically Jul to Sept) or due to festivals in the region. E.g., it is observed that typically the truck traffic during the first half of the financial year (April-September) is generally lower than the annual average, mainly because of peak summer season followed by monsoons affect the freight movement patterns in large parts of the country in the July-September period. In addition to these, there may be other seasonal variations specific to the Asset.

5.8 To normalise for these variations across the year when estimating AADT, Seasonality Correction Factors (SCFs) are used. SCFs are estimated to convert the monthly traffic numbers to an AADT level while accounting for seasonal variation due to local/national festivals, weather changes and/or temporary external impacts. These are typically estimated using historical data for each plaza and vehicle category over multiple years. An SCF greater than one implies that the traffic for that month is lower than the annual average and vice-versa.

5.9 Table 5.1 and Table 5.2 below present the average of FY23, FY24, and FY25 SCFs, used for the estimation of our FY26 base traffic position.

Table 5.1: Adopted SCF for the Asset for TP1 Lakshmipur

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.00	0.89	0.79	0.96	1.09	1.17	1.08	1.11	1.03	1.04	1.02	0.96
LCV	0.95	0.92	0.92	0.98	1.08	1.12	1.15	1.08	1.04	1.06	0.99	0.83
Bus	1.00	1.00	0.95	1.04	1.09	1.05	1.01	0.99	0.96	0.98	1.00	0.98
2A	0.95	0.94	0.97	1.04	1.06	1.04	1.12	1.05	1.02	1.03	0.94	0.88
3A	0.91	0.96	1.00	1.07	1.04	1.02	1.10	1.02	0.99	1.04	0.96	0.92
MAV	0.96	0.96	0.97	1.16	1.16	1.14	1.19	0.99	0.96	0.94	0.88	0.84

Source: Steer analysis of Client historical TMS data

Table 5.2: Adopted SCF for the Asset for TP2 Gazole

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	0.99	0.93	0.93	1.02	1.09	1.10	1.06	1.03	0.97	0.99	0.98	0.96
LCV	0.96	0.91	0.96	1.10	1.14	1.10	1.16	1.05	1.04	1.04	0.94	0.77
Bus	1.03	1.02	0.96	1.02	1.04	1.03	1.02	0.99	0.96	0.99	0.97	0.98
2A	0.96	0.96	0.97	1.09	1.08	1.03	1.11	0.99	0.98	1.02	0.96	0.90
3A	0.92	0.94	1.00	1.09	1.05	1.02	1.11	1.02	0.98	1.02	0.96	0.92
MAV	0.96	0.97	0.99	1.19	1.18	1.13	1.14	0.98	0.95	0.96	0.89	0.83

Source: Steer analysis of Client historical TMS data

Adopted FY26 Base AADT

5.10 Based on the above methodology and inputs, the Adopted FY26 Base AADT for both toll plazas are presented in Table 5.3 and Table 5.4 below:

Table 5.3: Adopted base estimates: TP1 Lakshmipur

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	4,082	4,264	4,299	5.3%
LCV	477	548	558	17.0%
Bus	420	432	434	3.5%
2A	1,070	1,162	1,177	10.0%
3A	737	690	695	(5.7%)
MAV	5,077	4,985	5,085	0.1%
OSV	0	1	1	
Total	**11,864**	**12,081**	**12,249**	**3.2%**
PCUs	**27,992**	**28,150**	**28,594**	**2.2%**

Source: Steer analysis: FY25 actual full year, FY26YTD includes 11 months of FY26, FY26A is adopted base for FY26

Table 5.4: Adopted base estimates: TP2 Gazole

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	5,820	6,419	6,453	10.9%
LCV	427	532	546	27.8%
Bus	659	694	696	5.6%
2A	1,213	1,338	1,354	11.6%
3A	756	739	746	(1.3%)
MAV	3,755	3,908	3,998	6.5%
OSV	0	1	1	
Total	**12,630**	**13,631**	**13,794**	**9.2%**
PCUs	**26,557**	**28,241**	**28,666**	**7.9%**

Source: Steer analysis: FY25 actual full year, FY26YTD includes 11 months of FY26, FY26A is adopted base for FY26

5.11 The tables above show that PCU growth from the full year FY25 AADT to the FY26A has been 2.2% at TP1 and 7.9% at TP2. Across all vehicle categories, we observed modest growth in FY26A, relative to FY25. LCVs observed a healthy growth in FY26 owing to stronger consumption trends in local areas near the Asset. Buses have observed muted growth; this could be attributed to shifting preferences towards personal mobility reflected in growth of CJVs.

5.12 For 3A/MAVs the muted growth trends are a result of two major factors - (1) continued decline in trade exports to Bangladesh, and (2) crackdown on illegal stone mining in Pakur District and other quarrying districts of Bengal, explained in more detail in Chapter 2 above and Chapter 6 below.

Estimation of background elasticities

5.13 Elasticities, in the case of traffic growth, are the relationships between traffic growth and the growth of underlying macro-economic drivers of traffic. Multiplied with forecasts of growth drivers like GDP or GSDP, they provide the forecasts of background traffic growth.

5.14 The TMS data for the Asset reports 3A and MAV separately along with Bus and 2A hence no further splits were required to understand the growth pattern of these vehicle categories. Following the brief note on historical trends provided in Chapter 3 above, we now delve deeper into the results of the historical growth analysis for each major vehicle type. Table 5.5 below shows the share of influence of each macroeconomic driver variable considered for estimating the background traffic growth of each vehicle category on the Asset.

Table 5.5: Identified growth drivers to model traffic growth

Vehicle type	GDP India	GSDP West Bengal
Car		100%
LCV		100%
Bus		100%
2A	100%	
3A	100%	
MAV	100%	

Source: Steer analysis of Client data

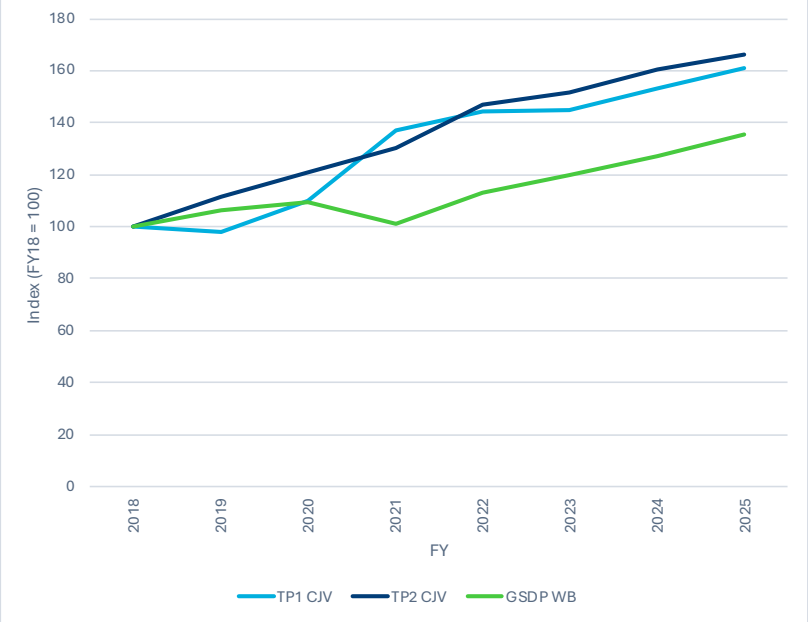
5.15 Since cars (CJVs), buses and LCVs cater to more regional movements (as validated from the OD trip lengths and zonal analyses above), growth of these vehicle categories are more influenced by regional economic drivers such West Bengal state GSDP. However, for 2As, 3As and MAVs that carry heavy commodities like construction material and agricultural products into West Bengal and Bangladesh, growth of these vehicle volumes on the Asset are more linked to nationwide GDP growth.

CJV

5.16 We see from the OD analysis (conducted in 2019 at TP2 and 2023 at TP1) that the CJVs primarily cater to regional movements between Farakka, Malda, Gazole, Raiganj and other towns lying on the Asset. We have therefore taken West Bengal GSDP to be the growth driver to model the growth of CJV traffic. Figure 5.1 below shows the relationship between the historical AADT CJV traffic on TP1 and TP2, over the period FY17 and FY24 and the GSDP of West Bengal.

5.17 Over the period FY18-25, CJV traffic at TP1 and TP2 grew at a CAGR of 7.0% and 7.5% per year respectively, while WB state GSDP grew at an average of 4.4% per year over the same period.

Figure 5.1: Relationship between CJV traffic GSDP of West Bengal – TP1 & TP2



Source: Steer analysis of Client TMS data and MoSPI data

5.18 Generally, we would expect that in fast-growing economies with relatively low car ownership levels, car traffic growth rates are often in line with or slightly higher than growth in GSDP/GDP (i.e. suggesting elasticities at or just above 1.0). Further, there is an expected increase in car ownership proportion of overall population as the economy grows. This assumption is however contextual and subject to changes in economic policies of government as well as overall regional economic conditions.

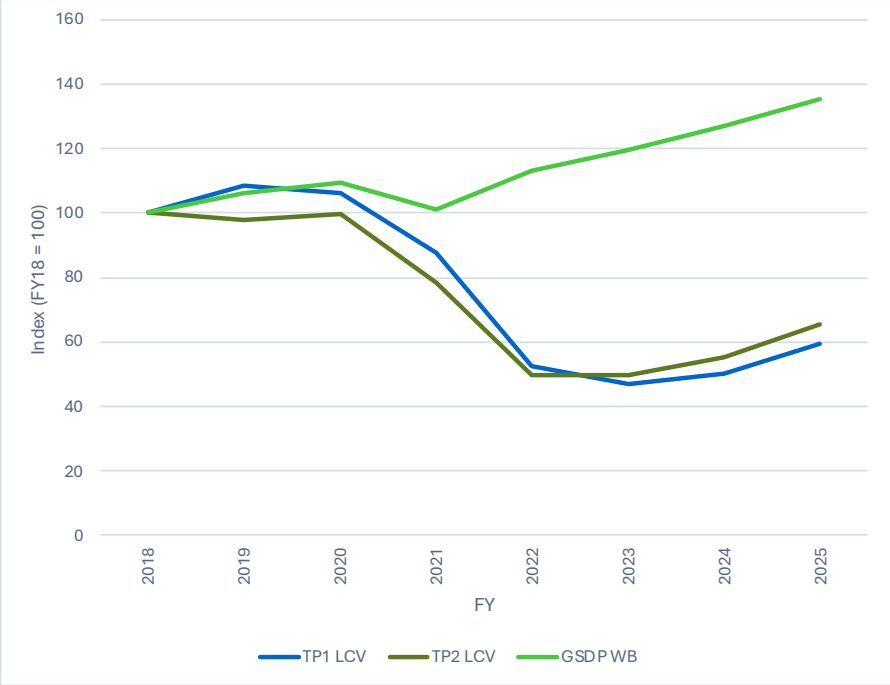
5.19 Considering the robust growth in CJV traffic observed over the operational history of the Asset, with trips largely between urban areas in and around the Asset, we have assumed a forecast background elasticity of 1.1 at TP1 and 1.0 at TP2 for CJVs, with respect to West Bengal GSDP. This is line with benchmarks we have observed at toll roads across the country, which have a considerable concentration of inter-urban areas.

LCV

5.20 Compared to heavy vehicles like 3A and MAV, LCVs on the Asset have more regional movements within the state, as observed in the OD data analysis (conducted in 2019 at TP2 and 2023 at TP1), where 70% of LCVs have one end of their trips within West Bengal. Hence, we have taken GSDP West Bengal as the growth driver for LCV.

5.21 Post FY20, due a change in national axle-load norms, there was nationwide shift in truckers' preferences from using LCVs to 2A trucks to carry more tonnage in commodities. Additionally, after the complete implementation of FASTag, there has been a significant reclassification of LCVs as either CJVs or 2As. This has also contributed to the declining LCV volumes on the Asset – between FY21 and FY25, LCV traffic witnessed a degrowth of CAGR 7.1% at TP1 and CAGR 7.7% at TP2.

Figure 5.2: Relationship between LCV traffic and GSDP of West Bengal – TP1 & TP2



Source: Steer analysis of Client TMS data and MoSPI data

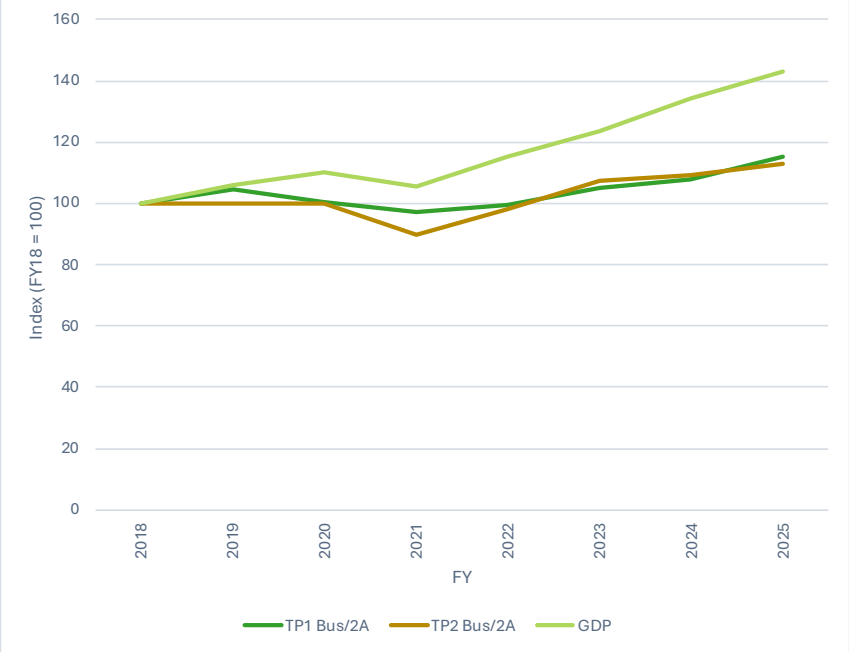
Bus and 2A

5.22 From FY22 onwards, Bus and 2A traffic were recorded separately, prior to which they were recorded together. Thus, given the limited period of three years (FY22-FY25) to understand the growth of Bus and 2A traffic trends separately we undertook regression analysis on the combined Bus and 2A traffic volumes. Bus growth tends to be largely supply-driven in many parts of the country, with new buses being bought and deployed by the government during different intervals of time. Based on our experience across the country, buses on inter-urban and tourism corridors show elasticities of 0.4 to 0.6 with respect to the GSDP.

5.23 In the period of FY18-25, combined Bus and 2A traffic grew at a CAGR of 2.0% on TP1 and 1.8% on TP2, while WB state GSDP grew at an average 4.4% per year and national GDP grew at an average 4.8% per year over the same period. With its closer proximity to Malda town, Bus+2A volumes at TP2 are higher than observed at TP1.

5.24 As a result, for the purpose of forecasting traffic growth at both plazas, we have considered an elasticity of 0.25 for buses and 0.75 for 2As, at both toll plazas respectively.

Figure 5.3: Relationship between Bus and 2A traffic with GSDP West Bengal and GDP – TP1 & TP2

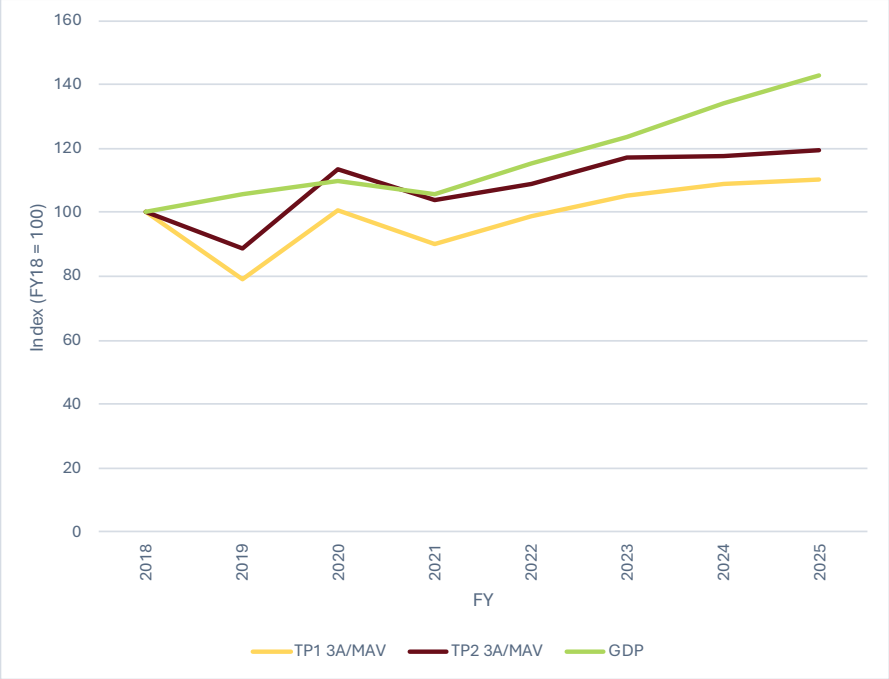


Source: Steer analysis of Client TMS data and MoSPI data

3A/MAV Trucks

5.25 Compared to lighter trucks like LCVs and 2As, 3As and MAVs have more national or long-distance movements covering several states. Given that manufacturing-related commodities typically take prominence in their commodity distributions, traffic growth of 3As and MAVs is more influenced by industrial demand-supply ecosystems spread across the country. For the purpose of forecasting 3A and MAV traffic growth on the Asset, we have used national GDP as the growth driver for 3A and MAV in our forecasting model. Figure 5.4 below presents the relationship between indexed values of 3A+MAV (combined) traffic volumes on the Asset and National GDP over the period FY18-25.

Figure 5.4: Relationship between 3A and MAV traffic with GSDP West Bengal and GDP – TP1 & TP2



Source: Steer analysis of Client TMS data and MoSPI data

5.26 As seen in Figure 5.4 above, 3A/MAV traffic at both toll plazas has seen consistent growth in the past years. Though late FY19 saw a big temporary drop in traffic due to the closure of the Farakka Barrage for six months, FY20 showed a strong recovery growth, before the start of the pandemic. Based on FY18-25 growth, TP1 shows 1.4% 3A+MAV growth while TP2 shows 2.6% MAV growth against GDP growth of 5.2%.

5.27 A slowdown in the Bangladesh economy over the past few years (FY23-FY26YTD) in addition to domestic policies to curb illegal stone mining across the country including parts of WB and JH from where stone chips/aggregate materials are transported via trucks on the Asset has resulted in muted 3A/MAV growth on the Asset (at both plazas) over the past couple of years (FY25 and FY26YTD).

5.28 In the combination of 3A+MAV, 3As have grown slower than MAVs due to a shift in axle preferences over the last several years, as truckers and transporters have continued to favour MAVs over 3As for long-distance movements since ~FY20. This is because MAVs have higher load capacity allowing transporters to enjoy economies of scale through lower per unit costs of moving material over longer distances when doing so through MAVs instead of 3-Axle trucks. It is however, unlikely that 3A truck volumes will reduce to zero as there are certain commodities or movements that remain best served by 3As.

Forecasts for background elasticities

5.29 Table 5.6 below presents a summary of our assumed forecast elasticities for background traffic growth in comparison to our derived elasticities from our regression analyses.

5.30 The forecast elasticities for buses and LCVs are projected to remain constant throughout the concession period. The elasticity for CJVs at TP1 Lakshmipur is reduced from FY30 onwards, while that of MAVs has been increased from FY27 to FY30- in view of the expected recovery of exports to Bangladesh - This assumption is grounded in historical

trends and a long-term perspective on regional and national growth, suggesting market maturity is still several years away. These trends are based on a long-term understanding of historical relationships and an overall outlook on the growth of the region and the country.

Table 5.6: Assumed forecast elasticities for background growth

Vehicle type	Growth driver	Derived Elasticity	Period Considered (Without Dummy)	Forecast	
				Assumed forecast elasticity	Evolution of elasticity
TP1 Lakshmipur					
Car	GSDP West Bengal	1.41	FY18-25	1.10	Reduced to 1.0 by FY30
LCV	GSDP West Bengal	0.80*	FY18-25	0.50	No change
Bus+2A	GSDP West Bengal	0.42	FY18-25	0.25 for Bus and 0.75 for 2A	No change
3A+MAV	GDP	0.62*	FY18-25	0.20 for 3A and 0.9 for MAV	No change
TP2 Gazole					
Car	GSDP West Bengal	1.50	FY18-25	1.00	No change
LCV	GSDP West Bengal	1.26	FY18-25	0.40	No change
Bus+2A	GSDP West Bengal	0.45	FY18-25	0.25 for Bus and 0.75 for 2A	No change
3A+MAV	GDP	0.60	FY18-25	0.30 for 3A and 0.9 for MAV	No change

Source: Steer analysis of Client data; *insignificant results; FY25 AADT used in to derive the elasticities via regression analyses was the actual FY25 AADT; The derived elasticities for the Bus + 2A models at both plazas are with respect to GSDP WB, whereas in the models, Buses are driven by WB GSDP while 2As are driven by National GDP (as per Table 5.5 above).

6 Forecast: Network overlays and forecasts

Introduction

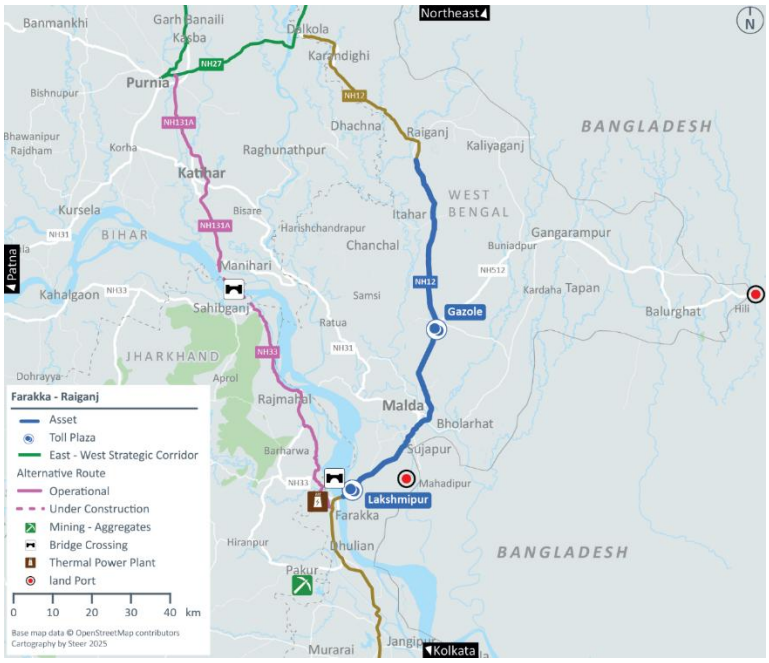
6.1 Following the discussion on estimated and assumed forecast background growth rates in the previous chapter, this chapter first deals with the forecasting assumptions around base year AADT and potential impacts on traffic growth on the Asset. Later, it presents the assumed toll segmentation, trip factors and evolution of toll rates for the forecast period which are used to estimate the forecasted revenue based on the forecast traffic. In the final section, the chapter summarises the traffic growth rates for the forecast years.

Analysis of potential network impacts

Alternate routes and improvements

6.2 The section below details the impacts which we believe would affect traffic on the Asset during the concession period. As discussed in Chapter 2, to assess the impacts on the Asset, whether positive or negative, we have studied developments (alternate roads, and feeder roads) in the surrounding road network. Figure 6.1 below shows the road network surrounding the Asset.

Figure 6.1: Asset route shown against the regional network context



Source: Steer analysis and cartography

6.3 Table 6.1 below summarizes upcoming network/other developments considered for this Asset, corresponding alternate/feeder routes associated with these developments, their year of completion, and indicative direction of each impact on the Asset.

Table 6.1: List of network/other developments

S. No.	Development	Route affected	Year of completion	Impact (+/-)
1	Completion of Sahibganj Bridge	Trips between south of Farakka and North of Raiganj.	FY29	-ve
2	LoS improvement (4-laning of Krishnanagar-Behrampore section of the NH12)	Asset Corridor	FY27	+ve
3	Recovery of Bangladesh bound traffic	Asset Corridor	FY27	+ve

Source: Steer analysis

Impact assessment for network/other developments

6.4 The subsection below includes a narrative of the improvement, as listed in the table above, and impacts associated to that development.

Completion of Sahibganj Bridge

6.5 As discussed in Chapter 2, the completion of 6-km 4-lane Sahibganj bridge across the Ganges between Sahibganj (JH) and Manihari (BH) is expected to be completed by FY29[Error! Bookmark not defined.]. Upon its completion, we expect that some of the traffic currently p lying on the Asset moving between Farakka, Pakur, Nalhati and further south (of Bengal) and parts of Bihar (including Purnia, Katihar), and north of Raiganj (in WB) will divert to this alternative route especially short to medium distance trips.

6.6 It can be seen from Figure 6.1 above that the northern section of the longer corridor i.e., Purnia and Manihari section of the NH131A is already 4-laned and currently being tolled at the Routara toll plaza. Going forward we expect the southern section of the corridor i.e., the Sahibganj-Farakka section of the NH33 to also become fully upgraded to a 4-lane configuration, improving the overall LoS of alternative route to the Asset. The impact estimated is applied in the following manner: 25% in FY29; 50% in FY30 and 100% from FY31

6.7 Table 6.2 below presents the impacts estimated for both the toll plazas.

Table 6.2: Impact of completion of Completion of Sahibganj Bridge

Vehicle type	FY29	FY30	FY31 Onwards
Staging	*25%*	*50%*	*100%*
TP1 Lakshmipur			
2A	(0.5%)	(1.0%)	(2.1%)
3A	(0.7%)	(1.4%)	(2.7%)
MAV	(0.7%)	(1.4%)	(2.9%)
TP2 Gazole			
2A	(0.4%)	(0.9%)	(1.8%)

Vehicle type	FY29	FY30	FY31 Onwards
3A	(0.6%)	(1.3%)	(2.5%)
MAV	(0.9%)	(1.8%)	(3.6%)

Source: Steer analysis

4-laning of Krishnanagar-Behrampore section of NH12

6.8 As seen in Figure 6.2 below, while the Raiganj bypass and ROB as well as the Raiganj-Dalkhola section of the NH12 have been fully upgraded (to 4-lane configuration) as of early FY25[9], the southern section of the NH12 (i.e., 4-laning between Krishnanagar and Behrampore) is still under construction in several sections (as of February 2026) and is expected to completed by mid-FY27.

Figure 6.2: Impact of 6-laning LOS improvement

Source: Steer analysis and cartography

6.9 Given the 4-laning of the NH12 section between Kolkata and Krishnagar was also completed as of early FY25[21], the completion of the Krishnanagar-Behrampore section will significantly increase the LoS offered by the NH12 across its full length from Kolkata to Raiganj, improving long-distance commercial traffic access to the Asset. To incorporate the positive impact of this development on future traffic growth on the Asset, we performed a GJC cost analysis of the NH12 pre- and post-completion of the project.

6.10 A comparison of generalised journey costs (GJC) provides how different elements of cost and time affect traffic. This comparison was done for both light and heavy vehicles. Lower GJCs correspond to higher induced traffic. Based on Steer's studies and research in India, we have found that for every 1% reduction in the GJCs, the traffic increases by a factor of 0.3. We then applied the difference of GJCs to the elasticity of 0.3 to get net influence on the traffic.

6.11 The improvement in travel costs or GJC is translated into the impact on that share of local + IAOI OD movements using a linear inverse relationship. Thereafter, the GJC influence is applied on the corresponding shares of traffic, which were extracted from OD data.

6.12 Table 6.3 and Table 6.4 below present the extent of the LoS impact on both Asset toll plazas and the expected timelines of the impact on the Asset.

Table 6.3: Impact of 6 laning LOS improvement for TP1 Lakshmipur

Vehicle category	FY27 Onwards
CJV	1.7%
LCV	1.7%

Source: Steer Analysis

Table 6.4: Impact of 6 laning LOS improvement for TP2 Gazole

Vehicle category	FY27 Onwards
CJV	1.0%
MLCV	1.0%

Source: Steer Analysis

Recovery of Bangladesh bound Traffic

6.13 The overall slowdown and rising inflation in Bangladesh's economy has led to overall drop in export and import and in addition affected the construction activity in the country, due to which demand of construction materials has declined. The political instability in the country[22] has also had an impact on trade, with FY25 seeing a major dip following the crisis that emerged in August 2024. This has continued in FY26YTD as well.

6.14 Bangladesh's economy has recently been affected by economic downturn due to high inflation, dwindling foreign reserves, high debt among others resulting in a decline in

[21] **Project Details - NHAI (Four Laning of Bal. Works of Barasat-Krishnagar from km. 48.553 to km. 115.272)**

[22] **Timeline of student-people's 'July uprising' | News**

overall economic activity in the country. Private consumption growth, public investments witnessed a fall in Bangladesh, as a result the country's imports have also gone down, according to a report published by the Asian Development Bank, earlier discussed in section 2.17. This had led to fall in India's overall exports to Bangladesh by ~19% in FY24 vs FY23. This drop continues in FY25 and FY26 up to October 2025.

6.15 Trends in Bangladesh-bound export volumes suggest recovery from October 2025 as Bangladesh's political situation stabilised. With fresh elections and new government being established in February 2026, recovery in Bangladesh exports is expected to happen from FY27. This was validated by the site visit conducted by Steer in February 2026.

6.16 However, with the recovery in Bangladesh economy, we expect construction activity in the country to pick up and export demand will start increasing.[23] This recovery impact is assumed from FY27 onwards and expected to materialise in full by FY28 in a phased manner as shown in Table 6.5 and Table 6.6 below.

Table 6.5: Impact of Bangladesh Recovery on TP1

Vehicle category	Impact
3A	4.7%
MAV	6.1%

Source: Steer Analysis

Table 6.6: Impact of Bangladesh Recovery on TP2

Vehicle category	Impact
3A	2.0%
MAV	1.5%

Source: Steer Analysis

Overloading

6.17 Overloading contributes to a significant share of both traffic and revenue at both Asset toll plazas. Over the past years since commencement of tolling, the proportion of overloading has varied significantly, mainly due to the decisions taken by the local administration to either ban or lift the ban on overloading at various times.

6.18 Since overloading proportions are already at historic lows, (as discussed in Chapter 3), no further reduction in overloading shares has been assumed in our future traffic and revenue forecasts for the Asset. FY26YTD (as of Feb'26) average overloading shares have been considered for the forecasts.

Table 6.7: Overloading assumptions for forecast years (FY26 onwards)

Vehicle type	TP1 Lakshmipur	TP2 Gazole
LCV	1.1%	2.2%
2A	0.4%	0.8%

[23] Asian Development Outlook (ADO) April 2025: Bangladesh

Vehicle type	TP1 Lakshmipur	TP2 Gazole
3A	0.1%	0.6%
MAV	6.5%	2.9%

Source: Steer analysis of Client data

Revenue forecasting assumptions

6.19 To forecast the revenues for a forecast year, the traffic forecast for each vehicle type is converted into tickets sold, which is then multiplied with the corresponding toll rate. While toll segmentation provides the breakup of trips paying each ticket type, trip factors provide the conversion factor to convert from traffic (trips) to tickets sold. This section discusses assumptions related to toll segmentation, trip factors and toll rates for the forecast period.

Toll segmentation

6.20 The Ministry of Road Transport & Highways has finalized a compensation formula for existing toll concessionaires to offset revenue loss from the Annual Pass scheme for non-commercial vehicles[24].

6.21 Across multiple assets, the share of annual pass trips has been rising on a monthly basis since August 5. A corresponding decline in other ticket categories including Single and Return journeys has been observed.

6.22 CJV Segmentation for FY26 has been developed using the pre annual pass segmentation till 14th August 2025, and post-annual pass segmentation from 15th August 2025 till 28th February 2026. The share of annual pass trips in March 2026 has been assumed to be the same as the share of annual pass trips in the last 10 days of February 2026.

6.23 The segmentation for CJVs in FY27 has been assumed to be the same as the estimated March 2026 segmentation as trends suggest that the share of annual pass trips have stabilised. For other vehicle categories we have analysed the historical TMS data split by ticket categories, to understand trends, as shown in Chapter 3. For the traffic and revenue forecast, FY26YTD (Apr- Feb) as discussed in the earlier sections, can be considered a normal period:

Table 6.8: Toll segmentation at TP1 Lakshmipur

Forecast	CJV (FY26)	CJV (FY27)	Mini-LCV	LCV	Bus	2A	3A	MAV
Single	25.9%	22.0%	28.4%	41.9%	17.4%	75.0%	78.0%	44.5%
Return	50.8%	46.2%	56.9%	52.1%	81.5%	23.2%	21.9%	55.4%
Local personal	7.7%	7.0%	7.9%	-	-	-	-	-
Exemptions	7.1%	7.2%	6.7%	6.0%	1.1%	1.7%	0.1%	0.1%
Violations	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Annual Pass	8.3%	17.4%	-	-	-	-	-	-

[24] Finalization-Concessionaire-Annual-Pass-Facility-on-NHs-01092025.pdf

Source: Steer analysis of Client TMS data

Table 6.9: Toll segmentation at TP2 Gazole

Forecast	CJV (FY26)	CJV (FY27)	Mini-LCV	LCV	Bus	2A	3A	MAV
Single	19.8%	16.6%	22.3%	41.7%	9.9%	63.1%	73.5%	53.2%
Return	59.0%	53.5%	64.8%	57.4%	89.6%	35.8%	26.4%	46.7%
Local personal	6.4%	6.3%	6.4%	-	-	-	-	-
Exemptions	7.1%	7.3%	6.3%	0.8%	0.5%	1.1%	0.1%	0.1%
Violations	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
Annual Pass	7.6%	16.2%	-	-	-	-	-	-

Source: Steer analysis of Client TMS data

Trip factors

6.24 Trip factors are used to calculate the revenue for the trips made on passes such as return, local personal, monthly passes. The trip factors assumed are based on the latest FY25 data available and are presented in Table 6.10 and Table 6.11 below.

Table 6.10: Trip factors at TP1 Lakshmipur

Forecast	CJV/Mini-LCV	LCV	Bus/2A	3A	MAV
Single	1	1	1	1	1
Return	2	2	2	2	2
Monthly	45	48	45	49	45
Local commercial	1	1	1	1	1
Local personal	18	-	-	-	-
Exemptions	1	1	1	1	1
Violations	1	1	1	1	1

Source: Steer analysis of Client TMS data

Table 6.11: Trip factors at TP2 Gazole

Forecast	CJV/Mini-LCV	LCV	Bus/2A	3A	MAV
Single	1	1	1	1	1
Return	2	2	2	2	2
Monthly	45	45	45	45	45
Local commercial	1	1	1	1	1
Local personal	27	-	-	-	-
Exemptions	1	1	1	1	1
Violations	1	1	1	1	1

Source: Steer analysis of Client TMS data

Toll evolution

6.25 Based on the concession agreement and the gazetted toll notification, we see that base toll rates increase every year based on WPI-linked inflation to provide us unrounded toll rates. These are rounded up to the nearest five rupees to estimate the rounded toll rates charged to the road user.

6.26 We have used actual toll rates from FY25 toll notifications to validate the modelling of the toll evolution. Forecasted growth in WPI was adopted from Client based inputs of WPI growth forecasts, presented in Table 6.12 below. The upward trend in inflation is expected to continue in the medium term, before gradually tapering to 4.1% in the long term.

6.27 These WPI forecasts provided by the Client. The WPI forecasts available from other independent forecasting agencies may vary from this assumption and could be lower or higher than that provided by the Client.

Table 6.12: WPI growth forecast assumptions

Financial year	WPI growth (%)
FY26	2.57%
FY27	0.96%
FY28	5.0%
FY29	5.1%
FY30	4.9%
FY31	4.4%
FY32 onwards	4.1%

Source: FY28 onwards WPI print as per client inputs

Revenue reconciliation

6.28 As part of validating the data provided by the Client, as well as our assumptions around toll calculations, we have reconciled the actual reported revenue for FY26YTD. To reconcile we have used the FY26YTD segmentation, FY26YTD AADT and compared it with the reported revenue for the year. The exercise was undertaken at an annual level. The comparison, as shown in Table 6.13 below, depicts the modelled revenue vs the reported revenue difference, and the difference lies within 0.1%. This gives us the confidence in the assumptions around segmentation and trip factors for future forecast purposes.

Table 6.13: Revenue reconciliation summary (AADC INR lakhs)- FY26YTD

Toll Plaza	Modelled Revenue	Actual Revenue	Difference (%)
TP1 Lakshmipur	47.34	47.34	0.0%
TP2 Gazole	21.62	21.63	(0.1%)

Source: Steer analysis

Traffic and Revenue forecasts

6.29 Based on the traffic and revenue related forecast assumptions discussed above, we modelled traffic and revenue forecasts for the Asset over its full concession period. Table 6.14, Table 6.15, Table 6.18, and Table 6.19 below present the AADT/PCU forecasts and

associated forecasted growth rates on the Asset. Further, Appendix A presents the AADT and revenue forecasts for the Asset.

Table 6.14: Final Traffic forecast for TP1 Lakshmipur

Vehicle Type	FY26	FY27	FY30	FY32	FY37	FY42
CJV	2,753	2,983	3,559	3,966	5,244	6,874
Mini LCV	1,546	1,638	1,847	1,994	2,428	2,939
LCV	558	575	627	662	763	875
Bus	434	441	460	473	508	545
2A	1,177	1,234	1,400	1,510	1,882	2,322
3A	695	720	755	762	809	857
MAV	5,085	5,545	6,625	7,245	9,427	12,118
OSV	1	1	1	1	1	2
AADT	**12,249**	**13,138**	**15,274**	**16,613**	**21,063**	**26,532**
PCU	**28,594**	**30,706**	**35,739**	**38,754**	**49,078**	**61,714**

Source: Steer analysis

Table 6.15: Final Traffic CAGR (%) for TP1 Lakshmipur

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY32	FY32-FY37	FY37-FY42	FY26-FY42
CJV	8.4%	6.1%	5.6%	5.7%	5.6%	5.9%
Mini LCV	6.0%	4.1%	3.9%	4.0%	3.9%	4.1%
LCV	3.0%	2.9%	2.8%	2.9%	2.8%	2.9%
Bus	1.5%	1.5%	1.4%	1.4%	1.4%	1.4%
2A	4.9%	4.3%	3.9%	4.5%	4.3%	4.3%
3A	3.7%	1.6%	0.5%	1.2%	1.1%	1.3%
MAV	9.0%	6.1%	4.6%	5.4%	5.2%	5.6%
OSV						
AADT	**7.3%**	**5.1%**	**4.3%**	**4.9%**	**4.7%**	**4.9%**
PCU	**7.4%**	**5.2%**	**4.1%**	**4.8%**	**4.7%**	**4.9%**

Source: Steer analysis

Table 6.16: Final Revenue forecast (INR Crores) for TP1 Lakshmipur

Vehicle Type	FY26	FY27	FY30	FY32	FY37	FY42
CJV	10.6	11.8	16.3	19.9	32.6	53.6
Mini LCV	5.9	6.5	8.5	10.0	15.1	22.9
LCV	3.9	4.1	5.2	6.0	8.6	12.4
Bus	6.7	7.0	8.5	9.6	12.7	17.1
2A	18.8	20.1	26.4	31.4	48.3	74.6
3A	17.3	18.3	22.3	24.7	32.5	43.0
MAV	126.0	140.7	195.2	234.1	377.7	606.8
OSV	0.0	0.0	0.0	0.0	0.1	0.1
Total	**189.3**	**208.6**	**282.4**	**335.7**	**527.6**	**830.4**

Source: Steer analysis

Table 6.17: Final Revenue CAGR (%) for TP1 Lakshmipur

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY32	FY32-FY37	FY37-FY42	FY26-FY42
CJV	11.5%	11.5%	10.4%	10.4%	10.5%	10.7%
Mini LCV	8.9%	9.4%	8.7%	8.6%	8.7%	8.8%
LCV	4.9%	8.1%	7.9%	7.3%	7.6%	7.5%
Bus	4.2%	6.6%	6.1%	5.9%	6.0%	6.0%
2A	7.2%	9.5%	9.0%	9.0%	9.1%	9.0%
3A	6.0%	6.8%	5.3%	5.6%	5.8%	5.9%
MAV	11.7%	11.5%	9.5%	10.0%	9.9%	10.3%
OSV	8.2%	10.9%	10.2%	10.1%	9.9%	10.1%
Total	**10.2%**	**10.6%**	**9.0%**	**9.5%**	**9.5%**	**9.7%**

Source: Steer analysis

Table 6.18: Final Traffic forecast for TP2 Gazole

Vehicle Type	FY26	FY27	FY30	FY32	FY37	FY42
CJV	4,500	4,823	5,716	6,368	8,421	11,039
Mini LCV	1,953	2,045	2,267	2,420	2,867	3,379
LCV	546	560	600	627	702	784
Bus	696	707	738	759	815	873
2A	1,354	1,420	1,612	1,742	2,171	2,679
3A	746	759	790	798	847	897
MAV	3,998	4,247	4,963	5,402	7,029	9,036
OSV	1	1	1	1	1	2
AADT	**13,794**	**14,561**	**16,686**	**18,117**	**22,854**	**28,688**
PCU	**28,666**	**30,180**	**34,445**	**37,196**	**46,706**	**58,333**

Source: Steer analysis

Table 6.19: Final Traffic CAGR (%) for TP2 Gazole

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY32	FY32-FY37	FY37-FY42	FY26-FY42
CJV	7.2%	5.8%	5.6%	5.7%	5.6%	5.8%
Mini LCV	4.7%	3.5%	3.3%	3.4%	3.3%	3.5%
LCV	2.4%	2.3%	2.2%	2.3%	2.2%	2.3%
Bus	1.5%	1.5%	1.4%	1.4%	1.4%	1.4%
2A	4.9%	4.3%	3.9%	4.5%	4.3%	4.4%
3A	1.8%	1.3%	0.5%	1.2%	1.1%	1.2%
MAV	6.2%	5.3%	4.3%	5.4%	5.2%	5.2%
OSV						
AADT	**5.6%**	**4.6%**	**4.2%**	**4.8%**	**4.7%**	**4.7%**
PCU	**5.3%**	**4.5%**	**3.9%**	**4.7%**	**4.5%**	**4.5%**

Source: Steer analysis

Table 6.20: Final Revenue forecast (INR Crores) for TP2 Gazole

Vehicle Type	FY26	FY27	FY30	FY32	FY37	FY42
CJV	7.8	8.6	11.7	14.4	23.4	38.9
Mini LCV	3.4	3.6	4.6	5.5	8.0	11.9
LCV	1.9	2.0	2.5	2.9	4.0	5.6
Bus	4.9	5.1	6.1	6.9	9.2	12.3
2A	10.1	10.9	14.2	16.9	26.1	40.2
3A	9.0	9.4	11.3	12.6	16.5	21.8
MAV	47.1	51.4	69.4	82.8	133.7	214.4
OSV	0.0	0.0	0.0	0.0	0.0	0.1
Total	**84.2**	**91.1**	**119.9**	**141.9**	**220.9**	**345.1**

Source: Steer analysis

Table 6.21: Final Revenue CAGR (%) for TP2 Gazole

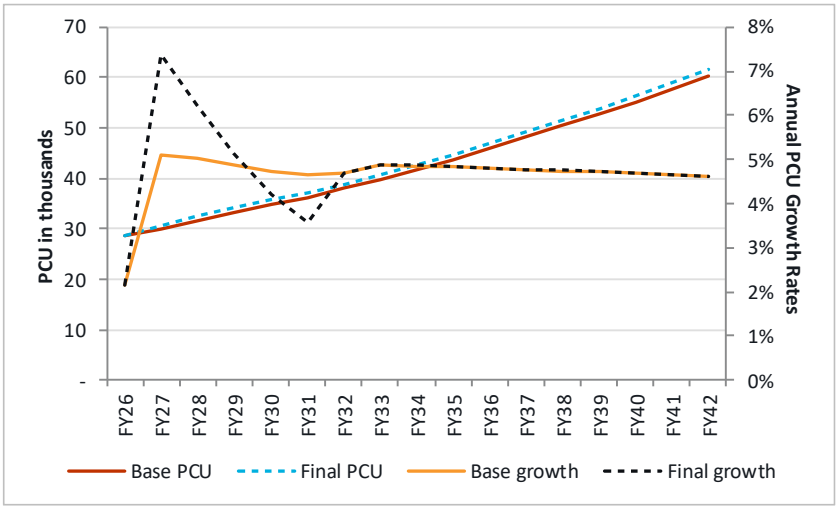
Vehicle Type	FY25-FY26	FY26-FY27	FY27-FY32	FY32-FY37	FY37-FY42	FY26-FY42
CJV	9.9%	10.8%	10.9%	10.2%	10.6%	10.5%
Mini LCV	7.2%	8.4%	8.9%	7.8%	8.2%	8.1%
LCV	6.5%	7.0%	7.4%	6.7%	7.0%	6.9%
Bus	4.4%	6.2%	6.5%	5.9%	6.0%	6.0%
2A	7.4%	9.3%	9.0%	9.1%	9.1%	9.0%
3A	4.7%	6.3%	5.3%	5.7%	5.7%	5.7%
MAV	9.3%	10.5%	9.2%	10.1%	9.9%	9.9%
OSV	8.3%	11.0%	10.5%	10.0%	9.9%	10.1%
Total	**8.2%**	**9.6%**	**8.8%**	**9.3%**	**9.3%**	**9.2%**

Source: Steer analysis

6.30 As presented in Table 6.15 and Table 6.19 above, concession end CAGRs (i.e., for the period FY26-FY42) of our final traffic forecasts (i.e., background growth + impacts) in PCUs are 4.9% and 4.5% per year at TP1 Lakshmipur, and TP2 Gazole (respectively). While the background growth is primarily driven by car growth followed by MAV growth, the minimal uplift in final growth rates (as evidenced in Figure 6.3 and Figure 6.4 below) is due to two impacts expected going forward namely, (1) Recovery in Bangladesh-bound construction traffic movement on the Asset, and (2) Increased long-distance and within state traffic flows on the Asset due to significant LoS improvement on the NH12 corridor due to 4-laning completion of the Krishnanagar-Behrampore section of the NH12.

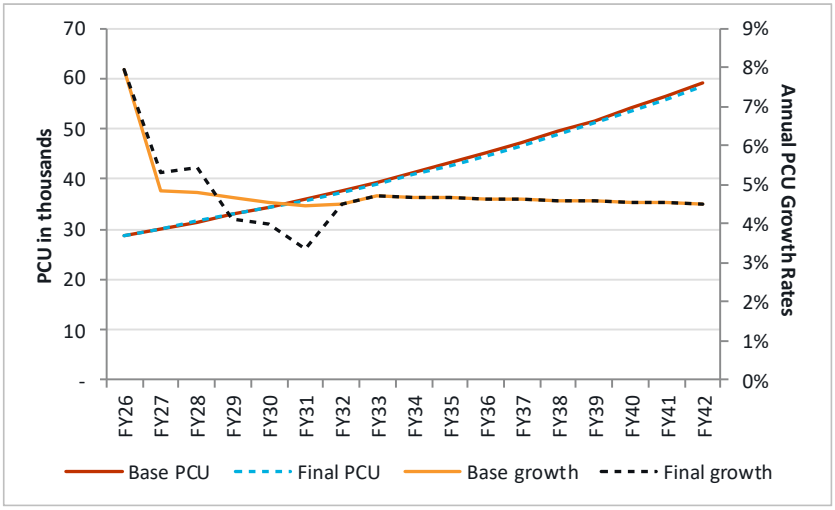
6.31 Figure 6.3 and Figure 6.4 below present the PCU volumes and growth rates from the Base Year (FY26) through the end of the concession in FY42.

Figure 6.3: Forecast traffic and growth rates in PCUs - Background and final, TP1



Source: Steer analysis

Figure 6.4: Forecast traffic and growth rates in PCUs - Background and final, TP2



Source: Steer analysis

Upside and Downside cases

Upside and Downside scenario assumptions

6.32 We have developed our base case scenario considering a balanced view on the risks associated with input assumptions around GDP growth and traffic growth elasticities. There is always a risk that the outturn values of these inputs will vary as compared to the assumptions taken due to exogenous impacts, e.g. GDP growth could be influenced both positively and negatively by the impact of monsoons, export-import balances, political changes etc.

6.33 Similarly, traffic growth elasticities could be influenced by increased efficiencies achieved by technology, large shifts in commodity prices globally, changes in local

manufacturing practices. However, at this stage we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

6.34 To account for the possible variations in the growth drivers, we are also presenting an Upside (optimistic) and a Downside (pessimistic) scenario. These scenarios are defined by the following variations from the base assumptions:

Table 6.22: Summary of Macro-economic Assumptions for upside and downside cases

Input	Upside	Downside
Macro Assumptions		
GDP/GSDP	+1% every year	-1% every year
WPI	+1% every year	-1% every year
Elasticities	+ 10%	- 10%

Source: Steer analysis

6.35 Further, network developments are highly dependent on governmental directions, policies, legal and financial measure which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside (pessimistic) case. However, at this stage, we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

Impacts-Upside Case

6.36 The upside case impacts included in forecasts are summarised in below.

Table 6.23: Summary of impacts on the Assets – upside case

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact	
			TP1 Lakshmipur	TP2 Gazole
Sahibganj Bridge Completion	FY29*	+25% of base case	2A: (1.6%) 3A: (2.0%) MAV: (2.1%)	2A: (1.3%) 3A: (1.9%) MAV: (2.7%)
Bangladesh bound traffic recovery	FY27*		3A: 5.9% MAV: 7.6%	3A: 2.5% MAV: 1.9%
4-laning of Krishnanagar-Behrampore section of NH12	FY27*		CJV: 2.1% MLCV: 2.6%	CJV: 1.3% MLCV: 1.6%

Source: Steer analysis; *Same as base case timeline

Impacts-Downside Case

6.37 The downside case impacts included in forecasts are summarised in the table below.

Table 6.24: Summary of impacts on the Assets - downside case

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact	
			TP1 Lakshmipur	TP2 Gazole
Sahibganj Bridge Completion	FY29*	-25% of base case	2A: (2.6%) 3A: (3.4%)	2A: (2.2%) 3A: (3.1%)

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact	
			TP1 Lakshmipur	TP2 Gazole
			MAV: (3.6%)	MAV: (4.6%)
Bangladesh bound traffic recovery	FY27*		3A: 3.5% MAV: 4.5%	3A: 1.5% MAV: 1.1%
6-laning LOS improvement	FY27*		CJV: 1.3% MLCV: 0.9%	CJV: 0.8% MLCV: 0.6%

Source: Steer analysis; *Same as base case timeline

Upside and Downside Case Forecasts

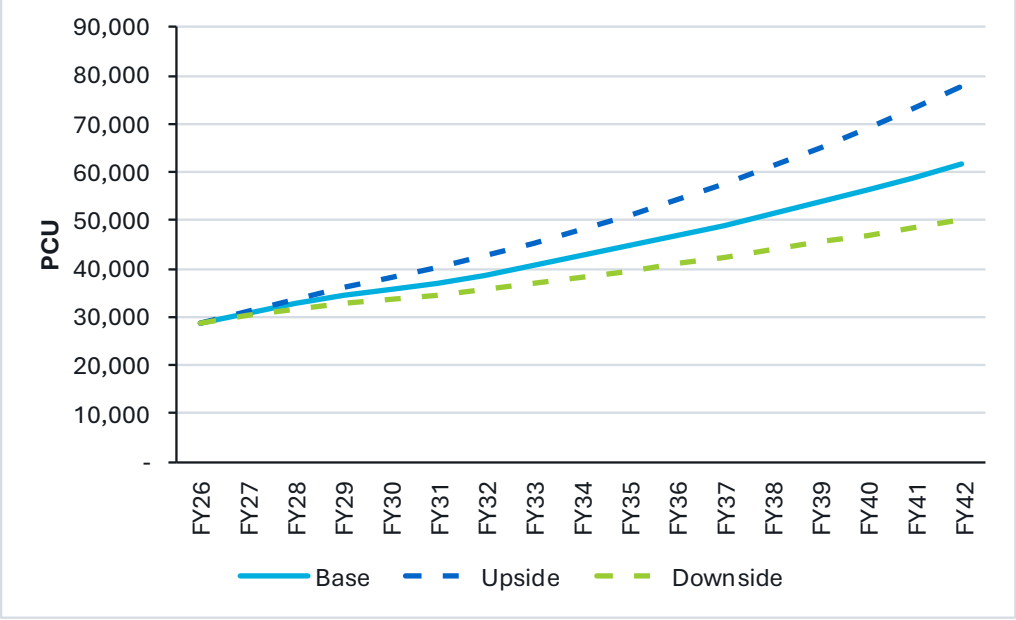
6.38 Table 6.25 below presents the difference between the Upside and Downside Case forecasts relative to the Base Case forecasts in FY42 (i.e., the concession end year) for both Asset toll plazas. The table and charts below plots the Upside and Downside Case forecasts relative to the Base Case forecasts for each Asset toll plaza over the full concession period (FY26-FY42).

Table 6.25: Percentage Difference Upside and Downside Case Forecasts vs. Base Case Forecasts - FY42

Case	Measure	TP1 Lakshmipur	TP2 Gazole
Upside Case	Traffic (PCU)	25.8%	24.2%
Downside Case		(18.5%)	(17.4%)
Upside Case	Revenue	41.7%	39.8%
Downside Case		(27.2%)	(26.2%)

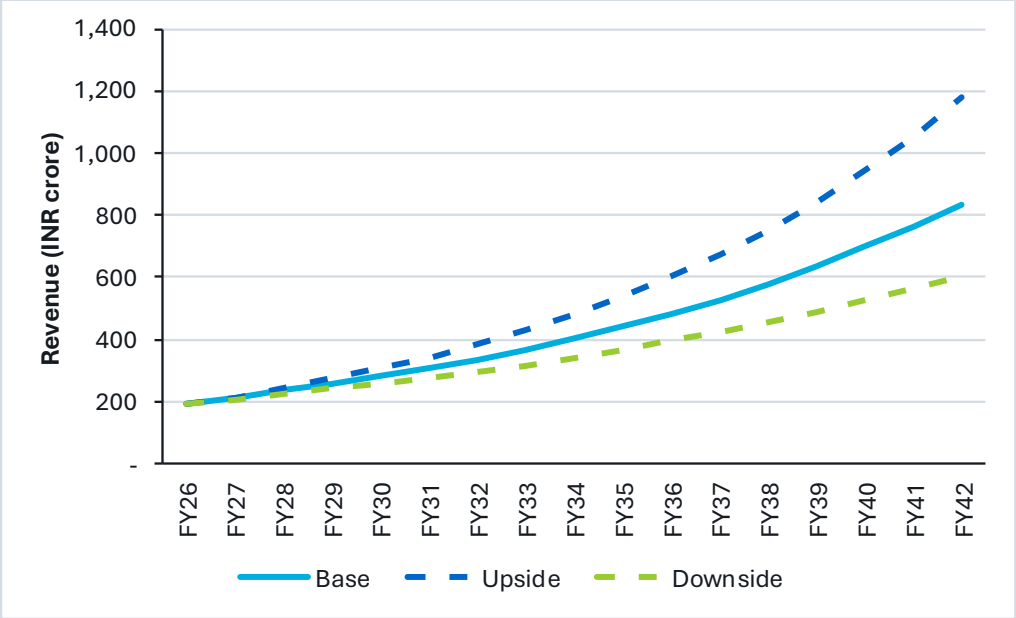
Source: Steer Analysis of client data

Figure 6.5: Long-term PCU forecasts for TP1 Lakshmipur including upside and downside scenarios



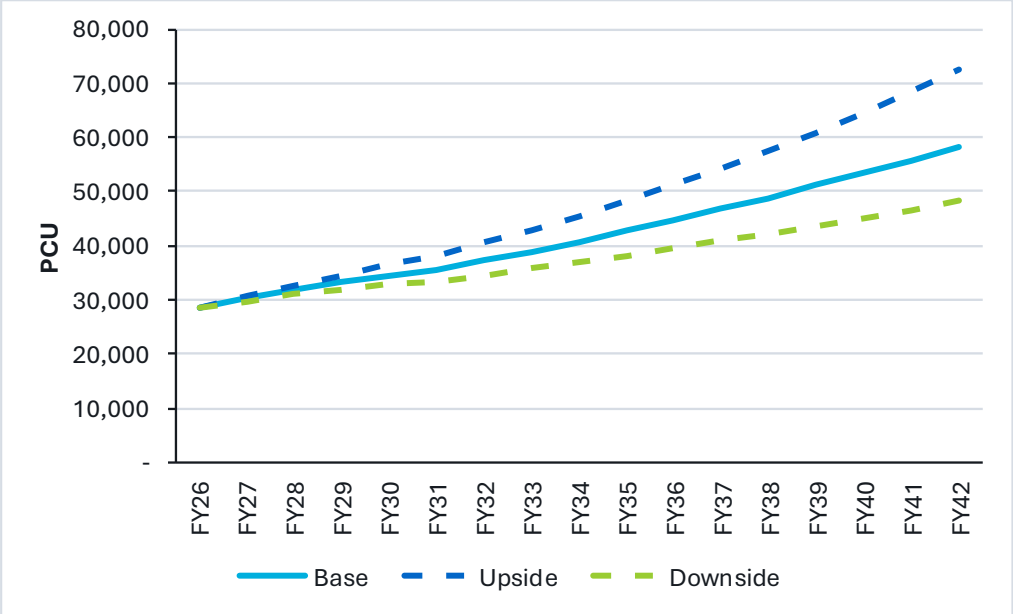
Source: Steer Analysis of client data

Figure 6.6: Long-term revenue forecasts for TP1 Lakshmipur including upside and downside scenarios



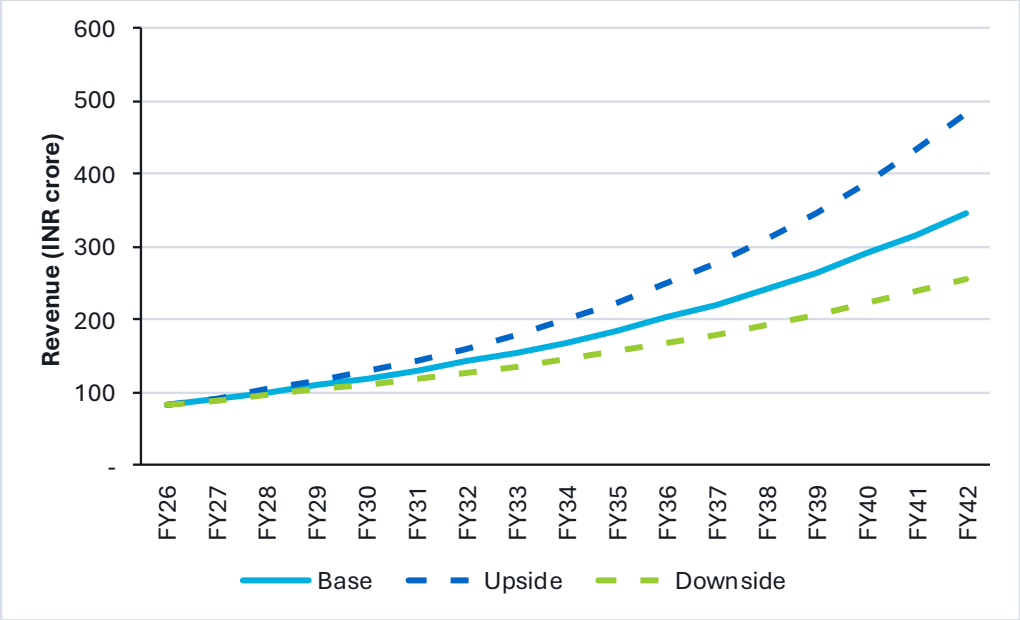
Source: Steer Analysis of client data

Figure 6.7: Long-term PCU forecasts for TP2 Gazole including upside and downside scenarios



Source: Steer Analysis of client data

Figure 6.8: Long-term revenue forecasts for TP2 Gazole including upside and downside scenarios



Source: Steer Analysis of client data

Summary outlook

6.39 Overall, passenger traffic on the Asset is mainly influenced by leisure travel between major urban centers in the state and near the Asset including Kolkata in south Bengal as well as other towns like Farakka, Malda, Gazole, and Raiganj that lie along the Asset route. In contrast to the passenger traffic profile on the Asset, most of the goods traffic observed on the Asset is influenced by economic productivity of local stone mines/quarries and crushing units near the Asset (i.e., in Pakur district of Jharkhand) and trade export flows of construction materials (particularly stone chips) and agricultural products from India to Bangladesh, which is further linked to the Bangladeshi economy.

6.40 Between FY22 and FY25, both passenger and goods traffic on the Asset have observed robust growth, with TP1 growing at an CAGR of 2.6% and TP2 at 4.0% , attributable to growing household incomes and local tourism activity in the region, as well as the ongoing construction of the New Farakka Setu, which has kept demand for construction material buoyant, and induced growing construction traffic movement on the Asset over the same period. Further, a slowdown in supply of stone and construction material from Jharkhand for Bangladesh was observed due to erratic mining on account of the monsoon. On the demand side, it was observed that the demand for stone aggregate still has not fully stabilised in Bangladesh. As a result, traffic on Lakshmipur has seen lower growth than Gazole.

6.41 While most of the NH12 between Kolkata and Dalkhola has already been upgraded to 4-lane configuration, some sections such as the Krishnanagar-Behrampore section are still yet to complete in full. These upgrades are anticipated to enhance the overall service level along the entire corridor, leading to not only steady traffic growth on the Asset via traditional movements but also an increase in induced traffic volumes on the Asset.

6.42 The Asset acts as the primary route connecting Kolkata and southern West Bengal with the northern parts of the state and Northeast India. Consequently, improvements in

service levels due to the completion of construction in various planned and ongoing sections are expected to encourage more passenger movement and stimulate additional traffic. The strategic and geographical advantage of its unique location works in favour of the Asset, as there are currently no other viable alternative routes for users moving between these regions.

6.43 In summary, future traffic growth outlook of the Asset remains promising given its captive commercial traffic market and strategic nature as the only viable route connecting South Bengal and beyond to parts of North Bengal and the NE states. Furthermore, it serves as the main artery on the tourism corridor, with both state and national governments focusing on developing northeastern states as tourism hubs in the near future. We expect traffic on the Asset to rebound in-step with a revival of the Bangladeshi economy which is forecast to return to trend growth by FY27 and beyond[25]. Thus, the underlying growth drivers of the corridor remain robust and are expected to deliver sustained long-term growth.

[25] **Bangladesh Economy to Slow to 3.9% Growth in FY2025 Before Rebounding in FY2026 | Asian Development Bank**

Appendices

A Top 10 OD pairs

A.1 Further to the OD analysis presented in Chapter 3 this appendix presents the top 10 OD pairs at each toll plaza. Please see this data for both CJVs and MAVs and OSVs combined below.

TP1 Lakshmipur

Table A.1: CJV and Buses top 10 OD pair shares at TP1 Lakshmipur

Sr. no.	TOP OD Pairs	Share
1	Malda Area-Gazole Area	7.2%
2	Rest of Murshidabad-Malda Area	3.7%
3	Malda Area-Raiganj Area	3.6%
4	Farakka Area-Malda Area	3.5%
5	Farakka Area-Gazole Area	2.6%
6	Malda Area-Balurghat Area	2.3%
7	Darjiling-Kolkata	2.2%
8	Malda Area-Chanchal Area	1.9%
9	Rest of Murshidabad-Sujapur Area	1.6%
10	Samsi Area-Malda Area	1.6%

Source: Steer analysis of OD data

Table A.2: Mini LCV, LCV and 2Axle vehicles top 10 OD pair shares at TP1 Lakshmipur

Sr. no.	TOP OD Pairs	Share
1	Malda Area-Gazole Area	8.8%
2	Darjiling-Kolkata	5.9%
3	Assam-Kolkata	5.2%
4	Kolkata-Malda Area	3.8%
5	Malda Area-Raiganj Area	3.3%
6	Kolkata-Gazole Area	2.5%
7	Gangarampur Area-Malda Area	2.0%
8	Darjiling-Malda Area	1.9%
9	Farakka Area-Malda Area	1.9%
10	Samsi Area-Malda Area	1.8%

Table A.3: 3 Axle, Multi Axle and Oversized vehicle top 10 OD pair shares at TP1 Lakshmipur

Sr. no.	TOP OD Pairs	Share
1	Assam-Kolkata	4.8%
2	Darjiling-Kolkata	3.6%
3	Kolkata-Malda Area	2.7%
4	Pakur Area-Malda Area	2.5%
5	Farakka Area-Malda Area	2.1%
6	Kolkata-Raiganj Area	1.7%
7	Malda Area-Gazole Area	1.6%
8	Kolkata-Gazole Area	1.5%
9	Assam-Barddhaman	1.5%
10	Farakka Area-Gazole Area	1.3%

Source: Steer analysis of OD data

TP2 Gazole

Table A.2: CJV and Buses top 10 OD pair shares at TP2 Gazole

Sr. no.	TOP OD Pairs	Share
1	Malda Area-Gazole Area	12.5%
2	Malda Area-Raiganj Area	6.3%
3	Malda Area-Balurghat Area	4.0%
4	Malda Area-Chanchal Area	3.3%
5	Samsi Area-Malda Area	2.8%
6	Darjiling-Kolkata	2.2%
7	Malda Area-Itahar Area	2.1%
8	Darjiling-Malda Area	1.9%
9	Gangarampur Area-Malda Area	1.9%
10	Farakka Area-Gazole Area	1.7%

Source: Steer analysis of OD data

Table A.5: Mini LCV, LCV and 2Axle vehicles top 10 OD pair shares at TP2 Gazole

Sr. no.	OD Pair	Share
1.	Malda Area-Gazole Area	15.1%
2.	Darjiling-Kolkata	5.9%
3.	Malda Area-Raiganj Area	5.6%
4.	Assam-Kolkata	4.5%
5.	Kolkata-Gazole Area	3.6%
6.	Gangarampur Area-Malda Area	3.4%
7.	Darjiling-Malda Area	3.3%

8.	Samsi Area-Malda Area	3.1%
9.	Malda Area-Balurghat Area	2.9%
10.	Kolkata-Raiganj Area	2.3%

Source: Steer analysis of OD data

Table A.3: 3 Axle, Multi Axle and Oversized vehicle top 10 OD pair shares at TP2 Gazole

Sr. no.	OD Pair	Share
1.	Assam-Kolkata	4.9%
2.	Darjiling-Kolkata	4.5%
3.	Malda Area-Gazole Area	3.6%
4.	Kolkata-Gazole Area	2.3%
5.	Malda Area-Raiganj Area	2.1%
6.	Darjiling-Malda Area	2.1%
7.	Kolkata-Raiganj Area	2.1%
8.	Malda Area-Balurghat Area	1.7%
9.	Assam-Barddhaman	1.7%
10.	Assam-Malda Area	1.6%

Source: Steer analysis of OD data

B Data Collection Exercise

B.1 To validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

TVC count

Table B.1: 3-day TVC counts at TP1 Lakshmipur

Date	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
05-03-2026	2,387	1,195	1,030	509	519	439	5,739	-	11,818
06-03-2026	2,340	1,391	1,329	554	561	558	6,095	-	12,828
07-03-2026	2,413	1,422	1,329	602	663	627	6,527	-	13,583

Source: Steer analysis

Table B.2: 3-day TVC counts at TP2 Gazole

Date	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
7-3-2026	4,424	2,194	1,352	872	764	775	4,902	-	15,283
8-3-2026	5,229	1,988	1,520	857	826	679	5,099	-	16,198
9-3-2026	4,854	2,113	1,419	861	790	617	4,965	4	15,623

Source: Steer analysis

Table B.3: Weekly average daily traffic of TVC vs TMS

Toll Plaza	Source	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total
TP1 Lakshmipur	TVC	2,380	1,336	1,229	555	581	541	6,120	-	12,743
	TMS	3,834	-	503	404	1,030	609	6,103	-	12,482
TP2 Gazole	TVC	4,836	2,098	1,430	863	793	690	4,989	1	15,701
	TMS	6,977	-	574	695	1,306	740	4,986	1	15,279

Source: Steer analysis, TMS Traffic data shared by Client

Zone list

Table B.4: Zone list used for OD analysis

Zone No	Zone Name	State
1	Rest of India	Andaman & Nicobar Island
2	Andhra Pradesh	Andhra Pradesh
3	Arunanchal Pradesh	Arunanchal Pradesh
4	Assam	Assam
5	Bangladesh	Bangladesh
6	Bhutan	Bhutan
7	Araria	Bihar
8	Aurangabad	Bihar
9	Banka	Bihar
10	Begusarai	Bihar
11	Bihpur Naugachhia Area	Bihar
12	Bhojpur	Bihar
13	Buxar	Bihar
14	Darbhanga	Bihar
15	Gaya	Bihar
16	Gopalganj	Bihar
17	Jamui	Bihar
18	Kaimur (bhabua)	Bihar
19	Rest of Katihar	Bihar
20	Khagaria	Bihar
21	Kishanganj	Bihar
22	Lakhisarai	Bihar
23	Madhepura	Bihar
24	Madhubani	Bihar
25	Munger	Bihar
26	Muzaffarpur	Bihar
27	Nalanda	Bihar
28	Nawada	Bihar
29	Pashchim Champaran	Bihar
30	Patna	Bihar
31	Purba Champaran	Bihar
32	Purnia	Bihar
33	Rohtas	Bihar
34	Saharsa	Bihar

Zone No	Zone Name	State
35	Samastipur	Bihar
36	Saran (chhapra)	Bihar
37	Sheikhpura	Bihar
38	Sheohar	Bihar
39	Sitamarhi	Bihar
40	Siwan	Bihar
41	Supaul	Bihar
42	Vaishali	Bihar
43	Arwal	Bihar
44	Jehanabad	Bihar
45	Barsoi Area	Bihar
46	Sultanganj Area	Bihar
47	Bhagalpur Area	Bihar
48	Kahalgaon Area	Bihar
49	Chandigarh	Chandigarh
50	Rest of Chhattisgarh	Chhattisgarh
51	Bailadilla City	Chhattisgarh
52	Bilaspur City	Chhattisgarh
53	Bhilai City	Chhattisgarh
54	Dadara & Nagar Havelli	Dadara & Nagar Havelli
55	Daman & Diu	Daman & Diu
56	Goa	Goa
57	Pipavav Port	Gujarat
58	Rest of Gujarat	Gujarat
59	Jamnagar Port	Gujarat
60	Mundra Port	Gujarat
61	Surat Port	Gujarat
62	Kandla Port	Gujarat
63	Rest of Haryana	Haryana
64	Gurgaon City	Haryana
65	Panipat City	Haryana
66	North India	Himachal Pradesh
67	Bokaro City	Jharkhand
68	Rest of Bokaro	Jharkhand
69	Chatra	Jharkhand
70	Deoghar	Jharkhand
71	Dhanbad	Jharkhand

Zone No	Zone Name	State
72	Dumka	Jharkhand
73	Garhwa	Jharkhand
74	Giridih	Jharkhand
75	Godda	Jharkhand
76	Gumla	Jharkhand
77	Hazaribagh City	Jharkhand
78	Rest of Hazaribagh	Jharkhand
79	Jamtara	Jharkhand
80	Khunti	Jharkhand
81	Kodarma	Jharkhand
82	Latehar	Jharkhand
83	Lohardaga	Jharkhand
84	Rest of Pakur	Jharkhand
85	Palamu	Jharkhand
86	Pashchimi Singhbhum	Jharkhand
87	Jamshedpur City	Jharkhand
88	Rest of Purbi Singhbhum	Jharkhand
89	Ramgarh	Jharkhand
90	Ranchi	Jharkhand
91	Rest of Sahibganj	Jharkhand
92	Saraikela-kharsawan	Jharkhand
93	Simdega	Jharkhand
94	Sahibganj Area	Jharkhand
95	Pakur Area	Jharkhand
96	Karnataka	Karnataka
97	Kerala	Kerala
98	Rest of West Madhya Pradesh	Madhya Pradesh
99	Rest of East Madhya Pradesh	Madhya Pradesh
100	Rest of Central Madhya Pradesh	Madhya Pradesh
101	Balaghat City	Madhya Pradesh
102	Bhopal	Madhya Pradesh
103	Indore City	Madhya Pradesh
104	Rest of Maharashtra	Maharashtra
105	Mumbai City	Maharashtra
106	Pune	Maharashtra
107	Nagpur City	Maharashtra

Zone No	Zone Name	State
108	Manipur	Manipur
109	Meghalaya	Meghalaya
110	Mizoram	Mizoram
111	Myanmar	Myanmar
112	Nagaland	Nagaland
113	NCT of Delhi	NCT of Delhi
114	Nepal	Nepal
115	Rest of Odisha	Odisha
116	Rayagada City	Odisha
117	Paradip Port	Odisha
118	Rourkela City	Odisha
119	Pakistan	Pakistan
120	Puducherry	Puducherry
121	Punjab	Punjab
122	Rajasthan	Rajasthan
123	Sikkim	Sikkim
124	Tamil Nadu	Tamil Nadu
125	Telangana	Telangana
126	Tripura	Tripura
127	Agra	Uttar Pradesh
128	Rest of West Uttar Pradesh	Uttar Pradesh
129	Allahabad	Uttar Pradesh
130	Rest of East Uttar Pradesh	Uttar Pradesh
131	Kanpur Nagar	Uttar Pradesh
132	Lucknow	Uttar Pradesh
133	Mathura	Uttar Pradesh
134	Moradabad	Uttar Pradesh
135	Varanasi	Uttar Pradesh
136	West Uttar Pradesh	Uttar Pradesh
137	Uttarakhand	Uttarakhand
138	Bankura	West Bengal
139	Barddhaman	West Bengal
140	Suri Area	West Bengal
141	Dakshin Dinajpur	West Bengal
142	Darjiling	West Bengal
143	Haora	West Bengal

Zone No	Zone Name	State
144	Hugli	West Bengal
145	Jalpaiguri	West Bengal
146	Koch Bihar	West Bengal
147	Kolkata	West Bengal
148	Bhaluka Area	West Bengal
149	Dhuliyan Area	West Bengal
150	Nadia	West Bengal
151	North 24 Parganas	West Bengal
152	Pashchim Medinipur	West Bengal
153	Purba Medinipur	West Bengal
154	Puruliya	West Bengal
155	South 24 Parganas	West Bengal
156	Stalkuri Area	West Bengal
157	Gangarampur Area	West Bengal
158	Rest of Murshidabad	West Bengal
159	Rest of Uttar Dinajpur	West Bengal
160	Samsi Area	West Bengal
161	Farakka Area	West Bengal
162	Aurangabad Area	West Bengal
163	Rest of Maldah	West Bengal
164	Manikchak Area	West Bengal
165	Baishnabnagar Area	West Bengal
166	Kachu Pukur Area	West Bengal
167	Malda Area	West Bengal
168	Ratua Area	West Bengal
169	Adina Jadupur Area	West Bengal
170	Bamangola Area	West Bengal
171	Dahil Area	West Bengal
172	Gazole Area	West Bengal
173	Makdampur Area	West Bengal
174	Makra Area	West Bengal
175	Khasra Area	West Bengal
176	Gosaipur Area	West Bengal
177	Khatil Area	West Bengal
178	Balurghat Area	West Bengal
179	Kaliyaganj Area	West Bengal

Zone No	Zone Name	State
180	Mirual Area	West Bengal
181	Gulandar Area	West Bengal
182	Khail Area	West Bengal
183	Kamalabari Area	West Bengal
184	Lahanda Area	West Bengal
185	Gunarajpur Area	West Bengal
186	Bankur Area	West Bengal
187	Raiganj Area	West Bengal
188	Bhadratha Area	West Bengal
189	Itahar Area	West Bengal
190	Chanchal Area	West Bengal
191	Eklakhi Area	West Bengal
192	Harishchandrapur Area	West Bengal
193	Baliadanga Area	West Bengal
194	Sujapur Area	West Bengal
195	Rampurhat Area	West Bengal
196	Nalhati Area	West Bengal
197	Barharwa Area	West Bengal
198	Farakka NTPC Plant	West Bengal
199	NTPC	West Bengal

Source: Steer Analysis

Direction-wise commodity distribution

Table B.5: Commodity distribution towards Farakka for TP1 Lakshmipur

Commodity code	LCV	2 Axle	3 Axle	MAV
Agriculture	0%	7%	5%	3%
Groceries	12%	33%	24%	14%
Construction	1%	-	2%	2%
Petroleum	3%	-	3%	7%
Manufacturing	8%	19%	15%	16%
Automobile	2%	3%	1%	1%
Miscellaneous	13%	-	5%	9%
Metals & minerals	3%	3%	4%	1%
Empty	57%	35%	40%	48%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer analysis

Table B.6: Commodity distribution towards Raiganj for TP1 Lakshmipur

Commodity code	LCV	2 Axle	3 Axle	MAV
Agriculture	4%	9%	2%	8%
Groceries	25%	20%	22%	19%
Construction	3%	-	6%	14%
Petroleum	3%	5%	12%	16%
Manufacturing	9%	6%	20%	14%
Automobile	2%	-	3%	2%
Miscellaneous	19%	13%	14%	4%
Metals & minerals	4%	12%	6%	14%
Empty	34%	34%	15%	10%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer analysis

Table B.7: Commodity distribution towards Malda for TP2 Gazole

Commodity Category	LCV	2 Axle	3 Axle	MAV
Agriculture	3%	4%	4%	7%
Groceries	17%	14%	15%	5%
Construction	5%	1%	5%	6%
Petroleum	3%	4%	7%	3%
Manufacturing	7%	7%	14%	4%
Automobile	1%	0%	-	0%
Miscellaneous	8%	3%	7%	1%
Metals & minerals	1%	1%	1%	2%
Empty	55%	66%	46%	71%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer analysis

Table B.8: Commodity distribution towards Raiganj for TP2 Gazole

Commodity Category	LCV	2 Axle	3 Axle	MAV
Agriculture	4%	3%	8%	5%
Groceries	33%	29%	16%	16%
Construction	2%	5%	18%	41%
Petroleum	2%	6%	17%	12%
Manufacturing	8%	13%	13%	7%
Automobile	-	1%	1%	1%
Miscellaneous	11%	14%	11%	4%
Metals & minerals	4%	4%	8%	10%

Empty	35%	26%	8%	4%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer analysis

Trip length distribution

Table B.9: Trip length frequency for TP1 Lakshmipur

Distance range	LCV	2A Truck	3A Truck	MAV
0-65 km	9%	11%	8%	12%
65-300 km	34%	25%	31%	38%
300-500 km	29%	27%	24%	22%
500-1000 km	17%	20%	18%	15%
>1000 km	12%	17%	19%	14%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer Analysis

Table B.10: Trip length frequency for TP2 Gazole

Distance range	LCV	2A Truck	3A Truck	MAV
0-65 km	18%	25%	8%	7%
65-300 km	36%	35%	30%	44%
300-500 km	19%	17%	20%	19%
500-1000 km	17%	14%	20%	16%
>1000 km	10%	10%	22%	14%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer Analysis

C Detailed forecasts

C.1 Further to the summary of forecasts presented in Chapter 6, this appendix presents detailed forecasts.

Traffic forecasts

C.2 This section presents the detailed traffic forecasts for the forecast period until FY42. The following two tables show the traffic growth rates and AADT, respectively, in the scenario without overloading clampdown.

Table C.1: Forecasts for final (background + impacts) traffic forecasts (%), TP1 Lakshmipur

FY	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY27	2,983	1,638	575	441	1,234	720	5,545	13,138	30,706
FY28	3,173	1,707	593	448	1,294	740	5,967	13,922	32,620
FY29	3,366	1,777	610	454	1,347	751	6,329	14,634	34,297
FY30	3,559	1,847	627	460	1,400	755	6,625	15,274	35,739
FY31	3,757	1,919	644	467	1,446	754	6,880	15,867	37,019
FY32	3,966	1,994	662	473	1,510	762	7,245	16,613	38,754
FY33	4,196	2,075	682	480	1,579	772	7,644	17,428	40,649
FY34	4,439	2,159	701	487	1,651	781	8,061	18,280	42,626
FY35	4,694	2,245	721	494	1,726	790	8,497	19,169	44,689
FY36	4,962	2,335	742	501	1,803	800	8,952	20,096	46,838
FY37	5,244	2,428	763	508	1,882	809	9,427	21,063	49,078
FY38	5,540	2,524	785	516	1,965	819	9,922	22,071	51,411
FY39	5,851	2,623	807	523	2,050	828	10,438	23,122	53,839
FY40	6,177	2,725	829	530	2,138	838	10,976	24,214	56,363
FY41	6,517	2,831	852	537	2,229	847	11,536	25,350	58,987
FY42	6,874	2,939	875	545	2,322	857	12,118	26,532	61,714

Source: Steer analysis

Table C.2: Forecasts for final (background + impacts) growth rates (%) for TP1 Lakshmipur

FY	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY27	8.4%	6.0%	3.0%	1.5%	4.9%	3.7%	9.0%	7.3%	7.4%
FY28	6.4%	4.2%	3.0%	1.5%	4.8%	2.7%	7.6%	6.0%	6.2%
FY29	6.1%	4.1%	2.9%	1.5%	4.1%	1.5%	6.1%	5.1%	5.1%
FY30	5.8%	3.9%	2.8%	1.4%	3.9%	0.5%	4.7%	4.4%	4.2%
FY31	5.5%	3.9%	2.8%	1.4%	3.3%	(0.1%)	3.9%	3.9%	3.6%
FY32	5.6%	3.9%	2.8%	1.4%	4.4%	1.2%	5.3%	4.7%	4.7%

FY	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY33	5.8%	4.1%	2.9%	1.5%	4.6%	1.2%	5.5%	4.9%	4.9%
FY34	5.8%	4.0%	2.9%	1.4%	4.5%	1.2%	5.5%	4.9%	4.9%
FY35	5.8%	4.0%	2.9%	1.4%	4.5%	1.2%	5.4%	4.9%	4.8%
FY36	5.7%	4.0%	2.9%	1.4%	4.5%	1.2%	5.4%	4.8%	4.8%
FY37	5.7%	4.0%	2.8%	1.4%	4.4%	1.2%	5.3%	4.8%	4.8%
FY38	5.6%	4.0%	2.8%	1.4%	4.4%	1.2%	5.3%	4.8%	4.8%
FY39	5.6%	3.9%	2.8%	1.4%	4.3%	1.2%	5.2%	4.8%	4.7%
FY40	5.6%	3.9%	2.8%	1.4%	4.3%	1.1%	5.2%	4.7%	4.7%
FY41	5.5%	3.9%	2.8%	1.4%	4.3%	1.1%	5.1%	4.7%	4.7%
FY42	5.5%	3.8%	2.7%	1.4%	4.2%	1.1%	5.0%	4.7%	4.6%

Source: Steer analysis

Table C.3: Forecasts for final (background + impacts) traffic forecasts, TP2 Gazole

FY	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY27	4,823	2,045	560	707	1,420	759	4,247	14,561	30,180
FY28	5,113	2,118	573	717	1,488	780	4,542	15,333	31,823
FY29	5,411	2,193	587	728	1,550	785	4,752	16,006	33,130
FY30	5,716	2,267	600	738	1,612	790	4,963	16,686	34,445
FY31	6,032	2,342	613	748	1,668	789	5,130	17,324	35,597
FY32	6,368	2,420	627	759	1,742	798	5,402	18,117	37,196
FY33	6,738	2,505	641	770	1,821	808	5,699	18,984	38,943
FY34	7,128	2,592	656	781	1,904	818	6,010	19,890	40,765
FY35	7,538	2,681	671	792	1,990	828	6,335	20,837	42,664
FY36	7,969	2,773	687	803	2,079	838	6,675	21,824	44,644
FY37	8,421	2,867	702	815	2,171	847	7,029	22,854	46,706
FY38	8,897	2,965	718	826	2,266	857	7,398	23,929	48,853
FY39	9,396	3,065	734	838	2,364	867	7,783	25,049	51,088
FY40	9,918	3,167	750	850	2,466	877	8,184	26,214	53,410
FY41	10,465	3,271	767	861	2,570	887	8,602	27,426	55,824
FY42	11,039	3,379	784	873	2,679	897	9,036	28,688	58,333

Source: Steer analysis

Table C.4: Forecasts for final (background + impacts) growth rates (%) for TP2 Gazole

FY	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY27	7.2%	4.7%	2.4%	1.5%	4.9%	1.8%	6.2%	5.6%	5.3%
FY28	6.0%	3.6%	2.4%	1.5%	4.8%	2.8%	6.9%	5.3%	5.4%
FY29	5.8%	3.5%	2.3%	1.5%	4.2%	0.6%	4.6%	4.4%	4.1%
FY30	5.6%	3.4%	2.3%	1.4%	4.0%	0.6%	4.4%	4.3%	4.0%
FY31	5.5%	3.3%	2.2%	1.4%	3.5%	(0.1%)	3.4%	3.8%	3.3%
FY32	5.6%	3.3%	2.2%	1.4%	4.4%	1.2%	5.3%	4.6%	4.5%
FY33	5.8%	3.5%	2.3%	1.5%	4.6%	1.2%	5.5%	4.8%	4.7%

FY	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY34	5.8%	3.5%	2.3%	1.4%	4.5%	1.2%	5.5%	4.8%	4.7%
FY35	5.8%	3.5%	2.3%	1.4%	4.5%	1.2%	5.4%	4.8%	4.7%
FY36	5.7%	3.4%	2.3%	1.4%	4.5%	1.2%	5.4%	4.7%	4.6%
FY37	5.7%	3.4%	2.3%	1.4%	4.4%	1.2%	5.3%	4.7%	4.6%
FY38	5.6%	3.4%	2.3%	1.4%	4.4%	1.2%	5.3%	4.7%	4.6%
FY39	5.6%	3.4%	2.2%	1.4%	4.3%	1.2%	5.2%	4.7%	4.6%
FY40	5.6%	3.3%	2.2%	1.4%	4.3%	1.1%	5.2%	4.6%	4.5%
FY41	5.5%	3.3%	2.2%	1.4%	4.3%	1.1%	5.1%	4.6%	4.5%
FY42	5.5%	3.3%	2.2%	1.4%	4.2%	1.1%	5.0%	4.6%	4.5%

Source: Steer analysis

Revenue forecasts

C.3 The following table presents the year-wise annual revenue forecasts for the forecast period until FY42.

Table C.5: Forecasts for final (background + impacts) revenue forecasts (in INR Cr), TP1 Lakshmipur

FY	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	11.8	6.5	4.1	7.0	20.1	18.3	140.7	208.6
FY28	13.3	7.1	4.4	7.5	22.3	19.9	159.8	234.3
FY29	14.7	7.8	4.8	8.0	24.3	21.0	177.2	257.8
FY30	16.3	8.5	5.2	8.5	26.4	22.3	195.2	282.4
FY31	18.0	9.2	5.6	9.0	28.5	23.2	211.6	305.0
FY32	19.9	10.0	6.0	9.6	31.4	24.7	234.1	335.7
FY33	22.1	10.9	6.4	10.1	34.1	26.0	256.9	366.6
FY34	24.4	11.8	6.9	10.7	37.3	27.5	283.2	401.9
FY35	26.7	12.8	7.5	11.4	40.8	29.1	312.0	440.1
FY36	29.6	13.9	8.0	12.1	44.5	30.8	344.2	483.2
FY37	32.6	15.1	8.6	12.7	48.3	32.5	377.7	527.6
FY38	36.3	16.5	9.3	13.5	52.8	34.4	416.1	578.9
FY39	40.1	17.9	9.9	14.3	57.8	36.4	457.3	633.9
FY40	44.1	19.4	10.7	15.3	63.1	38.6	504.4	695.7
FY41	48.8	21.1	11.5	16.1	68.6	40.7	553.2	760.1
FY42	53.6	22.9	12.4	17.1	74.6	43.0	606.8	830.4

Source: Steer analysis

Table C.6: Forecasts for final (background + impacts) revenue forecasts (in INR Cr), TP2 Gazole

FY	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	8.6	3.6	2.0	5.1	10.9	9.4	51.4	91.1
FY28	9.4	3.9	2.2	5.4	11.9	10.1	57.5	100.5
FY29	10.5	4.3	2.3	5.7	13.0	10.7	63.2	109.8
FY30	11.7	4.6	2.5	6.1	14.2	11.3	69.4	119.9
FY31	13.0	5.1	2.7	6.5	15.3	11.8	74.9	129.3
FY32	14.4	5.5	2.9	6.9	16.9	12.6	82.8	141.9
FY33	15.9	5.9	3.0	7.3	18.5	13.2	90.9	154.9
FY34	17.6	6.4	3.2	7.7	20.0	14.0	100.2	169.2
FY35	19.4	6.9	3.5	8.2	21.9	14.8	110.8	185.6
FY36	21.4	7.5	3.7	8.7	24.0	15.7	121.8	202.9
FY37	23.4	8.0	4.0	9.2	26.1	16.5	133.7	220.9
FY38	25.7	8.6	4.2	9.7	28.7	17.5	147.1	241.6
FY39	28.6	9.4	4.6	10.3	31.1	18.5	162.3	264.9
FY40	31.8	10.2	4.8	11.0	34.2	19.6	178.2	289.9
FY41	34.6	10.9	5.2	11.6	36.9	20.7	195.4	315.3
FY42	38.9	11.9	5.6	12.3	40.2	21.8	214.4	345.1

Source: Steer analysis

Control Information

Prepared by

Steer
Suite No. S3,Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002, India
+91 124 441 8650
www.steergroup.com

Prepared for

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1,
Sector 16, Noida- 201301 (UP, India)

Steer project/proposal number

Click here to enter text.

Client contract/project number

Transit 11

Author/originator

Vineet Karlapalem

Reviewer/approver

Vaibhav Gupta

Other contributors

Shipra Bhatia, Ayushman Rai, Harshit Garg, Samridha K

Distribution

Client: Cube Highways Steer:

Version control/issue number

Date

April 2026

steergroup.com

steer

Final Report

April 2026

Project Transit: Traffic Due Diligence for Ghaziabad Aligarh Expressway Private Limited

Cube Highways Fund Advisors Private Limited
23741311
Transit 11

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence for Ghaziabad Aligarh Expressway Private Limited

Prepared by:

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002, India

+91 124 441 8650

www.steergroup.com

Prepared for:

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1, Sector 16, Noida- 201301 (UP, India)

Transit 11

Our ref: 23741311

Steer has prepared this material for Cube Highways Fund Advisors Private Limited. This material may only be used within the context and scope for which Steer has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer shall be deemed to confirm their agreement to indemnify Steer for all loss or damage resulting therefrom. Steer has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

steer

Contents

Disclaimer		**1**
Glossary Items		**3**
1	**Introduction**	**5**
	The assignment	5
	Our approach	6
	Contents of this report	7
2	**The Asset**	**9**
	Introduction	9
	Strategic network	9
	Key economic activities	12
	Alternate Routes	13
3	**Traffic Description**	**15**
	Introduction	15
	Historical Trends	16
	Toll Frequencies	19
	Key findings of origin-destination analysis	26
	Conclusions	34
4	**Socio Economic Context**	**35**
	Population growth	35
	Economic Indicators	36
	Economic growth	39
	Forecasts for growth drivers	45
5	**Traffic growth analysis**	**48**
	Introduction	48
	FY26 Base year AADT estimates	48
	Estimation of background elasticities	51
	Forecasts for background elasticities	56
6	**Forecasts: Base year AADT and Impacts**	**57**
	Introduction	57
	Revenue forecasting assumptions	60
	Traffic and Revenue forecasts	63
	Upside and Downside cases	66
	Summary outlook	70

Figures

Figure 2-1: Asset Location 9
Figure 2-2: Completed 6-Laning of the Asset 10
Figure 2-3: Asset context 10
Figure 2-4: Typical cross section of the Asset and toll plazas 12
Figure 2-5: Alternate routes 13
Figure 2-6: Local leak at TP1 (first row) and TP2 (second row) 14
Figure 3-1: Ticket segmentation for CJV at TP1 (Luharli) 21
Figure 3-2: Ticket segmentation for MAV at TP1 (Luharli) 22
Figure 3-3: Ticket segmentation for CJV at TP2 (Somna) 22
Figure 3-4: Ticket segmentation for MAVs at TP2 (Somna) 23
Figure 3-5: Comparison between TVC and TMS daily traffic data, TP1 Luharli 25
Figure 3-6: Comparison between TVC and TMS daily traffic data, TP2 Somna 25
Figure 3-7: Comparison between vehicle shares from TVC and TMS WADTs 26
Figure 3-8: Zonal influence, TP1 Luharli 29
Figure 3-9: Zonal influence at TP2, Somna 29
Figure 3-10: Internal-external distribution, TP1 Luharli 30
Figure 3-11: Internal-external distribution, TP2 Somna 31
Figure 3-12: Commodity distribution, TP1 Luharli 32
Figure 3-13: Commodity distribution, TP2 Somna 32
Figure 3-14: Trip length distribution TP1 33
Figure 3-15: Trip length distribution TP2 33
Figure 4-1: Annual growth – Index of Industrial Production (FY16-FY26YTD) 37
Figure 4-2: Total number of registered motor vehicles in India (per 1000 population 38
Figure 4-3: Relative Per Capita Income (FY15-FY25) 39
Figure 4-4: YoY growth in expenditure components of GDP 40
Figure 4-5: Month on Month IIP performance 41
Figure 4-6: Industrial components of GVA 41
Figure 4-7: Evolution of Delhi's and Uttar Pradesh's GSDP and national GDP 42
Figure 4-8: Sectoral contribution to Uttar Pradesh's GSDP as of FY25 43
Figure 4-9: Western UP vs UP GSDP Growth 44
Figure 4-10: Sectoral contribution to Delhi's GSDP in FY25 45
Figure 4-11: GDP-GSDP forecast 47
Figure 5-1: Relationship between CJV traffic and Delhi/Uttar Pradesh GSDP, TP1 and TP2 53
Figure 5-2: Relationship between LCV traffic and Delhi/Uttar Pradesh GSDP, TP1 and TP2 54
Figure 5-3: Relationship between Bus/2A traffic and Delhi/Uttar Pradesh GSDP and GDP, TP1 and TP2 55
Figure 5-4: Relationship between 3A+MAV traffic and India GDP, TP1 and TP2 55
Figure 6-1: Alternate routes and Asset shown against the regional network context 57
Figure 6.2: Long-term PCU forecasts for TP1 Luharli including upside and downside scenarios 69
Figure 6.3: Long-term PCU forecasts for TP2 Somna including upside and downside scenarios 69

Figure 6.4: Long-term revenue forecasts for TP1 Luharli including upside and downside scenarios 70
Figure 6.5: Long-term revenue forecasts for TP2 Somna including upside and downside scenarios 70

Tables

Table 1.1: Scope of work and sources of data 5
Table 2.1: Concession details 11
Table 2.2: Vehicle wise toll rates on GAEPL (INR) 12
Table 3.1: PCU factors 15
Table 3.2: Historical evolution in AADT by vehicle class at TP1 – Luharli 16
Table 3.3: Historical Tollable Traffic Levels at TP1 – Luharli 16
Table 3.4: Historical evolution in AADT by vehicle class at TP2 – Somna 18
Table 3.5: Historical Tollable Traffic Levels at TP2 – Somna 18
Table 3.6: Historical evolution in annual revenue (in INR Crore) and AADC (in INR Lakhs) 19
Table 3.7: Typical ticket types sold at NHAI plazas 20
Table 3.8: Segmentation for LCV, Bus, 2A and 3A category – FY26YTD 23
Table 3.9: Data collection schedule 24
Table 3.10: Sample rates for OD data 27
Table 3.11: Aggregate commodity categories 27
Table 3.12: Zone aggregations for zonal influence analysis 28
Table 4.1: CAGR of population in India 35
Table 4.2: Population Growth in Uttar Pradesh, Delhi and India (2012-2024) 36
Table 5.1: Seasonality correction factors for TP1-Luharli 50
Table 5.2: Seasonality correction factors for TP2-Somna 50
Table 5.3: Adopted Base AADT, TP1 Luharli plaza 50
Table 5.4: Adopted Base AADT, TP2 Somna Plaza 50
Table 5.5: Identified growth drivers to model traffic growth 52
Table 5.6: Comparison of Derived Elasticities and Assumed Elasticities for Forecasting 56
Table 6.1: List of network/other developments 58
Table 6.2: Impact of Palwal-Aligarh 4-laning 59
Table 6.3: Impact of Ganga Expressway and Gorakhpur-Shamli Expressway 60
Table 6.4: Trip factors for the forecast years for TP1 Luharli 60
Table 6.5: Trip factors for the forecast years for TP2 Somna 61
Table 6.6: Forecast toll segmentation, FY26 onwards: Luharli (TP1) 61
Table 6.7: Forecast toll segmentation, FY26 onwards: Somna (TP2) 62
Table 6.8: WPI growth forecast assumptions 62
Table 6.9: Revenue reconciliation summary (INR Lakhs) 63
Table 6.10: Traffic forecast (With Impacts) for TP1 Luharli 63
Table 6.11: Traffic growth CAGR (%) for TP1 Luharli 63

Table 6.12: Revenue forecast (with Impacts) for TP1 (INR Crores) including AP Compensation for CJVs 64
Table 6.13: Revenue growth CAGR (%) for TP1 Luharli 64
Table 6.14: Traffic forecast (With Impacts) for TP2 Somna 64
Table 6.15: Traffic growth CAGR (%) for TP2 Somna 65
Table 6.16: Revenue forecast (with Impacts) for TP2 (INR Crores) including AP Compensation for CJVs 65
Table 6.17: Revenue growth CAGR (%) for TP2 Somna 65
Table 6.18: Summary of Macro-economic Assumptions for upside and downside cases 67
Table 6.19: Summary of impacts on the Assets – Upside case 67
Table 6.20: Summary of impacts on the Assets – Downside case 68
Table 6.21: Percentage Difference Upside and Downside Case Forecasts vs. Base Case Forecasts - FY40 68

Appendices

A Detailed Forecasts

B Top OD Pairs

Disclaimer

This report has been produced for the sole benefit of Cube Highways Pvt. Ltd ("the Client"). The report may only be relied upon by Approved Addressees in accordance with the terms of our engagement letter. This Report (the "Report") is confidential and disclosed only for information purposes, and it may not be relied upon by any party other than the Client or a Party to a Reliance Letter, and Steer: a) makes no warranty, expressed or implied, with respect to the use of any information or methods disclosed in this Report; and b) assumes no liability with respect to the use of any information or methods disclosed in this document. Any such party by its acceptance or use of this Report releases Steer from any liability for direct, indirect, consequential, or special loss or damage whether arising in contract, warranty, express or implied, tort or otherwise.

The Report is based on standard professional efforts, and information available to us at the time the review took place and is subject to time and budget constraints of the Report's scope of work. This Report, information and statements contained herein, are all based on third party data provided to us, or sourced by us, and Steer has not sought to establish the reliability of the data, except as specifically stated in the Report. Steer bears no responsibility for the results of any actions taken on the basis of third-party data.

Certain forward-looking statements in the Report are estimates based on interpretations or assessments of information available at the time of writing. The Report is thus to be viewed as an assessment that is time-relevant, specifically referring to conditions at the time of the review. Steer undertakes no obligation to update the Report for any reason.

While the estimates contained in the Report are not precise forecasts, they do represent, in our view a reasonable expectation of the future, based on information we have been provided with or sourced. However, the estimates necessarily rely on numerous assumptions and judgements, and circumstances may occur over the timeframe of the project that go counter to these assumptions and judgements and that affect the project's realized revenues. Actual events may differ from those assumed, and events are subject to change. Therefore, Steer makes or provides no warranty, whether implied or otherwise, as to the accuracy of forward-looking information presented. Further, it is important to note that forecasts presented represent long term growth profiles; the results for individual time periods may vary from forecasted values.

Traffic Consultant developed the relationships in the models used to produce the forecasts for the projects based on data available through February 2026. This report does not consider variations in traffic performance due to changing macro and force majeure events such (but not limited to) as global wars, economic uncertainty (high inflation, global recession), and changes in the regulatory environment. The situation remains dynamic and is subject to significant change in the short and medium term. In this challenging context, Traffic Consultant has produced base forecasts with a view on a possible scenario for the traffic forecasts. However, it is important to note that this is only one view, and there continues to remain uncertainty as to the short-term, intermediate or prolonged effects of and responses to such macro-economic/force majeure events. As a result, no assurance can be provided by Traffic Consultant that the scenarios and assumptions Traffic Consultant has identified will prove to be accurate. Given the uncertainty inherent in this scenario, Traffic Consultant advises that all readers of the Report consider the Report in the context of their own assessment of the impact of such events.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE ISSUE OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES.

Glossary Items

Acronym	Meaning
2A/ Truck	2 Axle/ Truck
3A	3 Axle
AADT	Annual Average Daily Traffic
BOT	Build Operate Transfer
CAGR	Compound Annual Growth Rate
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DPR	Detailed Project Report
ETC	Electronic Toll Collection, also referred to as FASTag
FY	Financial Year
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HAM	Hybrid Annuity Model
HCM/ EME	Heavy Commercial Vehicles/ Earth Moving Machinery
IE reports	Independent Engineers' reports
IHMCL	Indian Highway Management Company Limited
INR	Indian Rupees
InvIT	Infrastructure Investment Trust
Km	Kilometer
LCV/ LGV	Light Commercial Vehicles/ Light Goods Vehicle
LMV	Light motor vehicles
MADT	Monthly average daily traffic
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NSDP	National State Domestic Production
OD	Origin Destination
OSV	Oversized vehicles
PCU	Passenger Car Unit: it is a measure of standard vehicle unit to convert all vehicle classes to a single unit by using PCU factors to compute total traffic on an Asset.
Q1	Quarter 1 of financial year, from April to June
Q2	Quarter 2 of financial year, from July to September
Q3	Quarter 3 of financial year, from October to December
Q4	Quarter 4 of financial year, from January to March
RNP	Registered Number Plate

SCF	Seasonality Correction Factor
SH	State Highway
T&R	Traffic and Revenue
TMS	Traffic Management System
TVC	Traffic Volume Count
WADT	Weekly average daily traffic
YTD	Year to Date

1 Introduction

The assignment

1.1 The Cube Highways Fund Advisors Private Limited (the "Client") has commissioned Steer Davies Gleave India Private Limited ("Steer") for a traffic due diligence to be carried out on the Ghaziabad Aligarh Expressway Private Limited (hereafter called "Asset"). This report forms part of the annual fair market valuation (FMV) undertaken as part of the "Transit 11 project". This report presents an update of the traffic and revenue forecasts based on primary surveys undertaken in 2026, actual traffic data available up to February 2026 and latest macro-economic assumptions.

1.2 The Asset Ghaziabad- Aligarh consists of a single stretch of toll road with two toll plazas. For this report, we hereafter call the toll plazas present on the Asset as TP1 and TP2 respectively.

- TP1 – Luharli
- TP2 – Somna (Gabana)

1.3 Our scope of work for the traffic and revenue forecasting process includes:

Table 1.1: Scope of work and sources of data

Scope of work	Data source
• Review of historical Traffic Management System (TMS) data, Vendor reports and documents	• Provided by Client for the period between FY16 and Mar '26, with FY26 base AADT and forecasts considering data up to Feb'26
• Historical analysis and forecasts for baseline growth, including; — Background growth, and — Seasonality trends	• Historical toll plaza data provided by Client and benchmarks from Asset in the vicinity wherever long time series historical data was not available
• Validation of revenue reported in FY26YTD	• TMS data provided by Client • Revenue reconciliation using toll plaza traffic and ticket type data to calculate revenue and reconciling it with toll plaza reported revenue
• Origin Destination (OD) analysis to understand growth drivers: — Zonal influence and Top OD pairs — Commodity distribution — Trip length distribution	• Origin Destination (OD) surveys undertaken by Steer in Feb '26 on TP1 and TP2.
• Analysis of upcoming network improvements and other	• Secondary research and our in-house experience of working in the vicinity of the Asset. Impact analysis was

Scope of work	Data source
developments, that may have future impacts on traffic	conducted by Steer based on Generalised Journey Cost spreadsheet-based analysis
• Historical revenue analysis and forecasts for revenue estimation, including — Toll segmentation and trip factors, — Overloading shares	• Calculated from historical data provided by Client
• Final traffic growth forecasts including baseline growth rates and potential future impacts	• Elasticity based base growth and potential impacts from secondary research, Asset historical traffic performance and Steer's in-house experience of working on toll roads on the corridor • Gross Domestic Product (GDP) forecast assumptions provided by Client
• Toll revenue estimation for the entire concession, including toll evolution	• Toll evolution based on latest toll notification published by National Highway Authority of India (NHAI) and latest actual Wholesale Price Index (WPI) trends as shared by the Client. • Assumptions of WPI forecasts and future tolling length changes provided by Client • Revenues estimated as a product of traffic forecasts and toll evolution

Source: Steer

Our approach

1.4 Our approach follows well-established practices for forecasting ongoing traffic growth on an existing/brownfield Asset. The analysis has essentially focused on two sets of issues, namely:

- Understanding the traffic that is currently using the Asset; and
- Identifying how and why that traffic is likely to change in the future.

1.5 To understand the current traffic on the Asset, we have analysed traffic data from multiple independent sources:

- Client-provided secondary data, including:
  - TMS data starting June 2015 to March 2026. The historical traffic and revenue presented in Chapter 3 considers information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated
  - Concession agreement and toll notifications for FY25 and FY26
  - Previous studies related to traffic and revenue
  - Bid documents and studies by lenders

  - In previous studies Steer-commissioned OD survey on 3rd February 2025 on TP1 and 4th February 2025 at TP2 to validate any change in growth drivers and travel patterns and TVC counts between 3rd of February 2025 and 5th of February 2025. TMS for the coinciding dates was available from the data shared by Client
  - In this Study, Steer commissioned OD and TVC surveys on TP1 Luharli and TP2 Somna to observe the change in travel patterns and growth drivers. OD survey on TP1 was conducted on 19th February 2026 and on TP2 on 20th February 2026.
  - TVC surveys on TP3 and TP4 was conducted from 19th Feb'26 to 21st Feb'26.
- We undertook revenue reconciliation for FY26YTD, by building up revenue from the traffic reported by the toll plaza and subsequently matched it to the reported revenue for FY26YTD using the prevalent toll rates and reported segmentation/toll-frequencies for FY26YTD, this is a key part of our analysis to validate the segmentation/toll-frequency assumptions and the Annual Average Daily Traffic (AADT) reported for each of the toll plaza.

1.6 The estimation of future traffic demand on the Asset was undertaken through:

- Estimating FY26 base year position by applying seasonality correction factors (SCFs) on 11 months of traffic data (April to February).
- Secondary research to understand plans for new developments and progress of ongoing developments on the Asset.
- Steer independent primary surveys and site visits to validate our network and contextual understanding.
- Developing a bespoke growth model for each Asset/plaza/toll class to forecast year-on-year traffic growth from FY27 to the end of concession period.
- Investigating the elasticity of historical traffic growth compared to state (GSDP) and national (GDP) growth. Where historical data is limited, we have benchmarked the Asset against our Steer knowledge base (e.g., similar Asset types in the same state or on the same corridor), to derive appropriate elasticities.
- Applying our elasticities to independent GDP forecasts as provided by Client.
- Identifying and analysing the potential impacts of any relevant changes to the competitive position of each Asset – these include impacts of changes to road network including expressways and opening of competitive modes of travel.
- Identifying and analysing any other potential impacts to traffic and revenue on each Asset – these include axle load norms, axle shift for heavy goods, FASTag implementation.
- Considering changes in trends of segmentation over time and making suggestions for changes in exemptions in the future
- Preparing traffic and revenue forecast for the Asset for the complete length of concession. The analysis here includes the specific impacts of network, or other exogenous factors specific to the Asset. We have developed a set of forecasting assumptions for three scenarios: a base case and upside and downside scenarios.

Contents of this report

1.7 The report has been divided into the following chapters, including Chapter 1 providing an introduction:

- Chapter 1 introduces the methodology and approach to undertake the traffic and revenue due diligence;

- Chapter 2 describes the key characteristics of the Asset and its surrounding road network, primarily based on site visits;
- Chapter 3 summarises the current and historical traffic on the Asset, including results from the TMS, TVC and OD analyses;
- Chapter 4 presents the socio-economic context of the corridor and region/state containing the Asset, along with our approach and results on estimating background traffic demand growth; and
- Chapter 5 summarises our approach and results on estimating background traffic demand growth along with our key forecasting assumptions,
- Chapter 6 presents our baseline year forecast, concession traffic and revenue forecasts for the Asset along with assessment of network impacts.

2 The Asset

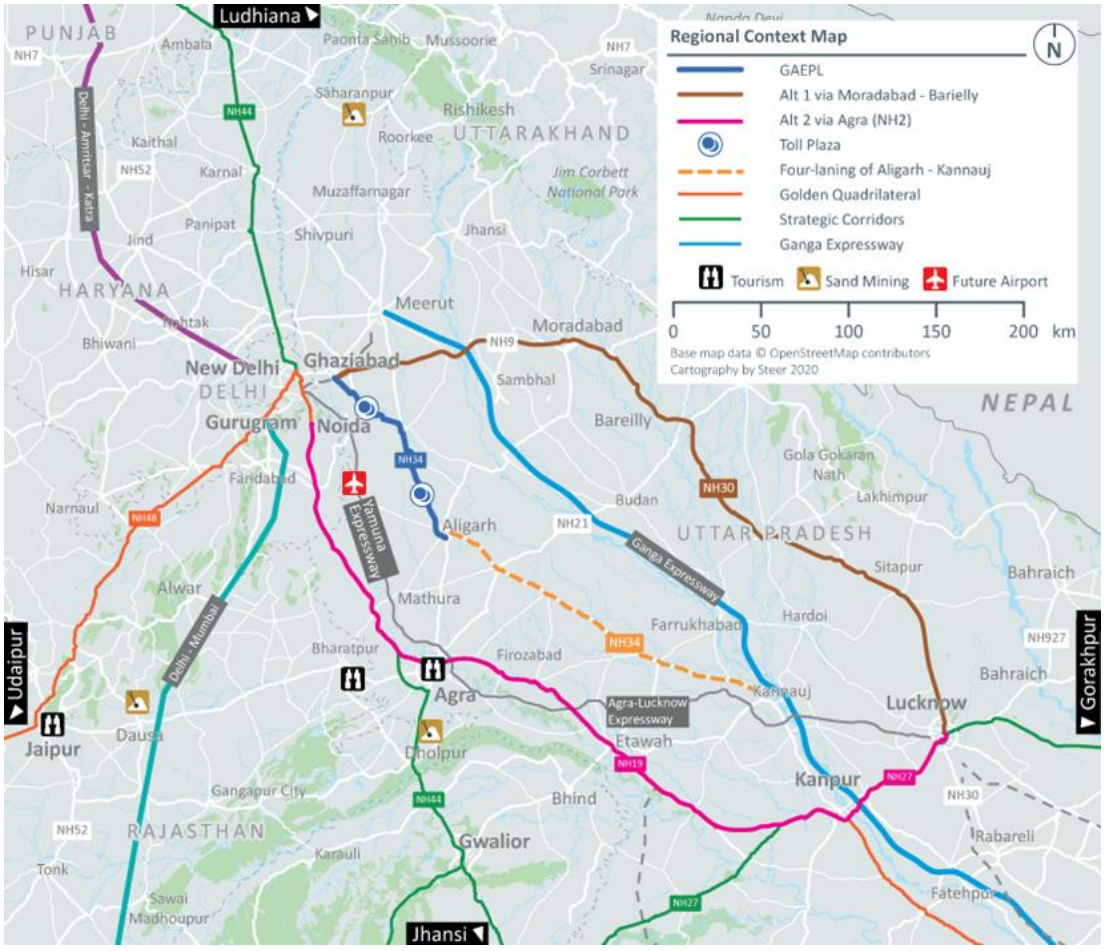
Introduction

2.1 This chapter provides a description of the Asset, primarily based on both primary (site visits) and our understanding of the regional and network context of the Asset. Starting with the strategic network context, the chapter discusses the Asset-level context, followed by economic activities and network developments around the Asset.

Strategic network

2.2 The Asset is situated in western Uttar Pradesh (UP), connecting the cities of Ghaziabad and Aligarh via Khurja and Bulandshahar. Figure 2-1 below shows the regional and wider road network in which the Asset is located.

Figure 2-1: Asset Location



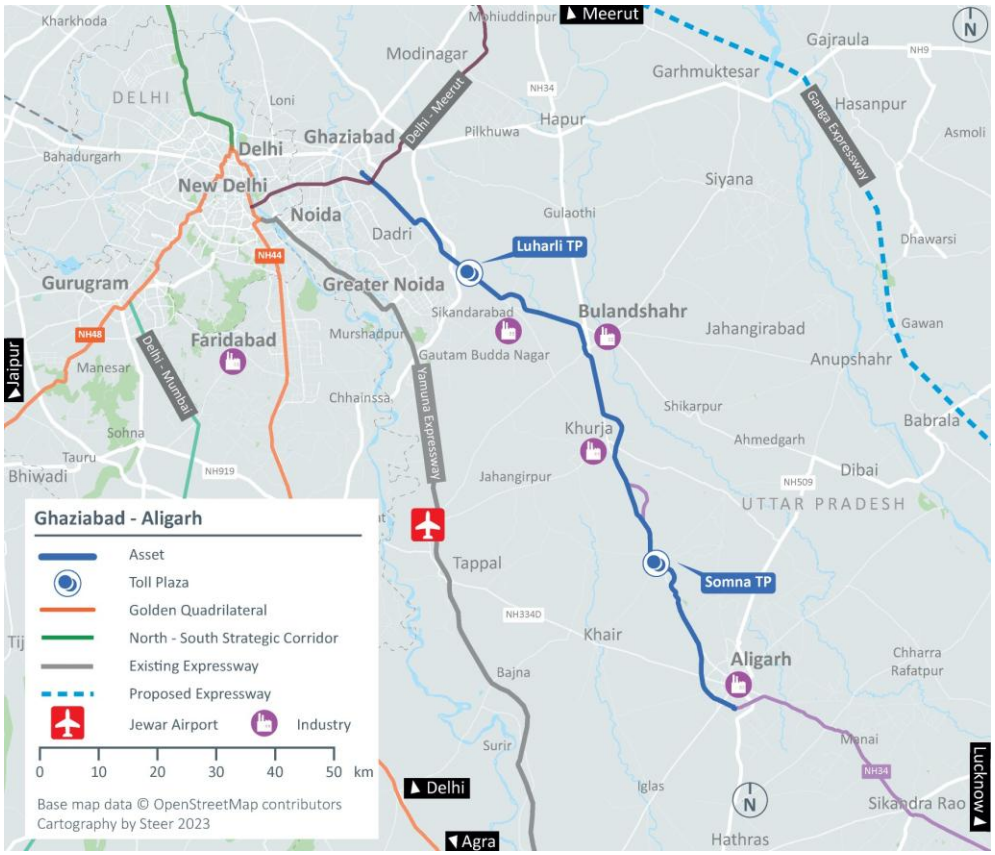
Source: Steer cartography

2.3 This 125.175-km asset is a six-lane toll road, a segment of NH 91 in Uttar Pradesh. It features two toll plazas: Luharli (TP1), situated closer to Ghaziabad, and Somna (TP2), near Aligarh. In October 2023, the Asset was expanded to a six-lane configuration, significantly enhancing capacity and unlocking growth across all vehicle categories that has sustained until present. In July of 2025, Luharli (TP1) was expanded to 16 lanes from 8 lanes earlier to ease congestion at the plaza during peak times[1].

Figure 2-2: Completed 6-Laning of the Asset

Source: Steer site visit

Figure 2-3: Asset context



Source: Steer cartography using OpenStreetMap data

[1] Jagran News, July '25

2.5 The Asset primarily caters to three different types of movements, by virtue of its strategic location on various corridors:

- Local traffic between cities in western UP, Delhi Central NCR (consisting of Delhi state) and Ghaziabad.
- Trips to the industrial area of Sikandrabad which is located on the Asset and serves as a major attractor/generator of traffic.
- Heavy vehicle traffic originating from the states of Haryana, Punjab and Jammu and Kashmir in the north travelling to states in the east of India including West Bengal, Orissa, and the north-eastern states. The Asset is part of strategic north – east movement.

2.6 On TP1, most of the traffic is to/from Delhi NCR and Sikandrabad Industrial Area which has small and medium scale manufacturing industries such as tiles, pesticides, pipes, paint, and furniture. Some of the key players such as Orient Bell tiles, Ultratech Cement, Vishal Pipes, Goodluck Industries have their presence in the vicinity of the Asset. Apart from these, there is also long-distance traffic going towards Kanpur present at TP1.

2.7 On TP2 Somna, majority of the traffic is medium to long distance going to and from Kanpur and Etawah. Also, local transportation of meat and hardware from processing plants and industries near/in Aligarh also contribute to traffic on the Asset. There exists significant bus traffic between Delhi and Aligarh that appears on this plaza as well. TP2 also has presence of THDC power plant in Khurja opened in January 2025[2].

Concession and tolling

2.8 The toll plazas on the Asset have been operational since June 2015. As per the original concession agreement the concession period was of approx. 20 years, which was scheduled to complete by 2035. But as per the settlement agreement dated 08th April 2022 an extension of 4.32 years has been granted and agreed upon by National highways Authority of India (NHAI) based on the clause 29 of the concession agreement and now the end of concession has been extended to FY40.

Table 2.1: Concession details

Item	Description
State	Uttar Pradesh
Highway and lane configuration	NH 91 six-lane
Toll plazas	TP1: Luharli TP2: Somna
Length (km) as per concession agreement, applicable	TP1: 62.175 Km TP2: 63.00 Km
Commencement of operations*	TP1: June 2015 TP2: June 2015
Concession period	24 years
Last year of concession	FY40

Source: Concession agreement

[2] Press Release: Press Information Bureau

2.9 The following pictures indicate a typical cross-section of the Asset and its toll plazas.

Figure 2-4: Typical cross section of the Asset and toll plazas

Source: Steer photos from site visit

2.10 In July '25, the Luharli toll plaza (TP1) was expanded to a 16-lane staggered configuration. The new plaza has eased congestion at the toll plaza during peak times and increased capture of traffic that earlier bypassed the plaza via a nearby micro diversion route (discussed later). Overloading is charged on TP1 only and not on TP2.

2.11 Tolls are collected for Car/Jeep/Van (CJV), LCV/Minibus, Bus/Truck, 3A/MAV/HCH/EME/OSV categories. The toll plazas have dedicated ETC/FASTag lanes for electronic tolling, apart from hybrid lanes. The toll rates for FY26 are as shown in Table 2.2 below.

Table 2.2: Vehicle wise toll rates on GAEPL (INR)

Type of Vehicle	Single Journey Fee	
	TP1 Luharli	TP2 Somna*
CJV	150	200
LCV	235	305
Bus/2A	480	615
3A/MAV	735	935
OSV	940	1220

Source: NHAI Revision of User fee rate, w.e.f. 01.04.2025; *For TP2, these reflect official toll rates as per the FY26 NHAI Toll Notification. Toll rates assumed in our forecast models are lower as we exclude 2.185 km from the total tolling length of TP2 from FY26 onwards as per Client input.

2.12 Apart from single tickets, the typical NHAI ticket categories like return, monthly, local personal and local commercial passes are also available on the Asset. Annual pass for CJV users is also available on the toll plaza.

Key economic activities

2.13 Uttar Pradesh is the most populous state in India and is largely an agrarian economy with agriculture being a major source of employment and livelihood. With several urban centres located on the Asset, including Ghaziabad, the toll plazas, especially TP1 Luharli, serve large volumes of local and regional light vehicular traffic with its proximity from Delhi/NCR and Ghaziabad.

2.14 The part of the state, where the Asset is located, is an industrial region with towns like Sikandrabad, Khurja and Aligarh that serve as separate distinct hubs of medium and large-scale industries specializing in manufacturing (e.g., ceramics, hardware). Commercial traffic on the Asset reflects characteristics consistent with this industrial profile carrying manufactured commodities from nearby factories to consumption centres elsewhere or intermediate goods destined for these factories for further processing on their production lines.

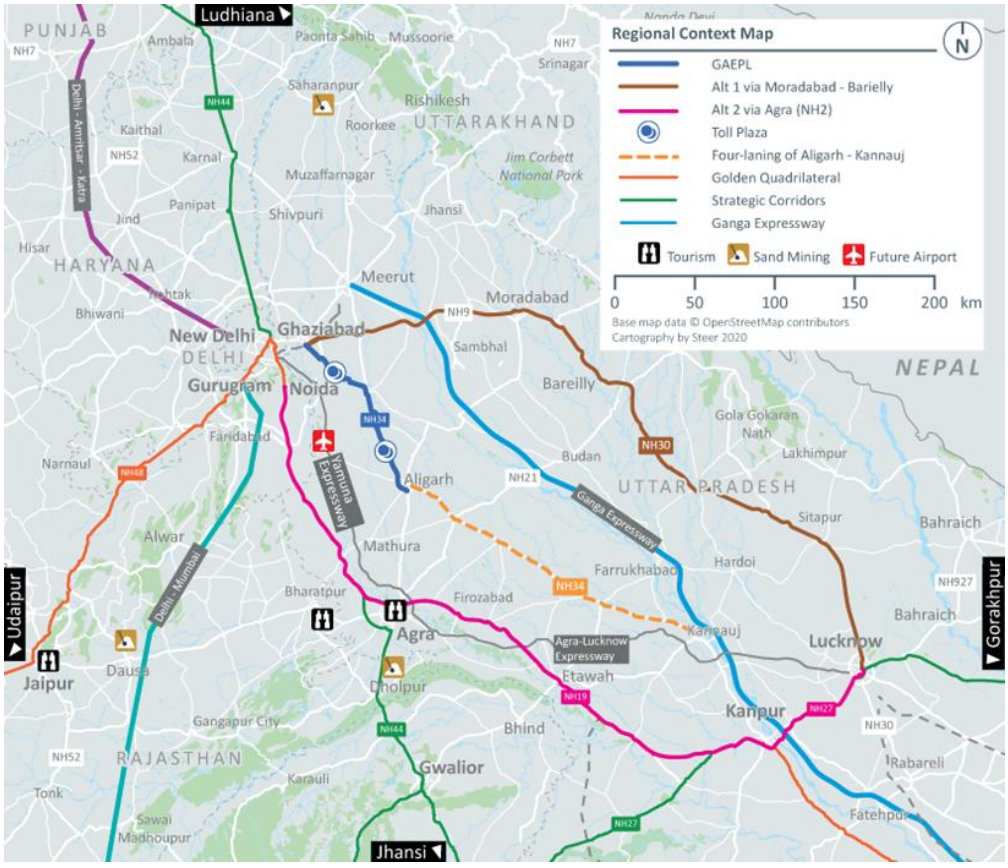
2.15 At TP1, majority of the commercial traffic is plying between Sikandrabad Industrial Area and National Capital Region (NCR). The influence of these economic drivers on the Asset's performance is discussed in more detail in Chapter 3 and 5 below.

Alternate Routes

2.16 The Asset occupies a strategically vital position along the east-west corridor connecting Delhi and the west with Lucknow and beyond. Figure 2-5 below illustrates other alternate routes available to long-distance users while travelling between Delhi and Lucknow. Currently, for travelling between Delhi and Lucknow there are four major routes:

- Asset: Delhi-Ghaziabad-Aligarh-Kannauj-Lucknow via NH91
- Alternate 1: Delhi-Moradabad-Bareilly-Sitapur-Lucknow via NH 24
- Alternate 2: Delhi-Faridabad-Agra-Kanpur-Lucknow via NH2 (NH19).
- Alternate 3: Delhi-Agra (via Yamuna Expressway)-Lucknow (via Agra-Lucknow expressway).

Figure 2-5: Alternate routes



Source: Steer Cartography

2.17 Medium-distance traffic, particularly those traveling southeast of the Asset, now have access to several recently upgraded state highways (such as the 4-laned Aligarh-Kanpur section). These improvements have enhanced the quality of the local road network, offering cheaper, and often free, alternative routes to industrial hubs such as Sikandrabad and Ghaziabad.

2.18 Chapter 6 provides a discussion and estimation of potential impacts due to these alternate routes in addition to the impact of new routes not currently operational (but expected to become operational in the near term) such as the Ganga Expressway

2.19 On the northbound side (towards Ghaziabad direction) near TP1, a micro leakage exists which could earlier be accessed from points on the Asset roughly 400-500m away from the earlier in-line plaza location. It is a two-lane local road which mostly caters to local Car and Mini-LCV traffic, that previously offered users the opportunity to evade the toll by taking a 1 km longer detour that could be travelled in roughly 10 minutes.

2.20 To address the issue of micro diversion of toll paying traffic, a Check Plaza was opened in Aug'23 at the location where local leak was connecting to the Asset. After almost a year of being operational, during which the existence of the check plaza significantly reduced leakage at TP1, the check plaza was vandalized by locals in September 2024.

Staggered Plaza for TP1: Luharli

2.21 While the check plaza was not under operation since September 2024, the newly operational staggered plaza configuration has reduced this leakage going forward. The staggered plaza was opened mid-July 2025. Traffic from September 2025 suggests significant increase in traffic, particularly CJV traffic at TP1 prior to the introduction of the Annual Pass on 15 August 2025. Thus, beyond assumptions of how we expect the share of Annual Pass CJV trips to evolve going forward (and its impact on residual CJV ticket shares), we have not assumed any further changes in segmentation that may or may not result from operationalisation of the staggered plaza configuration of TP1 relative to its earlier in-line configuration.

2.22 There exists a local diversion road at TP2 Somna as well. However, the TP2 micro diversion road is unmetalled and local villagers show resistance against vehicles using this road, suggesting that TP2 does not suffer the same or any significant level of revenue loss due to existence of this local diversion road.

Figure 2-6: Local leak at TP1 (first row) and TP2 (second row)

Source: Steer photos from site visit

3 Traffic Description

Introduction

3.1 This chapter describes current traffic and revenue trends on the Asset, as well as Steer's analysis of origin-destination (OD) data and traffic count data, including that which was collected as a part of this study, and data provided by the Client.

3.2 Traffic demand data is generally collected and analysed to understand the volume and vehicle composition of demand currently using the Asset, while OD data is used to obtain a better understanding of travel patterns, trip lengths, trip purposes and areas of influence in the vicinity of the Asset, as well as the commodities being moved by goods vehicles. This analysis, combined with our understanding of the Asset (based on our site visits), enables us to identify the key drivers of demand on the Asset.

3.3 Actual toll plaza data is used as the basis from which the current/base year Monthly Average Daily Traffic (MADT) is established. This data is typically provided by the Client and independently analysed and validated by us using Traffic Volume Count (TVC) information.

3.4 The below sections present historical traffic and revenue information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.

PCU Factor assumption

3.5 The PCU values have been taken from 'IRC 64:1990- Guidelines for Capacity of Roads in Rural Areas'. For MAV, based on the discussion with the Client, we have referred to the rigid and trailer splits for calculating the effective PCU for MAVs. For rigid trailer trucks we have assumed a PCU factor of 3, whereas for trailer trucks we have assumed a PCU factor of 4.5. These factors have been used to arrive at the PCU values presented in Table 3.1 below.

Table 3.1: PCU factors

Vehicle Category	PCU Factor
CJV/ Mini LCV	1.0
LCV	1.5
Bus/2A/3A	3.0
MAV*	3.8
OSV	4.5

Source: Steer analysis and IRC64,1990

Historical Trends

3.6 Table 3.2 and Table 3.3 below present the historical variation in total traffic and tollable traffic volumes at TP1 Luharli toll plaza, by vehicle category and in total PCU terms.

Table 3.2: Historical evolution in AADT by vehicle class at TP1 – Luharli

Vehicle	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR (FY19-26)
CJV	17,294	16,663	15,519	17,516	15,762	16,596	19,243	25,979	6.0%
LCV	2,433	2,283	1,905	1,672	1,620	1,514	1,461	1,612	(5.7%)
Bus	1,701	1,686	1,509	1,614	1,772	1,844	1,939	2,188	3.7%
2A	872	1,084	795	1,052	1,232	1,502	1,722	1,909	11.9%
3A	1,562	1,432	895	832	689	660	662	712	(10.6%)
MAV	989	1,152	1,561	1,862	2,021	2,169	2,400	2,588	14.7%
OSV	2	2	4	3	4	2	1	1	
Total	**24,852**	**24,303**	**22,187**	**24,551**	**23,101**	**24,287**	**27,428**	**34,989**	**5.0%**
PCU	**37,066**	**37,027**	**33,846**	**37,520**	**36,872**	**39,032**	**43,413**	**52,540**	**5.1%**

Source: Steer analysis of the Client data. FY26 represents full year actual (April to March).

Table 3.3: Historical Tollable Traffic Levels at TP1 – Luharli

Vehicle	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR (FY19-26)
CJV	5,854	6,793	7,671	9,254	9,069	11,925	14,175	20,427	19.5%
LCV	2,072	1,904	1,580	1,295	1,211	1,269	1,390	1,576	(3.8%)
Bus	1,630	1,611	1,488	1,599	1,746	1,841	1,934	2,185	4.3%
2A	812	1,020	743	985	1,125	1,374	1,669	1,889	12.8%
3A	1,363	1,271	791	726	594	608	648	710	(8.9%)
MAV	963	1,117	1,513	1,760	1,812	2,053	2,376	2,578	15.1%
OSV	2	2	4	4	3	2	1	1	
Tollable AADT	**12,697**	**13,719**	**13,791**	**15,623**	**15,559**	**19,073**	**22,193**	**29,366**	**12.7%**
Tollable PCU	**23,999**	**25,555**	**24,802**	**27,748**	**28,092**	**33,011**	**37,932**	**46,819**	**10.0%**

Source: Steer analysis of the Client data. FY26 represents full year actual (April to March).

3.7 Between FY19 and FY25, total PCUs on TP1 grew at approximately 2.7% per year. This modest PCU growth on TP1 was primarily due to variability in CJV traffic capture due to the micro leakage route near the toll plaza. Since TP1 is located in the NCR region, it observes a higher share of CJV, Mini LCV, and LCV traffic relative to TP2. In addition, the plaza has historically had a high share of non-paying users within the more local CJV, Mini LCV, and LCV vehicle categories.

3.8 However, in contrast to growth in total traffic, growth in tollable traffic over the same period (i.e. FY19-FY25) has been significantly faster, having grown at roughly 8% per year since FY19. This growth in tollable volumes can be attributed to a number of factors

- The mandatory implementation of FASTag in Feb ’21.
- Capacity expansion of the Asset to six-lane configuration in October ’23, and;
- Operation of a Check Plaza between Aug ’23 and Sept ’24.

3.9 As mentioned earlier, TP1 Luharli has witnessed a positive increase in total as well as tollable traffic volume in FY26 due to a combination of factors including completion of 6 - lane configuration of the Asset and opening of check plaza at TP1 which has led to improved reporting and compliance resulting in increase in FY25 and FY26 traffic volumes as well as tollable traffic[3]. Further as discussed in chapter 2, opening of a new staggered toll plaza starting July-25 has resulted in increased capture of CJV traffic and reduced the congestion faced by users using the earlier toll plaza. This has resulted in higher capture of traffic (effectively nullifying the effect of the micro leakage), better reporting of vehicles as well as reduced wait time for users at the Luharli toll plaza.

3.10 Moreover, 4-laning of NH-914 Aligarh-Kanpur section in H2 of 2024 – located east of the Asset has further improved LOS of the corridor, paving way for growth on the Asset

3.11 The strategic location of TP1 Luharli, in proximity to major urban centers such as Ghaziabad and Delhi, and serving significant intercity movement towards Sikandrabad, further influences traffic dynamics on the Asset. The substantial share of CJVs at TP1 (74%, in FY26) is due to the Asset's location, serving large urban and industrial hubs including Ghaziabad, Aligarh, Khurja, Bulandshahar, as well as other areas in and around Delhi NCR.

3.12 The historical classification of LCV-2As has presented challenges due to the similar physical characteristics of vehicles in these categories which has led to the share of LCVs decreasing over the past five years, attributable to classification shifts between the LCV and 2A categories. The implementation of FASTag has further contributed to this trend, resulting in the reclassification of some Mini LCVs, previously counted under the LCV category to CJVs. Consequently, LCV traffic at the plaza has exhibited a declining trend since FY19, with a 6.4% annual decline observed between FY19 and FY25. Post reclassification in FY22-23 however, LCV volumes have exhibited strong growth, with FY26YTD at 5.2% above FY25 levels.

3.13 The 2A/Bus category has also experienced strong growth since FY19, benefiting from the positive impact of the Asset's six-lane expansion, as well as the 4-laning of the Aligarh-Kanpur section of the NH91. 2A trucks have also benefitted from a shift in preference from 3A trucks due to favourable changes in the legal permissible loads for 2As[5] and their suitability for e-commerce-related freight, particularly high-value, low-volume goods over medium to long distances. 3A traffic on the Asset has declined consistently since FY19, at a CAGR of (-10.2%)

3.14 Table 3.4 and Table 3.5 below present the historical variation in total traffic and tollable traffic volumes at the TP2 Somna toll plaza, by vehicle category and in total PCU terms.

---

[3] Luharli toll plaza witnessed tollable traffic growth due to behavioral shifts among local users during the brief operationalization of the check plaza in FY24. Although the check plaza was later vandalized in September 2024, its presence temporarily curbed toll evasion and led to a sustained increase in users opting to pay tolls. Additionally, local villagers blocked the micro diversion route used to evade tolls, increasing the detour distance from roughly 1 km to nearly 3 km. This reduced the attractiveness of the alternate route and further limited leakage, helping maintain higher tollable traffic volumes despite the check plaza's destruction in late FY24.

[4] **Kanpur-Aligarh four-lane highway nears completion | Kanpur News - Times of India**

[5] **New axle load norm gets two amendments, ETAuto**

Table 3.4: Historical evolution in AADT by vehicle class at TP2 – Somna

Vehicle	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR (FY19-26)
CJV	6,250	6,482	6,013	6,206	5,726	5,892	7,154	9,973	6.9%
LCV	1,574	1,329	1,002	824	792	800	888	1,050	(5.6%)
Bus	1,118	1,088	1,061	1,110	1,198	1,225	1,280	1,477	4.0%
2A	740	911	756	926	1,072	1,203	1,408	1,679	12.4%
3A	1,471	1,228	913	732	663	663	663	692	(10.2%)
MAV	1,065	940	1,084	1,209	1,250	1,445	1,710	1,959	9.1%
OSV	1	0	1	1	3	2	1	1	
Total	**12,221**	**11,979**	**10,831**	**11,008**	**10,704**	**11,229**	**13,106**	**16,831**	**4.7%**
PCU	**22,603**	**21,688**	**19,778**	**20,287**	**20,418**	**21,794**	**24,964**	**30,445**	**4.3%**

Source: Steer analysis of the Client data. FY26 represents full year actual (April to March)

Table 3.5: Historical Tollable Traffic Levels at TP2 – Somna

Vehicle	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR (FY19-25)
CJV	4,663	4,941	4,636	4,717	4,411	4,735	5,833	8,539	9.0%
LCV	1,491	1,270	959	772	756	777	872	1,032	(5.1%)
Bus	1,101	1,071	1,053	1,109	1,194	1,222	1,276	1,471	4.2%
2A	734	902	750	917	1,060	1,187	1,399	1,671	12.5%
3A	1,467	1,224	910	727	647	645	661	691	(10.2%)
MAV	1,064	939	1,084	1,207	1,242	1,434	1,709	1,958	9.1%
OSV	1	0	2	2	3	2	1	1	
Tollable AADT	**10,522**	**10,347**	**9,394**	**9,451**	**9,314**	**10,001**	**11,751**	**15,363**	**5.6%**
Tollable PCU	**20,802**	**19,960**	**18,290**	**18,672**	**18,925**	**20,451**	**23,565**	**28,938**	**4.8%**

Source: Steer analysis of Client data; FY26 represents full year actual (April to March); Tollable traffic excludes exemption and violation.

3.15 Between FY19 and FY25, TP2 saw similar muted growth at a PCU level , which can be attributed to (1) the impact of the Covid-19 pandemic in FY21, and (2) the impact of the 4-lane expansion of the NH91 Kanpur-Aligarh section which led to a reduction in level of service during the construction period (FY22-FY24).

3.16 However, in FY26, TP2 Somna observed strong growth in MAV traffic, having grown from 1,709 AADT in FY25 to 1,958 AADT. The strong continued growth in MAV volumes at TP2 (and TP1) since H2FY24 is primarily driven by the overall upgradation of the NH91 corridor, increasing the attractiveness of the Asset as a facilitator of east-west long-distance goods movement.

3.17 Post 6-laning of the Asset in late 2023, traffic growth at TP2 picked up and has since sustained well, with FY26 traffic recording roughly 21% growth over FY25 levels. As per our site visit another contributor to the increase in volumes in FY26 is the temporary

diversion of a small volume of traffic destined towards Palwal to cross the plaza due to the closure of NH334D and Aligarh Bypass.

Historical Revenue

3.18 Table 3.6 below shows the historical reported revenue on the Asset.

Table 3.6: Historical evolution in annual revenue (in INR Crore) and AADC (in INR Lakhs)

Toll Plaza	FY23	FY24	FY25	FY26
TP1	129.7	158.7	186.7	239.3
TP2	121.6	139.3	163.5	205.1
Total	**251.3**	**298.0**	**350.2**	**444.5**
AADC (INR Lakh)	**68.8**	**81.4**	**96.0**	**130.0**
Growth		**18.2%**	**17.9%**	**26.9%**

Source: Steer analysis based on data provided by the Client; FY26 consists of data from Apr'25 to Mar'26

3.19 The opening of check plaza between Aug'23 and Sept '24 at TP1 Luharli resulted in improved reporting and compliance. This was observed as increased volumes of tollable traffic between August'23 and September'24 specifically for Cars and LCVs along with segmentation changes that showed a reduction in exemptions and violations during the same period.

3.20 Thus, better reporting and growth in tollable traffic coupled with the impact of improved LOS on the Asset in FY24 resulted in strong AADC growth in FY24 and FY25. This robust growth continued in FY26, because of the aforementioned factors, with the diversion of traffic due to the Palwal-Tappal-Aligarh being a major contributor. The average daily collection grew by ~35% in FY26, amounting to INR 1.3 Crores

Toll Frequencies

3.21 Toll frequency or segmentation is the distribution of different ticket categories recorded for all vehicle categories. This is based on the toll policy which is a part of the concession agreement. Each vehicle category has a different segmentation. As a part of our historical analysis, we calculate the toll frequency for each vehicle category from the monthly data shared by the Client. The most common ticket categories observed on a typical National Highway concession are: Single, Return, Monthly, Local and Exempt. Given the local nature of traffic, some toll plazas offer custom made local passes to attract the local commuters to opt for these category passes instead of evading toll.

3.22 Understanding the toll frequency gives us insights into the nature of traffic plying on the Asset. CJVs generally have higher shares of return passes or local monthly passes because they travel shorter distances, while heavy trucks mostly have single tickets since they travel longer distances. Exemptions and Violations are typically observed for CJVs and smaller vehicles since they are not tolled per government mandates (e.g. 2-wheelers and tractors), or include state vehicles (e.g., police cars and govt convoys) that are exempted from paying tolls as per NHAI policy. An Asset catering to short distance local traffic generally observes high share of return or other local monthly passes while one catering to strategic long-distance traffic generally has high share of single ticket traffic.

3.23 Further, the toll plazas also record violations which are non-paying users, who are not officially allowed under exemptions category but are forced exemptions. For the Asset, the segmentation discussed below reports Exemption and violations together.

3.24 Table 3.7 below summarizes the types of tickets being sold at both toll plazas of the Asset.

Table 3.7: Typical ticket types sold at NHAI plazas

Category	Description
Single	Allows the vehicle to cross the toll plaza once
Return	Allows for a return journey within a day with a 50% discount on the return trip.
Monthly	Discounted single entry ticket for users who undertake multiple trips within a month can buy the monthly pass.
Local Personal	Discounted single entry pass only for private cars of residents within 20km radius of toll plaza
Local Commercial	50% discount on single trips for commercial vehicles registered in the local district. This pass allows single entry only
Exemptions	Officially exempted vehicles like ambulance, police cars, key political personnel etc.

Introduction of Annual pass for CJVs

3.25 The National Highway Authority of India launched the “The FASTag Annual Pass” on August 15, 2025, a prepaid facility that allows private CJVs to travel across designated National Highway and National Expressway toll plazas. The annual pass is worth INR 3,000. The pass is valid for one year or 200 trips, whichever occurs first and is applicable only to private, non-commercial vehicles (Car/Jeep/Vans).

Since this pass has been introduced by NHAI, it is not valid on

- state governed toll plazas on highways
- state governed toll plazas expressways
- Parking areas or other non-NHAI tolling locations

3.26 The pass can be activated via the RajmargYatra app or the NHAI website, and links directly to an existing FASTag.

The Annual Pass aims to:

- Promote cashless and seamless travel on national highways.
- Reduce congestion and improve traffic flow at tolls
- Provide cost-effective travel for frequent users of NH/NE toll road

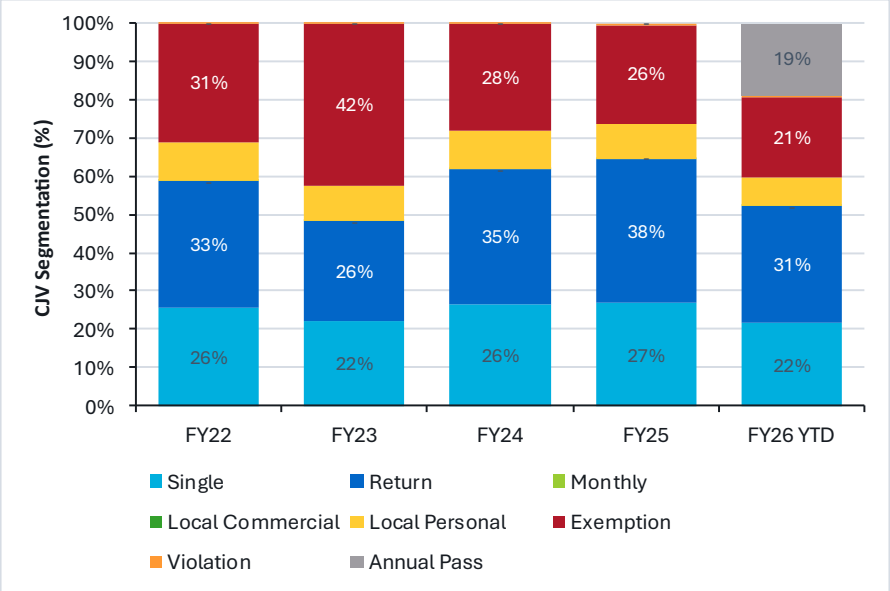
3.27 Figure 3-1 through Figure 3-4 below present toll segmentation for the historical years at TP1 and TP2 for CJVs and MAVs. Table 3.8 below presents the same for the remaining vehicle types at both the Asset toll plazas.

3.28 As a general pattern, the shares of single/return/monthly tickets tend to stabilise within 2-3 years of the commencement of Asset operations. Only in the cases where trip patterns are expected to change significantly due to urban expansion is where we expect these shares to change over the period or due to some external events impacting the trip patterns. During FY21 and FY22, however, two key events impacted the traffic patterns throughout the country: COVID-19 and FASTag implementation. Despite large variations

in ticket segmentations observed during those two years, segmentation trends on the Asset have slowly stabilised since, with FY25 and FY26YTD showing more consistent segmentation trends for CJVs and MAVs at both TP1 than in previous years (see Figure 3-1 through Figure 3-4 below).

3.29 Given stable segmentation trends observed over the past few years and through Aug '25, we have used FY26YTD (thru Aug'25) segmentation as the base segmentation for all vehicle categories **except CJVs** for forecasting purposes. For CJVs however, we have incorporated the assumption of Annual Pass adoption through the rest of FY26 and beyond into our forecasts – this is discussed in more detail in Chapter 6.

Figure 3-1: Ticket segmentation for CJV at TP1 (Luharli)



Source: Steer analysis of the Client data; FY26YTD contains data upto Feb'26

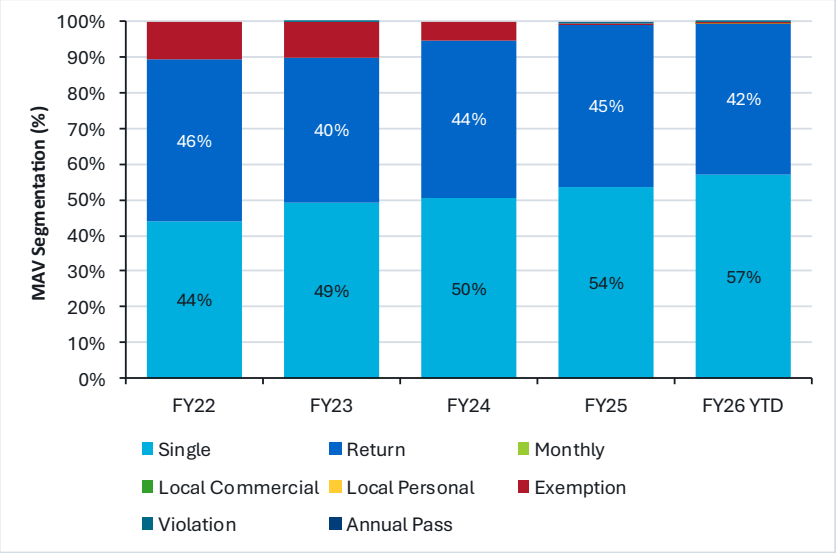
3.30 As observed from Figure 3-1 above, we see a major share of the CJV traffic under the Exemption and Violation category ranging from 30% to 42% over the years. This share has reduced to around 21% as of FY26YTD as compared to 31% in FY22. This decrease can be attributed to a few factors namely FASTag implementation in FY22, operation of Check Plaza at TP1 between in Aug '23 and Sept '24, the commencement of the staggered toll plaza in July 2025, as well as the issuance of Annual Passes from August 2025.

3.31 The magnitude of the share of exemptions observed on this Asset is much higher than our observations on similar Assets across the country. As per our observation during the site visits and our understanding of the region, local political influences and aggressive attitudes of local road users resistant to pay the toll play a role in this high share.

3.32 The share of single and return journeys have reduced from 65% in FY25 to 53% in FY26YTD on account of annual passes. Annual passes have influenced exemptions too as it has fallen from FY2 levels (26%) to 21% in FY26YTD.

3.33 Figure 3-2 below presents the ticket segmentation for MAVs at TP1. For MAVs, single ticket shares grew 4% and return ticket shares declined 1% in FY25 relative to FY24. This coincided with a 5% decrease in traffic exemptions, suggesting a greater capture of both long-distance and local traffic.

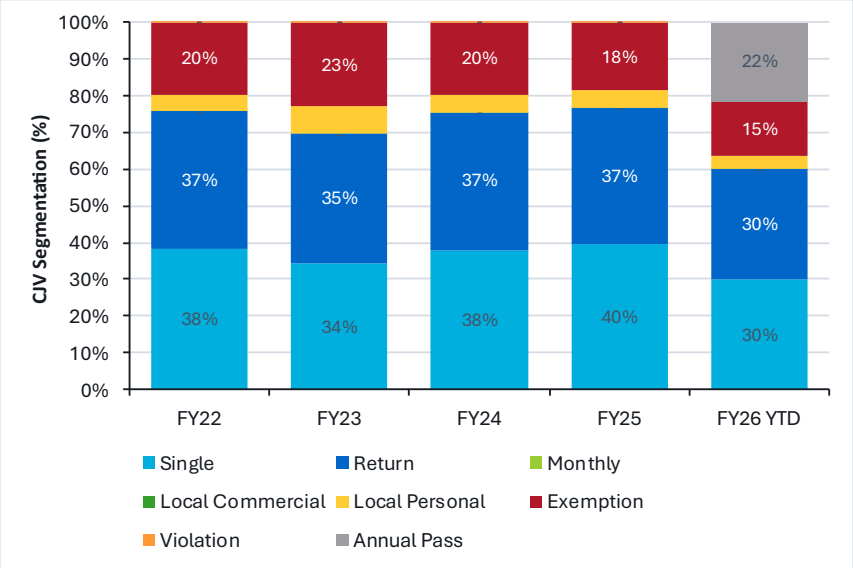
Figure 3-2: Ticket segmentation for MAV at TP1 (Luharli)



Source: Steer analysis of the Client data; FY26YTD contains data upto Feb'26

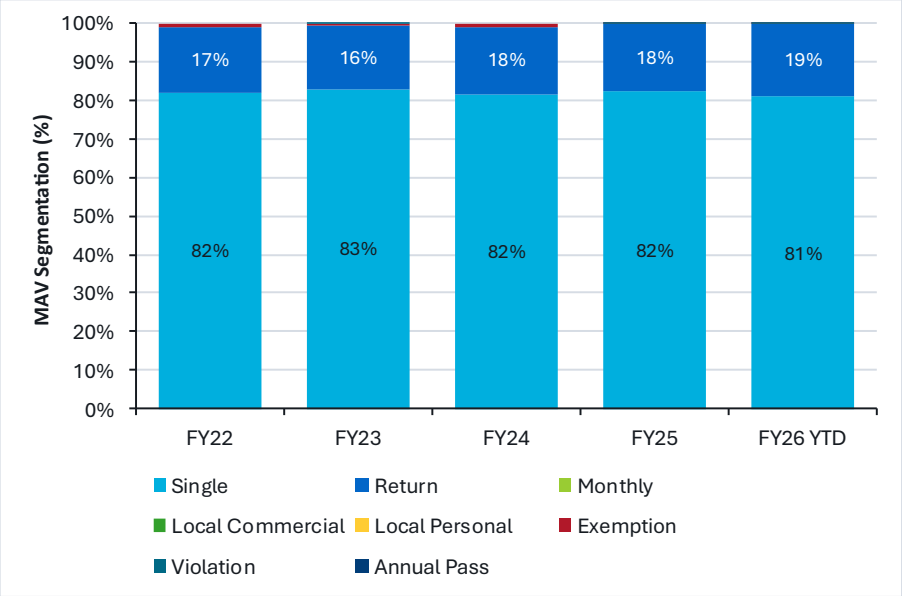
3.34 Figure 3-3 and Figure 3-4 below present the ticket segmentation for CJVs and MAVs (respectively) at the TP2 Somna toll plaza.

Figure 3-3: Ticket segmentation for CJV at TP2 (Somna)



Source: Steer analysis of the Client data; FY26YTD contains data upto Feb'26

Figure 3-4: Ticket segmentation for MAVs at TP2 (Somna)



Source: Steer analysis of the Client data; FY26YTD contains data upto Feb'26

3.35 As shown in Figure 3-3 above, return journey tickets and local personal tickets together have historically accounted for the majority share of CJV trips at TP2 Somna. The high share of local trips in CJVs is validated by their average trip length of around 260kms, suggested that majority of CJV traffic at TP2 is regional in nature. Exemptions and violations in FY26YTD are similar to FY25 shares, whereas exemptions on TP2 is lower than the TP1 given lower volumes and urban density compared to TP1.

3.36 Figure 3-4 above shows that as of FY26YTD, MAV trips observed at TP2 Somna had a high share of single journey tickets (at approx. 81% of total trips). This high share of single tickets suggests the dominance of long-distance movements, further validated by the OD analysis outputs— with MAVs averaging a trip length of approx. 650 kms.

3.37 The segmentation shows us that both the plazas on the Asset have very distinct characteristics. TP1 has a high share of local traffic catering to the travel demand generated by the regions of Dadri, Sikandrabad and Ghaziabad whereas TP2 serves long haul trips connecting north-west Uttar Pradesh, Punjab etc. to cities like Kanpur, Lucknow, Patna, Kolkata.

3.38 Table 3.8 below presents the FY26 YTD (upto Feb'26) segmentation for LCV, Bus, 2A and 3A categories.

Table 3.8: Segmentation for LCV, Bus, 2A and 3A category – FY26YTD

Ticket Category	TP1 (Luharli)				TP2 (Somna)			
	LCV	Bus	2A	3A	LCV	Bus	2A	3A
Single	40%	7%	58%	70%	58%	11%	77%	85%
Return	56%	93%	40%	30%	40%	89%	22%	15%
Local Commercial	-	-	-	-	-	-	-	-
Monthly	2%	0%	0%	0%	0%	-	-	-
Violation	-	-	-	-	-	-	-	-

Ticket Category	TP1 (Luharli)				TP2 (Somna)			
	LCV	Bus	2A	3A	LCV	Bus	2A	3A
Exemption	1%	0%	1%	0%	0%	0%	0%	0%

Source: Steer analysis of the Client data

Data collection exercise

3.39 As aforementioned, to validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset comprising the surveys listed in the table below. While TVC survey data were provided by the Client, OD surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas. TVC data collection involves video graphic capture of traffic passing crossing the toll plazas, followed by manual counting. Table 3.9 below summarizes the details of the primary surveys Steer conducted as part of this study.

Table 3.9: Data collection schedule

Toll plaza	1-day OD survey		3-day videography based TVC			
	Start date	End date	Start date	Start Time	End Date	End Time
TP1 Luharli	19th February 2026	20th February 2026	19th February 2026	0900 hours	21st February 2026	0900 hours
TP2 Somna	20th February 2026	21st February 2026	19th February 2026	0900 hours	21st February 2026	0900 hours

3.40 It should be noted that, in our experience, traffic on national highways shows variation across the week due to the economic activities surrounding each road. To derive a representative TVC count considering daily variation, three-day to seven-day traffic counts are generally recommended, and hence, in order to fully understand the impact of the fluctuation on the Asset.

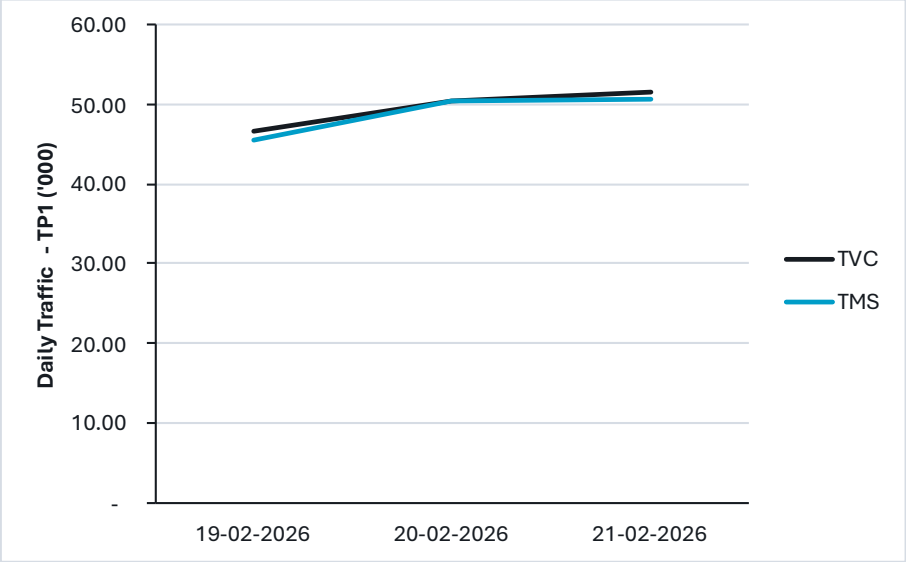
Key findings of the TVC data analysis

ADT estimates

3.41 We used the TVC data to validate the toll plaza data for the same days, as supplied by the Client via their toll management system (TMS). This TMS data was then used as the base data, for our forecasting model.

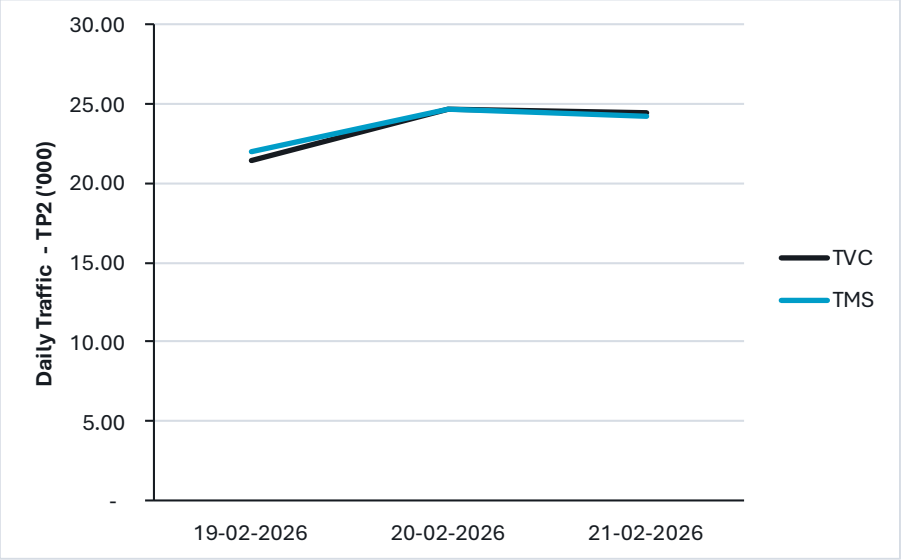
3.42 Figure 3-5 and Figure 3-6 below show the comparison between daily traffic data and shares of vehicle categories in TVC and TMS for the two toll plazas. The variation between the TVC ADT and TMS data on TP1 is approx. 1.5% at a total level and the same for TP2 is around (0.4%). The difference between daily traffic from both sources is minimal at both TP1 and TP2 and can be attributed to technical differences between the two independent traffic counting systems.

Figure 3-5: Comparison between TVC and TMS daily traffic data, TP1 Luharli



Source: Steer analysis of TVC and Client TMS data

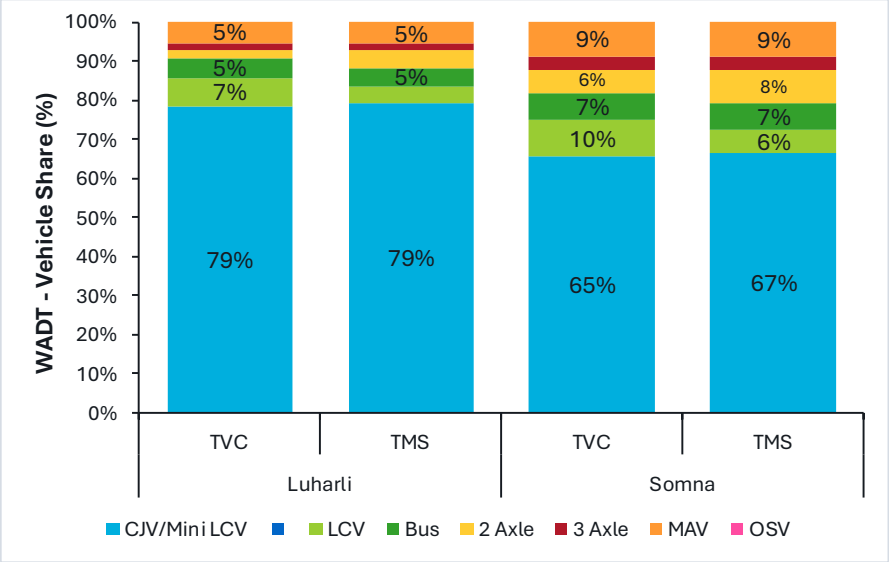
Figure 3-6: Comparison between TVC and TMS daily traffic data, TP2 Somna



Source: Steer analysis of TVC and Client TMS data

3.43 Figure 3-7 below displays the shares of vehicle types at both plazas, between TVC and TMS data. As can be seen, in the figure and as aforementioned, TP1 sees a higher influence of CJVs.

Figure 3-7: Comparison between vehicle shares from TVC and TMS WADTs



Source: Steer analysis of TVC and Client TMS data

3.44 Considering the variation between the TVC and TMS is within 1.5%, our TVC-TMS analysis gives us confidence that the base year traffic calculated using the Client data forms a reliable base year traffic estimate.

Key findings of origin-destination analysis

Overview

3.45 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Asset. As part of this assignment, we have analysed the regional drivers of demand based on the following OD analyses on the data as provided by the Client:

- Zonal influence
- Internal External analysis
- Commodity distribution
- Trip length distribution

3.46 While zonal analysis and list of top OD pairs help us to understand 'where' people and goods travel, commodity distribution sheds light on 'what' goods get transported. Trip length distribution show 'how far' vehicles and people travel, and goods get transported. This set of analysis is used to estimate key drivers of traffic and aid the making of informed forecasting assumptions around traffic demand elasticities, growth drivers and exogenous impacts.

Sample rates

3.47 Sample rates help understand the reliability of OD data. They are calculated by dividing OD samples captured by the traffic counts (based on the TVC data) during the same time. Table 3.10 below presents the sample rates for key vehicle type aggregations at both the toll plazas. Lower samples in Passenger at both the plazas is due to reduced stopping time of Cars especially at the plazas post FASTag implementation. However, we believe that the sample rates of the OD data are reasonable.

Table 3.10: Sample rates for OD data

Vehicle type	TP1 Luharli	TP2 Somna
Passenger (CJV+Bus)	35%	15%
Goods (LCV+2A+3A+MAV)	78%	80%

Source: Steer analysis of OD data

Commodity Categories

3.48 We have grouped various commodities into aggregate categories for ease of interpretation, as shown Table 3.11 below. The charts in the following sub-section present information in terms of aggregate commodity categories.

Table 3.11: Aggregate commodity categories

Commodity Description	Code	Aggregation code
Agriculture Products / Cash crops (Wheat, Rice, Sugar cane, Maize etc.)	AGR	AGR
Cattle Food / Live Stock (sheep, goat, cow, cattle food etc)	LIV	
Perishable Items (Fruits, vegetables)	PER	GRO
Animal Products/Dairy/Eggs/Fish/Meat/Animals	DFM	
Groceries / Food items (Soap, Salt, Sugar, Pulses, Spices, Biscuits, bread, cool drinks, beer etc.)	GRO	
Building Material / Construction (Cement, Lime, Brick, fly ash, etc)	CNS	CNS
Sand/Clay	SND	
Stone (kota stone, marble, Granite, Aggregate stone etc.)	STN	
Ceramic	CRM	
Petroleum Products (Oil, LPG, CNG, etc.)	PET	PET
Chemicals / Fertilizers (Acids, Fertilizers etc.)	CHM	
Electrical/Manufacturing items (Electronic items, Medicine, Leather, Wine, Rubber/ Tyre, Plastics, Cloth, Paper etc.)	MAN	MAN
Raw Wood, Cork & Wood Products, Furniture	WUD	
Machinery / Spare parts	MAC	
Automobiles (Finished products, auto parts, Car/bike manufacturing, New Chassis)	AUT	AUT
Basic / Fabricated Metals (Iron, Steel / Metal)	MET	MET
Mining Minerals (Coal, Gypsum, Cobalt etc.)	MIN	
Empty	EMT	EMT
Container	CTR	MSC
Miscellaneous (Parcel, Courier, Household items etc.)	MSC	
Passengers	PAS	
Scrap	SCR	

Source: Steer analysis

3.49 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones and influenced by various cities, states, and regions in the proximity of the Asset, we have aggregated zonal data as described in Table 3.12 below. The methodology behind zone aggregation may vary based on the characteristics displayed by each Asset.

Table 3.12: Zone aggregations for zonal influence analysis

Aggregate Zone	Description
Local	Local zones are those that fall on or very close to the Asset.
Immediate area of influence (IAOI)	IAOI zones are the locations which generate traffic and lie within approximately 75-150 km distance from the Asset.
Rest of State	Rest of cities/Districts in the state that Asset lies in (other than Local/IAOI)
Haryana	Haryana
Rajasthan	Rajasthan
Uttarakhand	Uttarakhand
Bihar	Bihar
North India	Punjab, Himachal Pradesh, Jammu & Kashmir
Central India	Madhya Pradesh
West India	Gujarat, Maharashtra, Goa
South India	Southern Indian states
East & Northeast India	Jharkhand, Odisha, West Bengal and Northeast Indian states
Outside India	Nepal, Bhutan, Bangladesh

Source: Steer analysis

Zonal influence

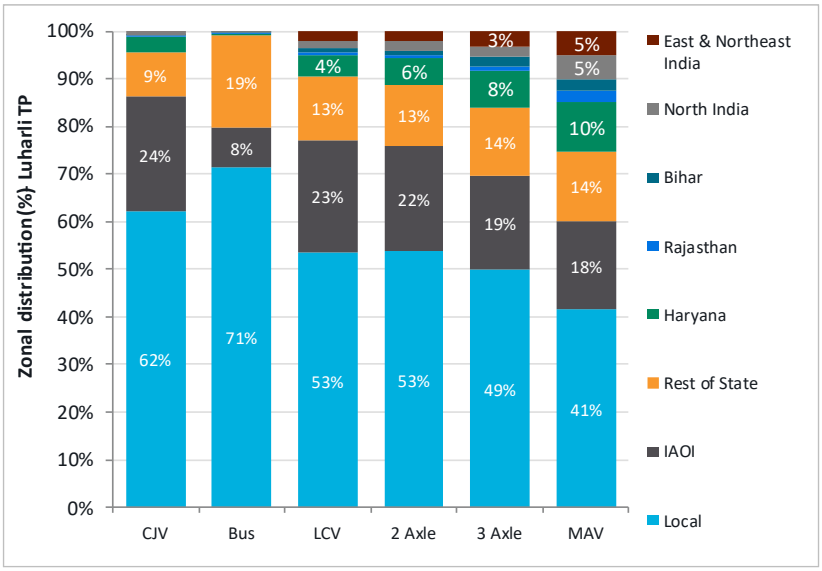
3.50 The zonal influence is the contribution of the zone or the zonal aggregation to trips by a vehicle type. This section presents the zonal influence of different regions (as defined in the table above) on traffic volumes crossing at each of the Asset toll plazas. Please note that zonal influence is analysed on trip ends and not trips.

3.51 Figure 3-8 and Figure 3-9 below present the zonal influence of different zones/regions on all the vehicle types crossing the toll plazas. We can see that ‘local’ trips make up the largest share for all vehicle types on TP1 whereas TP2 sees a mix of rest of state and local trips dominating the zonal distribution of the plaza. The influence of local trips is seen decreasing as the size of vehicle type increases, consistent with general trends observed across most highways across the country, given that heavier vehicles travel longer distances. In this context, the high incidence of local trips can be specifically attributed to the urban nature of the Asset and proximity to several industrial and growing urban centres like Ghaziabad, Sikandrabad, Khurja and Aligarh. The distribution also varies between the toll plazas, with TP2 showing lower ‘local’ influence.

3.52 We observe the highest share of 'local’ influence for CJV’s (62%, and 58% at TP1, and TP2 respectively). MAVs see lower but significant ‘local’ influence (41%, and 35% at TP1 and TP2 respectively), which is still much higher than observations made at long-distance corridors across roads in the country. Compared with competing long-distance corridors, this indicates potentially larger share of traffic having one trip end lying on the Asset i.e.,

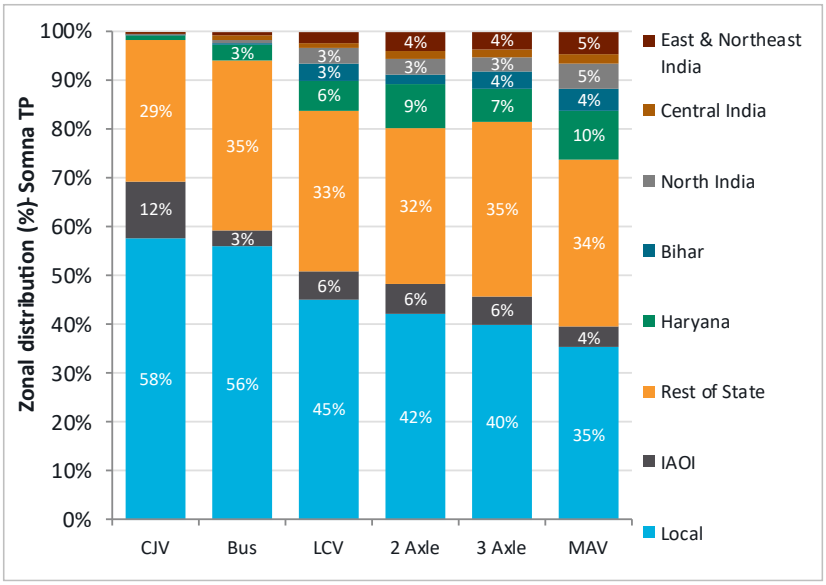
dependent on the regional economy. This is further discussed in the sub-sections presenting top OD pairs and trip length analysis.

Figure 3-8: Zonal influence, TP1 Luharli



Source: Steer analysis of OD data

Figure 3-9: Zonal influence at TP2, Somna



Source: Steer analysis of OD data

3.53 TP2 shows a much greater influence of Rest of State, with all categories showing shares above 29%, with MAVs touching 34%. The zonal distribution of both plazas indicates a high influence of within state trips across all vehicle categories

Internal External analysis

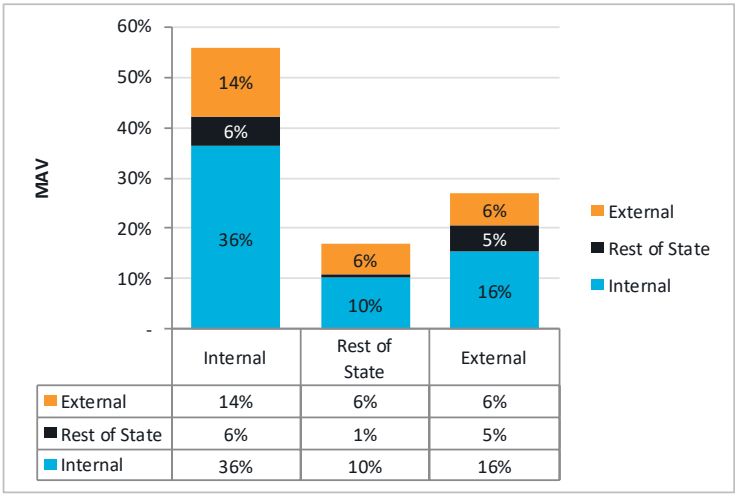
3.54 Internal-External analysis helps in identifying the trips which have both the origin and destination on the Asset (Internal-Internal), both trips end within the state (RoS) or or neither end on the Asset i.e. through trips (External-External). 'Internal' zones are those that were analysed as 'local' in the zonal influence analysis, i.e., lying on the Asset, while 'External' zones are all other zones.

3.55 Figure 3-10 and Figure 3-11below show the distribution of MAV trips based on these categories at both the Asset toll plazas TP1 Luharli and TP2 Somna (respectively). These supplement observations made in the zonal influence analysis presented earlier, but at a higher level of aggregation and at a trip level.

3.56 For CJVs and light vehicles at TP1 Luharli and TP2 Somna, we see that the zonal influence maps to a combination of internal and rest of state trips which means that there are both short-distance and medium-distance trips that contributed to the high 'local' zonal influence. MAVs, on the other hand, show difference between TP1 and TP2, with TP1 having a high share of trips having one 'internal' trip end. On the contrary, TP2 sees a slightly more balanced share between trips having one end 'internal' and one end as 'rest of state'.

3.57 As demonstrated in Tables 3.10 and 3.11, TP1's proximity to industrial zones in Khurja, Sikandrabad, and Bulandshahar results in shorter trip lengths (as detailed in the trip length analysis in Figure 3.14). Consequently, Internal-Internal trips constitute approximately 36% of the traffic on TP1. In contrast, TP2's zonal influence (refer to Figure 3-9), extending to the rest of the state and northeastern states, leads to a higher proportion of rest of state and external trips.

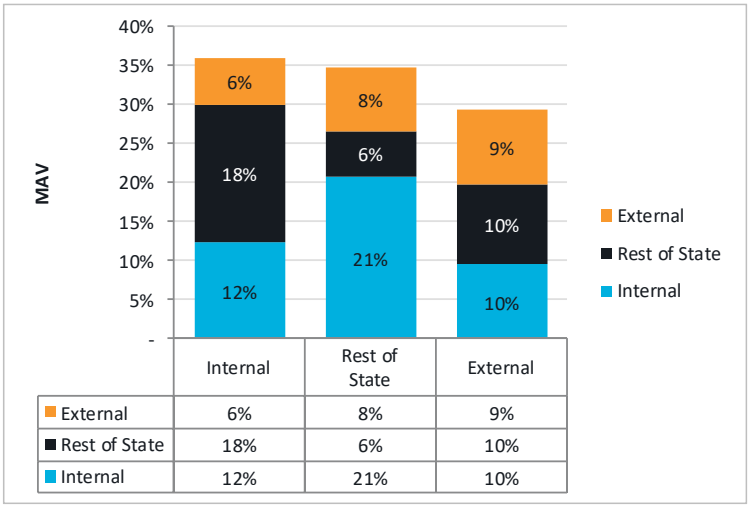
Figure 3-10: Internal-external distribution, TP1 Luharli



	Internal	Rest of State	External
External	14%	6%	6%
Rest of State	6%	1%	5%
Internal	36%	10%	16%

Source: Steer analysis of OD data

Figure 3-11: Internal-external distribution, TP2 Somna



	Internal	Rest of State	External
External	6%	8%	9%
Rest of State	18%	6%	10%
Internal	12%	21%	10%

Source: Steer analysis of OD data

Commodity distribution

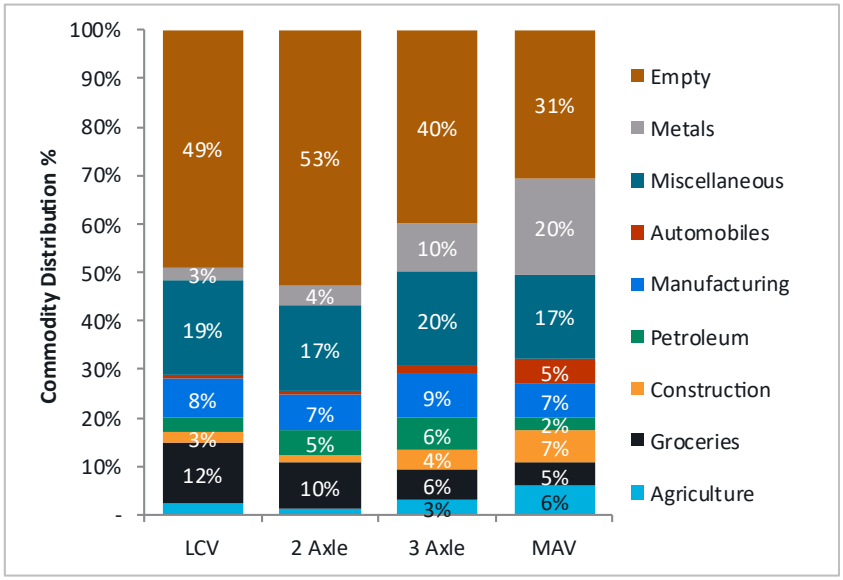
3.58 Figure 3-12 and Figure 3-13 below present the commodity distribution for goods vehicles at TP1 Luharli and TP2 Somna respectively. As also observed during our site visits, we see a high proportion of vehicles that are 'empty', which is consistent with the high 'local' zonal influence and significant shares of 'return' trips observed in our historical analysis section above.

3.59 There is a significant volume of construction, manufacturing, metals and petroleum related commodities on both plazas the Asset along with agricultural materials. Vehicles carrying these products generally have one end of their trips in the industrial areas of Sikandrabad, Ghaziabad, Bulandshahar or Aligarh. The share of construction traffic observed on the Asset can be attributed to cement being transported from Sikandrabad to Delhi NCR region.

3.60 The metal traffic observed on both the toll plazas is primarily iron pipes travelling in both directions from Sikandrabad to Delhi NCR region and from Ghaziabad to Sikandrabad and Aligarh.

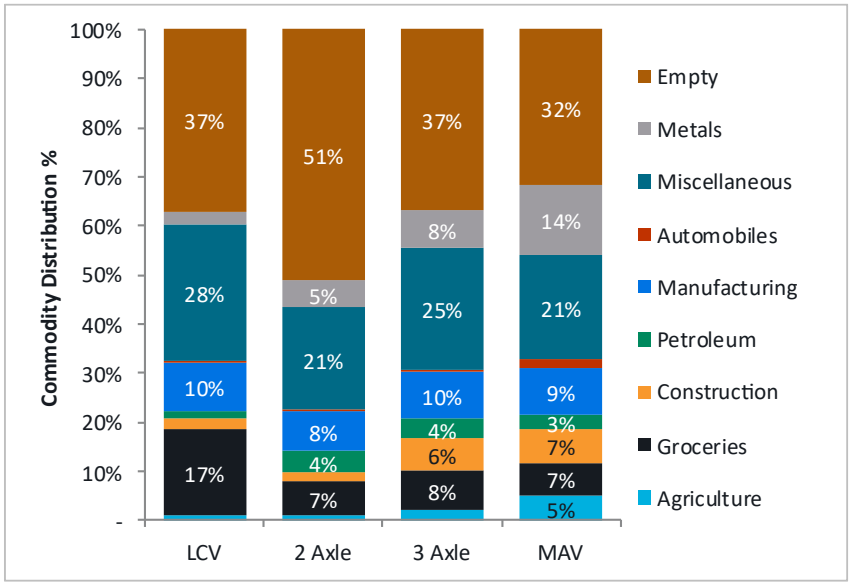
3.61 Somna toll plaza shows more efficient vehicle utilization with a lower share of empty trips and a high concentration of manufacturing and miscellaneous goods across all vehicle types, pointing to a diverse industrial catchment.

Figure 3-12: Commodity distribution, TP1 Luharli



Source: Steer analysis of OD data

Figure 3-13: Commodity distribution, TP2 Somna



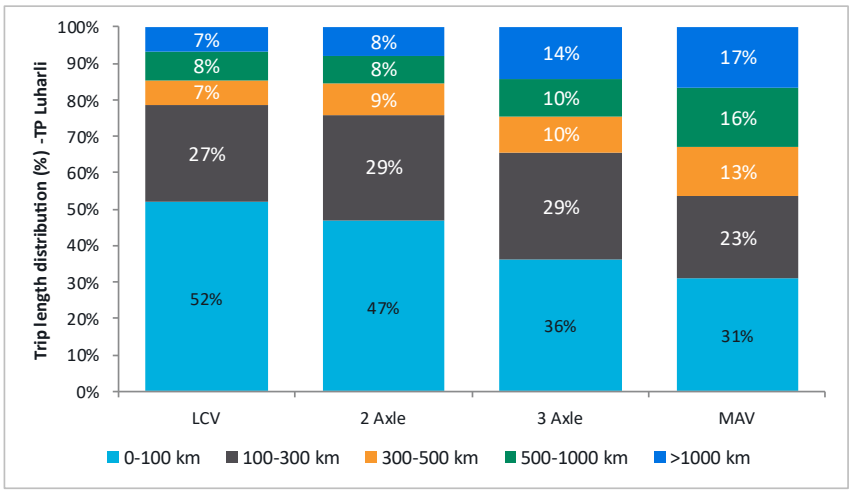
Source: Steer analysis of OD data

Trip length analysis

3.62 Trip-length distribution provides the distance-based profile of various vehicle types. This helps to validate assumptions around the share of macro-economic drivers, inputs from zonal influence and toll segmentation. For ease of interpretation, we have categorised distances into groups – 0-100 km, 100-300 km, 300-500 km, and 500-1000 km and >1,000 km. The trip distances were derived as driving distances from Google Distance Matrix Tool based on zonal coordinates for OD pairs.[6]

[6] Google Distance API is a tool that is available on a chargeable basis from Google Maps Platform. Link: https://developers.google.com/maps/documentation/distance-matrix/start. Travel distance

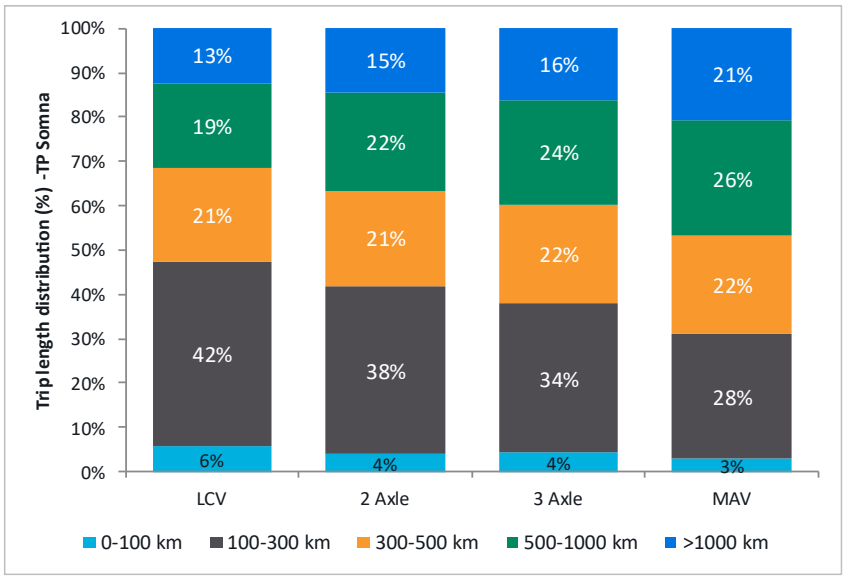
Figure 3-14: Trip length distribution TP1



Source: Steer analysis of OD data

3.63 It is observed that TP1, being closer to urban centres of Sikandrabad, Khurja and Ghaziabad, has a higher share of short distance local trips i.e., travelling within 300kms compared to TP2. The trend is similar in higher vehicle categories as well where one of the trips end is in the Asset region (within Delhi, UP or Haryana). In contrast, TP2 has a comparatively higher share of long-distance trips (i.e., more than 300kms) as evidenced in Figure 3-15 below. These long-distance trips primarily move between Delhi, Haryana and Punjab towards eastern UP regions of Kanpur and further towards north-eastern states such as West Bengal and Bihar.

Figure 3-15: Trip length distribution TP2



Source: Steer analysis of OD data

and time information for driving under various scenarios can be extracted using macro-enabled Excel, R, etc.

Conclusions

3.64 In summary, both TP1 Luharli and TP2 Somna witnessed strong growth in both total and tollable traffic in FY26 due to combination of factors including the impact of increased LoS across the full NH91 corridor from Delhi to Kanpur through (1) the 6 lane expansion of the Asset by October 2023, and (2) completion of 4-laning on the Kanpur-Aligarh stretch of the NH91 by H2FY24. Another contributor to the increase in volumes in FY26 is the temporary diversion of a small volume of traffic destined towards Palwal to cross the plaza due to the closure of NH334D and Aligarh Bypass

3.65 The TVC analysis confirmed the reliability of the Toll Management System (TMS) data, with minimal variation between TVC and TMS counts (1.5% at TP1, (0.4%) at TP2). These differences are within acceptable limits, validating the use of TMS data for base year traffic estimates.

3.66 The OD analyses highlighted significant local influence, particularly at TP1, where local trips form the largest share for most vehicle types as it serves demand being generated by the industrial regions of Dadri, Sikandrabad and Ghaziabad. TP2 on the other hand, shows a greater influence from the 'Rest of State'. MAVs exhibit higher 'local' influence than typical long-distance corridors, suggesting dependence on the regional economy and nearby industrial hubs (such as the Sikandrabad industrial area). Key commodities observed on the Asset include construction materials, manufacturing goods, metals, petroleum and agricultural produce.

3.67 The overall characteristic of the Asset is strategic in nature connecting several key urban and economic activity centres of New Delhi, Ghaziabad, Sikandrabad, Khurja, and Aligarh in the immediate vicinity with wider generators and attractors in Western-Uttar Pradesh, Punjab, Kanpur and Lucknow region, Bihar, and West Bengal also being connected by the Asset. High population density and contiguous development of urban centres are drivers for healthy CJV and Bus traffic growth on the Asset as well.

4 Socio Economic Context

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the Asset is in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions of the region where the Asset is located and conditions on a national scale. These include:

- Changes in factors such as population, economic growth (regional and national) and industrial production; and,
- Other local factors such as strategic port growth, and growth in local industries near the Assets.

4.2 In turn, the change in the competitive position of the Asset (and thus of the traffic capture it will achieve) derives from how the service offered and the prices charged on the Asset change in comparison to competing roads; and whether any new competing road facilities are available.

4.3 In this chapter, we assess the socio-economic indicators relevant to traffic growth on the Asset.

Population growth

National Level

4.4 The total population in India has grown at a Compound Annual Growth Rate (CAGR) of 1.5% since 2000, decreasing over the years, as shown in Table 4.1 below. The World Bank forecasts this growth to decrease to 0.6% CAGR by the 2030-45 period.

Table 4.1: CAGR of population in India

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
1970 – 1985	2.3%	1.9%	3.8%
1985 – 2000	2.0%	1.7%	2.9%
2000 – 2015	1.5%	1.0%	2.6%
2015 – 2030*	1.0%	0.3%	2.3%
2030 – 2045*	0.6%	-0.3%	1.9%

Source: World Bank Data on Health Nutrition and Population Statistics, *forecast population growth

State Level

4.5 Table 4.2 shows the evolution of population in the state of Uttar Pradesh and Delhi (containing the Asset), compared to that of the country.

4.6 As the tables show, the populations of both Uttar Pradesh and Delhi have grown at a faster pace, compared to that of India between 2012-2024. As of FY24, Uttar Pradesh holds an 8.1% share in India's population, while Delhi has a 3.8% share.

Table 4.2: Population Growth in Uttar Pradesh, Delhi and India (2012-2024)

State	2012 Population (m)	2024 Population (m)	CAGR (2012 – 2024)
Uttar Pradesh	201.5	237.0	**1.4%**
Delhi	17.0	21.6	**2.0%**
India	1,210	1,395	**1.2%**

Source: National Institution for Transforming India (NITI Aayog) – Census Data

4.7 Due to the complexities of patterns of urbanisation, and the very dynamic nature of local population migration (which are very difficult to forecast with accuracy), we do not use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide the underlying socio-economic context of the state/trends in the regions in which the Asset is located.

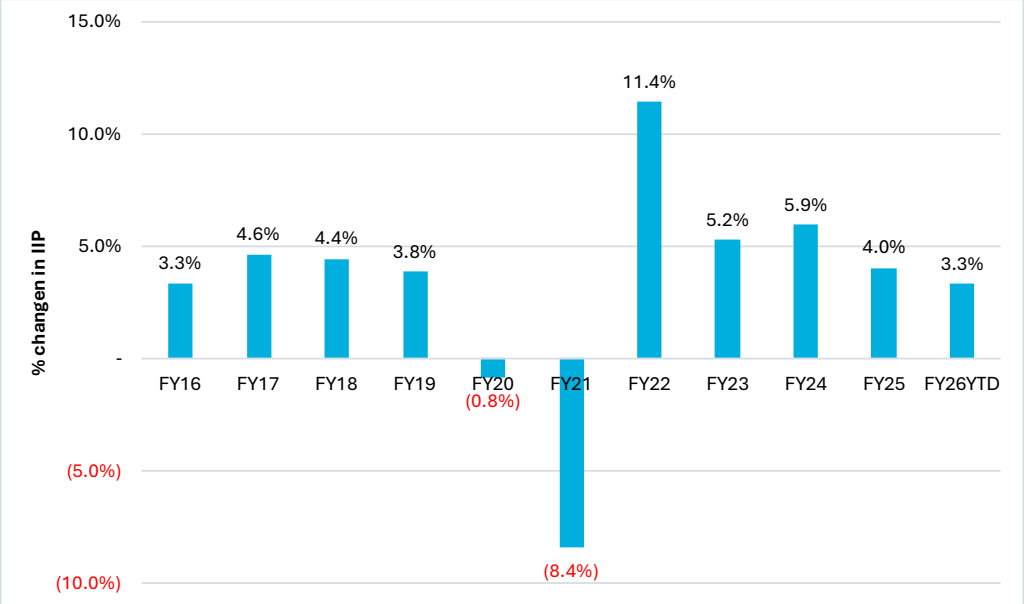
Economic Indicators

Industrial Production

4.1 The Index of Industrial Production (IIP) is a composite indicator that measures the short-term changes in the volume of production for a basket of industrial products. The IIP data tracks the manufacturing activity in different sectors of an economy, with mining, manufacturing, and electricity being the three broad sectors constituting the IIP.

4.2 The figure below shows that at an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20. In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. Post the immediate recovery in FY22, IIP growth has since stabilised, with FY25 recording 4%, and FY26YTD (till February 2026) recording 3.3% growth over FY25

Figure 4-1: Annual growth – Index of Industrial Production (FY16-FY26YTD)



Source: Ministry of Statistics and Program Implementation (MoSPI). FY26YTD represents data till Feb'26

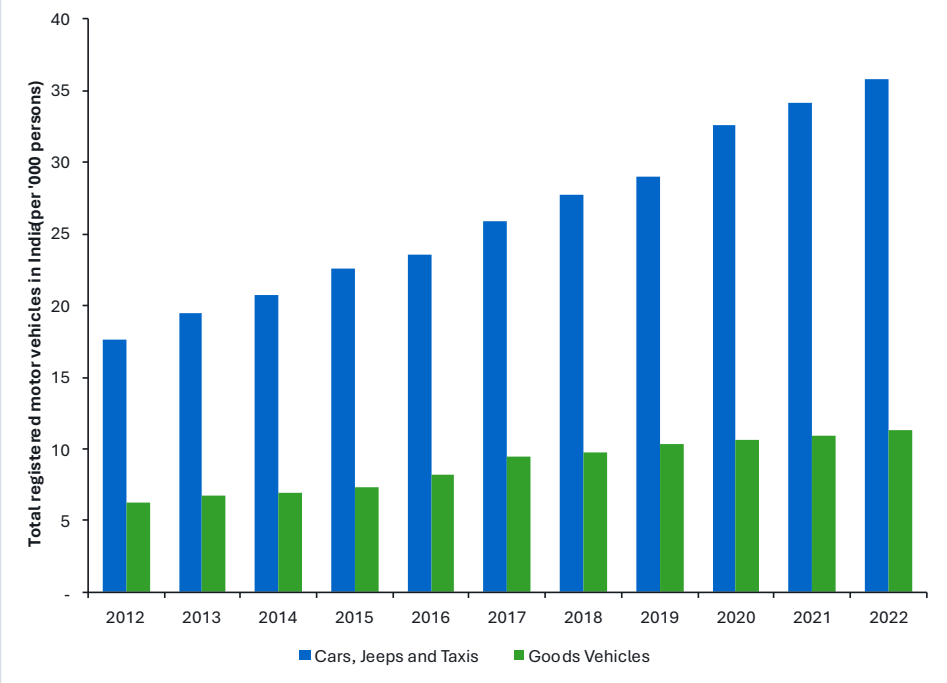
4.3 Since state-level IIP data is not as readily available as national-level IIP, we have presented national IIP here to indicate nationwide activity in key industrial sectors like power, manufacturing, and mining, all of which influence long-distance commercial movements across the nation, and not unique to this asset. We however, do not use it to forecast future travel demand growth since long-term forecast for IIP is not available through official sources such as MoSPI, RBI or through multilateral organisations like WB, or the IMF.

Vehicle Ownership

4.4 The gap in car ownership between India and developed nations remains substantial – with 36 cars/jeeps/taxis and 11 commercial vehicles per thousand people, as of FY22 (the latest year for which official data is available). However, with increasing per capita income levels, a booming economy and the subsequent increase in demand for mobility, the number of registered vehicles has been on a gradual upward trend

4.5 Overall, India still stands at a very nascent stage in the vehicle saturation curve, offering huge potential for growth going forward. Between FY12 and FY22, the CAGR for CJV and goods' vehicles registered in India was 8.6% and 7.3% respectively

Figure 4-2: Total number of registered motor vehicles in India (per 1000 population



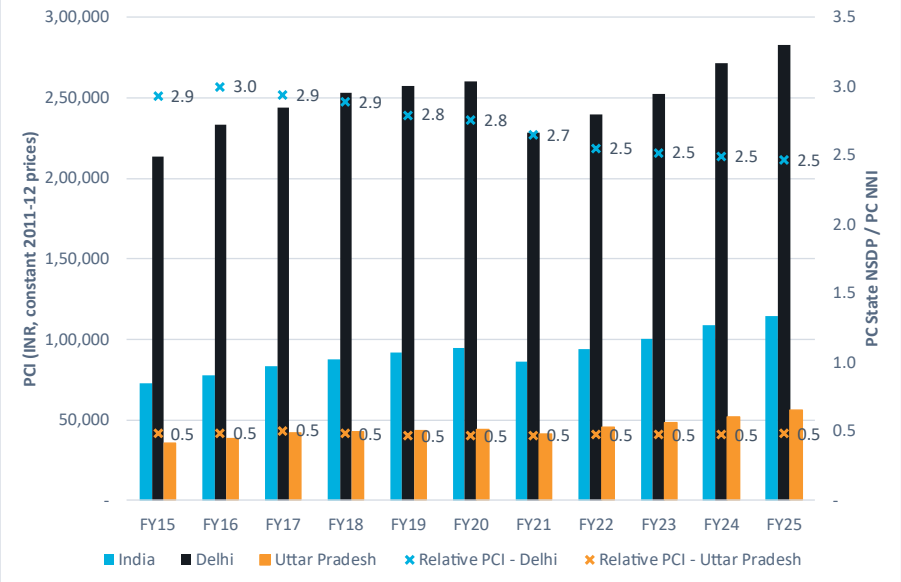
Source: Ministry of Road Transport and Highways (MoRTH)

Per Capita Income (PCI)

4.6 The Asset lies in Uttar Pradesh and Delhi. As shown in Figure 4-3 below, since FY15, the per capita income of Uttar Pradesh has been at roughly 40-50% of the national average. In contrast, the per capita income of Delhi has consistently been much higher – varying between 2-3 times the national average over the period FY15-FY25.

4.7 Traffic on the Asset is influenced by both Delhi and Uttar Pradesh – specifically, the western region of UP, which has grown at a faster rate than the rest of the state in recent years and is expected to continue this trajectory (as discussed in 4.21 below). The higher per capita income of Delhi and the higher growth in western UP indicates sustained economic growth in the region, driving traffic growth on the Asset over time.

Figure 4-3: Relative Per Capita Income (FY15-FY25)



Source: Steer Analysis of MoSPI data

Economic growth

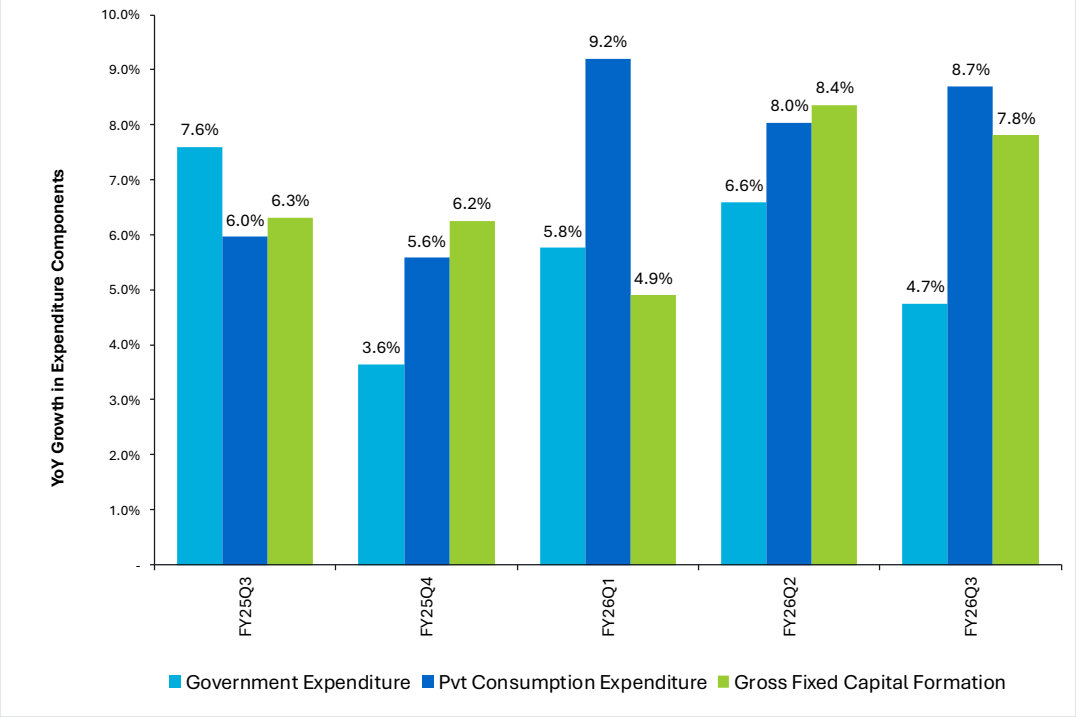
India's Performance

4.8 Following a slowdown in the economy during H1FY25, the Indian economy has observed strong growth each quarter since FY25Q2, with the latest published estimates for FY26Q3 GDP at 7.8% over FY25Q3. This performance has been driven by strong growth in investment and consumption expenditures and higher consumer optimism for the year ahead[7].

4.9 The figure below, we present quarterly Y-o-Y growth in three major components of GDP – government expenditures, consumption expenditures, and business investment (gross fixed capital expenditure) over the past year (FY25Q3-FY26Q3).

[7] Gov**ernment of India PIB Release (27th February 2026)**

Figure 4-4: YoY growth in expenditure components of GDP

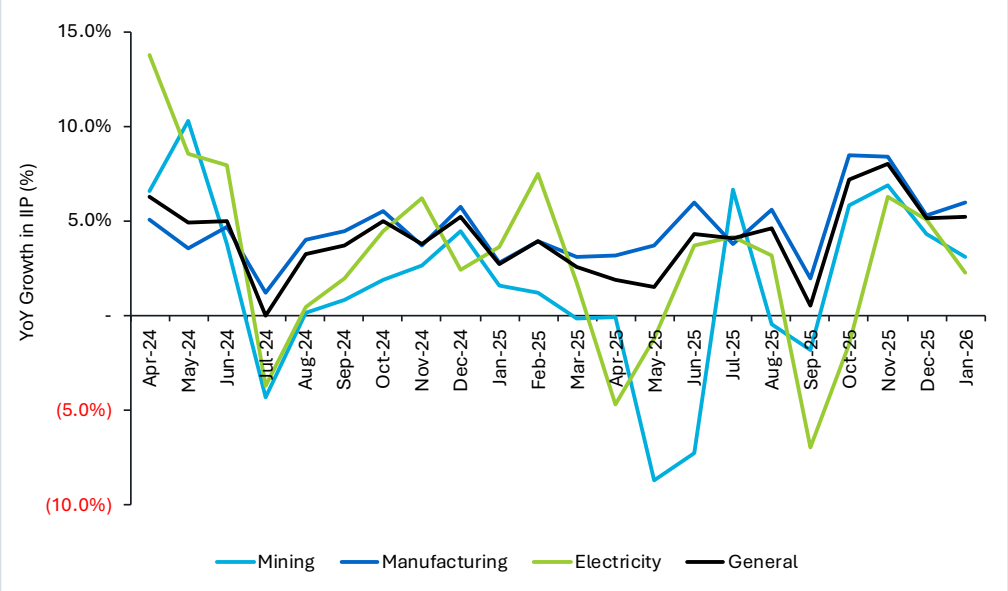


Source: Steer Analysis of MOSPI Data

4.10 While consumption and investment expenditures have continued to show consistent growth over the past two quarters, government expenditures observed a marginal decline in FY25Q4. In FY26Q1, government expenditures rebounded, recording 5.8% growth over FY25Q1 levels.

4.11 Performance across different types of industrial activities (such as Mining, Manufacturing, and Power Generation) directly impact freight movement and commercial traffic volume growth across the country, including on the Asset. In the figure below, we present growth trends in IIP – a measure that tracks the performance of the economy across these activities. As of FY26YTD (Apr'25-Feb '26), the Manufacturing sector continues to perform strongly, recording positive y-o-y growth since FY25Q3. While industrial activity across the two other sectors (i.e., Power Generation and Mining) dropped between May and Jun/Jul '25, they have since rebounded and show signs of continued growth going forward.

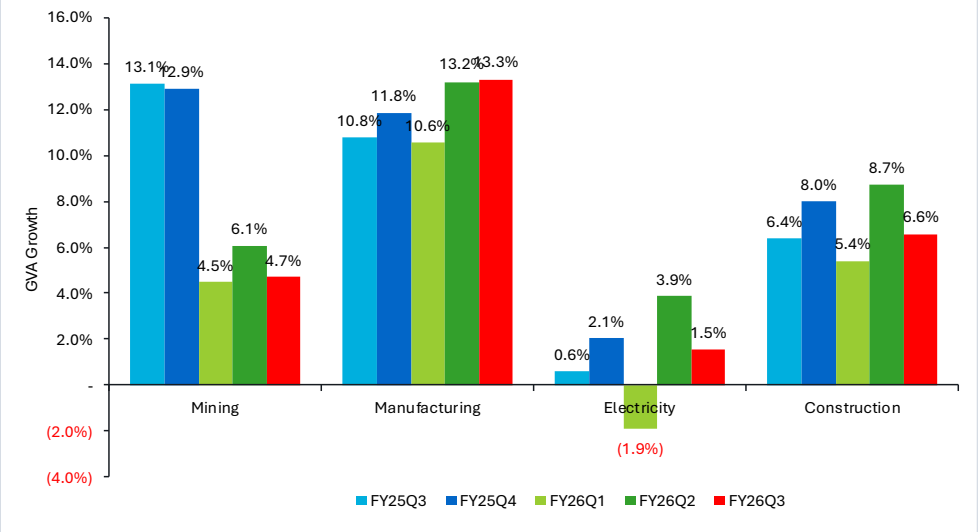
Figure 4-5: Month on Month IIP performance



Source: Steer Analysis of MOSPI Data

4.12 In addition to monthly trends in IIP, the figure below presents y-o-y growth of quarterly GVA in four industrial sectors - Mining (& Quarrying), Manufacturing, Electricity (and other Utilities), and Construction. While the Mining and Power sectors observed decline and muted growth in FY26Q1, the Manufacturing and Construction sectors experienced strong growth. While overall economic growth has remained resilient as of FY26YTD, performance across industries have varied, impacting economic growth across different regions and on the Asset as well.

Figure 4-6: Industrial components of GVA



Source: Steer Analysis of MOSPI Data

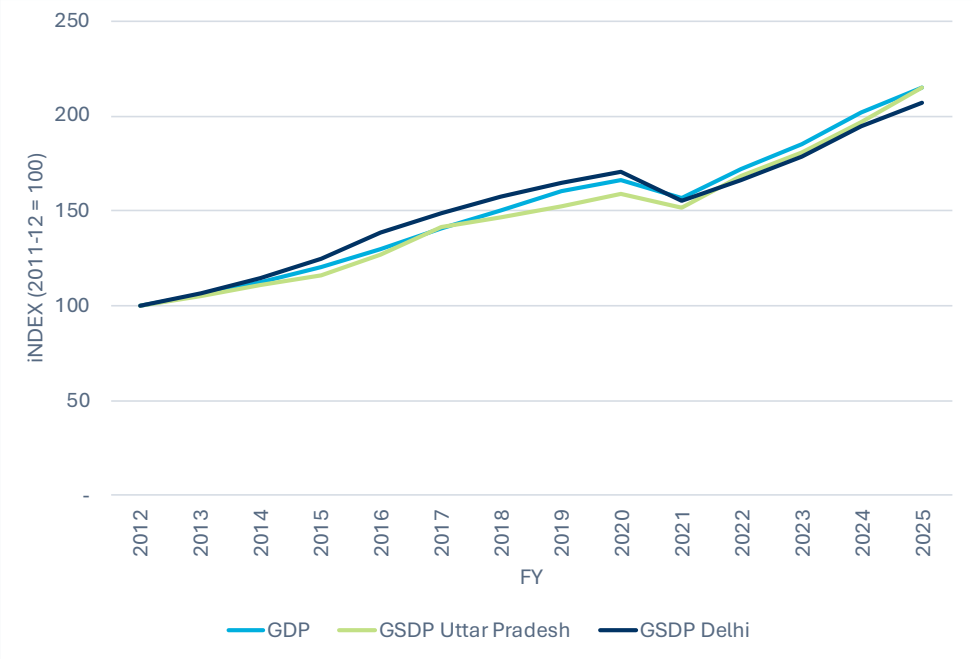
GDP and GSDP Growth

4.13 Figure 4-7 below presents historical growth in Delhi and Uttar Pradesh GSDP, and the GDP of India. Between the period of FY12 and FY25, the Indian economy grew at a CAGR

of 6.1% per year – aided by strong growth in the services/tertiary sector, which grew at a CAGR of 6.9%per year over the same period. UP GSDP and Delhi GSDP grew at 6.1% and 5.8% per year (respectively) between FY12 and FY25 – in step with the national economy.

4.14 As shown in Table 4.2 above, Delhi and UP respectively accounted for 1.5% and 17% of national population in FY24. In terms of national economic contribution, Delhi and Uttar Pradesh contributed approximately 4% and 8% respectively to India's GDP in FY24. Therefore, Delhi's per capita GDP contribution in FY24 far exceeded the same for UP statewide, highlighting the importance of the region in driving consumption demand and regional traffic growth near the Asset.

Figure 4-7: Evolution of Delhi's and Uttar Pradesh's GSDP and national GDP



Source: Ministry of Statistics and Program Implementation (MoSPI)

Economic activity in the state

Uttar Pradesh

4.15 Uttar Pradesh is the most populous state in India with a population of ~237 million people (as of FY24). The state has a large pool of skilled, semi-skilled and unskilled labour. A shown in Figure 4-8 below, the tertiary sector has the highest sectoral contribution (49%) to the state GSVA followed by the secondary (28%) and primary (23%) sectors, as of FY25.

4.16 Uttar Pradesh is considered one of the primary tourist destinations in India, with key tourist attractions being Agra, Varanasi, Mathura and Prayagraj. The state recorded a tourist footfall of 64.90 crore in 2024, a significant increase of over 17 crore in 2023, as per Union Ministry of Tourism[8]. Overall, Uttar Pradesh had an 8.2% contribution to national GDP as per FY24 data by the Ministry of Statistics and Program Implementation.

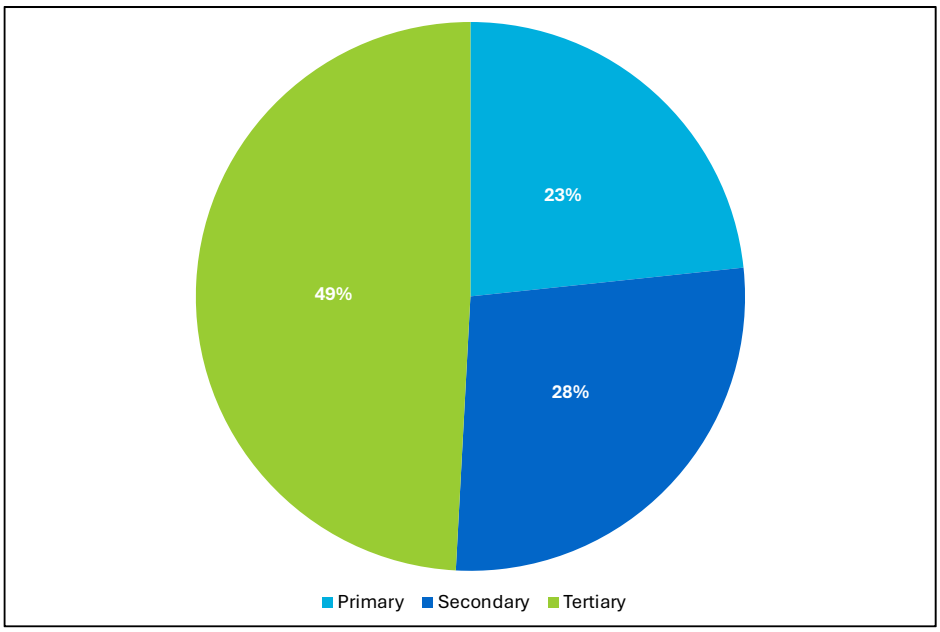
4.17 In terms of secondary sector, the state has key industrial areas in Khurja (Ceramic); Moradabad (Metals); Meerut, Bareilly, Mirzapur and Lucknow (Handloom & Handicrafts);

[8] up-sees-65-crore-tourists-in-2024-over-17-crore-more-from-2023

and Kanpur and Noida (Leather and tannery). The state also has an oil refinery in Mathura, operated by Indian Oil Corporation.

4.18 Uttar Pradesh has very fertile Gangetic land with a large share of population dependent upon agriculture sector for the livelihood. The key primary industries in the state include crop production and horticulture. The state is mainly known for production of wheat, sugarcane, potato and mango.

Figure 4-8: Sectoral contribution to Uttar Pradesh's GSDP as of FY25



Source: Steer Analysis of MoSPI data

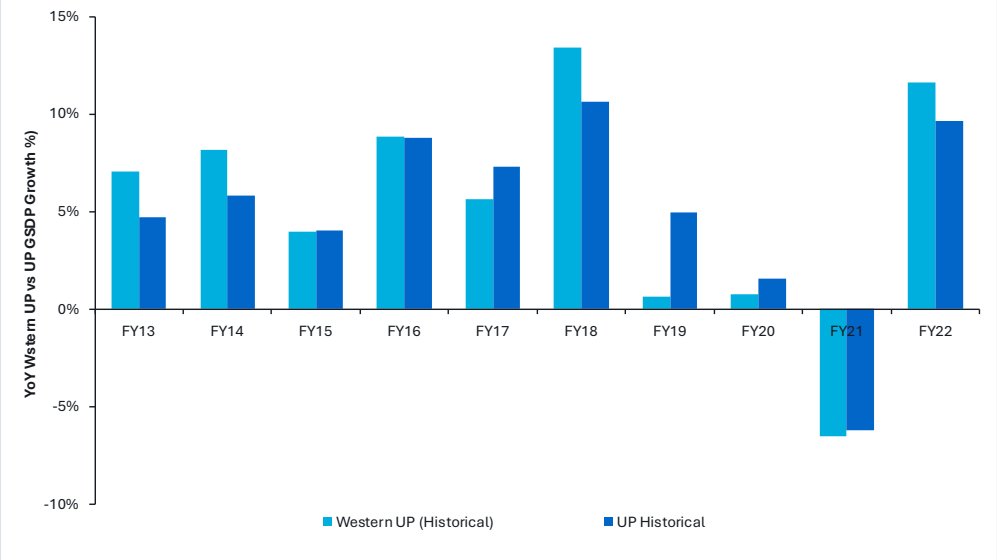
Western UP vs UP GSDP Growth

4.19 Since FY13, growth of Western UP GSDP[9] has remained relatively stable, and in line with UP statewide GSDP growth. In Figure 4-9 below, we see that between FY13 and FY22, GSDP growth in Western UP exceeded that of UP overall in 5 of the 10 years (FY13, FY14, FY18, FY21 and FY22), was consistent with UP in 2 of the 10 years (FY15 and FY16), and was below UP GSDP growth in 3 of the 10 years (FY17, FY19 and FY20). While UP statewide growth is largely influenced by Western UP, in recent years (FY21-22), Western UP GSDP has exhibited growth more sensitive than statewide trends.[10]

[9] The Western UP region consists of 30 districts, prominent among which are Ghaziabad, Gautam Budh Nagar, Agra, Meerut, Mathura and Bareilly. Historically, this collective region has been the more economically developed part of Uttar Pradesh, and as of FY22 accounted for half of the statewide total GSDP.

[10] Steer analysis of data sourced from the Directorate of Economics and Statistics, Uttar Pradesh (**UPDES website**)

Figure 4-9: Western UP vs UP GSDP Growth



Source: Directorate of Economics and Statistics, Uttar Pradesh

4.20 This can be explained due to a combination of policy- and market-driven factors which have contributed to higher growth in the Western region of the state. Some of these major developments pertaining to large-scale infrastructure investments in the region include:

- Delhi – Meerut Expressway[11]
- Ganga Expressway [12]
- Noida International Airport (Jewar Airport) [13]
- Logistics hub in Agra, by the Agra Development Authority [14]
- 'New Noida' initiative by the Uttar Pradesh government [15]

4.21 Between FY12–FY25, the GSDP of Uttar Pradesh grew at a CAGR of 6.1% per year. Over the same period, national GDP grew at 6.1%[16] per year, implying that the long-term elasticity factor of UP GSDP growth to national GDP growth is roughly 1. In this context, as Western UP has exhibited more elastic growth relative to UP state overall in recent years, as well as expectations of strong near-term growth in the Western region driven by large-scale infrastructure and commercial investments, we have assumed the near-term growth forecast for Western UP to be similarly elastic to India's GDP growth forecast.

4.22 Figure below presents the Client-provided forecasts of national (India) GDP growth from FY26 to FY45, and our assumed GSDP forecast for Western Uttar Pradesh over the same period. In the short term, we have assumed GSDP of Western UP to grow at 1.2 times that of national GDP growth forecast, eventually tapering down to a factor of 1.0 over time as it converges to the national growth rate forecast by FY45.

[11] https://timesofindia.indiatimes.com/city/meerut/gadkari-lays-foundation-of-highway-projects-worth-rs-11595-crore-in-west-up/articleshow/68086587.cms?

[12] 28 Flyovers, 126 Bridges, 600km In 6 Hours: Ganga Expressway Set To Open Soon; Check Route - News18

[13] Noida's Jewar Airport, Set To Be Asia's Largest, Will Open In April 2025; PM Modi To Inaugurate | Times Now

[14] Proposal for Rs 570 crore state-of-the-art logistics hub in Agra approved - India Today

[15] New Noida: UP govt approves massive housing and infrastructure development plan | Key details | Business News – India TV

[16] Steer analysis of MoSPI data

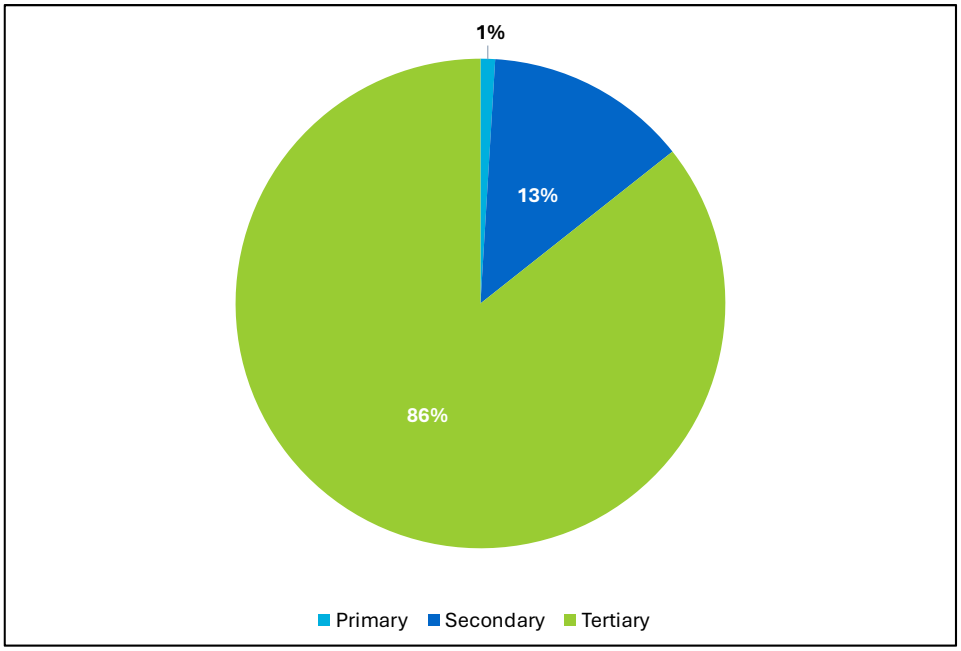
Delhi

4.23 Delhi, the capital city of India, is one of the largest metropolises in the country. In terms of the GSVA composition of Delhi, as shown in Figure 4-10, the tertiary sector has the highest share (86%) followed by the secondary sector (13%) as of FY25.

4.24 The biggest contributors to the tertiary sector in Delhi are tourism, trade, financial services and real estate. Owing to its location, connectivity and rich cultural history, Delhi has always been a prime tourist attraction of the country with key tourist places being India Gate, Lotus Temple, Humayun's Tomb and Akshardham. The Indira Gandhi International Airport of Delhi serves both domestic and international passengers and as of 2024, it was the tenth-busiest airport in the world[17], catering to approximately 72.2 million passengers.

4.25 In terms of secondary sector, NCT of Delhi has key industrial clusters at Narela, Naraina, Okhla and Mayapuri. The primary/agricultural sector accounts for a small share of Delhi's GSVA.

Figure 4-10: Sectoral contribution to Delhi's GSDP in FY25



Source: Steer Analysis Ministry of Statistics and Program Implementation (MoSPI) Data

Forecasts for growth drivers

4.26 Following the discussion in Chapter 4 on the nature of economic activity in the state of Western Uttar Pradesh and in Delhi, in this section, we describe the assumptions in relation to forecasts of the key macro-economic drivers of traffic growth on the Asset.

4.27 We have based our forecasts of the GSDPs for Western Uttar Pradesh and Delhi based on the forecasts of the GDP of India as provided by the client.

[17] Delhi's IGI airport is the 10th busiest airport in the world: Report | World News - The Indian Express

National GDP

4.28 After the last period of economic slowdown in FY11-12, the country experienced an economic downturn again in late FY19 with FY20 having reported a GDP growth of 4% (relative to an average growth rate of 7% per year between FY13 and FY19). India's GDP growth declined as domestic investment and consumption demand were already under stress because of the liquidity crunch before Covid-19. Other factors that contributed to the economic slowdown included reduced growth rates in automobile sales and production, liquidity crunch in credit markets and rising number of Non-Performing Assets (NPAs) within the banking sector, as well as lower manufacturing production and lower rural consumption.[18]

4.29 The Covid-19 outbreak had a significant impact on the Indian economy during the first two quarters of FY21 as government mandated lockdowns across the country effectively stalled economic activity and growth. The growth momentum eventually picked up in Q3 of FY21, with a sharp rebound in the economy in FY22 (GDP recorded 9.7% growth over FY21) and has since observed a consistent growth of 7.6% in FY23 and 9.2% in FY24, before showing signs of slowdown again in FY25 due to several domestic and external factors. Since H2FY25, the economy has shown strong growth, driven by improved consumer optimism, and growing consumption and investment demand.

4.30 Figure 4-11 below shows Client-provided GDP projections for India. The forecast projects the GDP of India to grow at an average of 6.3% between FY26-FY30 and 5.8% between FY31-FY44, gradually tapering down to 5.2% by FY50. The GDP growth forecast is broadly in line with other independent forecasts available from reliable sources such as IMF, World Bank and RBI[19] in the medium term.

4.31 We assume the GSDP growth of Delhi to be in line with India's GDP growth throughout the concession period. For our forecast of the GSDP growth of Uttar Pradesh, we have considered the growth expectations for the western region of UP – as opposed to UP state-wide, due to the location of the Asset in the western region of UP. Additionally, we have assumed the GSDP growth of western UP to higher than that of the GDP of India going forward, across the concession period.

4.32 In particular, we expect it to grow at 1.2 times the GDP of India in the short-term, tapering down to be in line with national GDP growth by FY45. This assumption is based on the recent performance of the GSDP of western UP relative to statewide GSDP growth (as discussed in detail in 4.19 above), as well as expectations of continued investment and economic growth in the region owing to a variety of factors.

4.33 There are significant investments expected to take place as part of the UP and Delhi state/regional government plans over the near to medium term (as described in 4.20 above). Given its leading position in industrial investments, western UP is expected to benefit significantly from these future investment plans. In this context, we believe it is

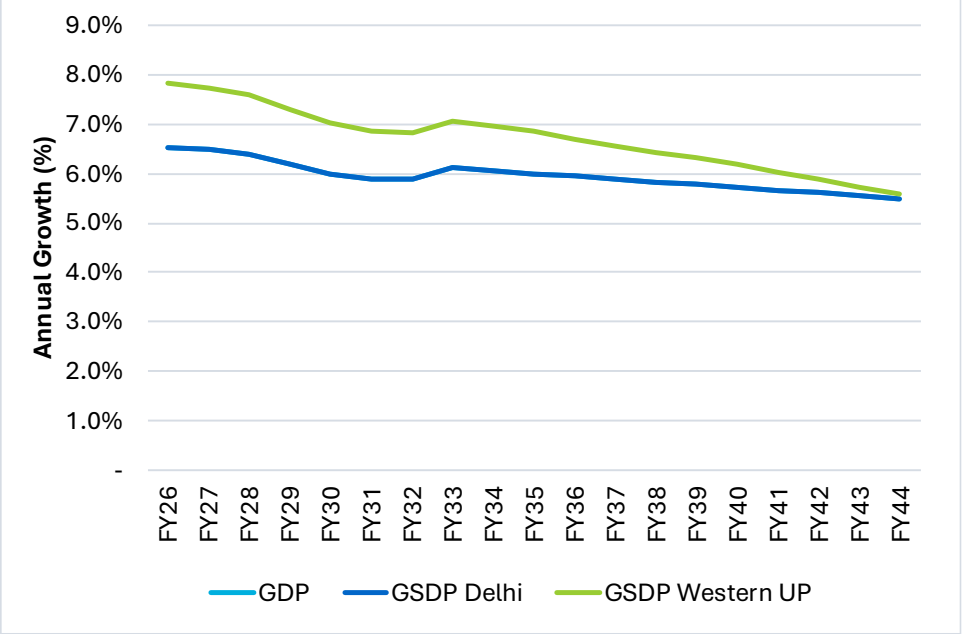
[18] **Data | India's GDP was on a downward slope even before COVID-19 wreaked havoc - The Hindu** (September 2020)

[19] **Survey of Professional Forecasters on Macroeconomic Indicators – Results of the 96th Round (Oct 2025)**

reasonable to assume that Western UP will observe more robust economic growth over the near and medium term relative to UP state overall, and national GDP growth.

4.34 Figure 4-11 below shows the assumed growth forecasts for Western UP and Delhi GSDP, and the GDP of India.

Figure 4-11: GDP-GSDP forecast



Source: GDP and GSDP forecast provided by Client, GSDP analysis by Steer based on historical GDP and GSDP relationships

5 Traffic growth analysis

Introduction

5.1 In this section, we present our approach, assumptions, and results for base (or background) traffic growth for each vehicle category on the Asset.

5.2 Traffic growth is commonly related to a variety of macro-economic and industry- or commodity-specific factors (hereafter referred to as 'traffic growth drivers'). These growth drivers are typically identified from the results of the OD data analysis and the site visits that help us appreciate the nature of traffic movement – 'what' travels 'where' and 'why'.

5.3 To understand the historical traffic trends in relation to these growth drivers, we carried out regression analyses to determine the historical relationship between each major vehicle category and its macroeconomic growth driver at each toll plaza. The dynamics of traffic demand is the dependent variable while the dynamics of one or more identified growth drivers are the independent or explanatory variables.

5.4 Typically, passenger and light commercial vehicle traffic like cars, buses, LCVs and 2-axle trucks grow in line with the GSDP of the state in which the toll road is located. Heavy vehicle traffic like 3-axle trucks and MAVs grow in line with the national GDP. This is because most light vehicles tend to travel shorter distances within the state, whereas heavy vehicles typically carry commodities over long-distances across the country. These commodities also tend to be part of industry ecosystems whose demand-supply relationships are scattered across the country and therefore relate more with GDP growth than more local or regional growth drivers.

FY26 Base year AADT estimates

5.5 The base year is the year on which long-term background forecast growth rates are applied to derive year-wise average annual daily traffic (AADT) estimates for forecast years. This is therefore an important aspect of our forecasting approach as traffic and ultimately revenue forecasts for future years are built on top of the base year traffic estimate. For this traffic study, we have used FY26 as the base year for generating or future year traffic forecasts for the Asset.

5.6 To establish the base year (FY26) traffic position, we utilised information from various sources including historical traffic data from the Client (FY25 and FY26YTD), latest information on FY26 estimated GDP and GSDP growth (as published by official sources), as well as our own contextual knowledge of the region and wider economy, and transportation network the Asset forms a part of.

Methodology

5.7 The base traffic for FY26 has been estimated using 11 months of actual traffic data (April to February). Each toll plaza's seasonality correction factors were applied on the actual MADTs of Apr-25 to Feb-26 to obtain seasonally corrected estimates for FY26 traffic. An average of these estimates is considered to be the FY26 base traffic.

Seasonal Correction Factors

5.8 Traffic on any Asset varies on a month-on-month level. Such variations maybe due to monsoons (typically Jul to Sept) or due to festivals in the region. E.g., it is observed that typically the truck traffic during the first half of the financial year (April-September) is generally lower than the annual average, mainly because of peak summer season followed by monsoons affect the freight movement patterns in large parts of the country in the July-September period. In addition to these, there may be other seasonal variations specific to the Asset.

5.9 To normalise for these variations across the year when estimating AADT, Seasonality Correction Factors (SCFs) are used. SCFs are estimated to convert the monthly traffic numbers to an AADT level while accounting for seasonal variation due to local/national festivals, weather changes and/or temporary external impacts. These are typically estimated using historical data for each plaza and vehicle category over multiple years. An SCF greater than one implies that the traffic for that month is lower than the annual average and vice-versa.

5.10 Table 5.1 and Table 5.2 below present the average of FY23 and FY24 SCFs (TP1) and FY23 SCFs (TP2), used for the estimation of our FY26 base traffic position.

Table 5.1: Seasonality correction factors for TP1-Luharli

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.04	0.98	1.00	1.12	1.05	1.10	1.06	0.96	0.98	1.06	0.88	0.96
LCV	0.95	0.97	0.98	0.98	0.98	1.01	1.03	1.01	1.03	1.10	0.97	1.02
Bus	1.02	0.97	0.98	0.96	0.97	1.05	1.03	0.94	1.04	1.20	0.98	0.92
2A	1.18	1.14	1.09	0.96	0.98	0.99	0.97	0.92	0.96	1.04	0.92	0.93
3A	0.99	1.04	1.04	0.93	1.00	1.04	1.05	0.95	1.00	1.11	0.95	0.94
MAV	1.10	1.15	1.04	1.03	1.03	1.05	0.91	0.86	0.92	1.06	0.96	0.98

Source: Steer analysis of Client TMS data

Table 5.2: Seasonality correction factors for TP2-Somna

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	0.94	0.88	0.91	1.02	1.04	1.21	1.05	1.03	0.99	1.09	0.84	1.09
LCV	0.95	0.98	0.98	1.04	1.08	1.08	1.12	0.95	0.94	1.02	0.89	1.00
Bus	0.98	0.93	0.98	1.05	0.95	1.07	0.99	1.00	1.06	1.13	0.99	0.93
2A	1.08	1.06	1.05	1.10	1.04	1.00	0.99	0.95	0.95	1.02	0.89	0.91
3A	0.99	1.02	1.06	1.07	1.05	1.00	0.96	0.89	0.94	1.10	1.00	0.98
MAV	1.18	1.19	1.13	1.13	1.05	1.04	0.87	0.78	0.86	1.03	0.97	0.99

Source: Steer analysis of Client TMS data

Adopted base estimates

5.11 Based on the above methodology and inputs, the adopted base for both the toll plazas has been shown in Table 5.3 and Table 5.4 below:

Table 5.3: Adopted Base AADT, TP1 Luharli plaza

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	19,243	25,372	25,686	33.5%
LCV	1,461	1,607	1,610	10.2%
Bus	1,939	2,166	2,192	13.1%
2A	1,722	1,922	1,941	12.7%
3A	662	709	714	8.0%
MAV	2,400	2,593	2,593	8.0%
OSV	1	1	-	
Total	**27,428**	**34,370**	**34,736**	**26.6%**
PCU	**43,413**	**51,906**	**52,373**	**20.6%**

Source: Steer analysis; FY26YTD includes 11 months of FY26 (Apr – Feb'26), FY26A is adopted base for FY26

Table 5.4: Adopted Base AADT, TP2 Somna Plaza

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	7,154	9,750	9,745	36.2%

	FY25	FY26YTD	FY26A	FY26A vs FY25
LCV	888	1,043	1,045	17.6%
Bus	1,280	1,463	1,475	15.2%
2A	1,408	1,675	1,690	20.0%
3A	663	692	694	4.6%
MAV	1,710	1,963	1,961	14.6%
OSV	1	1	-	
Total	**13,106**	**16,587**	**16,609**	**26.7%**
PCU	**24,964**	**30,174**	**30,245**	**21.2%**

Source: Steer analysis ; FY26YTD includes 11 months of FY26 (Apr – Feb'26), FY26A is adopted base for FY26

5.12 In PCU terms, the FY26A estimates show robust growth at both toll plazas, reflecting our assumption strong growth observed at both plazas through FY26 (Apr – Feb '26) is expected to continue through end of FY26. In PCU terms, we estimate TP1 and TP2 to grow by 20.7% and 21.2% (respectively) over FY25 levels.

5.13 Strong traffic growth on the Asset since FY24 is driven by the expansion of the Asset from four lanes to six lanes in October 2023, which significantly improved the Level of Service (LoS). Additionally, the four-laning of the NH91 Aligarh-Kanpur section, construction on nearby state roads (affecting Somna toll plaza), which extends east of the Asset towards Kanpur, has also improved highway conditions significantly, particularly for long-distance commercial movements.

5.14 Other contributing factors include better traffic reporting and compliance at TP1 from the check plaza that was operational between Aug'23 and Sept '24, continued operations of Wonder Cements' Aligarh Grinding Unit near TP2 since April 2023, the opening of the THDC Thermal Plant in Khurja (Unit 1) in January 2025, and most recently, the opening of Unit 2 in September 2025[20]. TP1, which was recently expanded from an 8-10 lane in-line plaza configuration to a 16-lane staggered (split) plaza configuration (July 2025) is also expected to improve travel times and curb leakage going forward.

Estimation of background elasticities

5.15 Elasticities, in the case of traffic growth, are the relationships between traffic growth and the growth in underlying macroeconomic drivers of traffic. Multiplied with forecasts of growth drivers like GDP or GSDP, they provide forecasts of background traffic growth.

5.16 Typically, we rely on national GDP as a growth driver for 3A/MAV trucks, given their characteristics of travelling across multiple states and carrying varied types of commodities which contribute to national GDP.

5.17 OD analysis reveals a strong link to Delhi and Uttar Pradesh, with approximately 92% of cars and 78% of MAVs at TP1, and 96% of cars and 74% of MAVs at TP2 having one end of their trip in these regions. This contributes to the fact that about 67% of all vehicle traffic

[20] Press Release:Press Information Bureau

on the asset travels within 300kms, suggesting traffic growth is significantly influenced by the Gross State Domestic Product (GSDP) of UP and Delhi. In contrast, the growth in traffic volume for 2-axle, 3-axle, and MAVs, which are key for transporting heavy commodities such as construction materials, manufactured goods, and metals, and make longer distance inter-state trips is more dependent on the national GDP growth.

5.18 Table 5.5 below presents the growth drivers identified to model the forecast background traffic growth rates.

Table 5.5: Identified growth drivers to model traffic growth

Vehicle type	TP1 Luharli			TP2 Somna		
	GDP India	GSDP Delhi	GSDP Western UP	GDP India	GSDP Delhi	GSDP Western UP
Car		30%	70%		22%	78%
LCV			100%			100%
Bus			100%			100%
2A	100%			100%		
3A	100%			100%		
MAV	100%			100%		

Source: Steer analysis of Client data; *

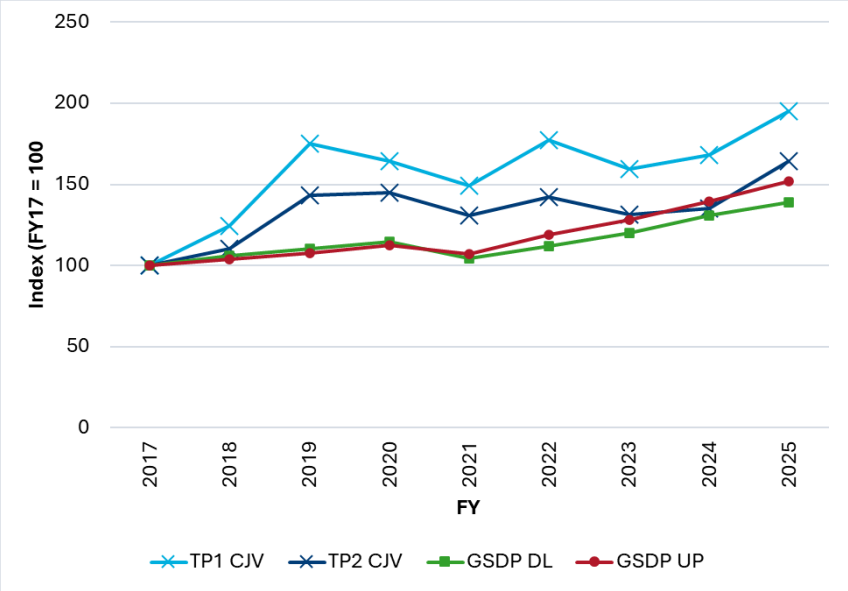
5.19 To understand the traffic growth on the Asset, we undertook regression analysis using traffic data over the period FY17-25 for all vehicle types at both the Asset toll plazas. However, since the Asset has shown variable growth trends every year since FY17, the results of the econometric regression analyses did not yield sufficiently reliable estimates of the elasticities to our assumed underlying growth drivers. We have therefore, analysed trends of each vehicle category and compared them with the growth of key drivers to arrive at assume elasticities, as described below.

CJV

5.20 We see from the OD data that the CJVs primarily cater to regional movements between Ghaziabad, Sikandrabad, Bulandshahr, Delhi, Aligarh and other towns lying on the Asset. In the period of FY17-24, Cars have grown by 6.7% at TP1 and 3.4% at TP2 per year, while the corresponding GSDP growth of Delhi was 1.9% and UP was 1.2% per year. In our understanding this is consistent with the Asset being closer to urban clusters of Delhi NCR and Aligarh, both of which are characterized by high per capita incomes, and levels of car ownership. Hence, we observe slightly higher growth of Cars (higher at TP1) with respect to GSDP.

5.21 Figure 5-1 below shows the relationship between the indexed values of CJV traffic and Uttar Pradesh GSDP at TP1 Luharli and TP2 Somna.

Figure 5-1: Relationship between CJV traffic and Delhi/Uttar Pradesh GSDP, TP1 and TP2



Source: Steer analysis of Client TMS data and publicly available GDP/GSDP data. CJV traffic includes reported exemptions.

5.22 Taking note of the positive outlook for passenger traffic on the Asset, regression results on earlier historical years and the urban nature of the Asset, we have assumed a forecast background elasticity of 1.1 for TP1 and 1.0 for TP2 Somna for CJVs going forward.

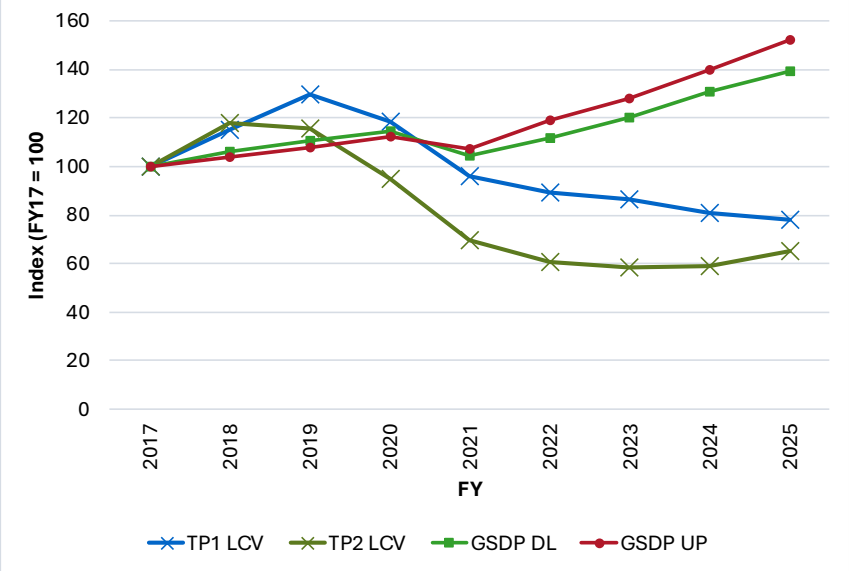
LCV, Bus & 2A

LCV

5.23 Prior to FY19-20, LCV growth on the Asset was strong. However, after FY20, axle load regulations switched in favour of 2A to carry higher tonnage of goods; this shift in preferences impacted LCV traffic growth across the country, and on the Asset as well. The impact of the Covid-19 pandemic in FY21 and reclassification LCVs into CJVs (Mini LCVs) post mandatory FASTag implementation in FY22 also resulted in degrowth of LCVs on the Asset since FY17. Since FY22 however, LCV volumes at both Asset plazas have observed muted or flat growth through FY25. Figure 5-2 below shows the relationship between indexed values of LCVs at both Asset plazas and Uttar Pradesh and Delhi's GSDP.

5.24 LCVs demonstrate more regional travel within Uttar Pradesh and Delhi NCR compared to 3A and MAV vehicles, as validated by the zonal distribution analyses above. As a result, the growth in LCVs at TP1 is modelled using the GSDP of both Uttar Pradesh and Delhi, while growth at TP2 is modelled using only the GSDP of Uttar Pradesh due to its closer proximity. We have assumed LCV will grow at a background elasticity of 0.5 for TP1 Luharli and 0.4 for TP2 Somna.

Figure 5-2: Relationship between LCV traffic and Delhi/Uttar Pradesh GSDP, TP1 and TP2



Source: Steer analysis of Client TMS data and publicly available GDP/GSDP data

Bus & 2A

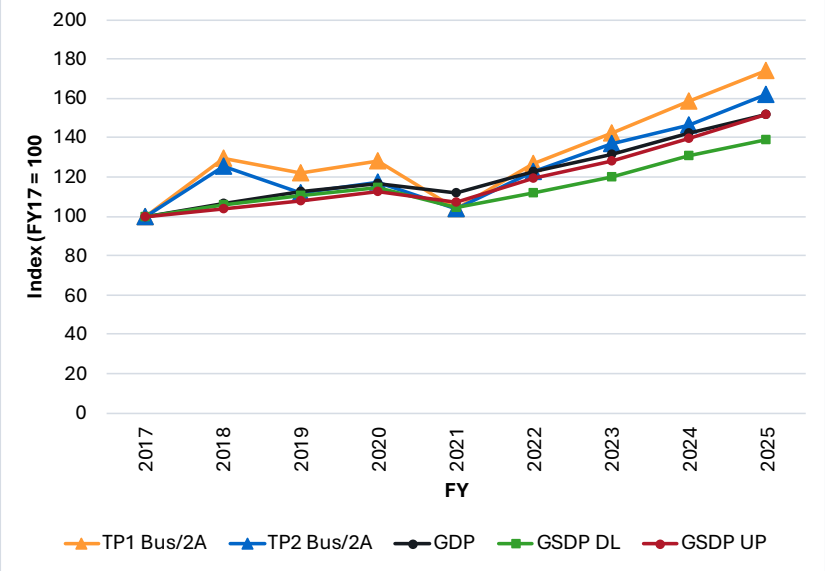
5.25 Bus growth tends to be largely supply-driven in many parts of the country, with new buses being bought and deployed by the government at different intervals of time. Based on our experience across the country, buses on inter-urban corridors show moderate elasticities of 0.4 to 0.6 with respect to the regional/state GSDP in which the asset is located.

5.26 Given that manufacturing-related commodities tend to take prominence in their commodity distribution, growth in 2A traffic is dependent on industry demand-supply ecosystems in the vicinity of the Asset and across the country. We have thus taken GDP as the growth driver to model the traffic growth in 2As. Compared to lighter trucks like LCVs, 2As have more national or long-distance movements covering several states.

5.27 Due to reporting issues (i.e., Buses and 2As being reported together prior to FY19), we present the relationship between the underlying growth drivers (i.e., GSDP Delhi, UP, and GDP) with the growth trend of the combined Bus/2A volumes in Figure 5-3 below. In terms of their split within the aggregate, Buses and 2As accounted for roughly 50% of the total at both toll plazas (53% of the total at TP1 and 48% of the total at TP2 in FY25).

5.28 Since FY17, Bus/2A volumes have exhibited robust y-o-y growth. Between FY17 and FY25, Bus/2A volumes grew at a CAGR of 7.2% and 6.2% at TP1 and TP2 respectively. Post the impact of the Covid-19 pandemic (FY21), and the mandatory implementation of FASTag (FY21-22), Bus+2A volumes have growth at CAGR of 9-10% per year (at both plazas) between FY23 and FY25. This growth is driven largely off the growth of 2As, as Bus volumes have witnessed a relatively muted growth profile over this period. Therefore, we have assumed an elasticity of 0.40 for Buses (with respect to Western UP/Delhi GSDP), and a more positive elasticity of 0.90 for 2As across both toll plazas on the Asset.

Figure 5-3: Relationship between Bus/2A traffic and Delhi/Uttar Pradesh GSDP and GDP, TP1 and TP2

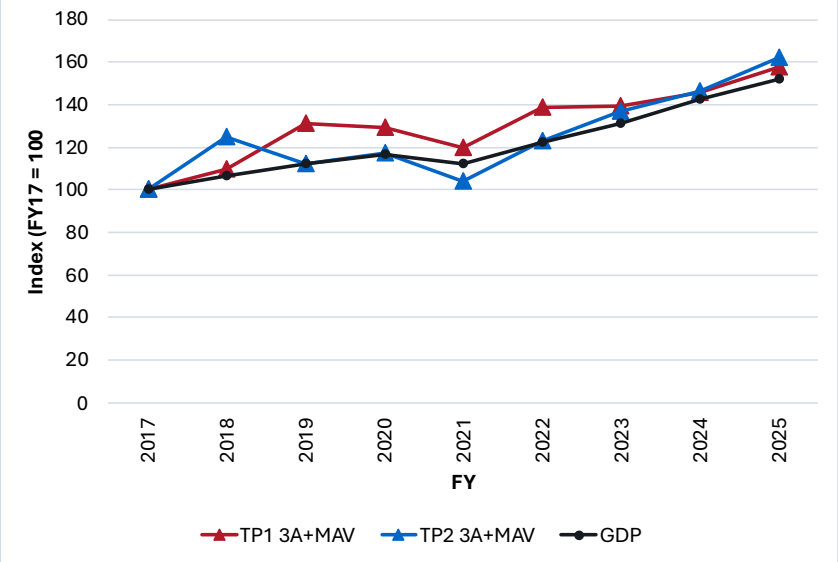


Source: Steer analysis of Client TMS data and publicly available GDP/GSDP data

3A/MAV Trucks

5.29 Given that manufacturing-related commodities tend to take prominence in their commodity distribution, growth in 3A and MAV traffic is dependent on industry demand-supply ecosystems in the vicinity of the Asset and across the country. We have thus taken GDP as the growth driver to model the traffic growth in 3As and MAVs. Compared to lighter trucks like LCVs, 3As and MAVs have more national or long-distance movements covering several states. Figure 5-4 below compares growth trends of 3As and MAVs at both TP1 and TP2 and India's GDP.

Figure 5-4: Relationship between 3A+MAV traffic and India GDP, TP1 and TP2



Source: Steer analysis of Client TMS data and publicly available GDP/GSDP data

Forecasts for background elasticities

5.30 Table 5.6 below presents a summary of the results of the regression analysis carried out on the historical toll plaza data and the macroeconomic (GDP/GDSP) growth, along with the assumed forecast elasticities for background traffic growth.

Table 5.6: Comparison of Derived Elasticities and Assumed Elasticities for Forecasting

Vehicle type	Growth driver	History		Forecast
		Derived elasticity	Years considered	Assumed forecast elasticity
TP1 Luharli				
Car	GSDP UP and Delhi	1.35	FY17-FY25	1.1 reducing to 1.0 by FY32
LCV	GSDP UP and Delhi	0.9	FY17-FY25	0.4
Bus	GSDP UP and Delhi	0.5	FY17-FY25	0.4
2A	GDP India	1.2	FY17-FY25	0.9 reducing to 0.8 by FY30
3A+MAV	GDP India	1.0	FY17-FY25	0.2 for 3A
				0.8 for MAV
TP2 Somna				
Car	GSDP UP	0.8	FY17-FY25	1.0 reducing to 0.9 by FY32
LCV	GSDP UP	N/A[21]	FY17-FY25	0.4
Bus	GSDP UP	0.6	FY17-FY25	0.4
2A	GDP India	1.0	FY17-FY25	0.9 reducing to 0.8 by FY30
3A+MAV	GDP India	N/A[21]	FY17-FY25	0.2 for 3A
				0.8 for MAV

Source: Steer analysis

5.31 In recent historical traffic performance across national highway corridors and as discussed in Chapter 3, a notable trend has emerged: there is a discernible shift in axle preference towards 2As and MAVs, resulting in a dampening effect on the growth of 3As. This trend is mirrored in the Assets performance as well, which has been discussed in detail in the subsequent sections. Due to these evolving axle preferences, it has been assumed that the relationship between 3As and GDP will be relatively muted, whereas 2As and MAVs are expected to grow more closely in line with the country's GDP.

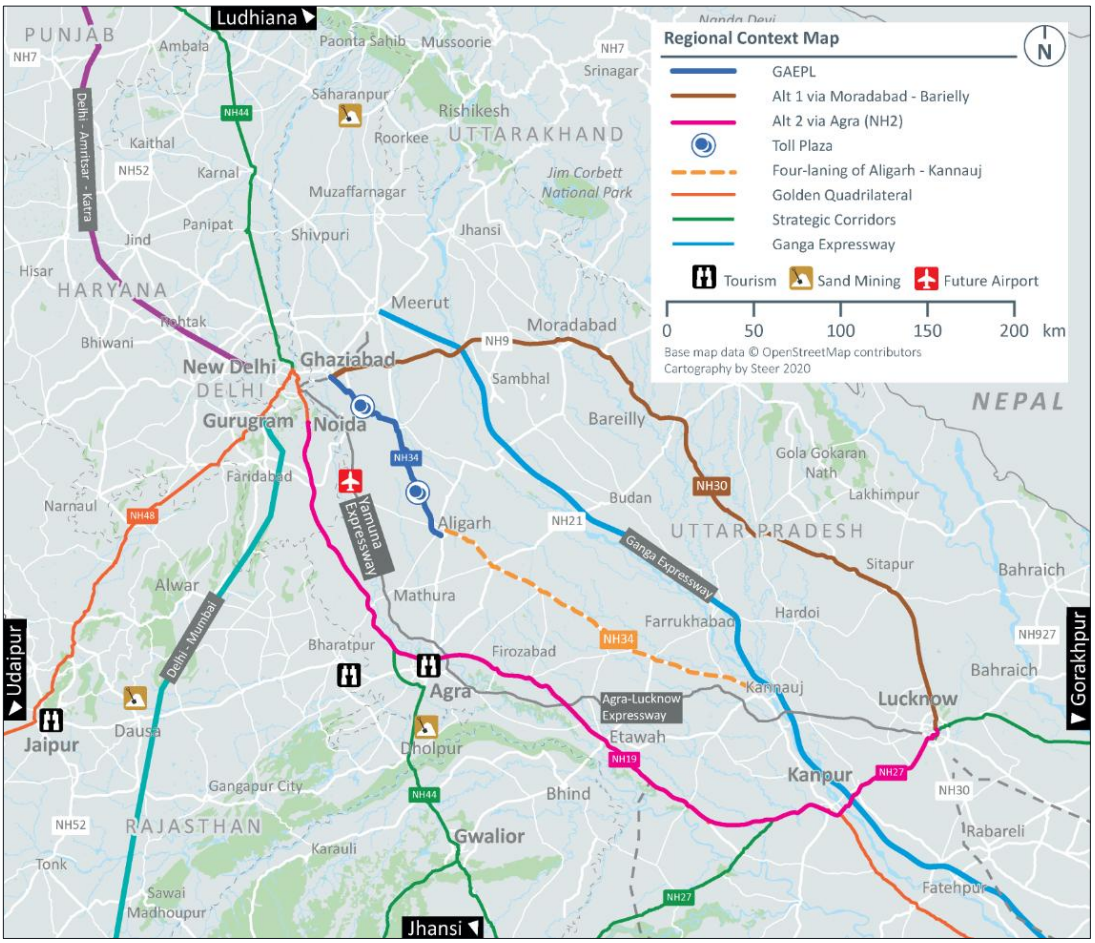
[21] Regression results were invalid.

6 Forecasts: Base year AADT and Impacts

Introduction

6.1 Following the discussion on estimated and assumed forecast background growth rates in the previous chapter, this chapter first deals with the forecasting assumptions around base year AADT and potential impacts on traffic growth on the Asset. Later, it also presents the assumed toll segmentation, trip factors and evolution of toll rates for the forecast period which are used to estimate the forecast revenue based on the forecast traffic. In the final section, the chapter summarises the traffic growth rates for the forecast years.

Figure 6-1: Alternate routes and Asset shown against the regional network context



Source: Steer analysis and cartography

6.2 The section below details the impacts which we believe would affect traffic on the Asset during the concession period. As discussed earlier in Chapter 2, in order to assess the impacts on the Asset, whether positive or negative, we have studied developments (alternate roads, feeder roads and regulatory) in the surrounding road network. Figure 6-1 below shows the road network surrounding the Asset.

6.3 A few key network-related and other developments are expected to impact traffic growth on the Asset going forward, including the Ganga Expressway, and the increased movement of fly-ash from recently completed THDC thermal power plants in Khurja (UP) that are accessible via the Asset. The impact of the recently operationalised 16-lane staggered plaza at TP1 was not conclusive from our analysis of daily traffic and ticket segmentation trends between 15-20 July through 14th Aug '25 i.e., prior to the introduction of the Annual Pass, which impacted ticket segmentation trends independently. Therefore, beyond the assumptions relating to Annual Pass adoption rates for FY26 and FY27 onwards for CJVs, we have not assumed further changes to ticket segmentation that may (or may not) be attributable to the operationalisation of the staggered plaza at TP1.

6.4 Table 6.1 below presents the upcoming network/other developments, corresponding alternate/feeder routes, year of completion and indicative direction of impact on the Asset.

Table 6.1: List of network/other developments

S. No.	Development	Route affected/ nature of impact	Year of completion	Impact (+/-)	
				TP1 Luharli	TP2 Somna
1.	Palwa-Aligarh road diversion	Trips between Aligarh and NCR and west that typically use NH334D	FY27	-ve	-ve
2.	Ganga Expressway + Shamli-Gorakhpur Expressway Impact	Trips between Delhi/North and Lucknow/east	FY27	-ve	-ve

Source: Steer analysis; *in our forecasts we have assumed the positive impact of this development on the Asset to be gradual and begin from FY27.

Impact assessment for network/other developments

6.5 The subsections below include a narrative of each of the improvements, as listed in the table above, and impacts associated from each of these. Please note that all traffic volumes for impacts were estimated as impact rates applied on FY26 Base AADT.

Palwal-Aligarh road diversion

6.6 The Palwal-Aligarh stretch of NH334D is currently an undivided 2-laned road. It is undergoing 4-laning currently, due to which traffic from Aligarh is being diverted to NH34, thereby appearing on the Asset. While some of the traffic passes Somna toll plaza (TP2) and takes the Deorau Road to return to NH334D via Chandaus, a portion of such trips pass both plazas and enter NCR from Sikandrabad.

6.7 Once the 4-laning of the Palwal-Aligarh stretch of NH334D is complete, the route would provide the fastest and shortest option for traffic between Aligarh and NCR (and west).

6.8 As the 4-laning is expected to get completed in mid-FY27, a negative impact has been considered on account of the return of Aligarh-NCR trips back to NH334D. Since, fewer such trips pass through Luharli toll plaza, the impact for TP1 is lower in magnitude.

Table 6.2: Impact of Palwal-Aligarh 4-laning

FY27 onwards	TP1	TP2
CJV	(0.5%)	(1.0%)
LCV	(1.6%)	(6.5%)
Bus	(0.1%)	(2.4%)
2A	(0.4%)	(5.2%)
3A	(1.4%)	(2.9%)
MAV	(2.6%)	(4.7%)

Source: Steer analysis of Client OD data and publicly available information.

Ganga Expressway and Shamli-Gorakhpur Expressway Impact

6.9 The Ganga Expressway is a 596-km long greenfield expressway being developed to provide an improved level of service to long-distance traffic between western and eastern India. Competing with the traditional route using the Asset, the upcoming Ganga Expressway could provide faster and unhindered connectivity, as illustrated in Figure 6-1 above[22].

6.10 We have considered North (India)-East (India) movements for this impact for long distance traffic between Delhi/North of Delhi and Lucknow/east of Lucknow towards east, as these have distinct cost comparisons between the Asset corridor and the upcoming expressway. The route through the expressway provides a competitive route for long-distance traffic from Delhi and west to reach Lucknow and east. While toll costs are favourable for the Asset route, distance and time costs are lower on the expressway.

6.11 On the other hand, The Gorakhpur-Shamli Expressway is a planned 700-kilometre, six-lane greenfield corridor connecting Gorakhpur in eastern Uttar Pradesh to Shamli in the western part of the state. Designed to pass through 22 districts and 37 tehsils, this project aims to significantly reduce travel time between the two ends to just 6 hours, cutting the distance by 200 kilometres compared to current routes like the Agra-Lucknow Expressway. The National Highways Authority of India (NHAI) is preparing a detailed project report (DPR), after which land acquisition will commence, paving the way for construction estimated to cost around Rs 35,000 crore. Once operational, the expressway will also enhance connectivity to popular destinations like Haridwar, Dehradun, Mussoorie, and Rishikesh[23]. This expressway will provide an alternate route to vehicles on the Asset and is expected to negatively affect north – east movement of traffic served by the Asset.

6.12 While both the above expressways will effectively serve the same alignment i.e., long-distance movements between the North of India and the East of India, and being parallel

[22] **Development of 'Ganga Expressway'**

[23] **Gorakhpur-Shamli Expressway: 700-Km-Stretch To Connect Haridwar, Dehradun And Mussoorie | Full Details Here**

to the Asset near Delhi and North India, will act as a direct competing route for these movements, the estimated impacts as shown in Table 6.3 below, using a GJC-based logit model is primarily that of the Ganga Expressway as it is expected to become fully operational by FY27-28 (assuming some delay beyond current estimates)[24]. The Shamli Gorakhpur Expressway, while being considered in combination with the Ganga Expressway for this impact estimation is still in its early stages, with its eventual future impact on the Asset less immediate or clear relative to the already under construction and soon-expected-to-open Ganga Expressway.

Table 6.3: Impact of Ganga Expressway and Gorakhpur-Shamli Expressway

	TP1		TP2	
	FY27	FY28	FY27	FY28 Onwards
CJV	(2.5%)	(4.2%)	(3.7%)	(6.2%)
LCV	(4.1%)	(6.9%)	(8.1%)	(13.4%)
2A	(5.0%)	(8.4%)	(10.0%)	(16.6%)
3A	(5.8%)	(9.6%)	(10.8%)	(18.0%)
MAV	(7.9%)	(13.2%)	(15.4%)	(25.6%)

Source: Steer analysis of Client OD data, Client TMS data and publicly available information.

Revenue forecasting assumptions

6.13 To forecast the revenues for a particular financial year, the traffic forecast for each vehicle type is converted into tickets sold, which is then multiplied with the corresponding toll rate, which grows over the years as defined in the Concession Agreement. While "trip factors" provide the conversion factor to the former, i.e. traffic (trips) to tickets sold, "toll segmentation" provides the latter i.e. the breakup of trips paying each ticket type. This section discusses assumptions related to trip factors, toll segmentation and toll rates for the forecast period.

Trip Factors

6.14 Trip factors are used to calculate the revenue for the trips made on passes such as return, local personal, monthly passes. The trip factors assumed are based on the latest FY25 data available and listed in Table 6.4 and Table 6.5 below:

Table 6.4: Trip factors for the forecast years for TP1 Luharli

Vehicle category	CJV	LCV/Mini Bus	Bus	2A	3A	MAV	OSV
Single	1	1	1	1	1	1	1
Return	2	2	2	2	2	2	2
Monthly	59	51	45	42	45	45	45
Local	26	1	1	1	1	1	1
Exemptions	1	1	1	1	1	1	1

Source: Steer analysis of Client TMS data

[24] Ganga Expressway to connect east, west Uttar Pradesh post Mahakumbh - Hindustan Times

Table 6.5: Trip factors for the forecast years for TP2 Somna

Vehicle category	CJV	LCV/Mini Bus	Bus	2A	3A	MAV	OSV
Single	1	1	1	1	1	1	1
Return	2	2	2	2	2	2	2
Monthly	45	45	45	45	45	45	45
Local	32	1	1	1	1	1	1
Exemptions	1	1	1	1	1	1	1

Source: Steer analysis of Client TMS data

6.15 There is no major toll category being charged, apart from the official list of toll categories in the toll notification. This assumes that further changes in toll categories, unless specific discounts are offered, are unlikely.

Toll Segmentation

6.16 The Ministry of Road Transport & Highways has finalized a compensation formula for existing toll concessionaires to offset revenue loss from the Annual Pass scheme for non-commercial vehicles[25].

6.17 Across multiple assets, the share of annual pass trips has been rising on a monthly basis since August 5. A corresponding decline in other ticket categories including Single and Return journeys has been observed.

6.18 CJV Segmentation for FY26 has been developed using the pre annual pass segmentation till 14th August 2025, and post-annual pass segmentation from 15th August 2025 till 28th February 2026. The share of annual pass trips in March 2026 has been assumed to be the same as the share of annual pass trips in the last 10 days of February 2026. For all other vehicle categories, we analysed the historical TMS data split by ticket categories to understand the latest trends in ticket segmentation across both Asset toll plazas. For the traffic and revenue forecast, we have assumed FY26YTD (Apr-Sept '25) segmentation to apply for all non-CJV vehicle categories.

Table 6.6: Forecast toll segmentation, FY26 onwards: Luharli (TP1)

Ticket Type	CJV (FY26	CJV (FY27	Mini LCV	LCV	Bus	2A	3A	MAV
Single	22%	17%	27%	40%	7%	58%	70%	57%
Return	31%	24%	38%	56%	93%	40%	30%	42%
Monthly	0%	0%	0%	2%	0%	0%	0%	0%
Local personal	7%	5%	9%	-	-	-	-	-
Exemption	21%	19%	26%	1%	0%	1%	0%	0%
Violation	1%	1%	1%	1%	0%	1%	0%	0%
Annual Pass	19%	35%	-	-	-	-	-	-

Source: Steer analysis of Client TMS data

[25] Finalization-Concessionaire-Annual-Pass-Facility-on-NHs-01092025.pdf

Table 6.7: Forecast toll segmentation, FY26 onwards: Somna (TP2)

Ticket Type	CJV (FY26	CJV (FY27	Mini LCV	LCV	Bus	2A	3A	MAV
Single	30%	23%	30%	58%	11%	77%	85%	81%
Return	30%	23%	30%	40%	89%	22%	15%	19%
Monthly	0%	0%	0%	0%	-	-	-	-
Local personal	4%	2%	4%	-	-	-	-	-
Exemption	15%	13%	15%	2%	0%	1%	0%	0%
Violation	0%	0%	0%	0%	0%	0%	0%	0%
Annual Pass	22%	40%	22%	-	-	-	-	-

Source: Steer analysis of Client TMS data

Toll evolution

6.19 Based on the concession agreement and the gazetted toll notification, we understand that base toll rates increase every year (revision month is April) based on WPI-linked inflation. These are rounded up to the nearest five to estimate the final toll rate charged to users.

6.20 We have used actual toll rates from the FY25 and FY26 WPI toll notifications to validate the modelling of future toll evolution. These forecasts provided by the Client. The WPI forecasts available from other independent forecasting agencies may vary from this assumption and could be lower or higher than that provided by the client

Table 6.8: WPI growth forecast assumptions

Financial year	WPI growth (%)
FY26	2.6%
FY27	0.96 %
FY28	5.0%
FY29	5.1%
FY30	4.9%
FY31	4.4%
FY32 onwards	4.1%

Source: FY27 onwards WPI print as per Client inputs

Revenue reconciliation

6.21 As part of validating the data provided by the Client, as well as our assumptions around toll calculations, we have reconciled the actual reported revenue against the modelled revenue at the AADC level. We have reconciled reported revenue with the modelled revenue for the year FY26YTD (Apr – July ’25) to exclude the impact of Annual Pass introduction in Aug ’25 on ticket segmentation distribution for CJVs. To reconcile the revenues, toll rates assumed in the model incorporate the additional 2.185 km within the tolling length of TP2 to make toll revenue calculations across both the TMS data and our

model consistent. For the revenue forecasts, as per Client input, we do not assume the additional tolling length to calculation TP2 toll rates in FY26 and beyond.

6.22 The comparison, as shown in Table 6.9 below, shows that modelled revenue overall is within a variation of 0.9% from the reported revenue for TP1 and 0.5% for TP2. This gives us confidence that the revenues estimated using the traffic data in our forecasts are accurately representing the revenues being reported from the Asset.

Table 6.9: Revenue reconciliation summary (INR Lakhs)

Asset	Modelled AADC	Actual AADC	Difference (%) Modelled vs Actual
	FY26YTD	FY26YTD	
TP-1 Luharli	40.7	40.7	<0.0%
TP-2 Somna	42.3	42.8	(1.0%)

Source: Steer comparison between modelled and reported revenue excluding CJV; FY26YTD here refers to the period prior to introduction of Annual Pass in Aug '25 (i.e., Apr – Feb'26)

Traffic and Revenue forecasts

6.23 Based on the traffic and revenue-related forecast assumptions discussed above, we have modelled the traffic and revenue forecasts for the forecast period for the Asset. Table 6.10 through Table 6.17 below present the AADT/PCU forecast growth rates and forecasted revenue CAGRs on this Asset (at both TP1 and TP2).

Table 6.10: Traffic forecast (With Impacts) for TP1 Luharli

Vehicle Type	FY26	FY27	FY30	FY35	FY40
CJV	23,649	25,780	30,755	42,478	57,583
Mini LCV	2,036	2,111	2,340	2,755	3,214
LCV	1,610	1,578	1,655	1,897	2,154
Bus	2,192	2,258	2,461	2,820	3,202
2A	1,941	1,944	2,176	2,750	3,455
3A	714	677	668	709	752
MAV	2,593	2,477	2,656	3,356	4,216
AADT	**34,736**	**36,826**	**42,711**	**56,766**	**74,577**
PCU	**52,373**	**54,190**	**61,458**	**79,509**	**1,02,076**

Source: Steer analysis

Table 6.11: Traffic growth CAGR (%) for TP1 Luharli

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY40	FY26-FY40
CJV	9.0%	6.1%	6.7%	6.3%	6.6%
Mini LCV	3.7%	3.5%	3.3%	3.1%	3.3%
LCV	(2.0%)	1.6%	2.8%	2.6%	2.1%
Bus	3.0%	2.9%	2.8%	2.6%	2.7%

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY40	FY26-FY40
2A	0.2%	3.8%	4.8%	4.7%	4.2%
3A	(5.2%)	(0.4%)	1.2%	1.2%	0.4%
MAV	(4.5%)	2.4%	4.8%	4.7%	3.5%
AADT	**6.0%**	**5.1%**	**5.9%**	**5.6%**	**5.6%**
PCU	**3.5%**	**4.3%**	**5.3%**	**5.1%**	**4.9%**

Source: Steer analysis

Table 6.12: Revenue forecast (with Impacts) for TP1 (INR Crores) including AP Compensation for CJVs

Vehicle Type	FY26	FY27	FY30	FY35	FY40
CJV	77.8	90.4	124.8	215.0	364.5
Mini LCV	6.9	9.3	11.9	17.5	25.5
LCV	11.9	11.9	14.6	20.8	29.6
Bus	29.4	31.2	39.2	56.2	79.9
2A	31.1	32.1	41.4	65.2	102.8
3A	18.0	17.5	19.9	26.5	35.1
MAV	64.1	62.9	77.9	123.2	193.7
Total	**239.2**	**255.2**	**329.7**	**524.4**	**831.1**

Source: Steer analysis

Table 6.13: Revenue growth CAGR (%) for TP1 Luharli

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY40	FY26-FY40
CJV	16.1%	11.4%	11.5%	11.1%	11.7%
Mini LCV	35.4%	8.5%	8.0%	7.9%	9.8%
LCV	0.5%	7.0%	7.3%	7.3%	6.7%
Bus	5.9%	8.0%	7.5%	7.3%	7.4%
2A	3.2%	8.9%	9.5%	9.5%	8.9%
3A	(2.7%)	4.4%	5.8%	5.8%	4.9%
MAV	(1.9%)	7.4%	9.6%	9.5%	8.2%
Total	**6.7%**	**8.9%**	**9.7%**	**9.6%**	**9.3%**

Source: Steer analysis

Table 6.14: Traffic forecast (With Impacts) for TP2 Somna

Vehicle Type	FY26	FY27	FY30	FY35	FY40
CJV	8,915	9,434	11,004	14,859	19,703
Mini LCV	830	855	930	1,061	1,202
LCV	1,045	955	940	1,077	1,223

Vehicle Type	FY26	FY27	FY30	FY35	FY40
Bus	1,475	1,503	1,619	1,855	2,107
2A	1,690	1,563	1,626	2,055	2,582
3A	694	617	577	613	649
MAV	1,961	1,698	1,663	2,101	2,640
AADT	**16,609**	**16,624**	**18,358**	**23,621**	**30,106**
PCU	**30,245**	**29,139**	**31,048**	**38,988**	**48,658**

Source: Steer analysis

Table 6.15: Traffic growth CAGR (%) for TP2 Somna

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY40	FY26-FY40
CJV	5.8%	5.3%	6.2%	5.8%	5.8%
Mini LCV	3.0%	2.8%	2.7%	2.5%	2.7%
LCV	(8.6%)	(0.5%)	2.8%	2.6%	1.1%
Bus	1.9%	2.5%	2.8%	2.6%	2.6%
2A	(7.5%)	1.3%	4.8%	4.7%	3.1%
3A	(11.1%)	(2.2%)	1.2%	1.2%	(0.5%)
MAV	(13.4%)	(0.7%)	4.8%	4.7%	2.2%
AADT	**0.1%**	**3.4%**	**5.2%**	**5.0%**	**4.3%**
PCU	**(3.7%)**	**2.1%**	**4.7%**	**4.5%**	**3.5%**

Source: Steer analysis

Table 6.16: Revenue forecast (with Impacts) for TP2 (INR Crores) including AP Compensation for CJVs

Vehicle Type	FY26	FY27	FY30	FY35	FY40
CJV	45.0	49.4	67.6	112.9	188.7
Mini LCV	3.5	4.8	6.1	8.7	12.4
LCV	10.1	9.5	10.8	15.5	22.0
Bus	25.3	26.3	32.9	47.0	66.8
2A	35.1	33.2	40.1	63.1	99.4
3A	22.3	20.4	22.0	29.2	38.8
MAV	63.7	55.5	62.7	99.0	155.9
Total	**204.9**	**199.1**	**242.3**	**375.2**	**583.9**

Source: Steer analysis

Table 6.17: Revenue growth CAGR (%) for TP2 Somna

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY40	FY26-FY40
CJV	9.9%	11.0%	10.8%	10.8%	10.8%

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY40	FY26-FY40
Mini LCV	37.6%	8.3%	7.2%	7.4%	9.4%
LCV	(5.9%)	4.2%	7.5%	7.3%	5.7%
Bus	4.2%	7.7%	7.4%	7.3%	7.2%
2A	(5.3%)	6.5%	9.5%	9.5%	7.7%
3A	(8.7%)	2.6%	5.8%	5.9%	4.0%
MAV	(12.9%)	4.2%	9.6%	9.5%	6.6%
Total	**(2.8%)**	**6.8%**	**9.1%**	**9.2%**	**7.8%**

Source: Steer analysis

6.24 As presented in Table 6.11 above, Total PCUs at TP1 Luharli is forecasted to grow at 4.9% per year over the remaining life of the concession (FY26-FY40); over the same period, total revenue (incl. AP compensation for CJVs) is forecasted to grow at 9.3% per year. PCU growth at TP2 Somna is forecasted to be 3.5% per year, while total revenue is forecasted to grow at 7.8% per year through the end of FY40. The Asset performance is largely impacted by the commissioning of the Ganga Expressway which is expected to significantly affect commercial traffic movement.

6.25 While the background growth is primarily driven by car growth and MAVs to some extent, the enhanced capacity of the Asset (from earlier 4-lane to current 6-lane), as well as the overall upgradation of the NH91 through Kanpur has significantly improved the attractiveness of the Asset for long-distance east-west movement between Delhi - Kanpur and beyond. This has been captured in the historical growth since FY24 and is expected to continue over the near term given the increasing economic importance of the region.

6.26 The high growth in CJVs on both the Asset plazas is attributable to Asset's proximity to large urban settlements, allowing it to capture local movements near and between Delhi, Ghaziabad, Bulandshahr as well as Lucknow, Kanpur, Etah, and so on. The projected MAV growth (CAGR) for TP1 over the remaining concession period is approximately 3.5%, driven by local freight demand. TP2 is expected to experience a CAGR of around 2.2% per year through FY40, given its role in transporting a significant portion of manufacturing and fast-moving consumer goods (FMCG) traffic between Haryana, Punjab, and Uttar Pradesh, as well as industrial traffic connecting Meerut, Aligarh, Kanpur, and Lucknow.

Upside and Downside cases

Upside and Downside scenario assumptions

6.27 We have developed our base case scenario considering a balanced view on the risks associated with input assumptions around GDP growth and traffic growth elasticities. There is always a risk that the outturn values of these inputs will vary as compared to the assumptions taken due to exogenous impacts, e.g. GDP growth could be influenced both positively and negatively by the impact of monsoons, export-import balances, political changes etc.

6.28 Similarly, traffic growth elasticities could be influenced by increased efficiencies achieved by technology, large shifts in commodity prices globally, changes in local

manufacturing practices. However, at this stage we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

6.29 To account for the possible variations in the growth drivers, we are also presenting an Upside (optimistic) and a Downside (pessimistic) scenario. These scenarios are defined by the following variations from the base assumptions:

Table 6.18: Summary of Macro-economic Assumptions for upside and downside cases

Input	Upside	Downside
Macro Assumptions		
GDP/GSDP	+1% every year	-1% every year
WPI	+1% every year	-1% every year
Elasticities	+ 10%	- 10%

Source: Steer analysis

6.30 Further, network developments are highly dependent on governmental directions, policies, legal and financial measure which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside (pessimistic) case. However, at this stage, we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

Impacts-Upside Case

6.31 The upside case impacts included in forecasts are summarised in Table 6.19 below.

Table 6.19: Summary of impacts on the Assets – Upside case

Development	Year of Impact	Change in impact w.r.t base case	Magnitude of impact	
			TP1 Luharli	TP2 Somna
4-laning of Palwal Agra stretch of NH334D	FY27*	+25% of base case	CJV: (0.4%) LCV: (1.2%) Bus: (0.1%) 2A: (0.3%) 3A: (1.0%) MAV: (1.9%)	CJV: (0.8%) LCV: (4.9%) Bus: (1.8%) 2A: (3.8%) 3A: (2.1%) MAV: (3.5%)
Ganga Expressway + Shamli-Gorakhpur Expressway Impact	FY27*		CJV: (3.2%) LCV: (5.1%) 2A: (6.3%) 3A: (7.2%) MAV: (9.9%)	CJV: (4.6%) LCV: (10.1%) 2A: (12.5%) 3A: (13.5%) MAV: (19.2%)

Source: Steer analysis; *Same as base case timeline; the impact estimates reflect total impact %s

Impacts-Downside Case

6.32 The downside case impacts included in forecasts are summarised in below.

Table 6.20: Summary of impacts on the Assets – Downside case

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact	
			TP1 Luharli	TP2 Somna
4-laning of Palwal Agra stretch of NH334D	FY27*	-25% of base case	CJV: (0.6%) LCV: (2.1%) Bus: (0.2%) 2A: (0.6%) 3A: (1.7%) MAV: (3.2%)	CJV: (1.3%) LCV: (8.2%) Bus: (2.9%) 2A: (6.4%) 3A: (3.6%) MAV: (5.8%)
Ganga Expressway + Shamli-Gorakhpur Expressway Impact	FY27*		CJV: (5.3%) LCV: (8.6%) 2A: (10.4%) 3A: (12.0%) MAV: (16.5%)	CJV: (7.7%) LCV: (16.8%) 2A: (20.8%) 3A: (22.5%) MAV: (32.0%)

Source: Steer analysis; *Same as base case timeline; the impact estimates reflect total impact %s

Upside and Downside Case Forecasts

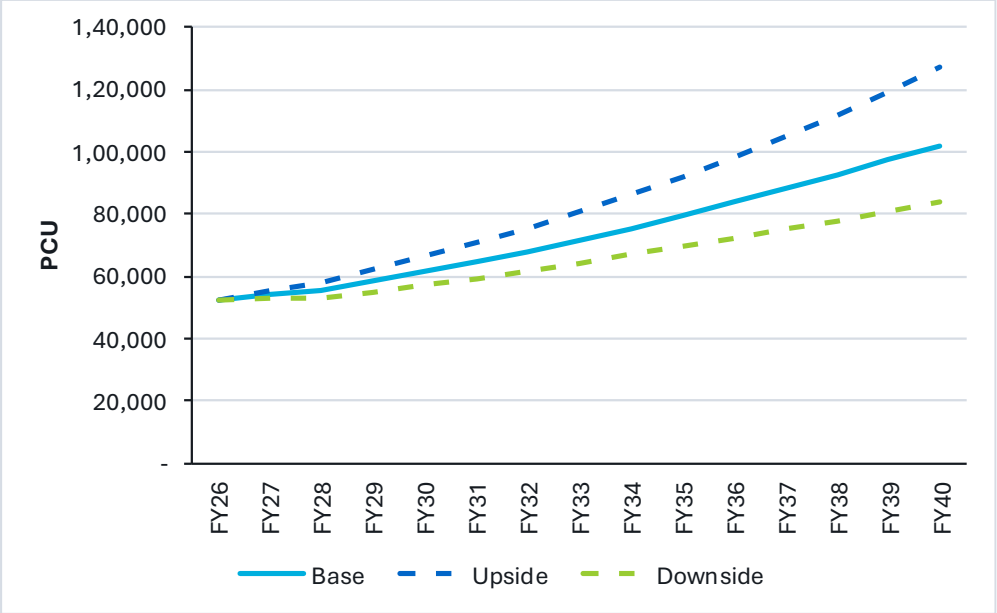
6.33 Table 6.21 below presents the difference between the Upside and Downside Case forecasts relative to the Base Case forecasts in FY40 (i.e., the concession end year) for both Asset toll plazas. The charts below plot the Upside and Downside Case forecasts relative to the Base Case forecasts for each Asset toll plaza over the full concession period (FY26-FY40).

Table 6.21: Percentage Difference Upside and Downside Case Forecasts vs. Base Case Forecasts - FY40

Case	Measure	TP1 Luharli	TP2 Somna
Upside Case	Traffic (PCU)	24.3%	24.9%
Downside Case		(17.7%)	(18.5%)
Upside Case	Revenue	36.4%	37.9%
Downside Case		(24.9%)	(26.3%)

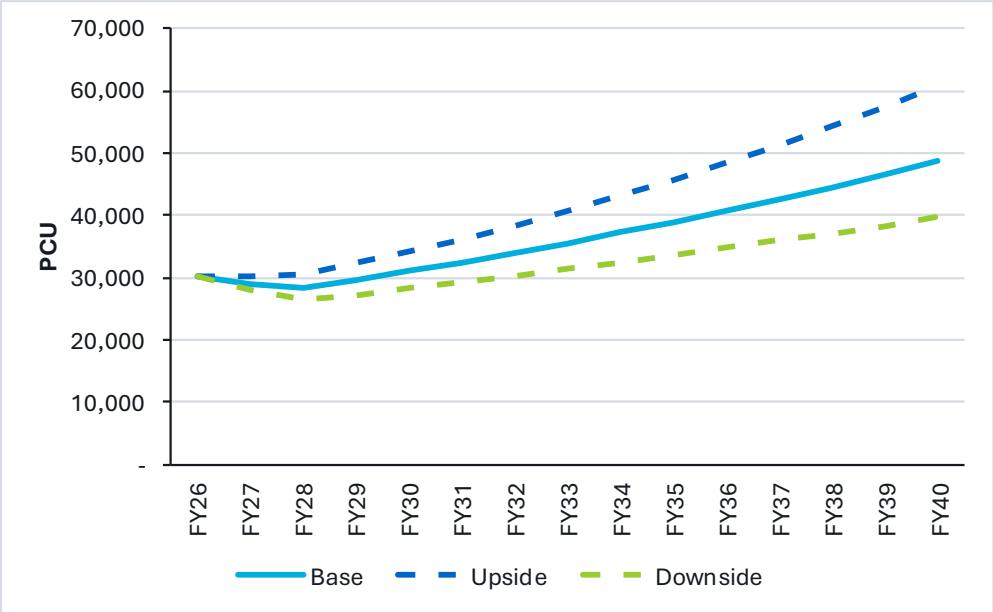
Source: Steer Analysis

Figure 6.2: Long-term PCU forecasts for TP1 Luharli including upside and downside scenarios



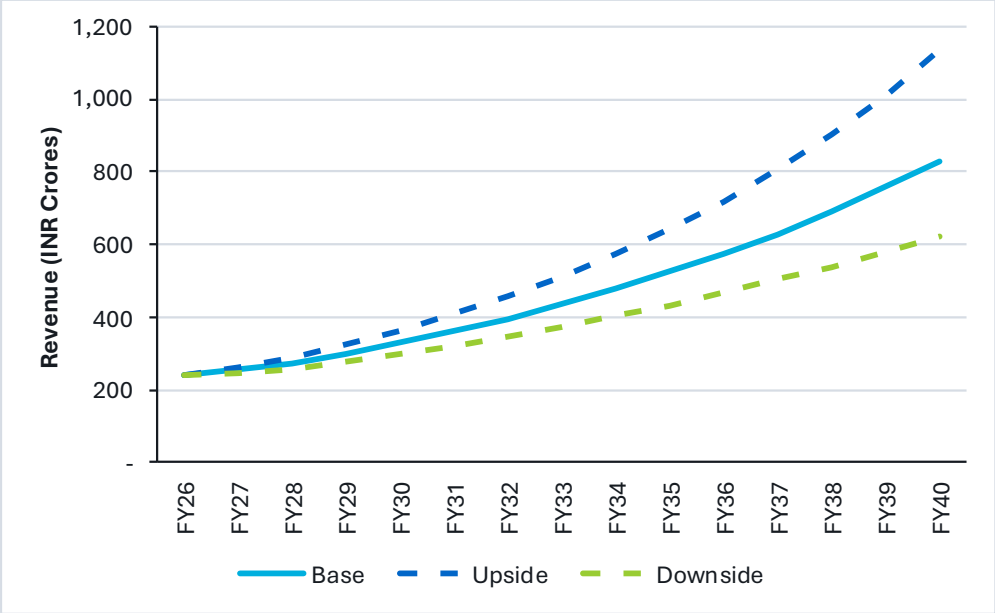
Source: Steer Analysis

Figure 6.3: Long-term PCU forecasts for TP2 Somna including upside and downside scenarios



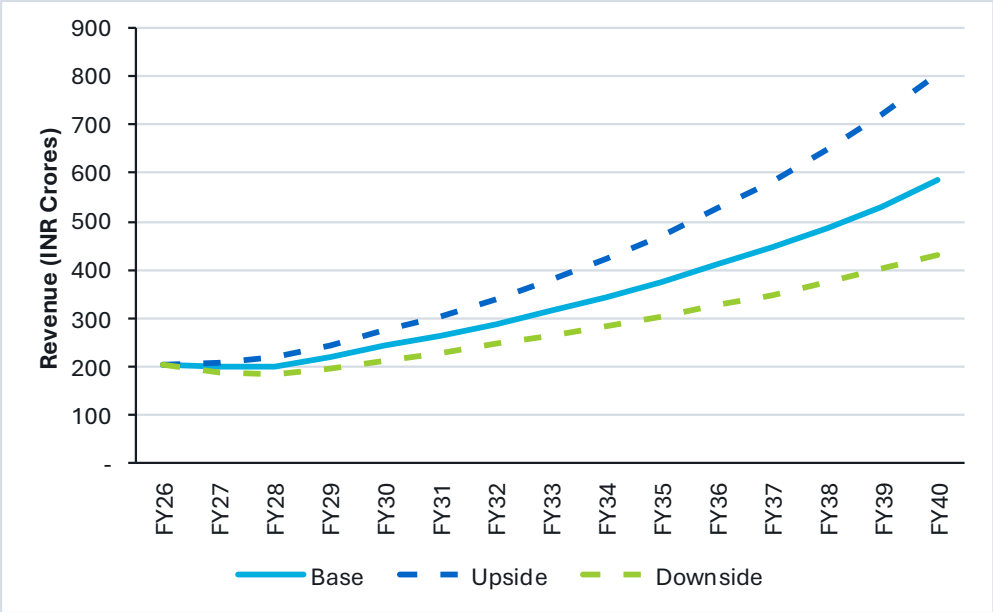
Source: Steer Analysis

Figure 6.4: Long-term revenue forecasts for TP1 Luharli including upside and downside scenarios



Source: Steer Analysis

Figure 6.5: Long-term revenue forecasts for TP2 Somna including upside and downside scenarios



Source: Steer Analysis

Summary outlook

6.34 Passenger traffic on the Asset primarily serves local needs, connecting the densely populated Delhi NCR, Sikandrabad, Bulandshahr, Khurja, Ghaziabad, Luharli, Somna, and Aligarh over short distances, as well as connecting the medium-to-long distance cities of Meerut, Muzaffarnagar, Kanpur, and Lucknow. The check plaza previously in place contributed to better compliance and fewer exemptions between August 2023 and September 2024, before its vandalism by locals (discussed earlier). The newly operational staggered plaza at TP1 is expected to further curb leakage from forced exemptions.

6.35 This Asset is unique in nature as both the toll plazas have very different traffic profiles serving key strategic movements specific to each of them. TP1 caters to industrial demand generated by local centres of Luharli, Sikandrabad, Ghaziabad, Aligarh, and Dadri while also serving the consumption demand of the Delhi-NCR region. On the other hand, TP2 serves a significant proportion of agricultural, construction and grocery carrying traffic traveling between Haryana, Punjab and Uttar Pradesh along with industrial traffic between Meerut, Aligarh, Kanpur, and Lucknow.

6.36 Following the opening of the TP1 check plaza, traffic volume on the Asset stabilized, leading to improved reporting and compliance. Operational between August 2023 and September 2024 (before getting vandalised by locals), the check plaza contributed to an increase in tollable traffic and a subsequent positive rise in per day collection (as shown in Table 3.6 above). Another major reason which contributes to positive performance of the Asset is the completion of 6 lane expansion of the Asset in October 2023 which significantly improved level of service of the Asset and consequently led to an increase in local traffic of Car, LCV, Buses and MLCV.

6.37 We anticipate a positive future for the Asset, driven by the increasing demand for agricultural and manufacturing goods between the key connecting centers of Delhi NCR and Aligarh/Uttar Pradesh. These essential commodities are projected to experience continued healthy growth in the coming years. Further, to cater to this growing demand and increasing traffic movement, the new 16-lane staggered plaza at TP1 will allow for effective management of heavy traffic movement in peak hours and ease congestion.

6.38 Overall, we see a positive outlook for the region and the Asset, given that it serves major urban centres of Delhi NCR, Ghaziabad, Aligarh, Lucknow and it being the part of the traditional Grand Trunk Road serving the east-west movement across the country. The underlying growth drivers of the corridor are strong and are expected to deliver long term sustained growth.

Appendices

A Detailed forecasts

A.1 Further to the summary of forecasts presented in Chapter 6, this appendix presents detailed forecasts.

Traffic forecasts

A.2 This section presents the detailed traffic forecasts for the forecast period until FY40.

Table A.1: Traffic Forecast (with impacts) over horizon years at TP1 Luharli

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	AADT	PCU
FY27	25,780	2,111	1,578	2,258	1,944	677	2,477	**36,826**	**54,190**
FY28	26,800	2,188	1,570	2,326	1,976	654	2,430	**37,945**	**55,331**
FY29	28,749	2,264	1,610	2,393	2,077	661	2,534	**40,288**	**58,329**
FY30	30,755	2,340	1,655	2,461	2,176	668	2,656	**42,711**	**61,458**
FY31	32,818	2,417	1,701	2,528	2,279	676	2,781	**45,199**	**64,668**
FY32	34,970	2,496	1,747	2,597	2,386	684	2,912	**47,792**	**68,013**
FY33	37,344	2,580	1,796	2,670	2,503	693	3,054	**50,641**	**71,676**
FY34	39,845	2,667	1,846	2,745	2,624	701	3,202	**53,630**	**75,506**
FY35	42,478	2,755	1,897	2,820	2,750	709	3,356	**56,766**	**79,509**
FY36	45,237	2,844	1,948	2,896	2,881	718	3,516	**60,040**	**83,679**
FY37	48,125	2,935	1,999	2,972	3,017	726	3,682	**63,455**	**88,017**
FY38	51,144	3,027	2,051	3,048	3,158	735	3,854	**67,015**	**92,527**
FY39	54,295	3,120	2,102	3,125	3,304	743	4,032	**70,722**	**97,212**
FY40	57,583	3,214	2,154	3,202	3,455	752	4,216	**74,577**	**1,02,076**

Table A.2 Forecasts (with impacts) for AADT growth rates (%) at TP1 Luharli

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	AADT	PCU
FY27	9.0%	3.7%	(2.0%)	3.0%	0.2%	(5.2%)	(4.5%)	**6.0%**	**3.5%**
FY28	4.0%	3.6%	(0.5%)	3.0%	1.6%	(3.3%)	(1.9%)	**3.0%**	**2.1%**
FY29	7.3%	3.5%	2.5%	2.9%	5.1%	0.9%	4.3%	**6.2%**	**5.4%**
FY30	7.0%	3.4%	2.8%	2.8%	4.8%	1.2%	4.8%	**6.0%**	**5.4%**
FY31	6.7%	3.3%	2.7%	2.7%	4.7%	1.2%	4.7%	**5.8%**	**5.2%**
FY32	6.6%	3.3%	2.7%	2.7%	4.7%	1.2%	4.7%	**5.7%**	**5.2%**
FY33	6.8%	3.4%	2.8%	2.8%	4.9%	1.2%	4.9%	**6.0%**	**5.4%**
FY34	6.7%	3.3%	2.8%	2.8%	4.8%	1.2%	4.8%	**5.9%**	**5.3%**
FY35	6.6%	3.3%	2.7%	2.7%	4.8%	1.2%	4.8%	**5.8%**	**5.3%**
FY36	6.5%	3.2%	2.7%	2.7%	4.8%	1.2%	4.8%	**5.8%**	**5.2%**
FY37	6.4%	3.2%	2.6%	2.6%	4.7%	1.2%	4.7%	**5.7%**	**5.2%**
FY38	6.3%	3.1%	2.6%	2.6%	4.7%	1.2%	4.7%	**5.6%**	**5.1%**
FY39	6.2%	3.1%	2.5%	2.5%	4.6%	1.2%	4.6%	**5.5%**	**5.1%**
FY40	6.1%	3.0%	2.5%	2.5%	4.6%	1.1%	4.6%	**5.5%**	**5.0%**

Source: Steer analysis

Table A.3: Traffic Forecast AADT (with impacts) over horizon years at TP2 Somna

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY27	9,434	855	955	1,503	1,563	617	1,698	**16,624**	**29,139**
FY28	9,696	880	903	1,537	1,495	568	1,532	**16,610**	**28,477**
FY29	10,336	905	914	1,575	1,552	570	1,587	**17,438**	**29,656**
FY30	11,004	930	940	1,619	1,626	577	1,663	**18,358**	**31,048**
FY31	11,688	954	965	1,663	1,703	584	1,741	**19,299**	**32,473**
FY32	12,400	980	992	1,709	1,783	591	1,823	**20,277**	**33,954**
FY33	13,181	1,006	1,020	1,757	1,870	598	1,912	**21,345**	**35,568**
FY34	14,001	1,034	1,048	1,806	1,961	605	2,005	**22,459**	**37,245**
FY35	14,859	1,061	1,077	1,855	2,055	613	2,101	**23,621**	**38,988**
FY36	15,753	1,089	1,106	1,905	2,153	620	2,201	**24,827**	**40,793**
FY37	16,684	1,117	1,135	1,955	2,255	627	2,305	**26,078**	**42,662**
FY38	17,653	1,145	1,164	2,005	2,360	635	2,412	**27,374**	**44,595**
FY39	18,659	1,174	1,193	2,056	2,469	642	2,524	**28,717**	**46,594**
FY40	19,703	1,202	1,223	2,107	2,582	649	2,640	**30,106**	**48,658**

Table A.4: Forecasts (with impacts) for AADT growth rates (%) at TP2 Somna

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	AADT	PCU
FY27	5.8%	3.0%	(8.6%)	1.9%	(7.5%)	(11.1%)	(13.4%)	**0.1%**	**(3.7%)**
FY28	2.8%	2.9%	(5.5%)	2.3%	(4.4%)	(8.0%)	(9.7%)	**(0.1%)**	**(2.3%)**
FY29	6.6%	2.8%	1.3%	2.4%	3.8%	0.5%	3.6%	**5.0%**	**4.1%**
FY30	6.5%	2.7%	2.8%	2.8%	4.8%	1.2%	4.8%	**5.3%**	**4.7%**
FY31	6.2%	2.7%	2.7%	2.7%	4.7%	1.2%	4.7%	**5.1%**	**4.6%**
FY32	6.1%	2.6%	2.7%	2.7%	4.7%	1.2%	4.7%	**5.1%**	**4.6%**
FY33	6.3%	2.7%	2.8%	2.8%	4.9%	1.2%	4.9%	**5.3%**	**4.8%**
FY34	6.2%	2.7%	2.8%	2.8%	4.8%	1.2%	4.8%	**5.2%**	**4.7%**
FY35	6.1%	2.7%	2.7%	2.7%	4.8%	1.2%	4.8%	**5.2%**	**4.7%**
FY36	6.0%	2.6%	2.7%	2.7%	4.8%	1.2%	4.8%	**5.1%**	**4.6%**
FY37	5.9%	2.6%	2.6%	2.6%	4.7%	1.2%	4.7%	**5.0%**	**4.6%**
FY38	5.8%	2.5%	2.6%	2.6%	4.7%	1.2%	4.7%	**5.0%**	**4.5%**
FY39	5.7%	2.5%	2.5%	2.5%	4.6%	1.2%	4.6%	**4.9%**	**4.5%**
FY40	5.6%	2.4%	2.5%	2.5%	4.6%	1.1%	4.6%	**4.8%**	**4.4%**

Source: Steer analysis

Revenue forecasts

A.3 The following table presents the year-wise annual revenue forecasts for the forecast period

Table A.5: Revenue Forecasts (with impacts) for horizon years (INR Crores) at TP1 including AP compensation for CJVs

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	90	9	12	31	32	17	63	**255**
FY28	100	10	13	34	34	18	65	**273**
FY29	110	11	14	36	38	19	71	**298**
FY30	125	12	15	39	41	20	78	**330**
FY31	140	13	16	42	45	21	86	**363**
FY32	155	14	17	45	50	22	94	**397**
FY33	173	15	18	49	54	24	102	**435**
FY34	193	16	19	52	59	25	112	**477**
FY35	215	17	21	56	65	26	123	**524**
FY36	240	19	22	60	72	28	135	**577**
FY37	265	20	24	65	78	30	148	**630**
FY38	295	22	26	69	86	31	162	**690**
FY39	329	24	28	74	94	33	177	**758**
FY40	364	26	30	80	103	35	194	**831**

Table A.6: Revenue Forecasts (with impacts) for horizon years (INR Crores) at TP2 including AP compensation for CJVs

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	49.4	4.8	9.5	26.3	33.2	20.4	55.5	**199.1**
FY28	53.5	5.2	9.5	28.3	33.4	19.7	52.6	**202.2**
FY29	59.8	5.6	10.0	30.4	36.4	20.7	57.1	**220.1**
FY30	67.6	6.1	10.8	32.9	40.1	22.0	62.7	**242.3**
FY31	74.9	6.6	11.6	35.4	43.8	23.4	68.9	**264.6**
FY32	83.2	7.1	12.5	38.0	48.1	24.8	75.6	**289.3**
FY33	91.6	7.5	13.4	40.7	52.6	26.2	82.7	**314.7**
FY34	102.7	8.1	14.4	43.8	57.8	27.6	90.6	**345.1**
FY35	112.9	8.7	15.5	47.0	63.1	29.2	99.0	**375.2**
FY36	126.0	9.4	16.6	50.5	69.5	31.0	108.9	**412.0**
FY37	139.5	10.0	17.8	54.1	75.8	32.6	118.6	**448.4**
FY38	153.0	10.7	19.1	58.0	82.9	34.6	130.0	**488.2**
FY39	168.8	11.4	20.4	62.1	90.6	36.5	142.1	**532.0**
FY40	188.7	12.4	22.0	66.8	99.4	38.8	155.9	**583.9**

Source: Steer analysis

B Top OD Pairs

B.1 Further to the OD analysis presented in Chapter 3 this appendix presents the top 10 OD pairs at each toll plaza. Please see this data for both CJVs and MAVs and OSVs combined below.

TP1 Luharli

Table B.1: CJV and Bus top 10 OD pair shares at TP1 Luharli

	OD Pair	Share
1	Akbapur, Nausana-Ghaziabad	6%
2	Ghaziabad-Sanwli and Sikandrabad	6%
3	Akbapur and Bulandsheher - Delhi	4%
4	Aligarh-Ghaziabad	4%
5	Central part of Delhi-Central part of Hapur district	3%
6	Western part of Agra district-Ghaziabad	3%
7	North-Eastern part of Gautam Buddha Nagar -Central part of Hapur district	3%
8	Ghaziabad-Khurja	2%
9	Aligarh-Central part of Delhi	2%
10	Akbapur and Bulandshahr-North-Eastern part of Gautam Buddha Nagar district	2%

Source: Steer analysis of OD data

Table B.2: 3A and MAV top 10 OD pair shares at TP1 Luharli

	OD Pair	Share
1	Ghaziabad-Sanwli & Sikandrabad	11%
2	Akbapur, Bulandshahr, & Nausana-Ghaziabad	10%
3	Lucknow district-Ghaziabad	3%
4	North-Eastern part of Gautam Buddha Nagar district-Central part of Hapur district	2%

	OD Pair	Share
5	Western part of Agra district-Ghaziabad	2%
6	Northern part of Haryana-Sanwli & Sikandrabad	2%
7	Sanwli & Sikandrabad-Eastern part of Ghaziabad district	2%
8	Central part of Delhi-Central part of Hapur district	2%
9	Aligarh-Ghaziabad	2%
10	Akbapur, Bulandshahr, & Nausana-North-Eastern part of Gautam Buddha Nagar district	2%

Source: Steer analysis of OD data

TP2 Somna

Table B.3: CJV top 10 OD pair shares at TP2 Somna

	OD Pair	Share
1.	Aligarh-Central part of Delhi	11%
2.	Aligarh-Western part of Hapur district	10%
3.	Western part of Agra district-Central part of Delhi	5%
4.	Aligarh-Northern part of Gautam Buddha Nagar district	5%
5.	Aligarh-Ghaziabad	4%
6.	Aligarh-Akbapur, Bulandshahr, & Nausana	4%
7.	Aligarh-Meerut district	3%
8.	Etah, Firozabad, & Mainpuri districts-Central part of Delhi	3%
9.	Aligarh-North-Eastern part of Gautam Buddha Nagar district	3%
10.	Kanpur Nagar district-Central part of Delhi	2%

Source: Steer analysis of OD data

Table B.4: MAV and OSV top 10 OD pair shares at TP2 Somna

	OD Pair	Share
1.	Kanpur Nagar district-Ghaziabad	3%
2.	Aligarh-Western part of Hapur district	2%
3.	Etah, Firozabad, & Mainpuri districts-Northern part of Haryana	2%

	OD Pair	Share
4.	Lucknow district-Ghaziabad	2%
5.	Aligarh-Northern part of Gautam Buddha Nagar district	2%
6.	Aligarh-Ghaziabad	2%
7.	Kanpur Nagar district-Northern part of Gautam Buddha Nagar district	2%
8.	Kanpur Nagar district-Northern part of Haryana	2%
9.	Lucknow district-Central part of Delhi	2%
10.	Kanpur Nagar district-Central part of Delhi	1%

Source: Steer analysis of OD data

Control Information

Prepared by

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002, India
+91 124 441 8650
www.steergroup.com

Prepared for

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1,
Sector 16, Noida- 201301 (UP, India)

Steer project/proposal number

23741311

Client contract/project number

Transit 11.0

Author/originator

Vineet Karlapalem

Reviewer/approver

Vaibhav Gupta

Other contributors

Shipra Bhatia, Ayushman Rai, Harshit Garg, Samridha Kalaiyan

Distribution

Client: Steer:

Version control/issue number

Date

April 2026

steergroup.com

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence for Hazaribagh Tollway Limited

Cube Highways Fund Advisors Private Limited
Our ref: 23741311

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence for Hazaribagh Tollway Limited

Prepared by:

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002,
India

+91 124 441 8650
www.steergroup.com

Prepared for:

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1, Sector 16, Noida- 201301 (UP, India)

Transit 11.0
Our ref: 23741311

Steer has prepared this material for Cube Highways Fund Advisors Private Limited. This material may only be used within the context and scope for which Steer has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer shall be deemed to confirm their agreement to indemnify Steer for all loss or damage resulting therefrom. Steer has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

Contents

Disclaimer		**i**
Glossary Items		**i**
1	**Introduction**	**1**
	The assignment	1
	Our approach	2
	Contents of this Report	3
2	**The Asset**	**4**
	Introduction	4
	Strategic network	4
	Concession and tolling details	6
	Key economic activities	7
	Alternate Routes	8
3	**Traffic description**	**10**
	Introduction	10
	Historical trends of traffic	11
	Key findings of the TVC data analysis	16
	Key findings of origin-destination analysis	18
	Conclusions	24
4	**Socio economic context and traffic growth**	**25**
	Introduction	25
	Population Growth	25
	Economic Indicators	26
	Vehicle ownership	27
	Economic growth	29
	Forecasts for growth drivers	32
5	**FY26 Base year AADT and Traffic growth Analysis**	**34**
	FY26 Base year AADT estimates	34
	Estimation of background elasticities	36
	Overview	36
6	**Forecasts: Network overlays and forecasts**	**39**
	Introduction	39
	Analysis of potential network/developmental impacts	39
(5.0%)	**40**	
	Revenue forecasting assumptions	42
	Traffic and Revenue forecasts	44
	Target revenues and modification of concession period	46
	Upside and Downside cases	46
	Summary outlook	50

Figures

Figure 2.1: Asset location in the regional network context 4
Figure 2.2: Asset context 5
Figure 2.3: Road cross section of the Asset and closure of Mihir Ghati 6
Figure 3.1: Ticket segmentation for CJV at TP1 Pundag 15
Figure 3.2: Ticket segmentation for MAV at TP1 Pundag 15
Figure 3.3: Comparison between TVC and TMS daily traffic data on TP1 Pundag 17
Figure 3.4: Comparison between vehicle shares from TVC and TMS WADTs 17
Figure 3.5: Zonal influence at TP1 Pundag 20
Figure 3.6 Internal-external distribution at TP1 Pundag 21
Figure 3.7: Commodity distribution at TP1 Pundag 22
Figure 3.8: Trip length distribution at TP1 Pundag 23
Figure 4-1: Annual growth – Index of Industrial Production (FY16-FY26YTD) 27
Figure 4-2: Total number of registered motor vehicles in India (per 1000 population 28
Figure 4.3: Per Capita Income 28
Figure 4-4: YoY growth in expenditure components of GDP 29
Figure 4-5: Month on Month IIP performance 30
Figure 4-6: Industrial components of GVA 30
Figure 4.7: Evolution of Jharkhand's GSDP and the National GDP 31
Figure 4.8: GDP-GSDP forecast 33
Figure 6.1: NH320 and Varanasi Kolkata Expressway 40
Figure 6.2: Long-term PCU forecasts for Pundag TP including upside and downside scenarios 49
Figure 6.3: Long-term revenue forecasts for Pundag TP including upside and downside scenarios 49

Tables

Table 1.1: Scope of work and sources of data 1
Table 2.1: Summary of concession 6
Table 2.2: Single toll rates on the Asset (INR), applicable FY26 7
Table 3.1: PCU factors 10
Table 3.2: Annual Average Daily Traffic (AADT) at TP1 Pundag 11
Table 3.3: Historical Tollable Traffic at TP1 Pundag 11
Table 3.4: Revenue (INR Crores) and AADC (in INR Lakhs) by vehicle type at TP1 Pundag 12
Table 3.5: Typical ticket types sold at NHAI plazas 13
Table 3.6: Ticket segmentation for LCV, Bus, 2A and 3A 16
Table 3.7: Data collection schedule 16
Table 3.8: WADT from TVC counts 16
Table 3.9: Sample rates for OD data 18
Table 3.10: Zone aggregations for zonal influence analysis 18
Table 3.11: Aggregate commodity categories 21

Table 3.12: Average trip length (in km)	23
Table 4.1: CAGR of Population in India	25
Table 4.2: Population Growth in India (2012-2024)	26
Table 5.1: SCF Values for TP1 Pundag	35
Table 5.2: Adopted base estimates: TP1 Pundag	35
Table 5.3: Identified growth drivers to model traffic growth	36
Table 5.4: Passenger and Commercial growth with normalised FY22	37
Table 5.5: Elasticity Recommendations for the Asset	37
Table 6.1: Impact of opening of NH320B	39
Table 6.2: Varanasi-Kolkata Expressway Impact	41
Table 6.3: Impact of 6 laning LOS improvement	41
Table 6.4: Toll segmentation for FY26 onwards	42
Table 6.5: Annual pass compensation for CJVs (in Crore)	43
Table 6.6: Trip factors at TP1 Pundag	43
Table 6.7: WPI growth forecast assumptions	43
Table 6.8: FY26 Revenue Reconciliation AADC (INR lakhs/daily)	44
Table 6.9: Final traffic forecast for TP1 Pundag	44
Table 6.10: Traffic CAGR (%) for TP1 Pundag	44
Table 6.11: Revenue forecast for TP1 Pundag (INR crores) including Annual Pass Compensation revenue for CJV	45
Table 6.12: Revenue growth CAGR (%) for TP1 Pundag	45
Table 6.13: Target Revenues for Extension 1	46
Table 6.14: Target Revenues for Extension 2	46
Table 6.15: Summary of Macro-economic Assumptions for upside and downside cases	47
Table 6.16: Summary of impacts on the Assets	47
Table 6.17: Summary of impacts on the Assets	48
Table 6.18: Upside potential and Downside PCU scenario – FY51	48
Table 6.19: Upside potential and Downside Revenue scenario – FY51	49

Appendices

A	**Top 10 OD Pairs**
B	**Data Collection Exercise**
C	**Detailed Forecasts**

Disclaimer

This report has been produced for the sole benefit of Cube Highways Pvt. Ltd. This Report (the "Report") is confidential and disclosed only for information purposes, and it may not be relied upon by any party other than the Client or a Party to a Reliance Letter, and Steer: a) makes no warranty, expressed or implied, with respect to the use of any information or methods disclosed in this Report; and b) assumes no liability with respect to the use of any information or methods disclosed in this document. Any such party by its acceptance or use of this Report releases Steer from any liability for direct, indirect, consequential, or special loss or damage whether arising in contract, warranty, express or implied, tort or otherwise.

The Report is based on standard professional efforts, and information available to us at the time the review took place and is subject to time and budget constraints of the Report's scope of work. This Report, information and statements contained herein, are all based on third party data provided to us, or sourced by us, and Steer has not sought to establish the reliability of the data, except as specifically stated in the Report. Steer bears no responsibility for the results of any actions taken based on third-party data.

Certain forward-looking statements in the Report are estimates based on interpretations or assessments of information available at the time of writing. The Report is thus to be viewed as an assessment that is time-relevant, specifically referring to conditions at the time of the review. Steer undertakes no obligation to update the Report for any reason.

While the estimates contained in the Report are not precise forecasts, they do represent, in our view a reasonable expectation of the future, based on information we have been provided with or sourced. However, the estimates necessarily rely on numerous assumptions and judgements, and circumstances may occur over the timeframe of the project that go counter to these assumptions and judgements and that affect the project's realized revenues. Actual events may differ from those assumed, and events are subject to change. Therefore, Steer makes or provides no warranty, whether implied or otherwise, as to the accuracy of forward-looking information presented. Further, it is important to note that forecasts presented represent long-term growth profiles; the results for individual time periods may vary from forecasted values.

Traffic Consultant developed the relationships in the models used to produce the forecasts for the projects based on data available through February 2026. This report does not consider variations in traffic performance due to changing macro and force majeure events such (but not limited to) as global wars, economic uncertainty (high inflation, global recession), and changes in the regulatory environment. The situation remains dynamic and is subject to significant change in the short and medium term. In this challenging context, Traffic Consultant has produced base forecasts with a view on a possible scenario for the traffic forecasts. However, it is important to note that this is only one view, and there continues to remain uncertainty as to the short-term, intermediate, or prolonged effects of and responses to such macro-economic/force majeure events. As a result, no assurance can be provided by Traffic Consultant that the scenarios and assumptions Traffic Consultant has identified will prove to be accurate. Given the uncertainty inherent in this scenario, Traffic Consultant advises that all readers of the Report consider the Report in the context of their own assessment of the impact of such events.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE ISSUE OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES.

Glossary Items

Acronym	Meaning
2A/ Truck	2 Axle/ Truck
3A	3 Axle
AADT	Annual Average Daily Traffic
BOT	Build Operate Transfer
CAGR	Compound Annual Growth Rate
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DPR	Detailed Project Report
ETC	Electronic Toll Collection, also referred to as FASTag
FY	Financial Year
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HAM	Hybrid Annuity Model
HCM/ EME	Heavy Commercial Vehicles/ Earth Moving Machinery
IE reports	Independent Engineers' reports
INR	Indian Rupees
km	Kilometre
LCV/ LGV	Light Commercial Vehicles/ Light Goods Vehicle
LMV	Light motor vehicles
MADT	Monthly average daily traffic
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NHIIMPL	National Highways Infra Investment Managers Private Limited
NSDP	National State Domestic Production
OD	Origin Destination
OSV	Oversized vehicles
PCU	Passenger Car Unit; it is a measure of standard vehicle unit to convert all vehicle classes to a single unit by using PCU factors to compute total traffic on an Asset.
Q1	Quarter 1 of financial year, from April to June
Q2	Quarter 2 of financial year, from July to September
Q3	Quarter 3 of financial year, from October to December
Q4	Quarter 4 of financial year, from January to March
RNP	Registered Number Plate
SCF	Seasonality Correction Factor

Acronym	Meaning
SH	State Highway
T&R	Traffic and Revenue
TMS	Traffic Management System
TVC	Traffic Volume Count
WADT	Weekly average daily traffic
YTD	Year to Date

1 Introduction

The assignment

1.1 The Cube Highways Fund Advisors Private Limited (the "Client") has commissioned Steer Davies Gleave India Private Limited ("Steer") for a traffic due diligence to be carried out on the Hazaribagh- Ranchi Toll Road (hereafter called "Asset"). This report forms part of the annual fair market valuation (FMV) undertaken as part of the "Transit 11 project. This report presents an update of the traffic and revenue forecasts based on actual traffic data available up to February 2026 and latest macro-economic assumptions.

1.2 The Asset Hazaribagh-Ranchi consists of the single toll road section with its own special purpose vehicle (SPV). For this report, we hereafter call the toll plaza on the Asset as TP1.

- Hazaribagh Tollway Limited: HTL: TP1 - Pundag

1.3 Our scope of work for the traffic and revenue forecasting process includes:

Table 1.1: Scope of work and sources of data

Scope of work	Data source
• Review of historical Traffic Management System (TMS) data, Vendor reports and documents	• Provided by client for the period between Oct'20 and Mar '26, with FY26 base AADT and forecasts considering data up to Feb'26
• Historical analysis and forecasts for baseline growth, including; — Background growth, and — Seasonality trends	• Historical data provided by the Client and benchmarking using plazas in the vicinity or of similar nature of the Asset has been done wherever sufficient data was unavailable.
• Validation of revenue reported in FY26YTD	• TMS data provided by Client • Revenue reconciliation using toll plaza traffic and ticket type data to calculate revenue and reconciling it with toll plaza reported revenue
• Origin Destination (OD) analysis to understand growth drivers: — Zonal influence and Top OD pairs — Commodity distribution — Trip length distribution	• Origin Destination (OD) surveys undertaken by Steer. The surveys were undertaken in February 2026.
• Analysis of upcoming network improvements and other developments, that may have future impacts on traffic	• Secondary research and our in-house experience of working in the vicinity of the Asset. Impact analysis to be conducted by Steer based on Generalised Journey Cost spreadsheet-based analysis

Scope of work	Data source
• Historical revenue analysis and forecasts for revenue estimation, including — Toll segmentation and trip factors, — Overloading shares	• Calculated from historical data provided by Client
• Final traffic growth forecasts including baseline growth rates and potential future impacts	• Elasticity based base growth and potential impacts from secondary research and Steer's in-house experience of working in the vicinity of the Asset
• Toll revenue estimation for the entire concession, including toll evolution	• Toll evolution based on latest toll notification published by National Highway Authority of India (NHAI); and latest Wholesale Price Index (WPI) trends as shared by the client

Our approach

1.4 Our approach follows well-established practices for forecasting ongoing traffic growth on an existing/brownfield Asset. The analysis focused on two sets of issues, namely:

- understanding the traffic that is currently using the Asset; and
- identifying how and why that traffic is likely to change in the future.

1.5 To understand the current traffic on the Asset, we have analysed traffic data from multiple independent sources:

- Client-provided secondary data, including:
  - TMS data starting October 2020 to February 2026. The historical traffic and revenue presented in Chapter 3 considers information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.
  - Concession agreement and toll notifications for FY25 and FY26.
  - Previous studies related to traffic and revenue
  - Steer-commissioned OD survey on 17th Feb 2026 to validate any change in growth drivers and travel patterns.
  - Steer-commissioned TVC survey in 2026 as a part of study in earlier commission.
- We undertook revenue reconciliation for FY26YTD, by building up revenue from the traffic reported by each of the toll plaza and subsequently match it to the reported revenue for FY26YTD using the prevalent toll rates and reported segmentation/toll-frequencies for FY26YTD, this is a key part of our analysis to validate the segmentation/toll-frequency assumptions and the Annual Average Daily Traffic (AADT) reported for each of the toll plaza.

1.6 The estimation of future traffic demand on the Asset was undertaken through:

- Estimating FY26 base year position by applying seasonality correction factors (SCFs) on 11 months of actual traffic (Apr-Feb).

- Secondary research to understand plans for new developments and progress of ongoing developments on the Asset.
- Steer independent primary surveys and site visits to validate our network and contextual understanding.
- Developing a bespoke growth model for each Asset/plaza/toll class to forecast year-on-year traffic growth from FY26 to the end of concession period.
- Investigating the elasticity of historical traffic growth compared to state (GSDP) and national (GDP) growth. Where historical data is limited, we have benchmarked the Asset against our Steer knowledge base (e.g., similar Asset types in the same state or on the same corridor), to derive appropriate elasticities.
- Applying our elasticities to independent GDP forecasts as provided by client.
- Identifying and analysing the potential impacts of any relevant changes to the competitive position of each Asset – these include impacts of changes to road network including expressways and opening of competitive modes of travel.
- Identifying and analysing any other potential impacts to traffic and revenue on each Asset – these include axle load norms, axle shift for heavy goods, FASTag implementation.
- Considering changes in trends of segmentation over time and making suggestions for changes in exemptions in the future.
- Preparing traffic and revenue forecast for the Asset for the complete length of concession. The analysis here includes the specific impacts of network, or other exogenous factors specific to the Asset. We have developed a set of forecasting assumptions for three scenarios: a base case and upside and downside scenarios.

Contents of this Report

1.7 The report has been divided into the following chapters, including Chapter 1 providing an introduction:

- Chapter 1 introduces the methodology and approach to undertake the traffic and revenue due diligence;
- Chapter 2 describes the key characteristics of the Asset and its surrounding road network, primarily based on site visits;
- Chapter 3 summarises the current and historical traffic on the Asset, including results from the TMS, TVC and OD analysis;
- Chapter 4 presents the socio-economic context of the corridor and region/state containing the Asset, along with our approach and results on estimating background traffic demand growth; and
- Chapter 5 presents our baseline year forecast and summarises our results on estimating background traffic demand growth
- Chapter 6 summarises our assessment of network impacts and presents concession traffic and revenue forecasts for the Asset along with the assumptions for upside and downside cases

2 The Asset

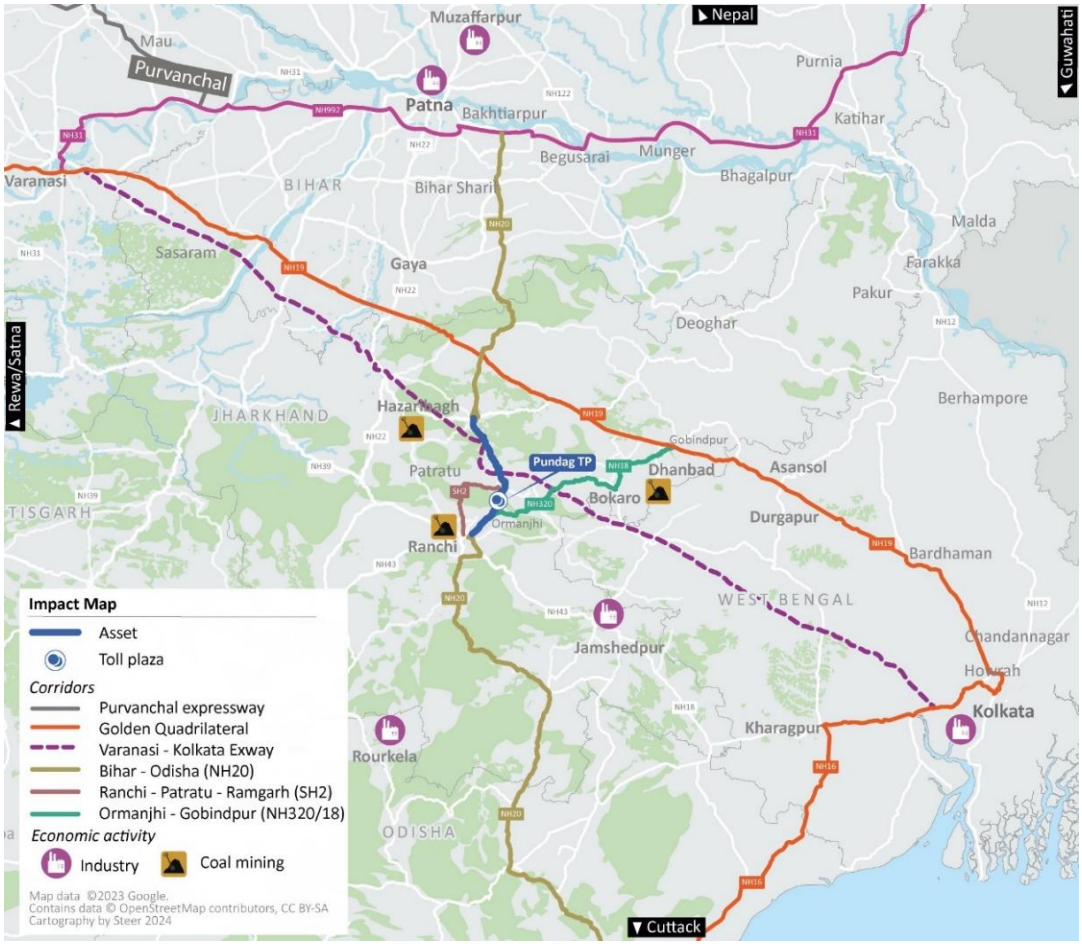
Introduction

2.1 This chapter provides a description of the Asset, based on both primary data (from site visits), and our understanding of the region and network surrounding the Asset. We cover the strategic network context, followed by key economic activities and network developments around the Asset.

Strategic network

2.2 The Asset is situated in the state of Jharkhand, connecting Ranchi, the capital of Jharkhand, and Hazaribagh, on the NH 20 (old NH 33). The following figure shows the regional road network in which the Asset is located.

Figure 2.1: Asset location in the regional network context



Source: Steer cartography using OpenStreetMap data

2.3 This Asset primarily caters to three different types of strategic movements:

- **Short-distance trips** including tourism and leisure travel trips between some of the key tourist destinations in Jharkhand. Many CJV users are either local or travel between Ramgarh and Patratu at one end and Ranchi at the other.
- **Medium-distance trips** between Bihar/rest of Jharkhand connecting the mines situated close to the Asset, to industries in Jharkhand. The Asset also transports a significant number of minerals, steel, and related products across the states of Bihar, West Bengal, and Odisha.
- **Long-distance trips** between Bihar/southern West Bengal and southern as well as central states of India.

2.4 The Asset is a 73.79 km long toll road which forms a part of the NH 20 (old NH 33) in Jharkhand. It is a four-lane divided road with one toll plaza, namely, Pundag at Km 100.4. The toll plaza is situated nearer to the Ranchi side of the Asset than to the Hazaribagh side. A detailed view of the Asset and its adjacent area is shown in Figure 2.2.

Figure 2.2: Asset context

Source: Steer Cartography

2.5 About 67% of vehicles on the Asset are CJVs, in FY26YTD which predominantly commute between Ranchi, Ramgarh, Hazaribagh and other local destinations along the Asset. The commercial vehicles on the Asset cover a mix of medium and long distances. Trucks from Jharkhand, Bihar are observed, as well as those from UP, Delhi, Haryana, and Rajasthan.

Concession and tolling details

2.6 The toll plaza on the Asset has been operational since September 2013 and the Client took over the operations in October 2020. The concession period ends in FY51. Table 2.1: Summary of concession presents a summary of the concession.

Table 2.1: Summary of concession

Particulars	Details
State	Jharkhand
Highway and lane configuration	NH 33 (old NH 20), 4-lane divided
Toll plaza	Pundag
Length (km) as per concession agreement, applicable	73.79 km
Commencement of operations	September 2013
Operated by Client since	20th October 2020
Concession period	30 years
Last year of concession	2051

Source: Client data

2.7 The following images show a typical cross section of Asset and its toll plaza.

Figure 2.3: Road cross section of the Asset and closure of Mihir Ghati

Source: Steer site visit

2.8 The toll rates for single category are shown in the following table. The toll plazas have dedicated ETC/FASTag lanes for electronic tolling. Like the other National Highway plazas, the Asset has Single, Return, Local Commercial, Local Personal, Monthly, and Local Monthly tickets.

2.9 Due to general elections in India from Apr-May'24 the toll rates on National highways across the country for next financial year were applicable Jun'24 onwards instead of Apr'24. Tolls of FY26 were updated in Apr'25.

Table 2.2: Single toll rates on the Asset (INR), applicable FY26

Type of Vehicle	Single Journey Fee
	Pundag
CJV	125
LCV	205
Bus/Truck	425
3A	465
HCM/EME/MAV	670
OSV	815

Source: NHAI Revision of User fee Rate w.e.f 01.06.2025

2.10 Apart from single tickets, ticket categories like monthly, local personal and local commercial passes are also available on the Asset.

Key economic activities

2.11 The Asset is situated in Jharkhand, a state rich in mineral resources, contributing 40% to India's mineral reserve. Minerals ranging from iron ore, coal, copper ore, mica, bauxite, Manganese, limestone, China clay, fire clay, graphite, kainite, chromite asbestos, thorium, sillimanite, uranium (Jarsuguda mines, Narwa Pahar) and even gold (Rakha Mines) and silver and several other minerals are found in Jharkhand.

2.12 The presence of large deposits of coal and iron ore in the vicinity has resulted in the concentration of industries, in centres like Jamshedpur, Dhanbad, Bokaro and Ranchi. Particularly, Hazaribagh and Chattra near the Asset contribute significantly to the state's total coal reserves, making coal one of the common commodities being transported on the Asset.

2.13 Jharkhand contributes 20-25% of the total steel produced in India and is home to industries like Tata Steel, Steel Authority of India Limited (SAIL), Jindal Steel and Power Limited (JSPL) etc. TATA Steel in Jamshedpur is 130 km from Ranchi towards the south-east of the Asset and accounts for a significant amount of traffic on the Asset. As per the 2023 report, Tinplate Company of India Limited (TCIL) is investing more than 2000 cr to increase capacity of steel production by 3L Ton per annum[1]. Jindal Steel and Power Limited (JSPL) operates a steel plant as well as power plant in Patratu (40 km from the Asset) and is planning to invest to add 2-2.5 million tonnes per annum to its current capacity of 0.6 million tonnes per annum (wire rod mill) and 1.2 million tonnes per annum (bar mill)2. The expansion is expected to add further steel carrying tollable traffic from Ranchi – Patratu.

2.14 The Ramgarh and Hazaribagh areas are rich in limestone mines. Since the state has reserves of cement grade limestone, the region is well-suited for creating additional capacities. Burnpur Cement's plant in Patratu attracts cement carrying traffic towards the Asset. Burnpur Cement is planning to launch new cement products from the Patratu plant

[1] **TCIL expansion project very important for Jamshedpur and Tata Steel: Narendran | The Avenue Mail**

[2] **https://www.thehindubusinessline.com/companies/jspl-looking-to-set-up-2-25-mtpa-steel-plant-at-patratu-in-jharkhand/article31088657.ece**

as well as increase its capacity utilisation[3]. Further exploration of limestone would help in developing new cement plants and hence, would generate additional traffic on our Asset.

2.15 Dalmia Cement (Bharat) Limited is investing ₹758 crore in Bokaro to expand its cement manufacturing capacity and sustainability initiatives. This includes ₹567 crore for a 2.6 MTPA grinding unit (taking total capacity to 6.3 MTPA), ₹250 crore for a solar power plant, and ₹8 crore for waste management facilities under Ranchi Municipal Corporation. The expansion is expected to generate significant employment and contribute to tollable traffic from Bokaro to Ranchi.[4]

2.16 The industrial area in Hazaribagh is also a significant traffic generator for the Asset. 1500+ industries are present in the industrial area involved in the production of cement, coke, and stone.[5] Although no major tourism spot is present on the Asset, Patratu Thermal Power Station (PTPS) dam at Patratu attracts CJV traffic from Ranchi and nearby areas as a weekend getaway.

Alternate Routes

2.17 For short/medium – distance traffic connecting Ranchi to Ramgarh, there is an alternate route via Patratu on SH 2 that bypasses the toll plaza. The same route also leads to Hazaribagh bypassing the whole Asset. The route is not preferred by truck drivers as it is longer and present on hilly terrain. Also, it is two-laned and passes through uninhabited areas. Hence, no traffic shift and impact are assumed for same.

2.18 For Hazaribagh – Jamshedpur traffic, an alternate route is available at Kothar (near Ramgarh). The alternate is two-lane undivided road connecting Hazaribagh – Jamshedpur. During Steer's site visit it was found that a few local coal carrying trucks from Hazaribagh/Barhi take this route instead of the Asset as the route is shorter (23 kms) and has no tolls. However, the route is known to be affected by local Naxal based insurgency and deemed unsafe. Long distance trucks follow the Asset as it is four-laned throughout the way (till Jamshedpur) and is safer as it doesn't pass through uninhabited areas. Therefore, for the reasons stated above the alternate is not considered to be favourable route for majority of the users.

2.19 As per latest updates, the Oramanjhi-Gola-Bokaro section of NH320B between Bokaro-Ranchi is undergoing construction. It is expected to be a 4 lane road that is largely greenfield with construction expected to get completed in 1-1.5 years. The Mihir Ghati road which is a part of the existing NH320 is currently being 4-laned and is expected to be a part of the NH320B once completed. Due to the closure of the Mihir Ghati section, commercial vehicles' movement on the NH320 has stopped. As a result, Ranchi-Bokaro traffic has started using the Asset, which has led to temporary gain in traffic on the Asset particularly moving between Ranchi and Bokaro.[6] The same is validated from monthly traffic data, wherein increased volume is observed on the plaza starting June'23 onwards.

---

[3] https://www.globalcement.com/news/item/5828-burnpur-cement-to-launch-pozzolona-portland-cement-brand-in-april-2017

[4] **Dalmia Bharat to impact 20,000 lives of Bokaro, investing Rs. 758 Cr on Industrial project - India CSR**

[5] **DIPS Hazaribagh.pdf (dcmsme.gov.in)**

[6] **https://www.livehindustan.com/jharkhand/bokaro/story-villagers-protest-nh-320-road-construction-in-lepo-mauja-demand-underpass-201741001945578.html**

This diverted traffic is expected to return to the alternate road when the construction activity is completed, and the ban is lifted.[7] The detailed impact assumed for the opening of NH320B is presented in Chapter 6 of the report.

2.20 National Highway Authority of India (NHAI) has proposed a 4/6 lane greenfield Varanasi Ranchi-Kolkata expressway connecting Varanasi, Ranchi, and Kolkata. As per the latest information available, the alignment of this expressway is supposed to cross the Asset north of the Ramgarh, and hence, is not expected to take away any traffic which is currently moving from east of Hazaribagh to Ranchi or vice versa. In the long-term, trips between Kolkata and Ranchi can benefit from the improved connectivity and act as a positive on the Asset. Hence, impact of the expressway has been considered in our analysis and has been detailed further in Chapter 6.

2.21 During Steer's site visit to the Asset, no major micro-diversions through local roads were observed close to the toll plazas.

[7] ttps://www.livehindustan.com/jharkhand/bokaro/story-villagers-protest-nh-320-road-construction-in-lepo-mauja-demand-underpass-201741001945578.html

3 Traffic description

Introduction

3.1 This chapter outlines the current traffic and revenues on the Asset, as well as our analysis of origin-destination (OD) data and traffic count data. This covers data which was collected as a part of this study and previous studies, as well as data provided by the Client.

3.2 Traffic demand data is generally collected and analysed to understand the volume and vehicle composition of demand currently using the Asset, while OD data is used to obtain a better understanding of travel patterns, trip lengths, trip purposes and areas of influence in the vicinity of the Asset, as well as the commodities being moved by goods vehicles. This analysis, combined with our understanding of the Asset (based on our site visits), enables us to identify the key drivers of demand on the Asset.

3.3 Actual toll plaza data is used as the basis from which the current/base year annual average daily traffic (AADT) is established. This data is typically provided by the Client and independently analysed and validated by us using traffic volume count (TVC) information.

3.4 The below sections present historical traffic and revenue information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.

PCU Factor assumption

3.5 The PCU values have been taken from 'IRC 64:1990- Guidelines for Capacity of Roads in Rural Areas'. For MAV, based on the discussion with the Client, we have referred to the rigid and trailer splits in the latest TVC counts conducted in 2026 for calculating the effective PCU for MAVs. For rigid trailer trucks we have assumed a PCU factor of 3, whereas for trailer trucks we have assumed a PCU factor of 4.5. These factors have been used to arrive at the PCU values presented in the following sections.

Table 3.1: PCU factors

Vehicle Category	PCU Factor
CJV	1.0
Mini LCV	1.0
LCV	1.5
Bus	3.0
2A	3.0
3A	3.0
MAV*	3.75

OSV	4.5

Source: Steer analysis, * Rigid-Trailer PCU calculated using TVC splits of such vehicle types

Historical trends of traffic

3.1 The following table illustrates the traffic data over the period of 6 years from October 2020 – February 2026 (provided by the Client) at a plaza level. There is lack of long-term historical data available on the Asset since tolling was started by the client only in October 2020 and the available years of data, FY21 and FY22 were impacted by COVID-19 related restrictions. Starting FY23 traffic on the Asset has started to get normalised with temporary traffic gain starting FY23 due to construction of alternate Oramanjhi- Gola-Bokaro Section.

Table 3.2: Annual Average Daily Traffic (AADT) at TP1 Pundag

Vehicle category	FY21*	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
CJV	9,186	8,516	8,935	9,879	10,928	12,401	11.5%
LCV	859	467	445	488	363	386	(4.6%)
Bus	672	447	583	594	797	915	16.2%
2A	490	586	681	845	1,023	1,076	16.5%
3A	516	455	480	529	555	576	6.3%
MAV	1594	1,629	1,690	1,950	2,557	2,883	19.5%
OSV	0	1	2	2	2	2	
AADT	**13,318**	**12,103**	**12,814**	**14,287**	**16,224**	**18,239**	**12.5%**
PCU	**21,492**	**19,803**	**21,178**	**23,840**	**28,199**	**31,507**	**14.2%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21); FY26 AADT represents the full year actual (April to March)

Table 3.3: Historical Tollable Traffic at TP1 Pundag

Vehicle category	FY21*	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
CJV	8,010	7,770	8,172	9,013	9,905	11,224	11.2%
LCV	862	460	442	484	357	381	(4.8%)
Bus	668	441	578	588	772	909	16.3%
2A	501	568	665	832	1,007	1,059	16.8%
3A	514	449	473	526	550	570	6.4%
MAV	1,690	1,624	1,687	1,948	2,551	2,880	19.5%
OSV	4	1	2	2	2	2	
Tollable AADT	**12,249**	**11,312**	**12,019**	**13,392**	**15,144**	**17,025**	**12.3%**
Tollable PCU	**20,711**	**18,932**	**20,322**	**22,895**	**27,009**	**30,224**	**14.2%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21); FY26 AADT represents the full year actual (April to March)

3.6 CJVs have the dominant share in traffic, comprising more than ~67% share in FY26 due to the presence of large urban centres close to the Asset like Ranchi, Hazaribagh and Ramgarh Cantt, which attracts large quantum of CJV traffic. Vehicles from nearby urban settlements in the influence area like Bokaro, Patratu, Jamshedpur also use this Asset. This is further validated by the analysis of the OD data discussed later.

3.7 As can be seen from Table 3.2, the CJV traffic has increased from ~8,900 AADT in FY23 to ~12,400 AADT in FY26. Whereas the MAV volume has increased from the earlier range of by CAGR 19.5% between FY23 and FY26. This volume increase is mainly driven by temporary traffic shift on the Asset due to the closure of the Mihir Ghati on NH320, which has led to shift of Ranchi-Bokaro trips to the Asset as mentioned in Chapter 2. Once the construction of NH320B is completed, seamless connectivity between Ranchi and Bokaro will be established; as a result, a shift of Ranchi-Bokaro trips are expected to take place from the Asset to NH320B.

3.8 Furthermore, effective May 2024, minibuses previously tolled as LCVs have been reclassified under the bus category. This reclassification is based on a passenger count system, replacing the earlier gross vehicle weight-based classification. Travel patterns in FY25 and FY26 remain largely consistent.

3.9 The trend of tollable traffic on the Asset has largely followed that of total traffic. The Asset has recorded 14.2% tollable PCU CAGR.

3.10 It is seen that the exemption volume in CJV is consistent ~800-1000 vehicles historically with no major change, as seen in Table 3.3.

3.11 The MAV traffic on the Asset is largely influenced by the mineral industries along its alignment, which also contributes to the overall stability of MAV volumes across different time periods.

3.12 The steel industry has seen slowdown over the last couple of years first due to Covid19 related disruptions, slowdown in demand for steel in China, and subsequent high inflation. Recent evidence from various industry players suggests a rebound in Steel production and consumption led by economic activity and urbanization which is expected to boost demand for steel in India to between 240-260 million metric tons by 2035. [8] [9]

3.13 These factors support the growth prospects of the Steel related industry and traffic in the future. Beyond these natural growth factors, higher than usual growth was observed on Asset due to the work on the alternate NH320 as mentioned earlier.

Historical Revenue

3.14 The following table shows the total revenue (in INR Crores) and AADC (Annual Average Daily Collection; in INR Lakhs) by vehicle type at the toll plaza for FY21 to FY26YTD.

Table 3.4: Revenue (INR Crores) and AADC (in INR Lakhs) by vehicle type at TP1 Pundag

FY	CJV	LCV	Bus	2A	3A	MAV	OSV	Total	AADC	AADC Growth
FY21*	1.2	0.2	0.3	0.3	0.3	1.5	0.0	**3.8**	**22**	

[8] Evolving with steel: Future growth and opportunities | McKinsey

[9] https://www.moneycontrol.com/news/sector/indian-steel-industry-tapered-now-tempered-for-future-thanks-to-improving-macros-10125481.html

FY	CJV	LCV	Bus	2A	3A	MAV	OSV	Total	AADC	AADC Growth
FY22	21.4	2.0	3.7	6.8	6.2	35.2	0.0	**75.3**	**21.0**	**(4.5%)**
FY23	21.8	1.9	4.7	7.9	6.3	36.4	0.0	**79.1**	**21.7**	**4.8%**
FY24	31.9	2.8	7.0	11.4	7.9	45.1	0.1	**106.3**	**29.0**	**34.0%**
FY25	35.6	2.2	9.3	14.0	8.4	59.0	0.1	**128.6**	**35.2**	**21.3%**
FY26	40.5	2.5	15.6	11.3	9.1	69.8	0.1	**148.9**	**40.8**	**15.8%**

Source: Steer analysis of Client data, (FY21* From Oct-20 (last 12 days) to Mar-21; AADC represents Average Annual Daily Collection; FY26 represents full year actual (April to March).

3.15 The MAVs are the biggest revenue contributor on the Asset followed by CJVs. Lower per day collection in FY22 can be attributed to COVID-19 with restricted traffic movements. FY21 and FY23 recorded the similar average per day collection of INR 22 lakh. AADC in FY25 and FY26 increased by 21% and 16% respectively due to incremental traffic gain on the plaza as construction of NH320B commenced and Mihir Ghati was closed.

Toll Frequencies

3.1 Toll frequency or segmentation is typically the share of each ticket category recorded for a particular vehicle type. This is based on the toll policy which forms a part of the concession agreement. Each vehicle category has different segmentation. As a part of historical analysis, we calculate the toll frequency for each vehicle category from the monthly data shared by the client. The most common ticket categories observed on a typical National Highway are: Single, Return, Monthly, Local and Exempt. Given the local nature of traffic, some toll plazas offer custom made local passes to attract the local commuters to opt for these passes instead of evading toll.

3.2 The following are the types of tickets being sold at the plazas of the Asset.

Table 3.5: Typical ticket types sold at NHAI plazas

Category	Description
Single	Allows the vehicle to cross the toll plaza once
Return	Allows for a return journey within a day with a 50% discount on the return trip.
Monthly Pass	Discounted single entry ticket for users who undertake multiple trips within a month can buy the monthly pass.
Local Personal	Discounted single entry pass only for private cars of residents within 20km radius of toll plaza
Local Commercial	50% discount on single trips for commercial vehicles registered in the local district. This pass allows single entry only
Exemptions	Officially exempted vehicles like ambulance, police cars, key political personnel etc.

3.3 Further, the toll plazas also record violations which are non-paying users, who are not officially allowed under exemptions category but are forced exemptions. For some Assets, the Exemption and violations are at time reported together.

3.4 Generally, over the period the shares of single/return/monthly tickets tend to stabilise within 2-3 years of Asset operations. Only in the cases where trip patterns are expected to change significantly due to urban expansion is where we expect these shares to change over the period or due to some external events impacting the trip patterns.

3.5 Further, FY21 was impacted due to the mandatory implementation of FASTag as a mode of payment, where users were now paying via an online payment system instead of cash payments at the toll plaza. Additionally, in FY22 traffic and travel patterns were impacted by the second wave of COVID-19 in Q1 and Q2. With FY21 and FY22 being impacted these external events, the segmentation began to stabilise from FY23 onwards and reached steady state starting FY24.

Introduction of Annual pass for CJVs

3.6 The National Highway Authority of India launched the "The FASTag Annual Pass" on August 15, 2025, a prepaid facility that allows private CJVs to travel across designated National Highway and National Expressway toll plazas. The annual pass is worth INR 3,000. The pass is valid for one year or 200 trips, whichever occurs first and is applicable only to private, non-commercial vehicles (Car/Jeep/Vans).

Since this pass has been introduced by NHAI, it is not valid on

- state governed toll plazas on highways
- state governed toll plazas expressways
- Parking areas or other non-NHAI tolling locations

3.7 The pass can be activated via the RajmargYatra app or the NHAI website, and links directly to an existing FASTag.

The Annual Pass aims to:

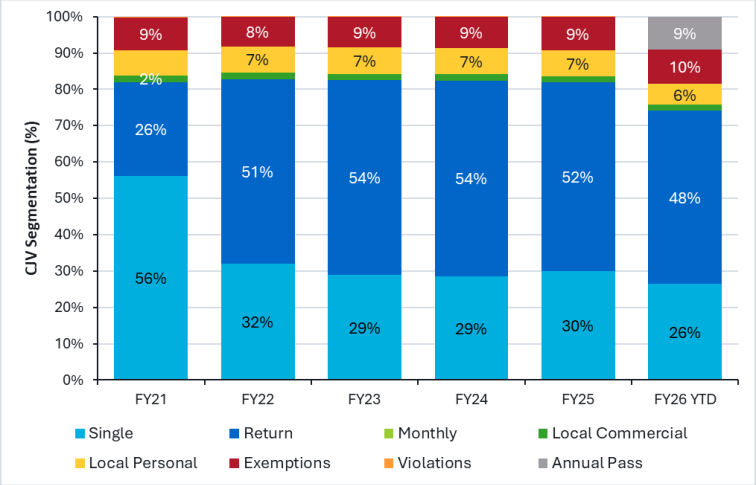
- Promote cashless and seamless travel on national highways.
- Reduce congestion and improve traffic flow at tolls
- Provide cost-effective travel for frequent users of NH/NE toll roads.

Share of traffic by payment type

3.8 As shown in Figure 3.1 from the period of FY26YTD, almost half of the CJVs paid for return tickets, and the remainder ticket-share being made up of single journeys, annual pass, local passes, and exemptions. High CJV return trips could be attributed to the travel pattern of the daily commuters between Ramgarh and Ranchi. The toll frequencies for CJV have largely remained the same since FY23.

3.9 Annual Passes were introduced for CJVs from 15 August 2025. At the Asset, these trips primarily shifted from single and return ticket categories, with exemptions and local person pass trips being at the same levels as FY25.

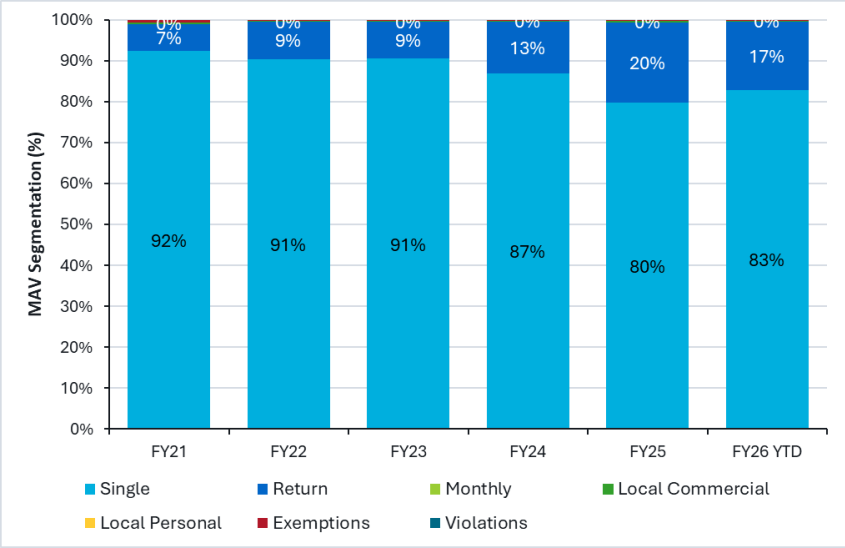
Figure 3.1: Ticket segmentation for CJV at TP1 Pundag



Source: Steer analysis of Client data, (FY21* From Oct-20 (last 12 days) to Mar-21; FY26YTD is for 11 months between April and February 2026

3.10 MAVs are observed to have high share of single tickets since FY21 which is aligned to observation of MAVs doing medium to long distance trips on the Asset. As discussed, and validated from the OD data, around 54% of the MAVs on the Asset travel >500 kms. A slight increase in return tickets is visible due to implementation of FASTag, allowing trucks to avail return journey discounts if they return within 24 hrs. In addition to this, FY24 and FY25 has observed increase in return tickets primarily could be due to MAVs carrying construction material such as cement, sand, etc. for the ongoing construction of NH320. Ranchi, Ramgarh and Patna are the major trip generators for the MAV traffic.

Figure 3.2: Ticket segmentation for MAV at TP1 Pundag



Source: Steer analysis of Client data, (FY21* From Oct-20 (last 12 days) to Mar-21; FY26YTD is for 11 months between April and February 2026

3.11 For FY26YTD, the MAV segmentation observes increase in the single tickets.

3.12 Refer below to the table for FY26YTD segmentation for LCV, Bus, 2A and 3A category:

Table 3.6: Ticket segmentation for LCV, Bus, 2A and 3A

Ticket Category	LCV	Bus	2A	3A
Single	44.7%	8.8%	64.3%	66.4%
Return	49.9%	89.6%	34.0%	30.9%
Local commercial	4.2%	0.8%	0.1%	1.7%
Exemption	1.2%	0.7%	1.6%	1.0%

Source: Steer analysis of Client data

Data Collection exercise

3.13 As mentioned previously, to validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset, comprising the surveys listed in the table below. Both OD surveys and TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas, which Steer also commissioned with a third party. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

Table 3.7: Data collection schedule

TP	3-day videography-based TVC			1-day OD survey			
	Start date	End date	Time (hrs)	Start date	Start time	End Date	End Time
TP1 Pundag	20th Feb 2026	22nd Feb 2026	0000-2359	17th Feb 2026	0800 hours	18th Feb 2026	0800 hours

Source: Steer analysis

3.14 It should be noted that, in our experience, traffic on national highways shows variation across the week due to the economic activities surrounding each road. To derive a representative TVC count considering daily variation, three-day to seven-day traffic counts are generally recommended, and hence, to fully understand the impact of this weekly fluctuation on the Asset, we collected seven-day counts at the toll plaza.

Key findings of the TVC data analysis

WADT estimates

3.15 Taking an average of the three-day TVC counts (20th Feb – 22nd Feb 2026, 0000-2359), we obtained the following weekly average daily traffic (WADT) for each toll plaza. This WADT excludes non-tollable vehicles such as tractors, two-wheelers, bullock-carts, etc., but includes officially exempt vehicles such as police cars, ambulances, emergency response vehicles, government vehicles and other vehicle types officially allowed as 'exempted' under the concession agreement.

Table 3.8: WADT from TVC counts

Toll Plaza	CJV	LCV	Mini LCV	Bus	2A	3A	MAV	Total
TP1 Pundag	10,936	1,487	1,646	981	948	630	3,509	**20,146**

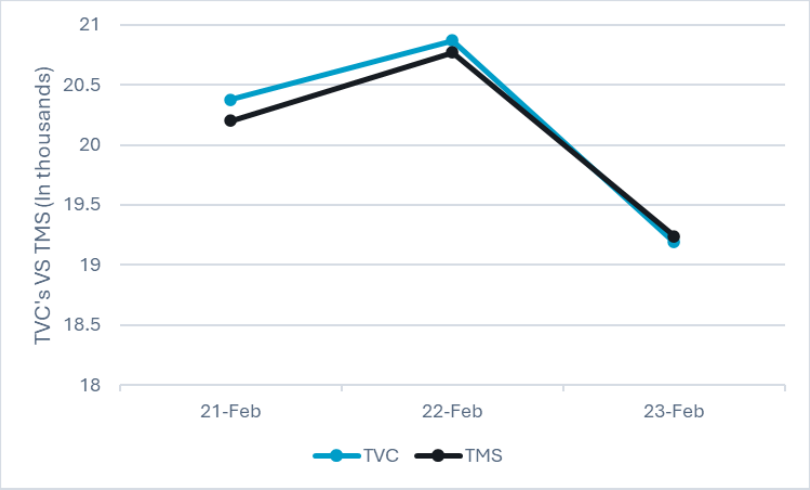
Source: Steer analysis of TVC data

TVC v/s TMS analysis

3.16 As we use the TMS data to estimate the base year AADT, we have used our TVC data to validate the TMS data on those days, as provided by the Client.

3.17 The following figures show the comparison between the daily traffic observed by TVC and TMS for the toll plaza.

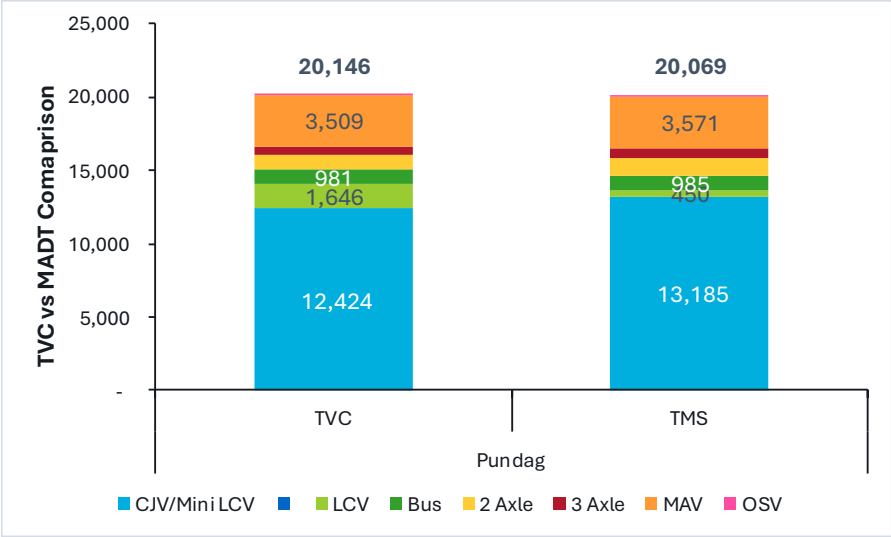
Figure 3.3: Comparison between TVC and TMS daily traffic data on TP1 Pundag



Source: Steer analysis of TVC and Client TMS data

3.18 The figure below compares the shares of vehicle types at both toll plazas observed by the TVC and TMS data. As can be seen, the total TMS count was found to be ~0.4% lower than the TVC count recorded for the same period. The differences within vehicle categories can be attributed to common misclassification of vehicle categories.

Figure 3.4: Comparison between vehicle shares from TVC and TMS WADTs



Source: Steer analysis of TVC and Client TMS data

3.19 Considering the variation between the TVC and TMS is 0.4%, our TVC-TMS analysis gives us confidence that the base year traffic calculated using the Client data forms a reliable base year traffic estimate.

Key findings of origin-destination analysis

Overview

3.20 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Asset. As mentioned previously, the OD analysis presented here has been based on the data collected on 17th-18th Feb 2026.

3.21 We have analysed the regional drivers of demand based on the following analyses:

- Zonal influence
- Commodity distribution
- Top OD pairs
- Trip length distribution

3.22 While zonal analysis and the list of top OD pairs help to understand 'where' people and goods travel, commodity distribution sheds light on 'what' goods get transported. Trip length distribution show 'how far' vehicles and people travel, and goods get transported. This set of analyses is generally used to estimate the key drivers of traffic and aid the making of informed forecasting assumptions around traffic demand elasticities, growth drivers and exogenous impacts.

Sample rates

3.23 Sample rates help understand the reliability of OD data. They are calculated by dividing OD samples captured by the traffic counts (based on the TMS data) during the same time period. The table below presents the sample rates for key vehicle type aggregations at the toll plaza.

Table 3.9: Sample rates for OD data

Vehicle type	TP1 Pundag
Passenger (CJV+Bus)	20.6%
Goods (LCV+2A+3A+MAV+OSV)	74.1%

Source: Steer analysis of OD data

Zone categories

3.24 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones, and influenced by various towns, cities, states and regions in the vicinity of the Asset, we have aggregated zonal data as described in the table below. The methodology behind this aggregation of zones may vary as per the characteristics displayed by the different Asset being studied.

Table 3.10: Zone aggregations for zonal influence analysis

Aggregate Zone	Description
Local	Local zones are those that fall on or very close to the Asset.

Aggregate Zone	Description
IAOI (Immediate Area of Influence)	IAOI zones are the locations which generate traffic and lie within approximately 75-150 km distance from the Asset.
Rest of State	Rest of the cities/Districts in the state that Asset lies in (other than Local/IAOI)
East & Northeast India	West Bengal, Jharkhand, and Northeast Indian states
Bihar	Bihar (Including Patna etc.)
Odisha	Delhi State, including New Delhi
South India	Tamil Nadu, Karnataka, Kerala, Andhra Pradesh
North India	Uttarakhand, Haryana, Punjab, Jammu and Kashmir
Central India	Madhya Pradesh, Chhattisgarh
West India	Rajasthan, Gujarat
Delhi	Delhi State, including New Delhi
Outside of India	Bangladesh, Nepal etc.

Source: Steer analysis

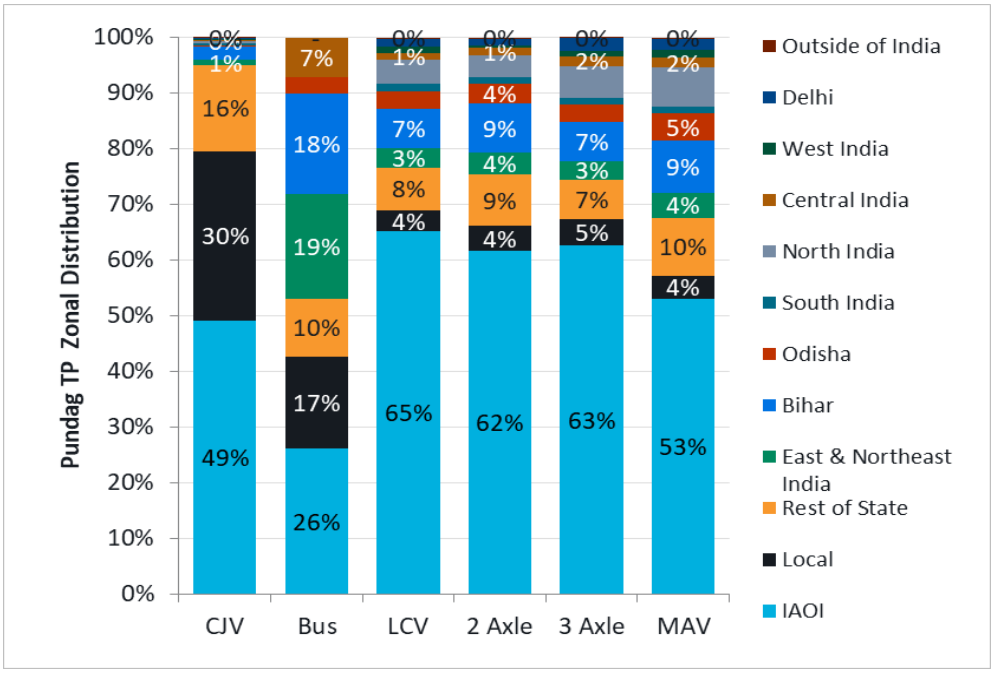
Zonal influence

3.25 The zonal influence is the contribution of the zone or the zonal aggregation to trips by a vehicle type. This section presents the zonal influence[10] at each toll plaza of each Asset, based on zonal aggregation listed in the previous sub-section. it should be noted that zonal influence is analysed on trip ends and not trips.

3.26 From the figures below, it can be observed that the plaza has high share of Local/IAOI trips with 57% for MAVs and 79% for CJVs. 3A and MAV trips are comparable with higher proportion of local trips given the presence of coal mines and large-scale industries close to the Asset. We see a high share of Bihar and East and Northeast India in 2A, 3A and MAV zonal influence. This also shows that the Asset serves to connect the eastern part of the country to the northern parts. The neighbouring state of Bihar also serves as a major influence across vehicle categories with 7-9% of goods vehicles influenced by it.

[10] For example, if out of 100 trips at a toll plaza on an Asset, 10 trips are between Hyderabad and Delhi and 90 trips are between Hyderabad and Chennai, then zonal influence of Hyderabad would be 50% since one end of all trips are at Hyderabad. Likewise, zonal influence of Delhi and Chennai would be 5% and 45%, respectively.

Figure 3.5: Zonal influence at TP1 Pundag



Source: Steer analysis of OD data

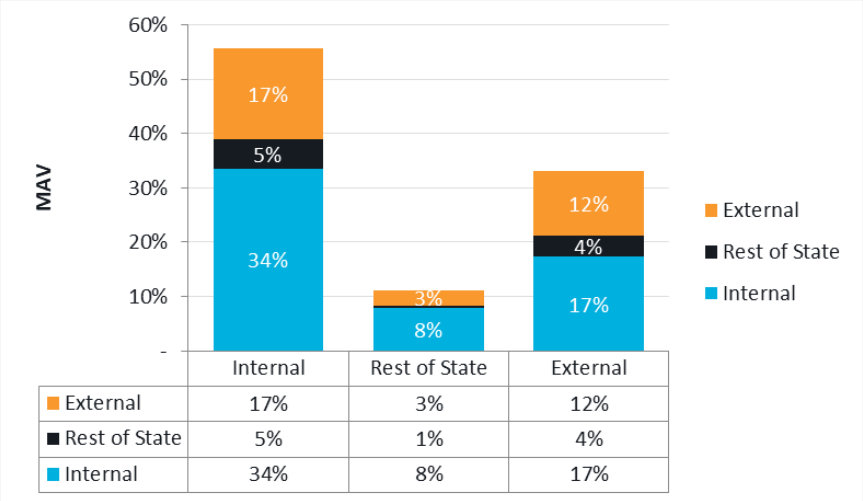
Internal External analysis

3.27 Internal-External analysis helps in identifying the trips which have both the origin and destination on the Asset (Internal-Internal or I-I), any one end on the Asset (Internal-External or I-E), or neither end on the Asset i.e., through trips (External-External or E-E). 'Internal' zones are those that were analysed as 'local' and 'IAOI' in the zonal influence analysis, i.e., lying on the Asset or in the "immediate area of influence", 'Rest of State' zones are those origins and destinations aggregated as "Rest of State" in the zonal analysis while 'External' zones are all other zones.

3.28 Figure 3.6 below show the distribution of trips based on these categories. Understandably, these reflect the observations seen in the zonal influence presented earlier, at a higher level of aggregation.

3.29 We see that I-I, I-E and, E-I trips dominate for MAV category suggesting Jharkhand as a significant origin of truck traffic. Presence of big industries near the Asset as well as in the state can be the reason behind this high number of Internal trips. This proportion also suggests that the trips are local in nature. 12% external-external trips validates the assertion that the Asset is a major connector for locations in East and North East of India with North India.

Figure 3.6 Internal-external distribution at TP1 Pundag



	Internal	Rest of State	External
External	17%	3%	12%
Rest of State	5%	1%	4%
Internal	34%	8%	17%

Source: Steer analysis of OD data

Commodity distribution

3.30 We have grouped various commodities into aggregate categories for ease of interpretation, as shown in the table below. The charts in the following sub-section present information in terms of aggregate commodity categories.

Table 3.11: Aggregate commodity categories

Commodity Description	Code	Combined codes used for charts
Agriculture Products / Cash crops (Wheat, Rice, Sugar cane,Maize etc.)	AGR	AGR
Cattle Food / Livestock (sheep, goat, cow, cattle food etc)	LIV	
Perishable Items (Fruits, vegetables)	PER	GRO
Animal Products/Dairy/Eggs/Fish/Meat/Animals	DFM	
Groceries / Food items (Soap, Salt, Sugar, Pulses, Spices, Biscuits, bread,cool drinks, beer etc.)	GRO	
Building Material / Construction (Cement, Lime, Brick, fly ash, etc)	CNS	CNS
Sand/Clay	SND	
Stone (kota stone, marble, Granite, Aggregate stone etc.)	STN	
Ceramic	CRM	
Petroleum Products (Oil, LPG, CNG, etc.)	PET	PET
Chemicals / Fertilizers (Acids,Fertilizers etc.)	CHM	
Electrical/Manufacturing items (Electronic items, Medicine, Leather, Wine, Rubber/ Tyre, Plastics, Cloth, Paper etc.)	MAN	MAN
Raw Wood,Cork & Wood Products, Furn	WUD	

Commodity Description	Code	Combined codes used for charts
Machinery / Spare parts	MAC	
Automobiles (Finished products, auto parts, Car/bike manufacturing, New Chassis)	AUT	AUT
Basic / Fabricated Metals (Iron, Steel / Metal)	MET	MET
Mining Minerals (Coal, Gypsum, Cobalt etc.)	MIN	
Empty	EMT	EMT
Container	CTR	MSC
Miscellaneous (Parcel, Courier, House hold items etc.)	MSC	
Passengers	PAS	
Scrap	SCR	

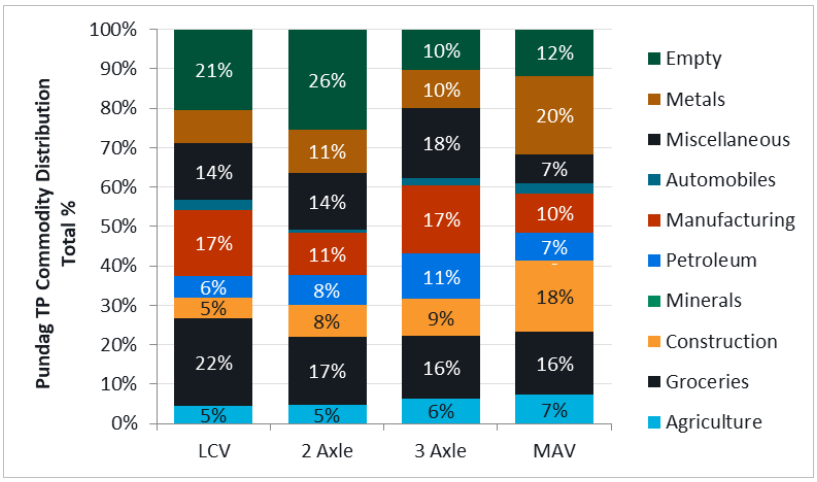
Source: Steer analysis

3.31 As observed during our site visit, a proportion of the vehicles were travelling empty. Those not empty, were carrying manufactured goods and related commodities (10-19%) across all goods vehicles.

3.32 For MAVs, metals and related commodities were observed with the highest share of 23%. Steel plants at Bokaro and Jamshedpur can be the main reason behind high shares. As the vehicle size decreases, the proportion of metal commodities being transported also decreases.

3.33 Agriculture, groceries and related commodities dominated the LCV category. Agricultural and groceries made up 27% of the LCVs. LCVs also carry 17% manufacturing goods. The share of agriculture and grocery decreases slightly for 2A, 3A and MAV but hovers between 22-23%. 8% of 2A trucks, 11% of 3A trucks, and 7% of the MAVs are also observed to transport petroleum products.

Figure 3.7: Commodity distribution at TP1 Pundag



Source: Steer analysis of OD data

Trip length analysis

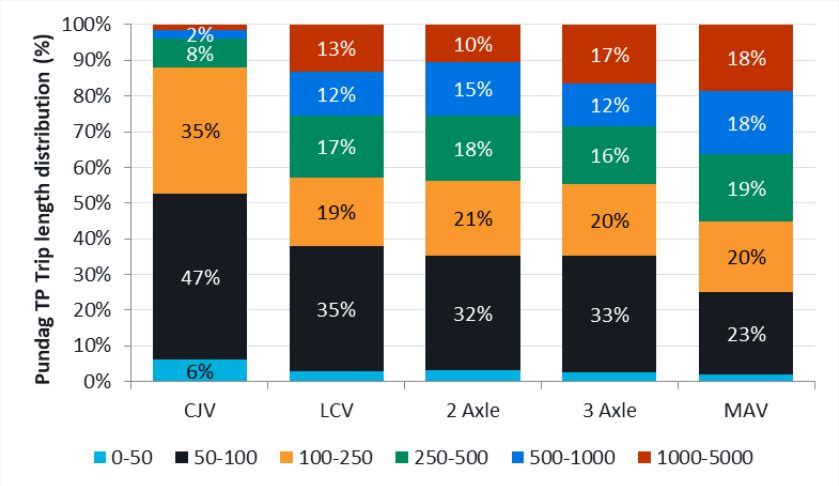
3.34 Trip-length distribution provides the distance-based profile of various vehicle types. This aids in validating assumptions around the share of macro-economic drivers, inputs from zonal influence and toll segmentation. For ease of interpretation, we have categorised distances into 5 groups – local (0-100 km), short-distance (100-300 km), medium-distance (300-500 km), long-distance (500-1000 km) and very-long-distance (+1,000 km). The trip distances were derived as driving distances from Google Distance Matrix Tool based on zonal coordinates for OD pairs.[11]

3.35 As observed in the Internal-External analysis, trips at the toll plaza are largely influenced by both internal or local zones and external zones. The same is validated by Figure 3.8, as the share of local and short-distance trips (up to 250 km) is considerably high in all the categories, ranging from 43% for MAVs to 53% for LCVs.

3.36 Medium-distanced trips gain greater share as the vehicles grow heavier from 8% in LCVs to 19% in MAVs. In terms of long-distance and very-long-distance trips (greater than 500 km), MAVs show a much higher share, up to 18% for 500-1000 km and 18% for >1000 km trips. These vehicles are travelling largely between East and North India.

3.37 We have seen in Figure 3.5 how the Asset serves to connect these two parts of the country; the trip length analysis also validates this assertion by showing such distribution. It is to be noted that for the category MAV, the proportions of E-E trips in Internal – External Analysis, East-Northeast and North India influence in Zonal Analysis, and >1000 km trips in the Trip Length Analysis are very similar, ranging around ~18%.

Figure 3.8: Trip length distribution at TP1 Pundag



Source: Steer analysis of OD data

Table 3.12: Average trip length (in km)

	LCV	2 Axle	3 Axle	MAV

[11] Google Distance API is a tool that is available on a chargeable basis from Google Maps Platform. Link: https://developers.google.com/maps/documentation/distance-matrix/start. Travel distance and time information for driving/transit under various congestion scenarios can be extracted through this tool by using macro-enabled Excel, R, etc.

Average trip length	466	430	471	563

Source: Steer analysis of OD data

Conclusions

3.38 In summary, as per the traffic volume data, CJVs contribute to the highest share in traffic around 67% followed by MAVs with 16% share. Even though CJVs make up for the highest share in traffic, MAVs are the biggest revenue contributor.

3.39 Both, CJV and MAV category vehicles, predominantly buy single tickets. However, with the onset of strict FASTag implementation, the share of single journeys has reduced across the categories as the share of return journey tickets increased especially in CJV's. For MAVs Single, tickets have remained dominant, holding a share of close to 90% across the months at the plaza.

3.40 The TVC data shows minor variation on the TMS data, where at a total level, TMS was found to be 0.4% lower than TVC count for the same period. This gives us confidence that the base year traffic calculated using the Client data forms a reliable base year traffic estimate.

3.41 The OD analysis indicates that in terms of zonal influence, the Asset has high share of traffic originating/ending at IAOI areas and hence, the Asset serves largely local traffic, more so for CJVs: Local and IAOI zonal influence ranges from 57% for MAVs to 79% for CJVs. The key commodities transported on the Asset include minerals, groceries, and manufactured products, which when combined, make up around 54% of the commodity share for MAV traffic. Agricultural and groceries also contribute an average 22-27% share across all goods vehicle's categories.

3.42 When considering the internal and external distribution, it is observed that healthy mix of internal and external traffic is observed. I-I and I-E trips dominate for 3A and MAV categories suggesting Jharkhand as a significant origin of truck traffic. Since, majority of the traffic is attributed to Internal zones, it can be inferred that the traffic is greatly local in nature, and the growth of traffic is directly proportional to the growth of state. In terms of through traffic, 12% of MAVs have both ends of trip external to the Asset, in terms of trip length analysis this makes up for 18% of trips traveling >1000 km.

3.43 In summary, analysing the vehicle share on the Asset and understanding the OD analysis, CJVs are the dominant vehicle class and as found by the zonal influence, internal-external and trip length analysis and are greatly contributing to the local traffic. Heavy goods vehicles, although accounting for 16% of the traffic, are the largest revenue generator for the Asset.

4 Socio economic context and traffic growth

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the roads are in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions in the region where the Asset is located and the country. These include:

- Changes in factors such as population, economic growth (regional and national) and industrial production; and
- Other local factors such as strategic port growth, and growth in local industries near the Asset.

4.2 In turn, the change in the relative competitive position of the Asset (and thus of the traffic capture they can achieve) derives from how the relative offer for the roads changes, i.e. the service offered, and the tolls charged on the project roads, in comparison to that on competing roads; and whether any competing road facilities are planned.

4.3 In this chapter, we have assessed the trends of the above growth drivers, as indicators of the socio-economic conditions in the regions surrounding the Asset.

Population Growth

4.4 We have analysed the key socioeconomic drivers of the background traffic demand in Jharkhand state, where the Asset is located.

National level

4.5 The total population in India has grown at a Compound Annual Growth Rate (CAGR) of 1.5% since 2000, decreasing over the years, as shown in Table 4.1 below. The World Bank forecasts this growth to decrease to 0.6% CAGR by the 2030-45 period.

Table 4.1: CAGR of Population in India

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
1970 - 1985	2.3%	1.9%	3.8%
1985 - 2000	2.0%	1.7%	2.9%
2000 - 2015	1.5%	1.0%	2.6%
2015 – 2030*	1.0%	0.3%	2.3%

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
2030 – 2045*	0.6%	-0.3%	1.9%

Source: World Bank Data on Health Nutrition and Population Statistics, *forecast population growth

State level

4.6 Table 4.2 below shows the evolution of population in Jharkhand state compared to that of the country. Overall, as can be seen, the trend observed at the country level is also noticeable at the state level, namely, a move towards urban agglomeration with the growth in rural population being slower than that of urban population. Further, the state has grown at a higher rate than the country average, in the decade between 2001 and 2011.

Table 4.2: Population Growth in India (2012-2024)

State	2012 Population (m)	2024 Population (m)	CAGR (2012 – 2024)
Jharkhand	33.3	39.7	1.5%
India	1,210	1,395	1.2%

Source: Ministry of Statistics and Program Implementation estimates

4.7 Due to the complexities of the patterns in which urbanisation takes place, and the very dynamic nature of local population migration (which are very difficult to forecast with accuracy), we do not use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide a socio-economic context of the trend in the region in which the Asset is located.

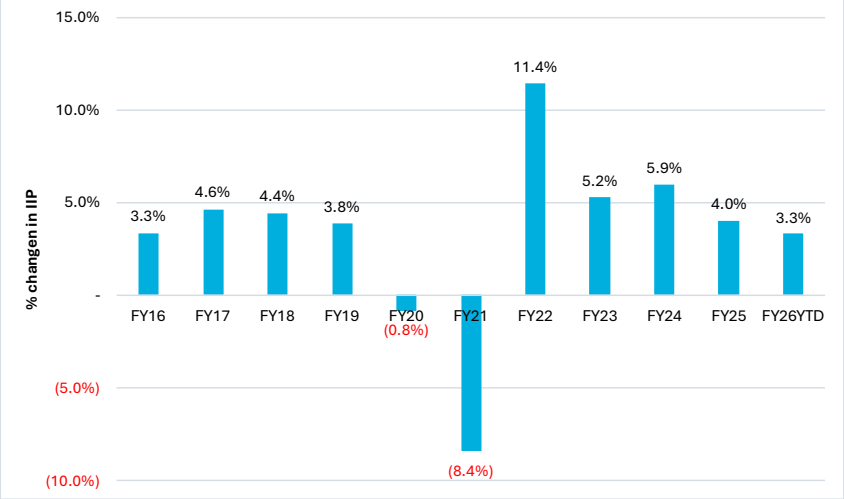
Economic Indicators

Industrial Production

4.8 The Index of Industrial Production (IIP) is a composite indicator that measures the short-term changes in the volume of production for a basket of industrial products. The IIP data tracks the manufacturing activity in different sectors of an economy, with mining, manufacturing, and electricity being the three broad sectors constituting the IIP.

4.9 The figure below shows that at an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20. In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. Post the immediate recovery in FY22, IIP growth has since stabilised, with FY25 recording 4%, and FY26YTD (till February 2026) recording 3.3% growth over FY25.

Figure 4-1: Annual growth – Index of Industrial Production (FY16-FY26YTD)



Source: Ministry of Statistics and Program Implementation (MoSPI). FY26YTD represents data till Feb'26

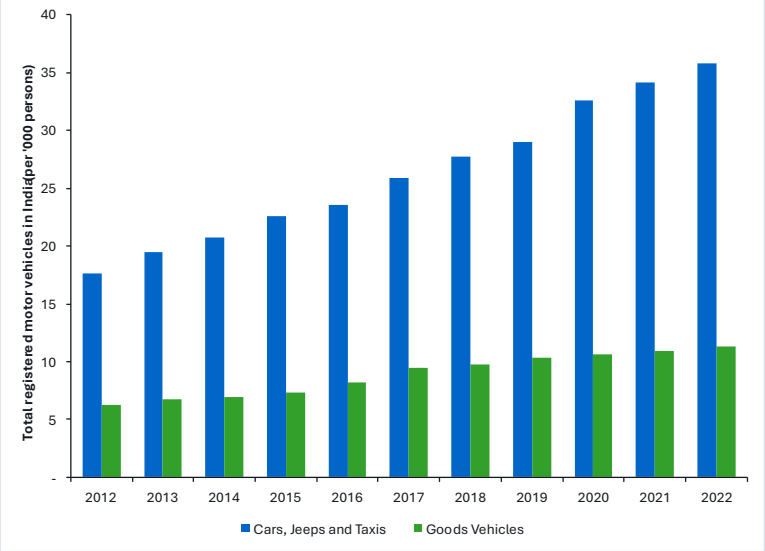
4.10 Since state-level IIP data is not as readily available as national-level IIP, we have presented national IIP here to indicate nationwide activity in key industrial sectors like power, manufacturing, and mining, all of which influence long-distance commercial movements across the nation, and not unique to this asset. We however, do not use it to forecast future travel demand growth since long-term forecast for IIP is not available through official sources such as MoSPI, RBI or through multilateral organisations like WB, or the IMF.

Vehicle ownership

4.11 The gap in car ownership between India and developed nations remains substantial – with 36 cars/jeeps/taxis and 11 commercial vehicles per thousand people, as of FY22 (the latest year for which official data is available). However, with increasing per capita income levels, a booming economy and the subsequent increase in demand for mobility, the number of registered vehicles has been on a gradual upward trend

A.1 Overall, India still stands at a very nascent stage in the vehicle saturation curve, offering huge potential for growth going forward. Between FY12 and FY22, the CAGR for CJV and goods' vehicles registered in India was 8.6% and 7.3% respectively

Figure 4-2: Total number of registered motor vehicles in India (per 1000 population

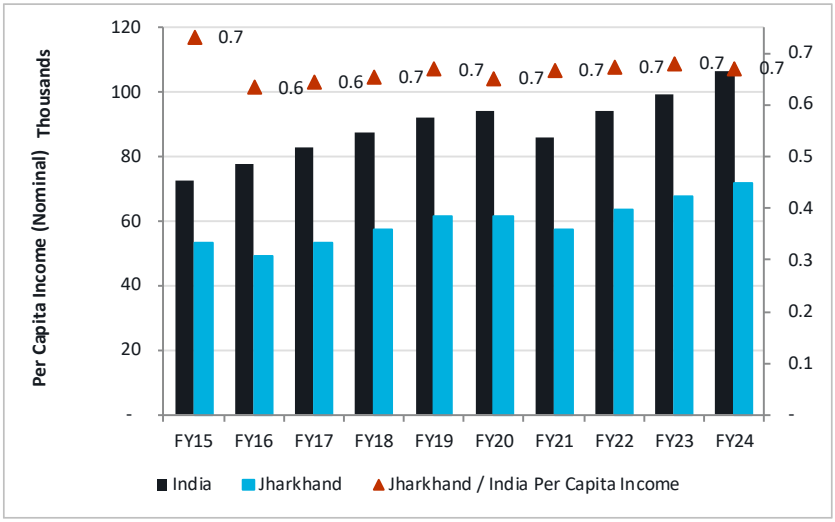


Source: Ministry of Road Transport and Highways (MoRTH)

Per Capita Income (PCI)

4.12 The state of Jharkhand where the Asset lies has a per capita income significantly lower than that of India as a whole. It has been hovering at nearly 67% of the national average for the past few years (FY22-24). Thus, the state is at a very early stage of consumption curve. Going forward, we therefore expect local consumption to be strong which would drive the growth in both passenger and commercial traffic.

Figure 4.3: Per Capita Income



Source: Steer analysis of MoSPI data

4.13 However, given the difficulty in obtaining granular district level PCI data it is not advisable to use this as a growth driver. Also, the long-term forecast for PCI is not available we therefore refrain from using it to forecast traffic.

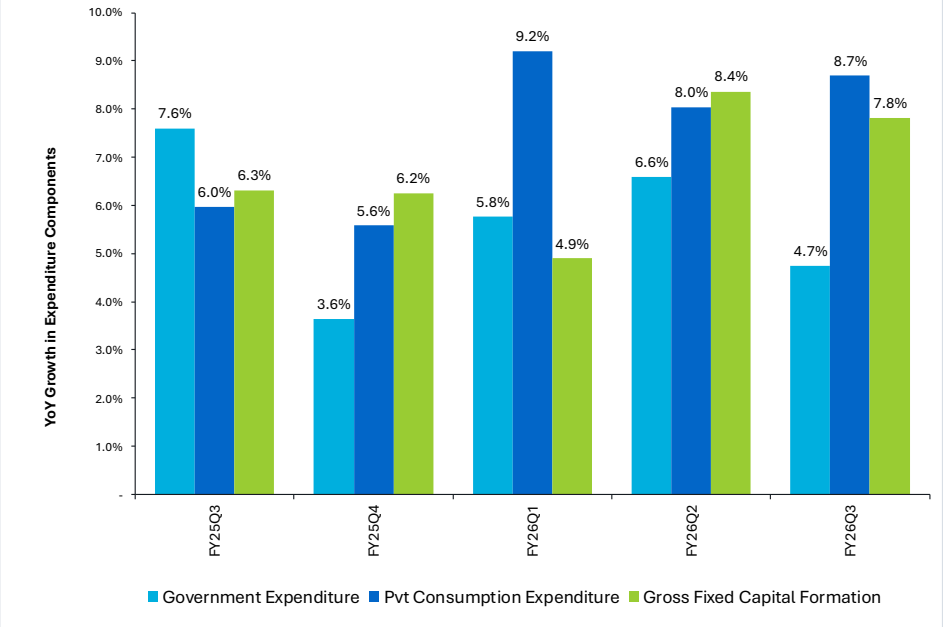
Economic growth

India's Performance

4.14 Despite a slowdown in the economy during H1FY25, the Indian economy has observed strong growth each quarter since FY25Q2, with the latest published estimates for FY26Q3 GDP at 7.8% over FY25Q3. This performance has been driven by strong growth in investment and consumption expenditures and higher consumer optimism for the year ahead[12].

4.15 The figure below, we present quarterly Y-o-Y growth in three major components of GDP – government expenditures, consumption expenditures, and business investment (gross fixed capital expenditure) over the past year (FY25Q3-FY26Q3).

Figure 4-4: YoY growth in expenditure components of GDP



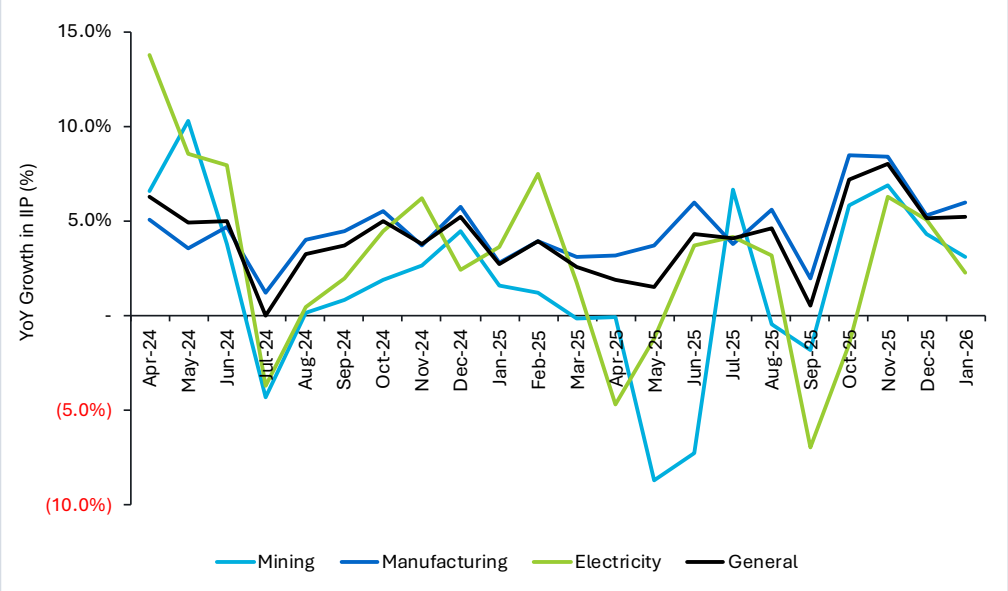
Source: Steer Analysis of MOSPI Data

4.16 While consumption and investment expenditures have continued to show consistent growth over the past two quarters, government expenditures observed a marginal decline in FY25Q4. In FY26Q1, government expenditures rebounded, recording 5.8% growth over FY25Q1 levels.

4.17 Performance across different types of industrial activities (such as Mining, Manufacturing, and Power Generation) directly impact freight movement and commercial traffic volume growth across the country, including on the Asset. In the figure below, we present growth trends in IIP – a measure that tracks the performance of the economy across these activities. As of FY26YTD (Apr'25-Feb '26), the Manufacturing sector continues to perform strongly, recording positive y-o-y growth since FY25Q3. While industrial activity across the two other sectors (i.e., Power Generation and Mining) dropped between May and Jun/Jul '25, they have since rebounded and show signs of continued growth going forward.

[12] Gov**ernment of India PIB Release (27th February 2026)**

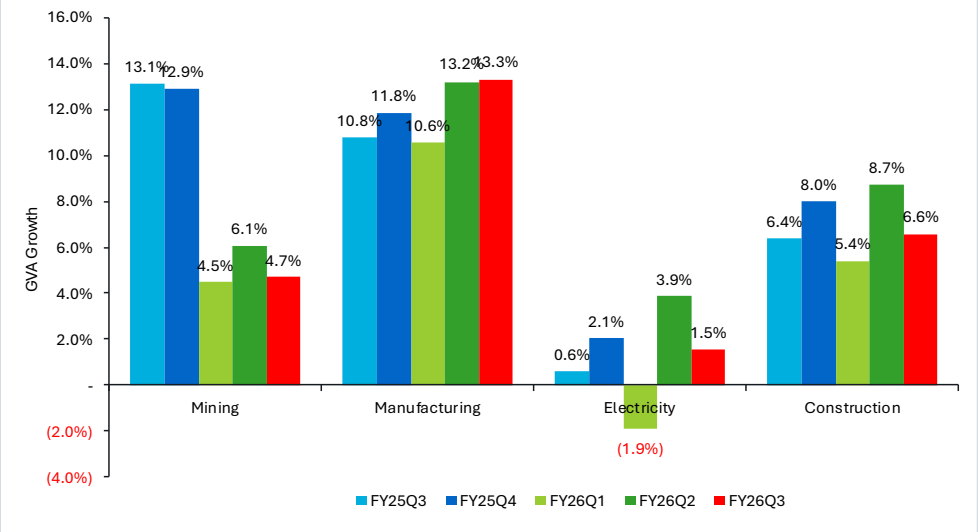
Figure 4-5: Month on Month IIP performance



Source: Steer Analysis of MOSPI Data

4.18 In addition to monthly trends in IIP, the figure below presents y-o-y growth of quarterly GVA in four industrial sectors - Mining (& Quarrying), Manufacturing, Electricity (and other Utilities), and Construction. While the Mining and Power sectors observed decline and muted growth in FY26Q1, the Manufacturing and Construction sectors experienced strong growth. While overall economic growth has remained resilient as of FY26YTD, performance across industries have varied, impacting economic growth across different regions and on the Asset as well.

Figure 4-6: Industrial components of GVA



Source: Steer Analysis of MOSPI Data

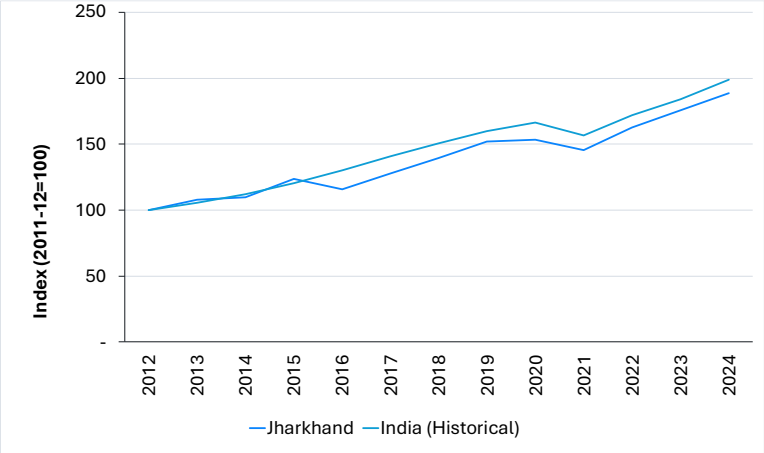
GDP and GSDP Growth

4.19 Over the period FY12-FY24, the Indian economy grew at a CAGR of approximately 6% aided by growth in the tertiary sector which grew at a CAGR of 6.9% over the same period

4.20 The Asset lies in the state of Jharkhand. Jharkhand is one of the richest mineral zones in the country with a share of around 40% of India's mineral resources and occupies the first position in the presence of coal reserves.[13] Due to its large mineral reserves, mining and mineral extraction are the major industries driving the state economy. The state houses the country's oldest and one of the largest steel plants, operated by the Tata Steel, in Jamshedpur. Another important steel plant at Bokaro, operated by Steel Authority of India Limited (SAIL) is also present in the state of Jharkhand. Since Jharkhand's economy is largely dependent upon the mining, the state GSDP growth rate fell rapidly after growing by over 10% in FY15 to -6% in FY16, with the ban on illegal mining. Jharkhand's GSDP (at constant prices) grew at a CAGR of 5.4% between FY12-24 and contributed 1.6% to India's GDP in FY24.

4.21 Figure 4.7 below illustrates the evolution of the GSDP of Jharkhand with the national GDP between FY12-24.

Figure 4.7: Evolution of Jharkhand's GSDP and the National GDP



Source: Steer Analysis of MOSPI data

4.22 The official historical GDP and GSDP data for India are released by the Ministry of Statistics and Program Implementation (MoSPI). The GDP forecasts for India are available from various reliable sources such as Oxford Economics and Consensus Economics[14], but state-specific GSDP forecasts are not published by any such sources. To derive state GSDP forecasts, we rely on past trends of the relationship between GDP and GSDP and develop GSDP forecasts as a function of our assumed GDP forecasts[15].

4.23 For any indicator to be used as a growth driver to forecast traffic, a reliable source of historical and forecast data availability for that indicator is the key requirement. Of the key socioeconomic indicators discussed above, GDP was assessed to be the only growth driver for which reliable data is available both in terms of historical and forecast data. Therefore, to forecast traffic, we use GDP/GSDP as our key growth drivers.

[13] **Minerals | Government of Jharkhand State**

[14] **Consensus Economics - Economic Forecasts and Indicators**

[15] Assuming that the historical long-term relationship between GSDP and GDP sustains over the short-term, we project future growth in GSDP as a function of our GDP growth forecast. We taper the relationship of GSDP growth to converge to GDP growth gradually over the long-term.

Forecasts for growth drivers

4.24 Following the discussion in Chapter 4 on the nature of economic activity in the state of Jharkhand, in this section, we describe the assumptions in relation to forecasts of the key macro-economic drivers of traffic growth on the Asset.

4.25 We have based our forecasts of the GSDP of Jharkhand based on the forecasts of GDP as provided by the Client.

National GDP

4.26 After the last period of economic slowdown in FY11-12, the country experienced an economic downturn again in late FY19 with FY20 having reported a GDP growth of 4% (relative to an average growth rate of 7% per year between FY13 and FY19). India's GDP growth declined as domestic investment and consumption demand were already under stress because of the liquidity crunch before Covid-19. Other factors that contributed to the economic slowdown included reduced growth rates in automobile sales and production, liquidity crunch in credit markets and rising number of Non-Performing Assets (NPAs) within the banking sector, as well as lower manufacturing production and lower rural consumption.[16]

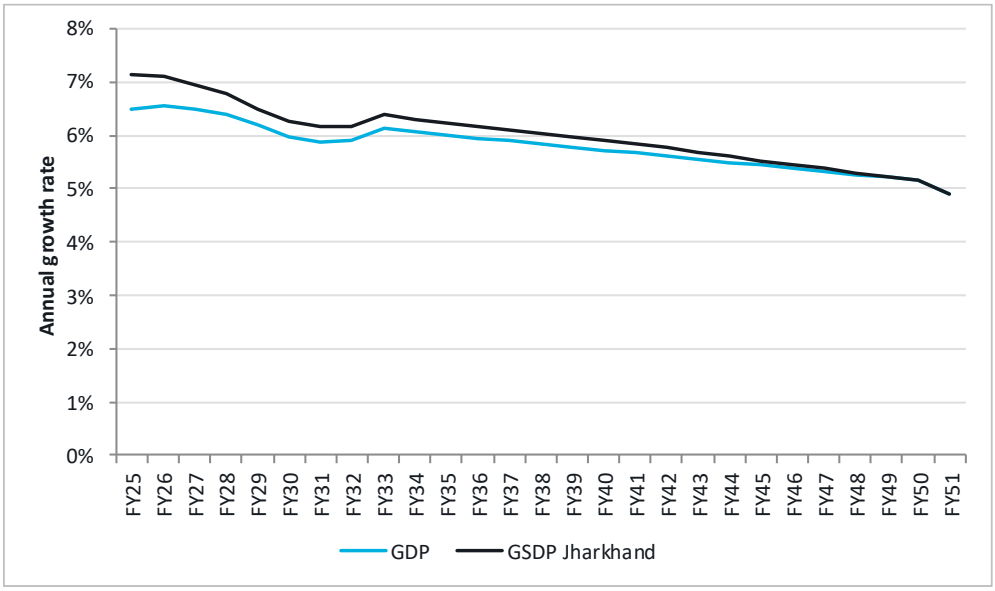
4.27 The Covid19 outbreak had a significant impact on the Indian economy during the first two quarters of FY21 as government mandated lockdowns across the country effectively stalled economic activity and growth. The growth momentum eventually picked up in Q3 of FY21, with a sharp rebound in the economy in FY22 (GDP recorded 9.7% growth over FY21) and has since observed a consistent growth of 7.6% in FY23, 9.2% in FY24.

4.28 Figure 4.8 below shows Client-provided GDP projections for India. The forecast provided expects the Indian GDP to grow at 6.4% between FY27-FY28 and gradually tapering down to 5.2% by FY50. The India GDP forecast is broadly in line with other independent forecasts available from reliable sources such as IMF, World Bank and RBI[17] in the short term Going forward, the forecast provided expects the Indian GDP to grow at an average of 6.5% between FY25-FY27, 5.9% between FY31-FY40 and gradually tapering down to 4.9% by FY51, end of concession.

4.29 Since Jharkhand is largely a mineral and manufacturing (iron & steel) dependent economy, the state is largely impacted by the fluctuations in these sectors. During the last decade, the mining industry was badly impacted by bans, new mining policy and change in steel and iron market scenario due to overall economic fluctuations. However, going forward, we expect as Jharkhand grows its economy stabilises overtime with magnitude of these cycles coming down.

[16] **Data | India's GDP was on a downward slope even before COVID-19 wreaked havoc - The Hindu** (September 2020)

Figure 4.8: GDP-GSDP forecast



Source: GDP forecast provided by the Client

5 FY26 Base year AADT and Traffic growth Analysis

Introduction

5.1 In this section, we present our approach, assumptions, and estimates for base year AADT and background traffic growth for each vehicle category on the Asset.

5.2 Traffic growth is commonly related to a variety of macro-economic and industry- or commodity-specific factors (hereafter referred to as 'traffic growth drivers'). These growth drivers are typically identified from the results of the OD data analysis and the site visits that help us appreciate the nature of traffic movement – 'what' travels 'where' and 'why'.

5.3 While comprehensive historical data on the asset is not available, we have access to six years of records. Despite some inconsistencies, this dataset provides a reasonable foundation for analysis. As a result, statistical methods to estimate background growth relationships could not be applied. Instead, we conducted a benchmarking exercise, supported by trip length and origin-destination (OD) analysis, to derive elasticity estimates. These are discussed in detail below.

FY26 Base year AADT estimates

5.4 The base year is the year on which long-term background forecast growth rates are applied to derive year-wise average annual daily traffic (AADT) estimates for forecast years. This is therefore an important aspect of our forecasting approach as traffic and ultimately revenue forecasts for future years are built on top of the base year traffic estimate. We have used FY26 as the base year for AADT estimates for the forecast years.

5.5 As described previously in Chapter 3; to establish the base year (FY26) traffic position, we utilized information from various sources – including from the Client and our context knowledge, to assess a reasonable demand on the corridor.

Methodology

The base traffic for FY26 has been estimated using 11 months of actual traffic data (April to February). Each toll plaza's seasonality correction factors were applied on the actual MADTs of Apr-25 to Feb-26 to obtain seasonally corrected estimates for FY26 traffic. An average of these estimates was considered to be the FY26 base traffic.

Seasonal Correction Factors

5.6 Traffic on any Asset varies on a month-on-month level. Such variations maybe due to monsoons (typically Jul to Sept) or due to festivals in the region. For e.g. It is observed that typically the truck traffic during the first half of the financial year (April-September) is generally lower than the annual average, mainly because of peak summer season

followed by monsoons affecting the freight movement patterns in large parts of the country in the July-September period. In addition to these there may be other seasonal variations specific to the Asset.

5.7 To normalise for these variations across the year to provide an AADT estimate, Seasonality Correction Factors (SCF) are used. SCFs are estimated to convert the monthly traffic numbers to an AADT level while accounting for seasonal variation due to local/national festivals, weather changes and/or temporary external impacts. These are typically estimated using historical data for each plaza and vehicle category over multiple years. An SCF >1 means that the traffic for the month is lower than the annual average and vice-versa.

5.8 Historical traffic data was available for all toll vehicle categories starting October 2020 up-to February 2026. Therefore, in absence of longer-term historical data for the Asset where FY21 and FY22 are COVID-19 impacted years, we assume FY24 and FY25 to be the normal year which is considered for FY26 base year estimation.

5.9 Table 5.1 presents the FY24 and FY25 average SCF used to estimate the AADT for the Asset's Toll Plaza:

Table 5.1: SCF Values for TP1 Pundag

Vehicle Category	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.04	1.02	0.97	1.08	1.12	1.13	1.08	0.96	0.92	0.98	0.88	0.95
LCV	0.85	1.30	0.96	1.05	1.09	1.07	1.03	1.04	0.93	0.96	1.09	0.92
Bus	1.09	1.10	1.03	1.04	1.15	1.07	1.01	0.92	0.90	1.02	0.89	0.89
2A	1.06	0.98	1.04	1.04	1.02	1.01	1.03	1.09	1.04	1.08	0.87	0.90
3A	1.01	1.01	1.02	1.05	1.14	1.11	1.02	1.00	0.94	0.97	0.89	0.93
MAV	1.08	1.09	1.07	1.10	1.09	1.07	1.04	0.99	0.92	0.92	0.88	0.90

Source: Steer analysis based on FY24 and FY25 data

Adopted base estimates

5.10 Based on the above methodology and inputs, the adopted base for the Asset has been shown below:

Table 5.2: Adopted base estimates: TP1 Pundag

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	10,928	12,354	12,494	14.3%
LCV	363	384	397	9.5%
Bus	797	914	933	17.1%
2A	1,023	1,055	1,079	5.5%
3A	555	574	580	4.5%
MAV	2,557	2,860	2,906	13.7%
OSV	2	2	2	
Total	**16,224**	**18,144**	**18,392**	**13.4%**
PCUs	**28,245**	**31,301**	**31,781**	**12.7%**

Source: Steer analysis: FY25 actual full year, FY26YTD includes 11 months of FY26, FY26A is adopted base for FY26.

5.11 As seen from Table 5.2, there is estimated to be a 12.8% PCU growth in the adopted FY26 base (FY26A) over FY25. All vehicle categories showcase healthy growth over FY25.

5.12 In the case of LCV and Bus we observe a change in the categorization of minibuses. Prior to FY25 the classification was based on "Gross Vehicle Weight" which has been changed to passenger-based system resulting in tolling of minibuses into the bus category.

5.13 The continued high growth in both PCU and across vehicle categories is driven by temporary traffic shift to the Asset post Jun'23 with the construction on Ormanjhi-Gola-Bokaro section of NH 320B. However, we believe this shift is temporary and not a part of the Asset's traffic hence, necessary adjustments in forecast and segmentation are made as reflected later in this report.

Estimation of background elasticities

Overview

5.14 For brownfield Asset, where sufficient historical traffic evolution is available, it is common practice to use regression model analysis to determine the relationship, expressed as elasticity, between traffic growth and key socioeconomic drivers. This relationship is then applied to assumptions of future socio-economic evolution to estimate future traffic growth.

5.15 As for the Asset under consideration, a consistent historical trend was not available. Therefore, we undertook a benchmark to estimate our forecast elasticities, Sources used included our understanding of the Asset, the elasticities used during the bid for TOT3 package by the client and the subsequent lender study that was undertaken by the Client. We have also undertaken a regional benchmarking against Asset having similar traffic profiles, which give us reasonable confidence the relationships proposed.

5.16 In terms of selection of growth drivers for vehicle types, in general we have assumed state GDP as the key driving factor for the passenger traffic given this traffic is generally driven by the local economies of the cities and state containing the Asset. The heavier commercial vehicles generally ply long-distance, and the underlying growth is governed by the general economies of several states or nation as whole.

5.17 The below table presents the growth drivers identified to model the forecast background traffic growth rates.

Table 5.3: Identified growth drivers to model traffic growth

Vehicle type	GDP India	GSDP Jharkhand
Car		100%
LCV		100%
Bus		100%
2A	100%	
3A	100%	
MAV	100%	

Source: Steer

5.18 Further to developing estimates for FY25 AADT, the Asset has operational history between FY22 and FY25, proving us four years of traffic growth on the Asset. The table below

summarises the volume growth across each of the vehicle categories. For this comparison we have normalised the FY22 AADT for COVID19 by adopting seasonally corrected H2FY22 as the FY22 normalised (FY22N), as can be seen in Table 5.4 below

Table 5.4: Passenger and Commercial growth with normalised FY22

	FY22N	FY23	FY24	FY25	FY26A	FY22N-26 CAGR
CJV	9,618	8,935	9,849	10,928	12,494	6.8%
LCV	511	445	487	363	397	(6.1%)
Bus	570	583	592	797	933	13.1%
2A	629	681	843	1,023	1,079	14.5%
3A	460	480	527	555	580	6.0%
MAV	1,639	1,690	1,945	2,557	2,906	15.4%
OSV	1	2	2	2	2	
Total	**13,427**	**12,814**	**14,245**	**16,225**	**18,392**	**8.2%**
PCUs	**21,516**	**21,178**	**23,773**	**28,201**	**31,781**	**10.2%**
Passenger	10,187	9,518	10,441	11,725	13,427	7.1%
Commercial	2,728	2,850	3,315	4,135	4,565	13.7%

Source: Steer Analysis; Note; Passenger includes CJV and Bus traffic whereas Commercial includes 2A/3A/MAV traffic

5.19 The Asset observed a CAGR of 10% from FY22N to FY26 at the PCU level, whereas commercial and passenger grew at a CAGR of 13.7% and 7.1% respectively. Passenger traffic, which includes CJV and buses, is projected based on the state's GSDP, as the growth is driven by the regional local economy. Meanwhile, commercial traffic (2A/3A/MAV) is growing in relation to GDP, as the Asset lies on the NH20 corridor, which primarily facilitates north-south movement between Bihar and southern West Bengal and south. Any growth observed on the Asset is influenced by regions along this route.

5.20 The sections below detail out the reasoning for selection of respective growth driver(s) for each vehicle category.

5.21 It must be understood that, in recent historical traffic performance across national highway corridors, a notable trend has emerged: there is a discernible shift in axle preference towards 2As and MAVs, resulting in a dampening effect on the growth of 3As. This trend is mirrored in the Assets FY24 and FY25 performance as well. Consequent of these evolving axle preferences, it has been assumed that the relationship between 3As and GDP will be relatively muted, whereas 2As and MAVs are expected to grow more closely in line with the country's GDP.

Table 5.5: Elasticity Recommendations for the Asset

Vehicle Category	Proposed	Growth Driver	Comments
CJV	1.0	Jharkhand GSDP	The cars predominantly commute between Ranchi, Ramgarh, Hazaribagh and other local destinations along the Asset. With the increase in urbanisation and trip generators along the Asset, cars are expected to grow

Vehicle Category	Proposed	Growth Driver	Comments
			faster in the near future, therefore we have assumed a 1 relationship to GSDP for cars.
Mini LCV	0.6	Jharkhand GSDP	As discussed in chapter 3, the trip lengths for Mini LCV and LCV category (up to 70%) are predominantly short distance <300Km and caters to local demand. Hence, elasticity of 0.6 is assumed which is higher than LCV's.
Buses	0.5	Jharkhand GSDP	Buses are local and interstate, around 85% of the buses have one end of their trip in Jharkhand, while 10% of trip have one end of their trip in Bihar. It seems that buses currently are serving local intercity demand. As these cities grow, the buses are also expected to respond to the increasing demand however only at a 0.5 relationship to GSDP.
LCV	0.4	Jharkhand GSDP	As discussed in chapter 3, the trip lengths of LCV and 2A category (up to 70%) are predominantly short distance <300Km. Which confirms the understanding that the movements cater to local demand. Considering the above observations, and our experience across other toll roads in the region, we believe that elasticities of 0.4 and 0.7 with respect to state GSDP and GDP for LCV and 2As resp. are considered reasonable.
2A	0.7	GDP India	
3A	0.2	GDP India	The Asset observes traffic between Haryana, Rajasthan, Jamshedpur, as well as the Bokaro Steel Plant. 55% of all MAVs cover >300 Kms, and ~30% cover >1000 Kms journeys. The long-distance character, in addition to the proximity of steel plants catering to nation-wide demand shape the critical link between the Asset and the national economy. We assume this relationship to influence a healthy growth profile for traffic on the Asset in the future as well.
MAV	0.9	GDP India	

Source: Steer Analysis

6 Forecasts: Network overlays and forecasts

Introduction

6.1 Following the discussion on our forecast of background growth rates in the previous chapter, this chapter first covers the potential network impacts on traffic growth on the Asset. Thereafter, we present our assumptions around toll segmentation, trip factors and evolution of toll rates for the forecast period which are used to forecast revenues as derived from forecast traffic. In the final section, this chapter summarises traffic growth rates for the forecast years.

Analysis of potential network/developmental impacts

6.2 The section below details the impacts which we believe would affect traffic on the Asset during the concession period. As discussed in earlier Chapters, to assess the impacts on the Asset, whether positive or negative, we have studied developments (alternate roads, feeder roads and regulatory) in the surrounding road network.

Construction of NH320B

6.3 The alternate route NH320 for Dhanbad-Bokaro-Ranchi trips, passing via Ormanjhi and Gola is the traditional route used for Ranchi-Bokaro trips. This is a two laned road. However, a section of this route called Mihir Ghati is undergoing 4-laning and is expected to be a part of the four-lane greenfield NH320B road that runs parallel to the existing NH320. Due to the ongoing four-laning of the Mihir Ghati, commercial traffic is forced to use Pundag toll plaza for trips between Ranchi and Bokaro. Construction is expected get completed by the second half of FY27. This diverted traffic is expected to return to the alternate road when the construction activity is completed as seamless connectivity would be established between Ranchi and Bokaro.

6.4 Basis the site visit observations and secondary research, the construction of Gola – Oramanjhi stretch is expected to be completed by the second half of FY27. Given this impact we expect a large share of the additional traffic to shift back to NH320B starting FY27, with full impact realising by FY29.

6.5 The following table shows the extent of the impact of the opening of NH320B.

Table 6.1: Impact of opening of NH320B

Vehicle category	FY27	FY28	FY29 onwards
Staging	*40%*	*80%*	*100%*

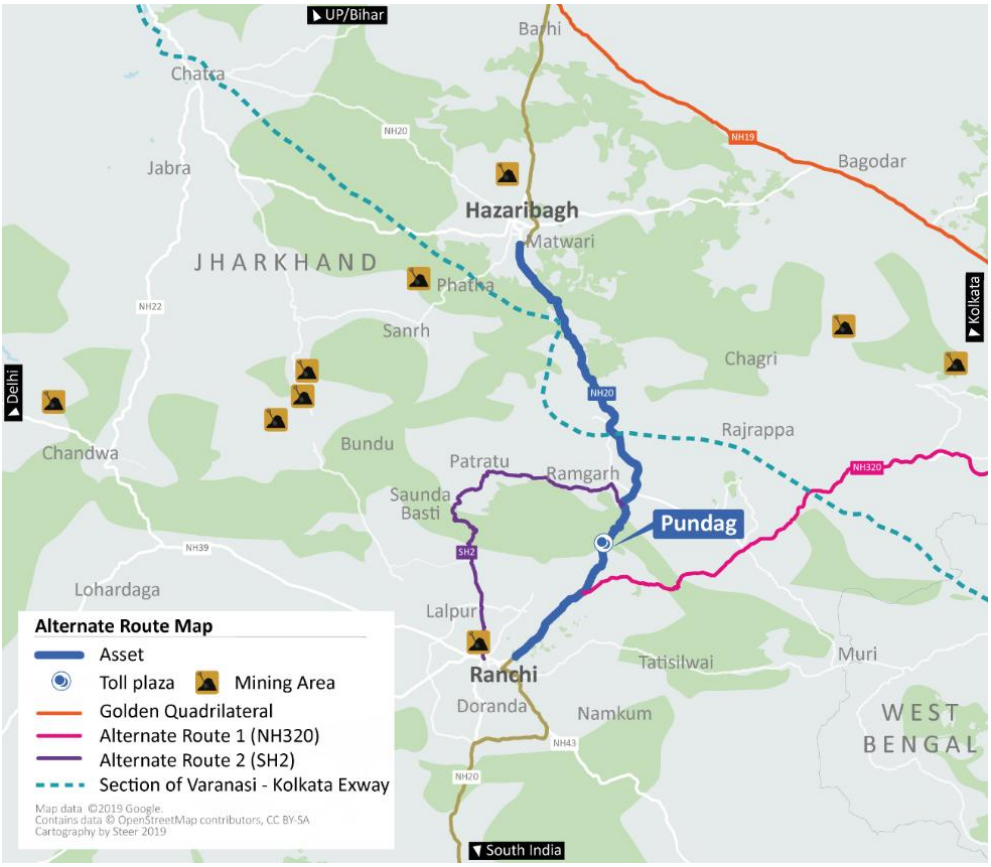
Vehicle category	FY27	FY28	FY29 onwards
CJV	(5.0%)	(10.0%)	(12.5%)
Bus	(9.1%)	(18.1%)	(22.7%)
LCV	(8.8%)	(17.6%)	(22.0%)
2A	(9.1%)	(18.1%)	(22.7%)
3A	(9.7%)	(19.4%)	(24.3%)
MAV	(9.3%)	(18.6%)	(23.2%)

Source: Steer analysis

Varanasi Kolkata Expressway

6.6 The NHAI is currently building a greenfield 4/6 lane access-controlled expressway between Varanasi and Kolkata with a spur to Kharagpur. So far 13 packages for the Asset in states of Uttar Pradesh, Bihar and Jharkhand have been awarded. The above-mentioned packages were awarded in March 2023. The expressway section in Jharkhand covers 203km across four districts, costing around Rs 10,000 crore. Designed for speeds of 120 km/hour, it includes measures like wildlife underpasses and interchanges. This expressway will intersect with the Asset at Bongabar, north of Ramgarh. It is expected to have some impact on the Asset once complete, as it can act as a feeder route providing access to Ranchi and Hazaribagh from the west and east respectively. Its impact is illustrated in the below table.

Figure 6.1: NH320 and Varanasi Kolkata Expressway



Source: Steer cartography using OpenStreetMap data

Table 6.2: Varanasi-Kolkata Expressway Impact

Vehicle category	FY28	FY29	FY30 onwards
Staging	*25%*	*75%*	100%
CJV	0.3%	0.8%	1.0%
2A	0.3%	0.8%	1.0%
MAV	0.3%	0.8%	1.0%

Source: Steer analysis

6 laning LOS improvement

6.7 As per the concession agreement as soon as the Asset hits 40,000 PCU's the Asset is eligible for capacity augmentation. The PCU level need to be maintained above the 40,000 levels for three consecutive years, and two years will be earmarked for DPR preparation. After that a three-year period is factored in for construction, during which the Year one of construction toll rates will be maintained at 75% and will remain flat at 75% for the duration of construction. After the construction is over the toll rates will be calculated as normal, as they should have been in that year.

6.8 On the Asset, it is expected based on our forecasts that traffic volumes will go beyond the 40,000 PCUs mark in FY35, thus breaching the Level of Service requirements set out in the concession agreement. We expect the level of service on the Asset to improve post capacity augmentation by FY43. To calculate this impact, we have employed a GJC based approach.

6.9 A comparison of generalised journey costs (GJC) provides how different elements of cost and time affect traffic. This comparison was done for both light and heavy vehicles. Lower GJCs correspond to higher induced traffic. Based on Steer's studies and research in India, we have found that for every 1% reduction in the GJCs, the traffic increases by a factor of 0.3. We then applied the difference of GJCs to the elasticity of 0.3 to get net influence on the traffic.

6.10 The improvement in GJC is translated into the impact on that share of local + IAOI OD movements using a linear inverse relationship. Therefore, the impact of improvement in level of service is applied on the corresponding shares of traffic, which were extracted from OD data.

6.11 The table below shows the extent of the LOS impact and the expected timelines of the impact on the Asset.

Table 6.3: Impact of 6 laning LOS improvement

Vehicle category	FY43 onwards
CJV	2.0%
LCV	1.6%
2A	1.8%
3A	1.6%
MAV	1.2%

Source: Steer analysis

Revenue forecasting assumptions

6.12 To forecast the revenues for a particular financial year, the traffic forecast for each vehicle type is converted into tickets sold, which is then multiplied with the corresponding toll rate, which grows over the years as defined in the Concession Agreement. While "trip factors" provide the conversion factor to the former, i.e., traffic (trips) to tickets sold, "toll segmentation" provides the latter i.e., the breakup of trips paying each ticket type. This section discusses assumptions related to trip factors, toll segmentation and toll rates for the forecast period.

Toll segmentation

6.13 The Ministry of Road Transport & Highways has finalized a compensation formula for existing toll concessionaires to offset revenue loss from the Annual Pass scheme for non-commercial vehicles.[18]

6.14 Across multiple assets, the share of annual pass trips has been rising on a monthly basis since August 5. A corresponding decline in other ticket categories including Single and Return journeys has been observed.

6.15 CJV Segmentation for FY26 has been developed using the pre annual pass segmentation till 14th August 2025, and post-annual pass segmentation from 15th August 2025 till 28th February 2026. The share of annual pass trips in March 2026 has been assumed to be the same as the share of annual pass trips in the last 10 days of February 2026.

The segmentation for CJVs in FY27 has been assumed to be the same as the estimated March 2026 segmentation as trends suggest that the share of annual pass trips have stabilised. For other vehicle categories we have analysed the historical TMS data split by ticket categories, to understand trends, as shown in Chapter 3. For the traffic and revenue forecast, FY26YTD (Apr- Feb) as discussed in the earlier sections, can be considered a normal period.

Table 6.4: Toll segmentation for FY26 onwards

Ticket type	CJV FY26	CJV FY27	Mini LCV	LCV	Bus	2A	3A	MAV
Single	26%	23%	29%	45%	9%	64%	66%	83%
Return	47%	41%	53%	50%	90%	34%	31%	17%
Monthly	-	-	-	-	-	-	-	-
Local commercial	2%	2%	2%	4%	1%	0%	2%	0%
Local personal	6%	4%	6%	-	-	-	-	-
Exemption	9%	9%	10%	1%	1%	2%	1%	0%
Violation	0%	0%	0%	0%	0%	0%	0%	0%
Annual Pass	10%	21%	-	-	-	-	-	-

Source: Steer analysis of Client TMS data; ticket segmentation for all vehicle categories other than CJVs are from FY26 onwards

[18] Annual Pass

6.16 The Annual pass compensation is separately calculated using the formula prescribed by NHAI in the same circular. Following Table 6.5 presents the Annual pass compensation computed for the toll plaza.

Table 6.5: Annual pass compensation for CJVs (in Crore)

Toll Plaza	FY26	FY28	FY33	FY38	FY43	FY51
Pundag	4.3	9.7	14.8	27.4	46.4	101.0

Source: Steer Analysis

Trip factors

6.17 Trip factors are used to calculate the revenue for the trips made on passes such as return, local personal, monthly passes. The trip factors assumed are based on the latest FY26YTD data available and listed in the table below:

Table 6.6: Trip factors at TP1 Pundag

Forecast	CJV/ Mini LCV	LCV	Bus	2A	3A	MAV
Single	1	1	1	1	1	1
Return	2	2	2	2	2	2
Monthly	14	46	50	50	45	45
Local commercial	1	1	1	1	1	1
Local Personal	20	20	20	20	20	20

Source: Steer analysis of Client TMS data

Toll evolution

6.18 Based on the concession agreement and the gazetted toll notification, we understand that base toll rates increase every year (revision month is April) based on WPI-linked inflation. These are rounded up to the nearest five to estimate the final toll rate charged to users.

6.19 We have used actual toll rates from the FY26 toll notifications and FY26 WPI to validate the modelling of future toll evolution. Increase in WPI was calculated based on the Client's WPI forecasts, as shown in the table below. These forecasts provided by the Client expect the Indian WPI to grow at an average of 4.0% between FY25-FY51. The Dec-25 WPI released by RBI, based on which FY27 tolls are calculated, is 0.96%. The WPI forecasts available from other independent forecasting agencies may vary from this assumption and could be lower or higher than that provided by the client.

Table 6.7: WPI growth forecast assumptions

Financial year	WPI growth (%)
FY26	2.57%
FY27	0.96%
FY28	5.0%
FY29	5.1%

Financial year	WPI growth (%)
FY30	4.9%
FY31	4.4%
FY32 onwards	4.1%

Source: Client inputs used for WPI FY27 onwards.

Revenue reconciliation

6.20 As part of validating the data provided by the Client, as well as our assumptions around toll calculations, we have reconciled the actual reported revenue on a daily level for the Asset. To reconcile we have used the FY26YTD segmentation, FY26YTD AADT and compared it with the reported revenue for the year. The exercise was undertaken at an annual level. The comparison, as shown in the table below, depicts the modelled revenue and the reported revenue and the difference between the two is 0.1%, this validates the assumptions around segmentation and trip factors used for estimating forecasting revenue.

Table 6.8: FY26 Revenue Reconciliation AADC (INR lakhs/daily)

Modelled	Reported	Delta
39.3	39.3	(0.1%)

Source: Steer comparison between modelled and reported revenue

Traffic and Revenue forecasts

6.21 Based on the traffic and revenue-related forecast assumptions discussed above, we have modelled the traffic and revenue forecasts for the forecast period for the Asset. The table below presents the AADT/PCU and revenue forecast growth rates and CAGRs on this Asset. Further, Appendix B presents the AADT and revenues for the forecast period.

Table 6.9: Final traffic forecast for TP1 Pundag

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	10,984	11,135	14,801	19,965	27,107	41,025
Mini LCV	1,510	1,637	1,969	2,361	2,804	3,605
Bus	933	817	900	1,048	1,210	1,493
LCV	397	346	371	419	480	568
2A	1,079	968	1,134	1,391	1,728	2,310
3A	580	479	478	507	548	596
MAV	2,906	2,657	3,293	4,275	5,564	8,063
OSV	2	3	3	4	5	8
AADT	**18,392**	**18,041**	**22,950**	**29,970**	**39,447**	**57,667**
PCUs	**31,781**	**30,065**	**37,238**	**47,853**	**61,993**	**88,969**

Source: Steer analysis

Table 6.10: Traffic CAGR (%) for TP1 Pundag

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	0.7%	5.9%	6.2%	6.3%	5.4%

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
Mini LCV	4.1%	3.8%	3.7%	3.5%	3.5%
Bus	(6.4%)	2.0%	3.1%	2.9%	1.9%
LCV	(6.7%)	1.4%	2.5%	2.8%	1.4%
2A	(5.3%)	3.2%	4.2%	4.4%	3.1%
3A	(9.1%)	(0.0%)	1.2%	1.6%	0.1%
MAV	(4.4%)	4.4%	5.4%	5.4%	4.2%
OSV	5.8%	5.4%	5.4%	5.1%	5.2%
AADT	**(1.0%)**	**4.9%**	**5.5%**	**5.6%**	**4.7%**
PCUs	**(2.7%)**	**4.4%**	**5.1%**	**5.3%**	**4.2%**

Source: Steer analysis

Table 6.11: Revenue forecast for TP1 Pundag (INR crores) including Annual Pass Compensation revenue for CJV

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	37.2	41.4	68.9	116.3	198.0	430.0
Mini LCV	5.0	5.9	8.8	13.3	19.7	36.4
Bus	11.5	10.9	15.1	21.9	31.6	55.9
LCV	2.6	2.4	3.3	4.6	6.6	11.2
2A	15.6	15.1	22.3	34.2	53.0	101.6
3A	9.2	8.2	10.3	13.7	18.5	28.8
MAV	70.4	69.3	108.0	175.2	284.4	592.1
OSV	0.1	0.1	0.1	0.2	0.4	0.7
Total Revenue	**151.7**	**153.3**	**236.9**	**379.4**	**612.2**	**1,256.8**

Source: Steer analysis

Table 6.12: Revenue growth CAGR (%) for TP1 Pundag

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	5.5%	10.7%	11.0%	11.2%	10.3%
Mini LCV	8.2%	8.6%	8.4%	8.3%	8.3%
Bus	(2.8%)	6.7%	7.8%	7.6%	6.5%
LCV	(3.1%)	6.2%	7.1%	7.5%	6.1%
2A	(1.5%)	8.1%	8.9%	9.2%	7.8%
3A	(5.3%)	4.6%	5.7%	6.2%	4.7%
MAV	(0.8%)	9.3%	10.2%	10.2%	8.9%
OSV	9.9%	10.3%	10.1%	9.9%	9.9%
Total revenue	**0.5%**	**9.1%**	**9.9%**	**10.0%**	**8.8%**

Source: Steer analysis

6.22 As presented in the tables above, traffic CAGRs (PCUs) for the traffic forecast (with impacts) on the Asset over the concession period is around 5% and corresponding revenue CAGR is around 8%. This growth is majorly driven by both CJVs and MAVs, as discussed in the historical section, this Asset connects major urban settlements of Hazaribagh, Ramgarh and Ranchi and because of which CJVs on the Asset are expected to grow with increasing per capita income levels of the region and are expected to grow at

a healthy rate for a longer period, given the low car ownership levels in the state. While for the strong growth of the MAVs can be attributed to the growing industrial landscape in the vicinity of the Asset which includes steel plants, power plants and mining activities.

Target revenues and modification of concession period

6.23 As per the concession agreement, the target revenue should be 15.80 Cr for the month of March 2030 first calculation of target revenue and 38.02 Cr for the month of March 2040 for the second calculation of target revenue. The traffic sampling will be undertaken for a continuous period of 7 days during anytime within 15 days prior to the date on the specified year, previous year and following year. The average thereof will be deemed as 'actual revenue.'

6.24 If the target revenue falls short or exceeds by 20% and 30% for extensions 1 and 2 respectively, the concession period shall be deemed to be modified using the laid-out conditions in the concession agreement. The table below presents the summary of the analysis.

Table 6.13: Target Revenues for Extension 1

Target Month	Target Revenue		Estimated Revenue		Average Revenue	Variation (%)
	INR Cr	2029	2030	2031		
Mar-30	15.80	15.38	16.97	18.71	17.02	7.7%

Source: Steer analysis

Table 6.14: Target Revenues for Extension 2

Target Month	Target Revenue		Estimated Revenue		Average Revenue	Variation (%)
	INR Cr	2039	2040	2041		
Mar-40	38.02	29.94	31.44	33.00	31.46	(17.3%)

Source: Steer analysis

6.25 We have used the average AADT forecast for target year, previous year and following year as a proxy for 'actual traffic.' We have forecast seasonality of March month to adjust for seasonal trends and arrive at March traffic from AADT traffic, which is then segmented according to the forecast toll segmentation and trip factors and multiplied with respective estimated toll rates to get to a monthly revenue collection.

6.26 As seen from the table above, the difference lies within the 20% and 30% thresholds, no modification of concession period is expected on the Asset.

Upside and Downside cases

Upside and Downside scenario assumptions

6.27 We have developed our base case scenario considering a balanced view on the risks associated with input assumptions around GDP growth and traffic growth elasticities. There is always a risk that the outturn values of these inputs will vary as compared to the assumptions taken due to exogenous impacts, e.g. GDP growth could be influenced both

positively and negatively by the impact of monsoons, export-import balances, political changes etc.

6.28 Similarly, traffic growth elasticities could be influenced by increased efficiencies achieved by technology, large shifts in commodity prices globally, changes in local manufacturing practices. However, at this stage we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

6.29 To account for the possible variations in the growth drivers, we are also presenting an Upside (optimistic) and a Downside (pessimistic) scenario. These scenarios are defined by the following variations from the base assumptions:

Table 6.15: Summary of Macro-economic Assumptions for upside and downside cases

Input	Upside	Downside
Macro Assumptions		
GDP/GSDP	+1% every year	-1% every year
WPI	+1% every year	-1% every year
Elasticities	+ 10%	- 10%

Source: Steer analysis

6.30 Further, network developments are highly dependent on governmental directions, policies, legal and financial measure which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside (pessimistic) case. However, at this stage, we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

Impacts-Upside Case

6.31 The upside case impacts included in forecasts are summarised in below.

Table 6.16: Summary of impacts on the Assets

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact
6 laning LOS improvement	FY43- 100%	+25% of base case	CJV: 2.5% LCV: 2.1% 2A: 2.2% 3A: 2.0% MAV: 1.5%
Four laning of NH320	FY27* - 40% FY28 – 80% FY29 – 100%		CJV: (9.4%) LCV: (16.5%) Bus: (17.0%) 2A: (17.0%) 3A: (18.2%) MAV: (17.4%)
Varanasi Kolkata Expressway	FY28* - 25% FY29 – 75% FY30 – Full Impact		CJV: 1.25% 2A: 1.25% MAV: 1.25%

Source: Steer analysis; * Same as base case timeline

Impacts-Downside Case

6.32 The downside case impacts included in forecasts are summarised in below.

Table 6.17: Summary of impacts on the Assets

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact
6 laning LOS improvement	FY43 – 100%	-25% of base case	CJV: 1.5% LCV: 1.2% 2A: 1.3% 3A: 1.2% MAV: 0.9%
Four laning of NH320	FY27* - 40% FY28 – 80% FY29 – 100%		CJV: (15.6%) LCV: (27.5%) Bus: (28.3%) 2A: (28.3%) 3A: (30.4%) MAV: (29.0%)
Varanasi Kolkata Expressway	FY28* - 25% FY29 – 75% FY30 – Full Impact		CJV: 0.75% 2A: 0.75% MAV: 0.75%

Source: Steer analysis; * Same as base case timeline

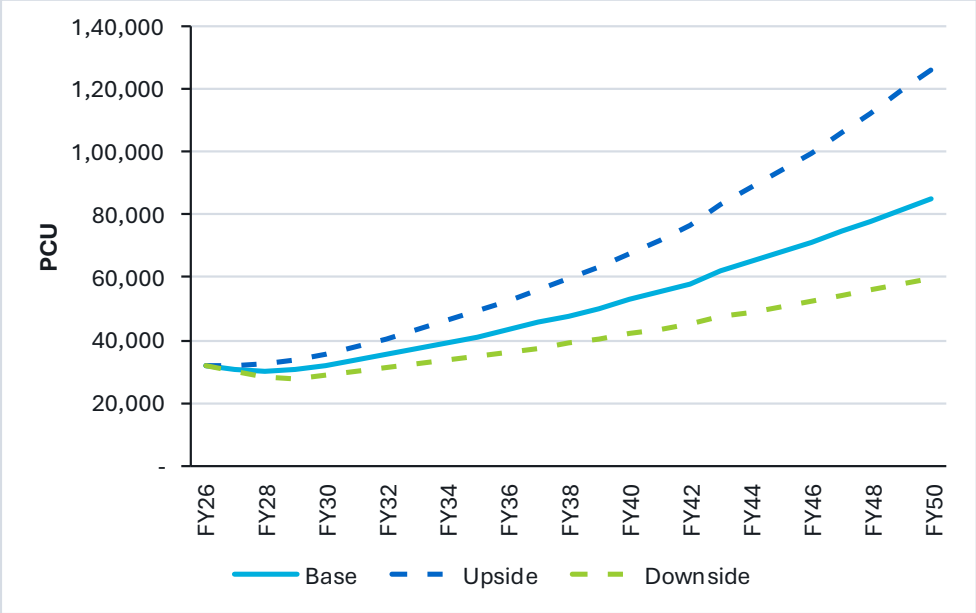
6.33 Based on the above assumptions for upside and downside scenarios, the following table summarizes the upside potential and downside risks associated with the PCU and the revenue for Pundag toll plaza at the end of the concession i.e. FY51.

Table 6.18: Upside potential and Downside PCU scenario – FY51

Toll Plaza	Upside Potential	Downside Risk
Pundag	50.1%	(30.9%)

Source: Steer Analysis of client data

Figure 6.2: Long-term PCU forecasts for Pundag TP including upside and downside scenarios



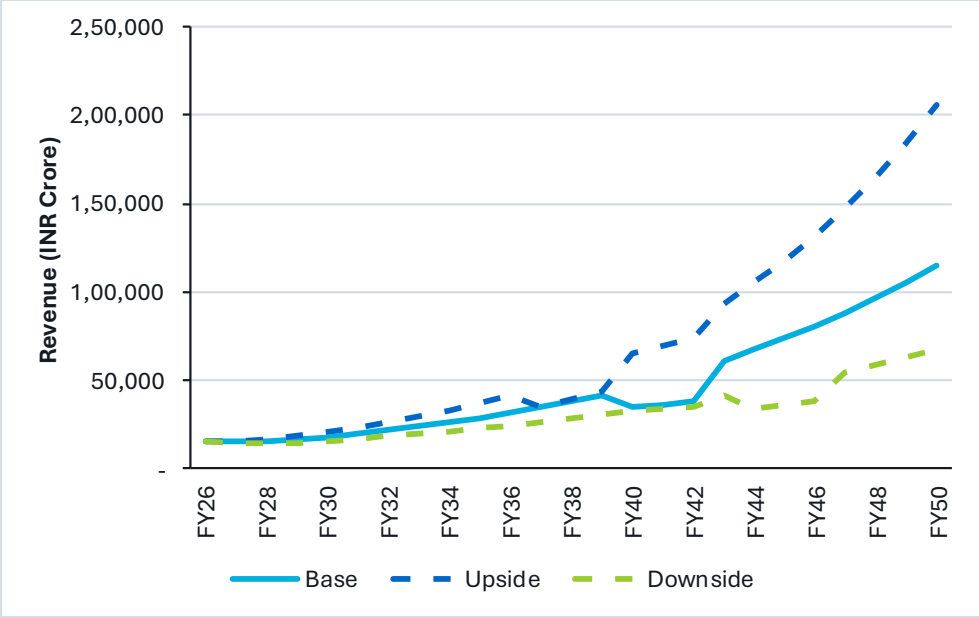
Source: Steer Analysis

Table 6.19: Upside potential and Downside Revenue scenario – FY51

Toll Plaza	Upside Potential	Downside Risk
Pundag	83.6%	(43.0%)

Source: Steer Analysis

Figure 6.3: Long-term revenue forecasts for Pundag TP including upside and downside scenarios



Source: Steer Analysis

6.34 Revenue projections exhibit variability in both the upside and downside cases, driven by fluctuations in macro-economic factors such as WPI, GDP/GSDP, elasticities and the network impacts.

Summary outlook

6.35 Passenger movement on the Asset is largely local in nature, connecting the cities of Ranchi to Patratu, Ramgarh, Hazaribagh over the short distance and northern regions of Delhi NCR, Uttar Pradesh, Patna, Gaya and Barhi to Jamshedpur, Rourkela, and further southern cities. Cars, the dominating vehicle category on the Asset, are expected to see a healthy growth on the Asset following the overall behavioural shift of users away from public transport.

6.36 Groceries, agricultural and manufacturing goods being transported form a part of essential commodities and are expected to show a healthy growth in the future years as well. Since the Asset is located in mineral and steel rich state of Jharkhand with numerous mines in the vicinity, the Asset is bound to grow with the growth of industrial sector as well as the overall growth of the country.

6.37 The strategic importance and geographic location of this Asset, connecting the key movement between north India and Bihar to the Jharkhand, Odisha, and West Bengal, is expected to continue driving a healthy traffic growth rate in the forecast years.

6.38 The MAV traffic on the Asset is largely influenced by the mineral industries along its alignment, which also contributes to the overall stability of MAV volumes across different time periods. Recent evidence from various industry players suggests a rebound in Steel production and consumption led by economic activity and urbanization which is expected to boost demand for steel in India to between 240-260 million metric tons by 2035. [19] [20] These factors support the growth prospects of the Steel related industry and traffic in the future. Beyond these natural growth factors, higher than usual growth was observed on Asset due to the work on the alternate NH320 as mentioned earlier.

6.39 Our findings and estimates in this report are based on our understanding from the site visit, analysis of primary data available both from surveys and the toll management system (both historical and current), macroeconomic assumptions prescribed by Client, feedback from Client meetings and secondary publicly available data. There can be both positive and negative risks associated with assumptions and the forecasts using them as summarised below.

6.40 Overall, we see a positive outlook for the region and the Asset, given that it serves major urban centres of Ranchi, Jamshedpur, Bokaro, Patna, Bhubaneswar, and Rourkela. The underlying growth drivers of the corridor are strong and are expected to deliver long term sustained growth driven by the industrial growth in the state backed by the potential of significant mining and mineral resources in the region.

[19] **Evolving with steel: Future growth and opportunities | McKinsey**

[20] **https://www.moneycontrol.com/news/sector/indian-steel-industry-tapered-now-tempered-for-future-thanks-to-improving-macros-10125481.html**

Appendices

A. Top 10 OD Pairs

A.1 Further to the OD analysis presented in Chapter 3 this appendix presents the top 10 OD pairs at each toll plaza. Please see this data for both CJVs and MAVs and OSVs combined below

TP1 Pundag

Table A.1: CJV top 10 OD pair shares at TP1 Pundag

	OD Pair	Share
1.	Ranchi-Ramgarh	9.8%
2.	Hazaribagh-Ranchi	9.3%
3.	Ranchi-Ramgarh	5.6%
4.	Hazaribagh-Ranchi	4.7%
5.	Ormanjhi-Ramgarh	3.6%
6.	Hazaribagh-Ranchi	3.1%
7.	Barhi-Ranchi	3.0%
8.	Hazaribagh-Khunti	2.8%
9.	Hazaribagh-Gumla	2.7%
10.	Ranchi-Patna	2.6%

Table A.2: MAV and OSV top 10 OD pair shares at TP1 Pundag

	OD Pair	Share
1.	Ranchi-Ramgarh	9.2%
2.	Ranchi-Patna	6.4%
3.	Ranchi-Bokaro	5.0%
4.	Hazaribagh-Ranchi	4.9%
5.	Ranchi-Dhanbad	4.2%
6.	Ranchi-Uttar Pradesh	2.1%
7.	Patna-Rourkela	2.1%
8.	Patna-Purbi Singhbhum	1.7%
9.	Ranchi-NCT of Delhi	1.7%
10.	Ramgarh-Purbi Singhbhum	1.4%

B. Data Collection Exercise

B.1 In order to validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

7-day TVC Count

Table B.1: TVC counts at TP1

Date	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	Total
21-02-2026	10,914	1,559	1,669	997	999	687	3,533	20,378
22-02-2026	11,362	1,608	1,718	1,018	1,006	647	3,509	20,869
23-02-2026	10,533	1,295	1,551	928	840	556	3,484	19,190

Source: Steer analysis

TVC vs TMS comparison

Table B.2: TVC and TMS WADT

Toll Plaza	Source	CJV+ Mini LCV	LCV	Bus	2 Axle	3 Axle+ MAV	OSV	Total
TP1	TVC	12,424	1,646	981	948	4,139	8	**20,146**
	TMS	13,185	450	985	1,246	4,201	3	**20,069**

Source: Steer analysis

Zone list

Table B.3: Zone list for TP1

Zone No	Zone name	State
1	Hazaribagh	Jharkhand
2	Babanbhai	Jharkhand
3	Morangi	Jharkhand
4	Barhi	Jharkhand
5	Chapwa	Jharkhand

Zone No	Zone name	State
6	Barasi	Jharkhand
7	Charhi	Jharkhand
8	Mandu	Jharkhand
9	Rewali	Jharkhand
10	Banadag	Jharkhand
11	Sakhiya	Jharkhand
12	Juljul	Jharkhand
13	Singhani	Jharkhand
14	Marai	Jharkhand
15	Chotha	Jharkhand
16	Huwag	Jharkhand
17	Topa	Jharkhand
18	Arka	Jharkhand
19	Sirka	Jharkhand
20	Orla	Jharkhand
22	Ranchi	Jharkhand
23	Mesra	Jharkhand
24	Getlatu	Jharkhand
25	Irba	Jharkhand
26	Dumardaga	Jharkhand
27	Lalpur	Jharkhand
28	Buti	Jharkhand
29	Ormanjhi	Jharkhand
30	Dardag	Jharkhand
31	Piska	Jharkhand
32	Chetar	Jharkhand
33	Chaha	Jharkhand
34	Gurgain	Jharkhand
35	Hujir	Jharkhand
36	Oyna	Jharkhand
37	Chuttu	Jharkhand
38	Hutup	Jharkhand
39	Boreya	Jharkhand
40	Turup	Jharkhand
41	Tatisilwai	Jharkhand

Zone No	Zone name	State
43	Ramgarh	Jharkhand
44	Kujju	Jharkhand
45	Kaitha	Jharkhand
46	Kankebar	Jharkhand
47	Seota	Jharkhand
48	Argada	Jharkhand
49	Huhua	Jharkhand
50	Barkakana	Jharkhand
51	Siur	Jharkhand
52	Kulhi	Jharkhand
53	Gola	Jharkhand
55	Bokaro	Jharkhand
56	Bokaro Steel City	Jharkhand
57	Phusro	Jharkhand
58	Gumia	Jharkhand
59	Chatra	Jharkhand
60	Deoghar	Jharkhand
61	Dhanbad	Jharkhand
63	Dumka	Jharkhand
64	Garhwa	Jharkhand
65	Bagodar	Jharkhand
66	Giridih	Jharkhand
67	Godda	Jharkhand
68	Gumla	Jharkhand
69	Jamtara	Jharkhand
70	Khunti	Jharkhand
71	Kodarma	Jharkhand
72	Jhumri Teleya	Jharkhand
73	Kolkata	West Bengal
74	Latehar	Jharkhand
75	Lohardaga	Jharkhand
76	Pakur	Jharkhand
77	Palamu	Jharkhand
78	Asansol	West Bengal
79	Pashchimi Singhbhum	Jharkhand

Zone No	Zone name	State
80	Patna	Bihar
80	Bihar	Bihar
81	Jamshedpur	Jharkhand
82	Purbi Singhbhum	Jharkhand
83	Sahibganj	Jharkhand
84	Saraikela-kharsawan	Jharkhand
85	Simdega	Jharkhand
86	Rourkela	Odisha
87	Andaman & Nicobar Island	Andaman & Nicobar Island
88	Andhra Pradesh	Andhra Pradesh
89	Arunanchal Pradesh	Arunanchal Pradesh
90	Assam	Assam
91	Chandigarh	Chandigarh
92	Chhattisgarh	Chhattisgarh
93	Dadara & Nagar Havelli	Dadara & Nagar Havelli
94	Daman & Diu	Daman & Diu
95	Goa	Goa
96	Gujarat	Gujarat
97	Haryana	Haryana
98	Himachal Pradesh	Himachal Pradesh
99	Jammu & Kashmir	Jammu & Kashmir
100	Leh	Leh
101	Karnataka	Karnataka
102	Kerala	Kerala
103	Lakshadweep	Lakshadweep
104	Madhya Pradesh	Madhya Pradesh
105	Maharashtra	Maharashtra
106	Manipur	Manipur
107	Meghalaya	Meghalaya
108	Mizoram	Mizoram
109	Nagaland	Nagaland
110	NCT of Delhi	NCT of Delhi
111	Puducherry	Puducherry
112	Punjab	Punjab
113	Rajasthan	Rajasthan

Zone No	Zone name	State
114	Sikkim	Sikkim
115	Tamil Nadu	Tamil Nadu
116	Telangana	Telangana
117	Tripura	Tripura
118	Uttar Pradesh	Uttar Pradesh
119	Uttarakhand	Uttarakhand
120	West Bengal	West Bengal
121	Odisha	Odisha
122	NEPAL	Nepal
123	Bangladesh	Bangladesh

Direction wise commodity distribution

Table B.4: Commodity distribution (towards Ranchi) at TP1

Commodity Category	LCV	2A	3A	MAV
Agriculture	6%	6%	7%	9%
Groceries	19%	13%	16%	15%
Construction	5%	10%	10%	21%
Minerals	-	-	-	-
Petroleum	5%	6%	12%	5%
Manufacturing	15%	10%	13%	8%
Automobiles	3%	0%	2%	3%
Miscellaneous	16%	15%	20%	8%
Metals	7%	10%	9%	15%
Empty	25%	30%	10%	14%

Source: Steer analysis of OD data

Table B.5: Commodity distribution (towards Hazaribagh) at TP1

Commodity Category	LCV	2A	3A	MAV
Agriculture	4%	4%	6%	6%
Groceries	24%	21%	16%	17%
Construction	5%	7%	9%	15%
Minerals	-	-	-	-
Petroleum	6%	10%	11%	9%
Manufacturing	18%	11%	21%	11%
Automobiles	2%	1%	1%	2%

Commodity Category	LCV	2A	3A	MAV
Miscellaneous	13%	14%	16%	6%
Metals	9%	11%	10%	25%
Empty	18%	21%	11%	9%

Source: Steer analysis of OD data

Trip length frequency

Table B.6: Trip length frequency at TP1

Distance range	LCV	2A	3A	MAV
0-50	6%	3%	3%	3%
50-100	47%	35%	32%	33%
100-250	35%	19%	21%	20%
250-500	8%	17%	18%	16%
500-1000	2%	12%	15%	12%

Source: Steer analysis of OD data

C. Detailed Forecasts

C.1 Further to the summary of forecasts presented in Chapter 6, this appendix presents detailed forecasts.

Traffic forecasts

C.2 This section presents the detailed traffic forecasts for the forecast period until FY51, year of expected close of the concession. The following two tables show the traffic growth rates and AADT, respectively.

Table C.1: Traffic Forecast (with impacts) over horizon years at TP1 Pundag

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY27	10,978	1,573	878	373	1,026	531	2,790	18,150	30,893
FY28	11,135	1,637	817	346	968	479	2,657	18,041	30,065
FY29	11,591	1,700	796	336	960	456	2,663	18,505	30,437
FY30	12,349	1,764	821	344	1,003	462	2,815	19,561	32,064
FY31	13,108	1,829	847	353	1,045	467	2,964	20,616	33,678
FY32	13,914	1,896	873	361	1,088	472	3,122	21,729	35,378
FY33	14,801	1,969	900	371	1,134	478	3,293	22,950	37,238
FY34	15,735	2,043	929	380	1,182	484	3,473	24,230	39,181
FY35	16,715	2,120	958	389	1,232	490	3,661	25,569	41,212
FY36	17,746	2,198	987	399	1,284	496	3,857	26,971	43,332
FY37	18,829	2,278	1,017	409	1,336	502	4,061	28,437	45,544
FY38	19,965	2,361	1,048	419	1,391	507	4,275	29,970	47,853
FY39	21,156	2,445	1,079	429	1,447	513	4,497	31,572	50,259
FY40	22,407	2,532	1,111	439	1,505	519	4,729	33,247	52,769
FY41	23,715	2,621	1,144	449	1,565	525	4,970	34,993	55,381
FY42	25,081	2,712	1,177	459	1,626	531	5,221	36,812	58,097
FY43	27,107	2,804	1,210	480	1,728	548	5,564	39,447	61,993
FY44	28,627	2,898	1,244	490	1,795	554	5,839	41,454	64,976
FY45	30,210	2,994	1,278	501	1,863	560	6,125	43,539	68,072
FY46	31,857	3,092	1,313	512	1,933	566	6,422	45,702	71,281
FY47	33,568	3,192	1,349	523	2,005	572	6,730	47,946	74,606

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY48	35,345	3,293	1,384	534	2,079	579	7,049	50,271	78,047
FY49	37,188	3,396	1,420	545	2,155	585	7,380	52,677	81,606
FY50	39,106	3,502	1,457	557	2,233	591	7,722	55,174	85,294
FY51	41,025	3,605	1,493	568	2,310	596	8,063	57,667	88,969

Table C.2: Forecasts (with impacts) for AADT growth rates (%) at TP1 Pundag

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY27	(0.1%)	4.2%	(5.9%)	(6.3%)	(4.9%)	(8.5%)	(4.0%)	(1.3%)	(2.8%)
FY28	1.4%	4.1%	(6.9%)	(7.2%)	(5.7%)	(9.6%)	(4.8%)	(0.6%)	(2.7%)
FY29	4.1%	3.9%	(2.5%)	(2.9%)	(0.8%)	(4.9%)	0.2%	2.6%	1.2%
FY30	6.5%	3.7%	3.1%	2.5%	4.5%	1.2%	5.7%	5.7%	5.3%
FY31	6.2%	3.7%	3.1%	2.5%	4.1%	1.2%	5.3%	5.4%	5.0%
FY32	6.1%	3.7%	3.1%	2.5%	4.1%	1.2%	5.3%	5.4%	5.0%
FY33	6.4%	3.8%	3.2%	2.6%	4.3%	1.2%	5.5%	5.6%	5.3%
FY34	6.3%	3.8%	3.2%	2.5%	4.2%	1.2%	5.5%	5.6%	5.2%
FY35	6.2%	3.7%	3.1%	2.5%	4.2%	1.2%	5.4%	5.5%	5.2%
FY36	6.2%	3.7%	3.1%	2.5%	4.2%	1.2%	5.4%	5.5%	5.1%
FY37	6.1%	3.7%	3.1%	2.4%	4.1%	1.2%	5.3%	5.4%	5.1%
FY38	6.0%	3.6%	3.0%	2.4%	4.1%	1.2%	5.3%	5.4%	5.1%
FY39	6.0%	3.6%	3.0%	2.4%	4.0%	1.2%	5.2%	5.3%	5.0%
FY40	5.9%	3.5%	3.0%	2.4%	4.0%	1.1%	5.2%	5.3%	5.0%
FY41	5.8%	3.5%	2.9%	2.3%	4.0%	1.1%	5.1%	5.3%	4.9%
FY42	5.8%	3.5%	2.9%	2.3%	3.9%	1.1%	5.0%	5.2%	4.9%
FY43	8.1%	3.4%	2.8%	4.4%	6.3%	3.3%	6.6%	7.2%	6.7%
FY44	5.6%	3.4%	2.8%	2.2%	3.8%	1.1%	4.9%	5.1%	4.8%
FY45	5.5%	3.3%	2.8%	2.2%	3.8%	1.1%	4.9%	5.0%	4.8%
FY46	5.5%	3.3%	2.7%	2.2%	3.8%	1.1%	4.8%	5.0%	4.7%
FY47	5.4%	3.2%	2.7%	2.1%	3.7%	1.1%	4.8%	4.9%	4.7%
FY48	5.3%	3.2%	2.6%	2.1%	3.7%	1.1%	4.7%	4.8%	4.6%
FY49	5.2%	3.1%	2.6%	2.1%	3.6%	1.0%	4.7%	4.8%	4.6%
FY50	5.2%	3.1%	2.6%	2.1%	3.6%	1.0%	4.6%	4.7%	4.5%
FY51	4.9%	2.9%	2.5%	2.0%	3.4%	1.0%	4.4%	4.5%	4.3%

Source: Steer analysis

Revenue forecasts

Table C.3: Revenue forecast (INR Crores), for TP1 Pundag including the revenue for annual compensation

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	OSV	Total
FY27	39.0	5.4	11.1	2.5	15.3	8.7	69.1	0.1	**151.1**
FY28	41.4	5.9	10.9	2.4	15.1	8.2	69.3	0.1	**153.3**

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	OSV	Total
FY29	45.6	6.4	11.1	2.5	15.7	8.2	72.9	0.1	**162.6**
FY30	50.9	7.0	12.1	2.6	17.3	8.8	81.0	0.1	**179.8**
FY31	56.0	7.6	13.0	2.8	18.8	9.2	89.0	0.1	**196.6**
FY32	62.8	8.2	14.0	3.1	20.6	9.8	98.3	0.1	**216.9**
FY33	68.9	8.8	15.1	3.3	22.3	10.3	108.0	0.1	**236.9**
FY34	77.4	9.7	16.2	3.5	24.3	10.9	119.3	0.1	**261.5**
FY35	86.0	10.5	17.5	3.8	26.5	11.6	131.5	0.2	**287.5**
FY36	94.9	11.4	19.0	4.0	28.9	12.2	145.0	0.2	**315.6**
FY37	104.7	12.2	20.3	4.3	31.4	12.9	159.4	0.2	**345.4**
FY38	116.3	13.3	21.9	4.6	34.2	13.7	175.2	0.2	**379.4**
FY39	128.9	14.4	23.6	4.9	37.1	14.5	192.2	0.2	**415.7**
FY40	107.1	11.7	19.1	4.0	30.4	11.5	159.6	0.2	**343.6**
FY41	113.1	12.0	19.6	4.1	31.5	11.6	167.3	0.2	**359.4**
FY42	119.6	12.5	20.1	4.2	32.8	11.7	175.7	0.2	**376.8**
FY43	198.0	19.7	31.6	6.6	53.0	18.5	284.4	0.4	**612.2**
FY44	220.4	21.5	34.0	7.0	57.8	19.5	313.5	0.4	**674.2**
FY45	241.2	23.1	36.5	7.6	62.6	20.6	342.9	0.4	**734.9**
FY46	266.4	24.9	39.2	8.0	67.8	21.9	376.3	0.5	**805.1**
FY47	293.4	26.9	42.1	8.6	73.7	23.0	412.1	0.5	**880.3**
FY48	324.6	29.2	45.3	9.2	80.0	24.5	452.6	0.6	**965.9**
FY49	356.0	31.4	48.6	9.8	86.6	25.8	494.5	0.6	**1,053.2**
FY50	393.5	33.9	52.1	10.5	93.8	27.3	541.5	0.7	**1,153.4**
FY51	430.0	36.4	55.9	11.2	101.6	28.8	592.1	0.7	**1,256.8**

Source: Steer analysis

Control Information

Prepared by

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002,
India
+91 124 441 8650
www.steergroup.com

Prepared for

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1,
Sector 16, Noida- 201301 (UP, India)

Steer project/proposal number

23741311

Client contract/project number

Transit 11.0

Author/originator

Vineet Karlapalem

Reviewer/approver

Vaibhav Gupta

Other contributors

Shipra Bhatia, Ayushman Rai, Harshit Garg, Samridha Kalaiyan

Distribution

Client: Cube Highways Steer:

Version control/issue number

Date

April 2026

steergroup.com

steer

Final Report

April 2026

Project Transit: Traffic Due Diligence of Jhansi-Lalitpur Tollways Limited

Cube Highways Fund Advisors Private Limited

Our ref: 23741311

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence of Jhansi-Lalitpur Tollways Limited

Prepared by:

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002,
India

+91 124 441 8650
www.steergroup.com

Prepared for:

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower,
Plot No. C - 1, Sector 16, Noida- 201301 (UP, India)

Client ref: Transit 11.0
Our ref: 23741311

Steer has prepared this material for Cube Highways Fund Advisors Private Limited. This material may only be used within the context and scope for which Steer has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer shall be deemed to confirm their agreement to indemnify Steer for all loss or damage resulting therefrom. Steer has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

steer

Table of Contents

	Disclaimer	i
Glossary Items		**iii**
1	**Introduction**	**1**
	The assignment	1
	Our Approach	2
	Contents of this report	3
2	**The Asset**	**4**
	Introduction	4
	Strategic network	4
	Concession and tolling details	6
	Key economic activities	7
	Alternate Routes	8
3	**Traffic Description**	**11**
	Introduction	11
	Historical trends	12
	Key findings of the TVC data analysis	19
	Key findings of origin-destination analysis	21
	Conclusions	29
4	**Socio economic context and traffic growth**	**31**
	Introduction	31
	Population growth	31
	Economic Indicators	32
	Economic growth	35
	Forecasts for growth drivers	38
5	**FY26 Base year AADT and Traffic growth Analysis**	**40**
	FY26 Base year AADT estimates	40
	Estimation of background elasticities	42
	Overview	42
6	**Forecast: Network overlays and forecasts**	**46**
	Introduction	46
	Analysis of potential network/developmental impacts	46
	Revenue forecasting assumptions	49
	Traffic and Revenue forecasts	52
	Target revenues and modification of concession period	55
	Upside and Downside cases	56
	Summary outlook	59

Figures

Figure 2-1: Location of Jhansi-Lalitpur and corresponding toll plazas 4
Figure 2-2: Asset context 5
Figure 2-3: Typical cross-sections and toll plazas on the Asset 6
Figure 3-1: Ticket segmentation for CJV at TP1 Babina 17
Figure 3-2: Ticket segmentation for MAV at TP1 Babina 17
Figure 3-3: Ticket segmentation for CJV at TP2 Vigakhet 18
Figure 3-4: Ticket segmentation for MAV at TP2 Vigakhet 18
Figure 3-5: Comparison between TVC and TMS daily traffic data on TP1 Babina 20
Figure 3-6: Comparison between TVC and TMS daily traffic data on TP2 Vigakhet 20
Figure 3-7: Comparison between vehicle shares from TVC and TMS WADTs 21
Figure 3-8: Zonal influence at TP1 Babina 23
Figure 3-9: Zonal influence at TP2 Vigakhet 24
Figure 3-10 Internal-external distribution at TP1 Babina 25
Figure 3-11 Internal-external distribution at TP2 Vigakhet 25
Figure 3-12: Commodity distribution at TP1 Babina 27
Figure 3-13: Commodity distribution at TP2 Vigakhet 27
Figure 3.14: Trip distance distribution at TP1 Babina 28
Figure 3.15: Trip distance distribution at TP2 Vigakhet 29
Figure 4-1: Annual growth – Index of Industrial Production (FY16-FY26YTD) 33
Figure 4-2: Total number of registered motor vehicles in India (per 1000 population) 34
Figure 4.3: Per capita income 34
Figure 4-4: YoY growth in expenditure components of GDP 35
Figure 4-5: Month on Month IIP performance 36
Figure 4-6: Industrial components of GVA 36
Figure 4-7: Evolution of Uttar Pradesh's state GDP and national GDP 37
Figure 4-8: GDP-GSDP forecast 39
Figure 6.1: Alternate Route via Delhi Mumbai Expressway and Surat Solapur Chennai 47
Figure 6.2: Long-term PCU forecasts for Babina TP including upside and downside scenarios 57

Tables

Table 1-1: Scope of work and sources of data 1
Table 2-1: Summary of concession 6
Table 2-2: Single toll rates on the Asset (INR), applicable Apr 2025 to March 2026 7
Table 3-1: PCU factors 11
Table 3-2: Average Daily Traffic data of TP1 Babina 12
Table 3.3: Tollable Daily Traffic at TP1 Babina 12
Table 3-4: Average Daily Traffic data at TP2 Vigakhet 13
Table 3.5: Tollable Traffic at TP2 Vigakhet 14

Table 3-6: Total Revenue (in INR Cr) at TP1 Babina, and AADC (in INR Lakhs/day) 14
Table 3-7: Total Revenue (in INR Cr) at TP2 Vigakhet and AADC (in INR Lakhs/day) 15
Table 3.8: Typical ticket types sold at NHAI plazas 15
Table 3-9: Ticket segmentation for LCV, Bus, 2A and 3A at TP1 Babina 17
Table 3-10: Ticket segmentation for LCV, Bus and 2A at TP2 Vigakhet 19
Table 3-11: Data collection exercise 19
Table 3-12: WADT from TVC counts 20
Table 3-13: Sample rates for OD data 22
Table 3-14: Zone aggregations for zonal influence analysis 22
Table 3-15: Aggregate commodity categories 25
Table 4-1: CAGR of population in India 31
Table 4-2: Population Growth in Uttar Pradesh and India (2012-2024) 32
Table 5-1 SCF values for JL TP1 41
Table 5-2: SCF Values for JL TP2 41
Table 5-3: Adopted base estimates: JL TP1 42
Table 5-4: Adopted base estimates: JL TP2 42
Table 5-5: Identified growth drivers to model traffic growth 43
Table 5.6: Passenger and Commercial growth with normalised FY22 – JL TP1 43
Table 5.7: Passenger and Commercial growth with normalised FY22 – JL TP2 44
Table 5-8: Elasticity recommendations for the Asset (both sections) 45
Table 6-1: Impact of IHE and SCE for TP1 48
Table 6-2: Impact of IHE and SCE for TP2 48
Table 6-3: Segmentation for forecast years, TP1 Babina 49
Table 6-4: Segmentation for forecast years, TP2 Vigakhet 50
Table 6.5: Annual pass compensation for CJVs (in Crore) 50
Table 6-6: Trip factors at TP1 Babina 50
Table 6-7: Trip factors at TP2 Vigakhet 50
Table 6-8: WPI growth forecast assumptions 51
Table 6-9: Revenue reconciliation summary TP Babina at AADC level (INR lakhs) 52
Table 6-10: Revenue reconciliation summary TP Vigakhet at AADC level (INR lakhs) 52
Table 6-11: Forecast traffic for TP1 Babina 52
Table 6-12: Forecast Traffic CAGR (%) for TP1 Babina 52
Table 6-13: Forecast Revenue for TP1 Babina (INR crores) including Annual Pass Compensation Revenue for CJV 53
Table 6-14: Forecast Revenue growth CAGR (%) for TP1 Babina 53
Table 6-15: Forecast traffic for TP2 Vigakhet 53
Table 6-16: Forecast Traffic CAGR (%) for TP2 Vigakhet 54
Table 6-17: Revenue Forecast for TP2 Vigakhet (INR crores) including Annual Pass Compensation Revenue for CJV 54
Table 6-18: Forecast Revenue growth CAGR (%) for TP2 Vigakhet 54
Table 6.19: Target Revenues for Extension 1 55

Table 6.20: Target Revenues for Extension 2	55
Table 6.21: Summary of Macro-economic Assumptions for upside and downside cases	56
Table 6.22: Summary of impacts on the Assets	56
Table 6.23: Summary of impacts on the Assets	57
Table 6.24: Upside potential and Downside PCU scenario – FY51	57
Table 6.25: Upside potential and Downside Revenue scenario – FY51	58

Appendices

A	**Top 10 OD Pairs**
B	**Data Collection Exercise**
C	**Detailed Forecasts**

Disclaimer

This report has been produced for the sole benefit of Cube Highways Pvt. Ltd. This Report (the "Report") is confidential and disclosed only for information purposes, and it may not be relied upon by any party other than the Client or a Party to a Reliance Letter, and Steer: a) makes no warranty, expressed or implied, with respect to the use of any information or methods disclosed in this Report; and b) assumes no liability with respect to the use of any information or methods disclosed in this document. Any such party by its acceptance or use of this Report releases Steer from any liability for direct, indirect, consequential, or special loss or damage whether arising in contract, warranty, express or implied, tort or otherwise.

The Report is based on standard professional efforts, and information available to us at the time the review took place and is subject to time and budget constraints of the Report's scope of work. This Report, information and statements contained herein, are all based on third party data provided to us, or sourced by us, and Steer has not sought to establish the reliability of the data, except as specifically stated in the Report. Steer bears no responsibility for the results of any actions taken based on third-party data.

Certain forward-looking statements in the Report are estimates based on interpretations or assessments of information available at the time of writing. The Report is thus to be viewed as an assessment that is time-relevant, specifically referring to conditions at the time of the review. Steer undertakes no obligation to update the Report for any reason.

While the estimates contained in the Report are not precise forecasts, they do represent, in our view a reasonable expectation of the future, based on information we have been provided with or sourced. However, the estimates necessarily rely on numerous assumptions and judgements, and circumstances may occur over the timeframe of the project that go counter to these assumptions and judgements and that affect the project's realized revenues. Actual events may differ from those assumed, and events are subject to change. Therefore, Steer makes or provides no warranty, whether implied or otherwise, as to the accuracy of forward-looking information presented. Further, it is important to note that forecasts presented represent long-term growth profiles; the results for individual time periods may vary from forecasted values.

Traffic Consultant developed the relationships in the models used to produce the forecasts for the projects based on data available through February 2026. This report does not consider variations in traffic performance due to changing macro and force majeure events such (but not limited to) as global wars, economic uncertainty (high inflation, global recession), and changes in the regulatory environment. The situation remains dynamic and is subject to significant change in the short and medium term. In this challenging context, Traffic Consultant has produced base forecasts with a view on a possible scenario for the traffic forecasts. However, it is important to note that this is only one view, and there continues to remain uncertainty as to the short-term, intermediate, or prolonged effects of and responses to such macro-economic/force majeure events. As a result, no assurance can be provided by Traffic Consultant that the scenarios and assumptions Traffic Consultant has identified will prove to be accurate. Given the uncertainty inherent in this scenario, Traffic Consultant advises that all readers of the Report consider the Report in the context of their own assessment of the impact of such events.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE ISSUE OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES.

Glossary Items

Acronym	Meaning
2A/ Truck	2 Axle/ Truck
3A	3 Axle
AADT	Annual Average Daily Traffic
BOT	Build Operate Transfer
CAGR	Compound Annual Growth Rate
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DPR	Detailed Project Report
ETC	Electronic Toll Collection, also referred to as FASTag
FY	Financial Year
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HAM	Hybrid Annuity Model
HCM/ EME	Heavy Commercial Vehicles/ Earth Moving Machinery
IE reports	Independent Engineers' reports
INR	Indian Rupees
km	Kilometre
LCV/ LGV	Light Commercial Vehicles/ Light Goods Vehicle
LMV	Light motor vehicles
MADT	Monthly average daily traffic
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NHIIMPL	National Highways Infra Investment Managers Private Limited
NSDP	National State Domestic Production
OD	Origin Destination
OSV	Oversized vehicles
PCU	Passenger Car Unit: it is a measure of standard vehicle unit to convert all vehicle classes to a single unit by using PCU factors to compute total traffic on an asset.
Q1	Quarter 1 of financial year, from April to June
Q2	Quarter 2 of financial year, from July to September
Q3	Quarter 3 of financial year, from October to December
Q4	Quarter 4 of financial year, from January to March
RNP	Registered Number Plate
SCF	Seasonality Correction Factor
SH	State Highway

Acronym	Meaning
T&R	Traffic and Revenue
TMS	Traffic Management System
TVC	Traffic Volume Count
WADT	Weekly average daily traffic
YTD	Year to Date

1 Introduction

The assignment

1.1 The Cube Highways Fund Advisors Private Limited (the "Client") has commissioned Steer Davies Gleave India Private Limited ("Steer") for a traffic due diligence to be carried out on the Jhansi Lalitpur Tollway Road (hereafter called "Asset"). This report forms part of the annual fair market valuation (FMV) undertaken as part of the "Transit 11 project". This report presents a full update of the traffic and revenue forecasts based on recent network developments, actual traffic data available up to February 2026 and latest macro-economic assumptions.

1.2 The Asset Jhansi-Lalitpur consists of two toll road sections, each of which has a special purpose vehicle (SPV). For this report, we hereafter call the two SPVs together as a single Asset and the toll plazas on each section as TP1-2.

- Jhansi Lalitpur Tollways Limited: JLTL-: TP1 – Babina
- Jhansi Vigakhet Tollways Limited: JVTL-: TP2 - Vigakhet

1.3 Our scope of work for the traffic and revenue forecasting process includes:

Table 1-1: Scope of work and sources of data

Scope of work	Data source
• Review of historical Traffic Management System (TMS) data, Vendor reports and documents	• • Provided by client for the period between Oct'20 and Mar '26, with FY26 base AADT and forecasts considering data up to Feb'26
• Historical analysis and forecasts for baseline growth, including; — Background growth, and — Seasonality trends	• Historical data provided by the Client and benchmarking using plazas in the vicinity or of similar nature of the Asset has been done wherever sufficient data was unavailable.
• Validation of revenue reported in FY26YTD	• TMS data provided by Client • Revenue reconciliation using toll plaza traffic and ticket type data to calculate revenue and reconciling it with toll plaza reported revenue
• Origin Destination (OD) analysis to understand growth drivers: — Zonal influence and Top OD pairs — Commodity distribution — Trip Length Distribution	• Origin Destination (OD) surveys undertaken by Steer. The surveys were undertaken in 2024 on TP1 and in 2026 at TP2.
• Analysis of upcoming network improvements and other	• Secondary research and our in-house experience of working in the vicinity of the Asset. Impact analysis to be conducted by

Scope of work	Data source
developments, that may have future impacts on traffic	Steer based on Generalised Journey Cost spreadsheet-based analysis
• Historical revenue analysis and forecasts for revenue estimation, including — Toll segmentation and trip factors, — Overloading shares	• Calculated from historical data provided by Client
• Final traffic growth forecasts including baseline growth rates and potential future impacts	• Elasticity based base growth and potential impacts from secondary research, Asset historical traffic performance and Steer's in-house experience of working on toll roads on the corridor
• Toll revenue estimation for the entire concession, including toll evolution	• Toll evolution based on latest toll notification published by National Highway Authority of India (NHAI); and latest Wholesale Price Index (WPI) trends as shared by the client

Our Approach

1.4 Our analysis follows well-established practices for forecasting ongoing traffic growth on an existing/brownfield Asset.

1.5 The analysis has focused on two sets of issues, namely:

- understanding the traffic that is currently using the Asset; and
- identifying how and why that traffic is likely to change in the future.

1.6 To understand the current traffic on the Asset, we have analysed traffic data from multiple independent sources as given below:

- Client-provided secondary data, including:
- TMS data starting October 2020 to February 2026. The historical traffic and revenue presented in Chapter 3 considers information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.
- Concession agreement and toll notifications for FY25 and FY26
- Previous studies related to traffic and revenue
- Steer-commissioned OD survey on 30th January to 31st January 2024 and TVC survey from 29th January to 31st January 2024 on TP1 Babina toll plaza as part of earlier commission. Similarly, as a part our current commission Steer-commissioned TVC counts on TP2 Vigakhet from 23rd February to 25th February 2026 and OD survey from 24th February to 25th February 2026.
- We undertook revenue reconciliation for FY26YTD, by building up revenue from the traffic reported by each of the toll plaza and subsequently match it to the reported revenue for FY26YTD using the prevalent toll rates and reported segmentation/toll-frequencies for FY26, this is a key part of our analysis to validate the segmentation/toll-frequency assumptions and the Annual Average Daily Traffic (AADT) reported for each of the toll plaza.

1.7 The estimation of future traffic demand on the Asset was undertaken through:

- To determine the adopted FY26, seasonality correction factors (SCFs) were applied on the 11 months of data available in FY26 (Apr-Feb).
- Secondary research to understand plans for new developments and progress of ongoing developments on the Asset.
- Steer independent primary surveys and site visits to validate our network and contextual understanding.
- Developing a bespoke growth model for each Asset/plaza/toll class to forecast year-on-year traffic growth from FY26 to the end of concession period.
- Investigating the elasticity of historical traffic growth compared to state (GSDP) and national (GDP) growth. Where historical data is limited, we have benchmarked the Asset against our Steer knowledge base (e.g., similar Asset types in the same state or on the same corridor), to derive appropriate elasticities.
- Applying our elasticities to independent GDP forecasts as provided by client.
- Identifying and analysing the potential impacts of any relevant changes to the competitive position of each Asset – these include impacts of changes to road network including expressways and opening of competitive modes of travel.
- Identifying and analysing any other potential impacts to traffic and revenue on each Asset – these include axle load norms, axle shift for heavy goods, FASTag implementation.
- Considering changes in trends of segmentation over time and making suggestions for changes in exemptions in the future
- Preparing traffic and revenue forecast for the Asset for the complete length of the concession. We have developed a set of forecasting assumptions for three scenarios: a base case and upside and downside scenarios.

Contents of this report

1.8 The report has been divided into the following chapters, including Chapter 1 providing an introduction:

- Chapter 1 introduces the methodology and approach to undertake the traffic and revenue due diligence;
- Chapter 2 describes the key characteristics of the Asset and its surrounding road network, primarily based on site visits;
- Chapter 3 summarises the current and historical traffic on the Asset, including results from the TMS, TVC and OD analyses;
- Chapter 4 presents the socio-economic context of the corridor and region/state containing the Asset, along with our approach and results on estimating background traffic demand growth; and
- Chapter 5 presents our baseline year forecast and summarises our results on estimating background traffic demand growth
- Chapter 6 summarises our assessment of network impacts and presents concession traffic and revenue forecasts for the Asset along with the assumptions for upside and downside cases

2 The Asset

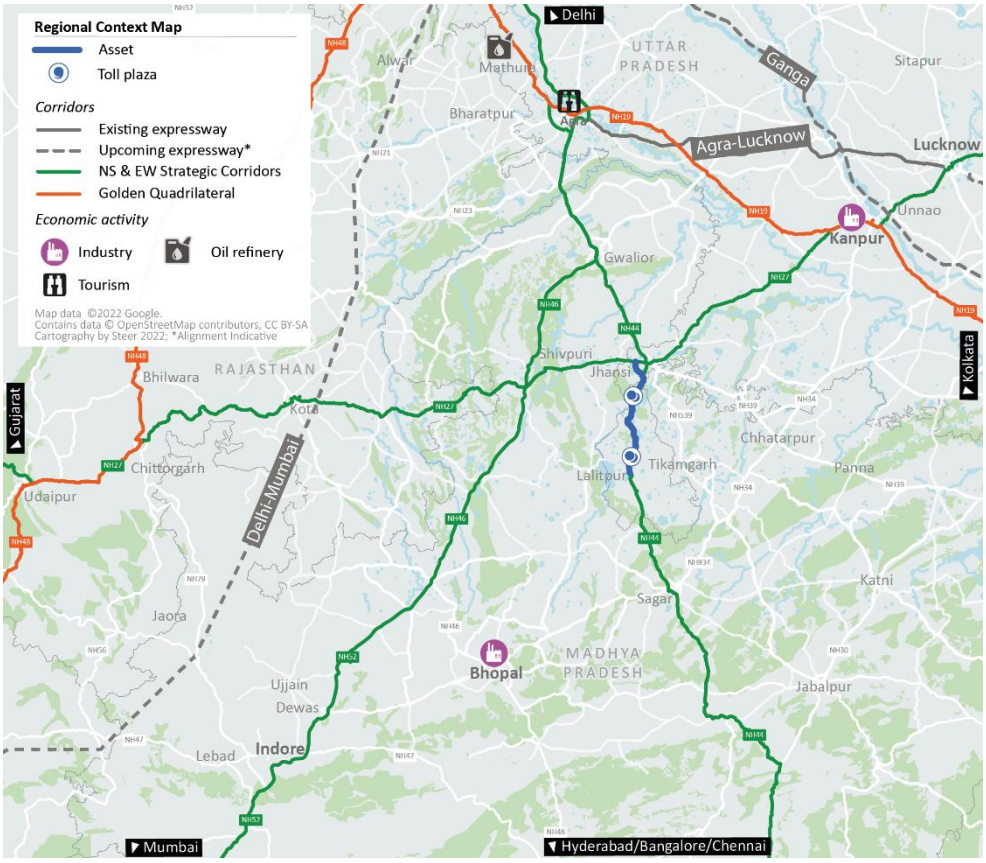
Introduction

2.1 This chapter provides a description of the Asset, based on both primary data (from site visits), and our understanding of the region and network surrounding the Asset. We cover the strategic network context, followed by key economic activities and network developments around the Asset.

Strategic network

2.2 The Asset is in the state of Uttar Pradesh, connecting Jhansi and Lalitpur, on the NH 44 (old NH 25 and 26). NH44 caters to the North- South movement between Jammu and Kashmir, and Kanyakumari, connecting major centres of economic activity such as Delhi, Nagpur, Hyderabad, Bangalore, and Chennai. The following figure shows the regional road network in which the Asset is located.

Figure 2-1: Location of Jhansi-Lalitpur and corresponding toll plazas



Source: Steer Cartography

2.3 The Asset primarily caters to two different types of strategic movements:

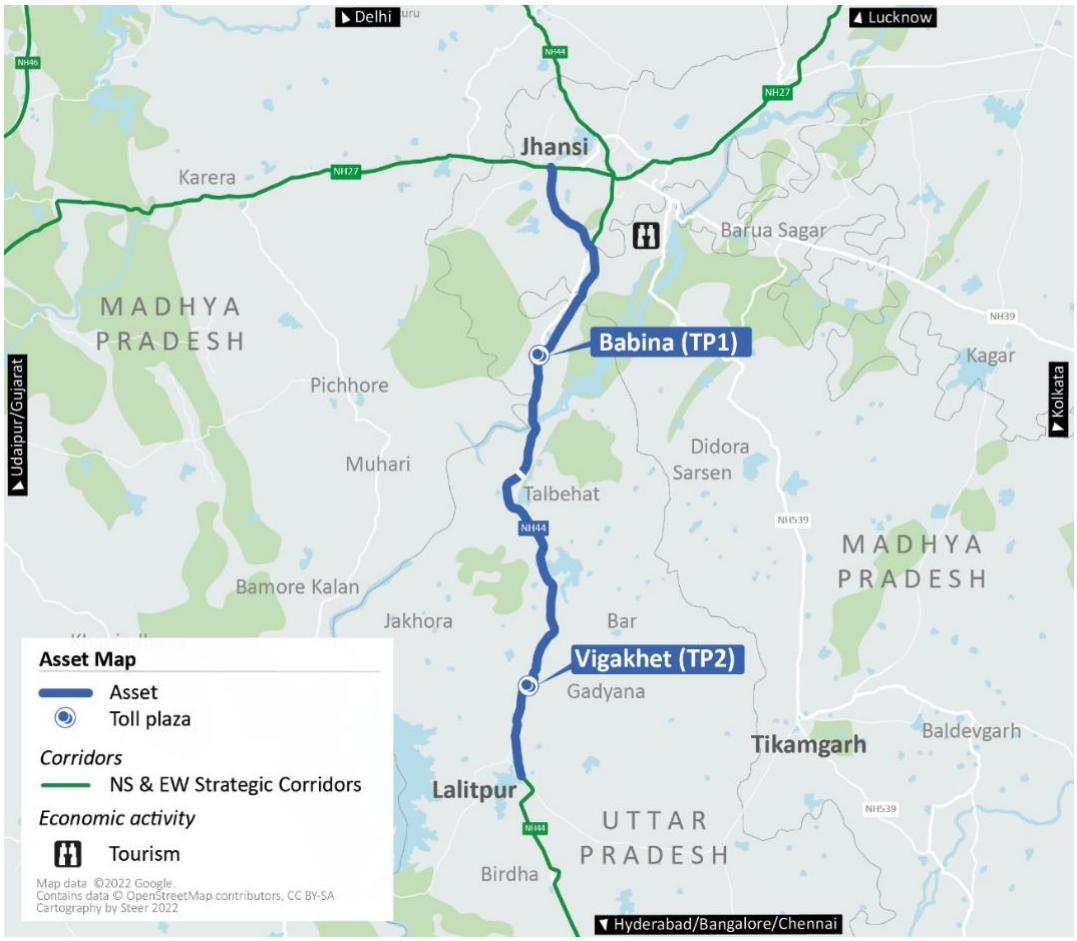
- **Short-distance trips** including leisure and business travel trips between some of the key tourist towns/cities around the Asset between Jhansi, Orchha, Talbehat, and Lalitpur.
- **Medium-distance and long-distance trips** by 3A and MAVs primarily between Delhi and north and Hyderabad/Bengaluru. The asset provides key link for the movement of goods between the states of Delhi, Haryana, Punjab in north India and Southern states of Telangana, Karnataka, Andhra Pradesh, and Tamil Nadu. Major long distance(>500kms) commodities include Automobile, Parcels, Manufacturing and Agri Commodities.

2.4 The Asset forms a 100.0 Km long contiguous section of toll roads which forms a part of NH 44 (old NH 25 and 26) in Uttar Pradesh. The following figure (Figure 2-2) provides a closer view of the Asset in the context of its immediate surrounding. Both the SPVs of the Asset are four-lane divided road with one toll plaza each namely,

- JLTL – TP1: Babina at km 32.100 and
- JVTL – TP2: Vigakhet at km 85.280.

2.5 TP1 Babina is near Jhansi whereas TP2 Vigakhet is near Lalitpur. The following figure provides a closer view of the Asset in the context of its immediate surroundings.

Figure 2-2: Asset context



Source: Steer cartography using OpenStreetMap data

Concession and tolling details

2.6 TP1- Babina on the Asset has been operational since November 2014 whereas TP2-Vigakhet has been operational since March 2012. The Client took over the operations of the Asset in October 2020. There are still 25 years left in the concession period which ends in FY51. Table 2-1 presents a summary of the concession.

Table 2-1: Summary of concession

Particulars	Details
State	Uttar Pradesh
Highway and lane configuration	NH 44 (old NH 25 and 26), 4-lane divided
Toll plaza	• SPV 1: TP1: Babina • SPV 2: TP2: Vigakhet
Length (km) as per concession agreement, applicable	• TP1: 49.70 km • TP2: 49.31 km
Commencement of operations	• TP1: November 2014 • TP2: March 2012
Operated by Client since	20th October 2020
Concession period	30 years
Last year of concession	2051

Source: Client data

2.7 Following pictures show typical cross section of the Asset and toll plazas.

Figure 2-3: Typical cross-sections and toll plazas on the Asset

Source: Steer site visit

2.8 The toll rates for single category are shown in Table 2-2. The toll plazas have dedicated ETC/FASTag lanes for electronic tolling. Like the other National Highway plazas, the Asset has Single, Return, Local Commercial, Local Personal, Monthly, and Local Monthly tickets.

2.9 There is a difference in toll rates of both the toll plazas since the structure length and bypass length are shorter on TP2: Vigakhet toll plaza in comparison to TP1 Babina toll plaza.

2.10 Due to general elections in India from Apr-May'24 the toll rates on National highways across the country for next financial year were applicable Jun'24 onwards instead of Apr'24. For FY26 the toll rates changed from Apr'25.

Table 2-2: Single toll rates on the Asset (INR), applicable Apr 2025 to March 2026

Type of Vehicle	Single Journey Fee	
	TP1 Babina	TP2 Vigakhet
CJV	125	90
LCV	200	145
Bus/Truck	420	310
3A	460	335
MAV	660	485
OSV	800	590

Source: NHAI Revision of User fee Rate w.e.f 01.04.2025

Key economic activities

The Asset is situated in the state of Uttar Pradesh. Uttar Pradesh is the third largest economy and the most populous state in the country, accounting for 16% of India's total population which also makes its high consumer base a key factor that contributes to the GDP. Agriculture is the most important and the biggest sector in the state economy followed by the service sector comprising of travel, tourism, real estate, insurance, and the finance industry. State's real GSDP for 2023-24 was INR14.23 trillion, having grown at 5.7% CAGR between FY16 and FY24, contributing 8.2% to the national GDP.

Economic Activity Around Asset

2.11 The northern end of the Asset, Jhansi is a city of historical relevance in the Bundelkhand region. Being the only city with presence of both, East-West highway corridor (NH27) and North-South highway corridor (NH44), Jhansi has observed development in infrastructure and real estate sectors over the years. Jhansi is also one of six nodes identified as defence corridors where industries will be set up to meet the needs and requirements of the country's defence sector. A Defence Park is planned to be established in Jhansi for automobiles manufacturing for military, police modernization, forensics centres, aircraft/helicopter manufacturing/ assembling units, testing facilities for military equipment, drone manufacturing and testing facilities.

1. In October 2025, the Uttar Pradesh government announced multiple infrastructure and industrial initiatives in the Bundelkhand region, covering Jhansi and Lalitpur districts including three solar plants totalling 2,000 MW capacity, with Hinduja Group setting up a 600 MW plant in Jhansi and NTPC Green Energy developing a 600 MW plant in Lalitpur. The projects, worth ₹10,000 crore, are expected to be operational by December 2025, generating green energy.[1]

2.12 The UP State Industrial Development Authority is also developing a Bulk Drug Pharma Park over 1,472 acres with an anticipated investment of ₹12,000 crore and job creation for approximately 14,000 people. The park will feature advanced infrastructure and is expected to be operational within 2–2.5 years.[2]

2.13 Concrete and granite stone mines are present throughout the state and are used for construction. Stone crusher plants are present at Bijoli, 12 km from Jhansi along the Asset, which produce aggregate for construction. The same is transported to the rest of the state. Bijoli is also home to cement, bricks and pipes as well as machine parts industries.

2.14 There are two thermal power plants present near the Asset namely, Parichha Thermal Power Plant (near Jhansi) and Lalitpur Power Plant (near Lalitpur).

2.15 Diamond Cement Factory has a grinding unit at Jhansi where one of the raw materials, fly ash, is transported from Lalitpur power plant using the Asset.

2.16 Since the economy of Uttar Pradesh is mainly based on agriculture and around 65% of the population is dependent on agriculture, the Asset observes Agri-products as a key commodity transported. Agriculture related Pradeshik Co-operative Federation warehouse is also located near Vigakhet which is further expected to generate Agri-related traffic on the Asset.

2.17 Being a part of the long-distance strategic corridor of NH44, key commodities moving on the Asset include tomato, rice, potato, manufacturing products, parcels, and a small proportion of automobile traffic.

Alternate Routes

2.18 An alternate route between Jhansi and Sagar via Tikamgarh is also present and bypasses the toll plazas. The route is 32 km longer than the Asset route. This alternate is of an uneven width for the most part. The route is also closed during the rainy season as water flows over the low-level bridge near Orchha. Due to this reason, the route isn't preferred by general traffic and is not considered to be impacting the traffic on the Asset.

2.19 The National Highway Authority of India (NHAI) is building an ~1382km long greenfield expressway connecting Delhi and Mumbai. It is an 8-lane access-controlled route with 4 lanes in each direction connecting Delhi-Noida Direct (DND) Flyway in Delhi with the Jawaharlal Nehru Port Trust (JNPT) in Mumbai. A few sections of the greenfield expressway have been made operational with Sohna-Dausa-Lalsot section (Feb'23), Madhya Pradesh section (Sep'23), Vadodara-Bharuch section (Feb'24), Lalsot-Sawai-Madhopur section (Feb'24) and the Kota-Bundi Section (Dec'24) already being

[1] **Solar Plants in Bundelkand**

[2] **Pharma Plant in Lalitpur**

operationalised. The project is currently suffering from construction delays, mainly on the Gujarat stretch. The timeline for completion of the expressway has been revised several times and is now expected to be completed by 2027 as per reports[3]. It is key to note that while certain sections of the Rajasthan expressway lack direct connectivity, they are effectively linked via state highways.

2.20 Like the DME, the ~1,271 km long Surat-Solapur-Chennai Expressway will connect Surat and Chennai via Solapur, Kurnool, Kadapa, and Tirupati. Once the expressway is constructed, traffic coming from Delhi/ north and travelling to Kurnool/south will have the option to use DME till Indore followed by NH52 till Solapur followed by the Akkalkot-Chennai section of the planned Surat Chennai Expressway from Solapur to Kurnool and beyond. This new alternative will provide the option of using expressways for ~60% of the total journey distance and hence, a share of Delhi-Kurnool and south specifically Chennai bound traffic is expected to have an alternate route choice.

2.21 Further, DME provides a faster access to Indore and post which the users can reach Solapur via Dhule – Aurangabad. After Solapur, the route to reach Chennai can either be via Surat Solapur Chennai expressway.

2.22 Currently the existing sections between Indore and Hyderabad are getting widened from two lanes to four lanes as part of Indore Hyderabad Economic Corridor.

- The sector between Indore and Khandwa (164 Km) is getting upgraded as a part of brownfield expansion.
- The section between Khandwa and Akola (146 Km) is proposed to upgrade as a part of greenfield expansion (however very limited information is available on this greenfield development).
- The section between Akola and Hyderabad (NH161) is majorly four-laned.
- The 40 km long Kandi to Ramsanpalle section of NH161which was two laned has been recently inaugurated by Prime Minister in Mar'25 after it's completion of four laning[4].

2.23 Once the widening of the existing alignment is completed, the route via Indore, Akola, Nanded will provide an alternate route traveling between Madhya Pradesh/ North and Hyderabad/South.

2.24 Thus, the Indore-Hyderabad Economic Corridor will act in conjunction with the Delhi-Mumbai Expressway and the Surat-Chennai Expressway to form an alternate route to the Asset for North-South traffic. The detailed impact of this composite alternate is discussed in Chapter 6.

2.25 The 4 laning of Satna-Chitrakoot-Prayagraj section of NH30 is a lane augmentation project on the east of the Asset. It will have impact on traffic between Lucknow and north and Nagpur and south. There is no official information to suggest when this project may be completed. Reports online suggests the project is expected to start construction in 2026.

---

[3] https://infra.economictimes.indiatimes.com/news/roads-highways/delhi-mumbai-e-way-unlikely-to-be-completed-before-2027/118236682

[4] **Hon'ble Prime Minister today inaugurated the 40 km long four-lane #Kandi-#Ramsanpalle section of NH-161 in #Telangana**

Once the 4-laning is completed, this section will act as an alternate to our Asset for the traffic commuting between Lucknow - Nagpur.

3 Traffic Description

Introduction

3.1 This chapter outlines the current traffic and revenues on the Asset, as well as our analysis of origin-destination (OD) data and traffic count data. This covers data which was collected as a part of the study in the previous commission, as well as data provided by the Client.

3.2 Traffic demand data is generally collected and analysed to understand the volume and vehicle composition of demand currently using the Asset, while OD data is used to obtain a better understanding of travel patterns, trip lengths, trip purposes and areas of influence in the vicinity of the Asset, as well as the commodities being moved by goods vehicles. This analysis, combined with our understanding of the Asset (based on our site visits), enables us to identify the key drivers of demand on the Asset.

3.3 Actual toll plaza data is used as the basis from which the current/base year annual average daily traffic (AADT) is established. This data is typically provided by the Client and independently analysed and validated by us using traffic volume count (TVC) information.

3.4 The below sections present historical traffic and revenue information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.

PCU Factor assumption for reporting

3.5 The PCU values have been taken from 'IRC 64:1990- Guidelines for Capacity of Roads in Rural Areas'.[5] For MAV, based on the discussion with the Client, we have referred to the rigid and trailer splits in the latest TVC counts conducted in 2026 for calculating the effective PCU for MAVs. For rigid trailer trucks we have assumed a PCU factor of 3, whereas for trailer trucks we have assumed a PCU factor of 4.5. These factors have been used to arrive at the PCU values presented in the following sections.

Table 3-1: PCU factors

Vehicle Category	PCU Factor
CJV/ Mini LCV	1.0
LCV	1.5
Bus/2A	3.0
3A	3.0

[5] IRC 64:1990- Guidelines for Capacity of Roads in Rural Areas

Vehicle Category	PCU Factor
MAV*	3.37
OSV	4.5

Source: Steer analysis and IRC64,1990, * Rigid-Trailer combined PCU

Historical trends

3.6 Table 3-2 illustrates the traffic data over the period of 5 years from October 2020 – September 2025 (provided by the Client) at a plaza level. There is lack of long-term historical data available on the Asset since tolling was started by the client only in October 2020 and both the available years of data, FY21 and FY22 were impacted by COVID-19 related restrictions. Therefore, starting FY23 traffic on the Asset has started to get normalised with normal travel patterns recorded FY24 onwards.

Table 3-2: Average Daily Traffic data of TP1 Babina

Vehicle category	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY23 -26
CJV	2,794	2,872	3,040	3,157	3,353	3,698	6.8%
LCV	241	220	236	253	311	337	12.6%
Bus	189	163	167	191	185	180	2.6%
2A	808	969	1,123	1,226	1,422	1,615	12.9%
3A	1,211	1,248	1,313	1,325	1,280	1,446	3.2%
MAV	1,498	1,611	1,761	1,818	2,010	1,940	3.3%
OSV	2	2	1	2	2	2	
Total	**6,743**	**7,085**	**7,641**	**7,971**	**8,563**	**9,219**	**6.5%**
PCU	**14,839**	**15,782**	**17,144**	**17,900**	**19,266**	**20,477**	**6.1%**

Source: Steer analysis of Client data, (*12 days of data was available for Oct'20) FY26 data is from Apr'25 to Mar'26

Table 3.3: Tollable Daily Traffic at TP1 Babina

Vehicle category	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY23 -26
CJV	2,570	2,511	2,696	2,770	2,962	3,286	6.8%
LCV	240	207	231	247	305	334	13.0%
Bus	239	150	163	186	182	178	3.0%
2A	741	885	1,093	1,206	1,389	1,586	13.2%
3A	1,272	1,239	1,301	1,316	1,364	1,443	3.5%
MAV	1,583	1,579	1,758	1,815	1,917	1,937	3.3%
OSV	1	2	1	2	2	2	10.7%
Tollable AADT	**6,646**	**6,571**	**7,244**	**7,541**	**8,120**	**8,765**	**6.6%**
Tollable PCU	**15,027**	**14,976**	**16,645**	**17,392**	**18,696**	**19,946**	**6.2%**

Source: Steer analysis of Client data, (*12 days of data was available for Oct'20 FY26 data is from Apr'25 to Mar'26; Tollable traffic excludes exemptions and violations

3.7 As per the reported data, it can be observed CJVs make up 40% of traffic in FY26 which can be attributed to short distance movement from Jhansi and surrounding region in proximity. Whereas 2A, 3A and MAV account for a total of nearly 54% of the traffic as the Asset is a part of the traditional North-South long-distance corridor and caters to many goods vehicles doing long distance North-South movement between Delhi/North and Nagpur/South.

3.8 3A category has largely growth at a 3.2% CAGR in the FY23-26 period. The reduction/stagnation in 3A volume is a result of the declining demand for 3A vehicles, which are being replaced by 2A and MAVs. MAVs offer higher tonnage capacity making them more cost-effective for transporters. While the increase in 2A volume reflects the growing preference for these vehicles due to favourable changes in the legal permissible loads for 2As and their suitability for e-commerce-related freight, particularly high-value, low-volume goods over medium to long distances. This is consistent with our discussion with various transporters and OEMs across the country who are favouring 2A and 5A vehicles for commodity movement due to better unit economics.

3.9 Based on the FY26 data provided by the client, movement of MAVs has declined by 3.5% compared to FY25. This reduction is primarily attributed to the diversion of north–south traffic onto the Delhi–Mumbai Expressway, as well as the rerouting of traffic from East Uttar Pradesh towards Nagpur and southern regions via NH30 (Rewa–Katni–Jabalpur–Nagpur), following the completion of the Katni Bypass in June 2025. During the site visit it was observed that congestion was caused by: (i) construction of a VUP on the intersection between NH27 and NH44 to the north of Jhansi; and (ii) construction of a flyover on NH27 near Bundelkhand University on the Kanpur-Shivpuri stretch. Since September 2025, it is understood that the congestion has been more streamlined.

3.10 2A and 3A continues to be positive in FY26 as well signalling a strong demand generated by cities such as Nagpur, Bangalore, Chennai originating from Gwalior and North Indian states like Delhi NCR, Punjab and Haryana and vice-versa. Traffic volumes observed at Vigakhet toll plaza are presented below.

Table 3-4: Average Daily Traffic data at TP2 Vigakhet

Vehicle category	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY23 -26
CJV	2,279	2,284	2,376	2,447	2,575	2,765	5.2%
LCV	233	201	222	243	303	328	13.9%
Bus	143	148	148	176	168	164	3.4%
2A	806	929	1,073	1,178	1,379	1,564	13.4%
3A	1,202	1,230	1,301	1,310	1,305	1,446	3.6%
MAV	1,435	1,541	1,689	1,713	1,865	1,847	3.0%
OSV	-	-	1	1	2	2	
Total	**6,098**	**6,333**	**6,811**	**7,068**	**7,595**	**8,116**	**6.0%**
PCU	**13,920**	**14,702**	**15,975**	**16,585**	**17,877**	**19,014**	**6.0%**

Source: Steer analysis of Client data, (*12 days of data was available for Oct'20) FY26 data is from Apr'25 to Mar'26

Table 3.5: Tollable Traffic at TP2 Vigakhet

Vehicle category	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY23 -26
CJV	2,127	1,984	2,102	2,155	2,268	2,441	5.1%
LCV	212	196	219	237	298	325	14.0%
Bus	139	130	147	173	166	163	3.5%
2A	793	851	1,054	1,162	1,355	1,544	13.6%
3A	1,259	1,236	1,298	1,308	1,358	1,444	3.6%
MAV	1,515	1,526	1,686	1,710	1,805	1,844	3.0%
OSV	2	2	1	1	2	2	
Total	**6,047**	**5,925**	**6,507**	**6,747**	**7,250**	**7,763**	**6.1%**
PCU	**14,134**	**14,082**	**15,616**	**16,209**	**17,446**	**18,609**	**6.0%**

Source: Steer analysis of Client data, (*12 days of data was available for Oct'20). FY26 data is from Apr'25 to Mar'26; Tollable traffic excludes exemptions and violations

3.11 Historically the traffic on TP2 as well has shown a healthy growth across categories with ~6.0% overall PCU growth for the period between FY23-FY26.

3.12 TP2 Vigakhet plaza lies south of Babina toll plaza and is a contiguous section. The traffic trends at both plazas are similar with similar seasonal impact as explained above. This is also validated with the toll plaza also reporting a very similar behaviour in the evolution of traffic since October 2020. There has been a growth in the 2A volume FY25 compared to FY24 due to increased category demand for long-distance movement. The tollable traffic at Vigakhet shows similar trend as the Babina Plaza.

3.13 Increase of approximately 13% has been observed in 2A vehicle traffic across both plazas, reflecting a broader trend along the corridor. Conversely, 3A vehicle growth has remained subdued, primarily attributed to an axle shift from 3A vehicles to MAVs.

Historical Revenue

3.14 In terms of revenue, CJVs contributes ~10% to the total revenue, while commercial traffic (2A, 3A and MAV) contribute ~86% in terms of revenue on Babina toll plaza with remaining shares by Bus and LCV.

3.15 Table 3-6 and Table 3-7 show the revenue by each vehicle type at the toll plaza at an annual level and at daily level.

Table 3-6: Total Revenue (in INR Cr) at TP1 Babina, and AADC (in INR Lakhs/day)

Year	CJV	LCV	Bus	2A	3A	MAV	OSV	Total	AADC	YoY %
FY21*	3.6	0.6	1.1	3.9	7.4	12.9	0.0	**29.5**	**17**	**-**
FY22	7.3	1.2	1.4	10.7	16.7	29.7	0.0	**67.0**	**19**	**11.8%**
FY23	8.3	1.5	1.7	14.7	19.2	36.4	0.0	**81.8**	**22**	**15.8%**
FY24	9.0	1.7	2.1	17.0	20.4	39.5	0.0	**89.7**	**25**	**9.4%**
FY25	9.7	2.1	2.1	20.3	20.4	44.7	0.0	**99.4**	**27**	**11.0%**
FY26	10.5	2.4	2.1	24.0	24.0	45.1	0.1	**108.1**	**30**	**8.8%**

Source: Steer analysis of Client data, (FY21* From Oct-20 (last 12 days) to Mar-21; AADC represents Average Annual Daily Collection; FY26 is from Apr'25 to Mar'26.

Table 3-7: Total Revenue (in INR Cr) at TP2 Vigakhet and AADC (in INR Lakhs/day)

Year	CJV	LCV	Bus	2A	3A	MAV	OSV	Total	AADC	YoY %
FY21*	2.3	0.4	0.4	3.1	5.4	9.2	0.0	**20.7**	**12**	**-**
FY22	4.5	0.8	1.0	7.6	12.2	21.2	0.0	**47.2**	**13**	**8.3%**
FY23	5.1	1.0	1.2	10.4	14.0	25.7	0.0	**57.7**	**16**	**23.1%**
FY24	5.5	1.2	1.6	12.1	14.9	27.5	0.0	**62.8**	**17**	**6.3%**
FY25	5.8	1.5	1.5	14.6	15.2	30.5	0.0	**69.2**	**19**	**10.4%**
FY26	5.9	1.7	1.5	17.3	17.4	31.5	0.0	**75.4**	**21**	**8.9%**

Source: Steer analysis of Client data, (FY21* From Oct-20 (last 12 days) to Mar-21; AADC represents Average Annual Daily Collection; FY26 is from Apr'25 to Mar'26.

3.16 It can be inferred from the data that major contributor to the revenue on the Asset is the MAV category which has a share ranging ~45% of overall revenue across the Asset.

3.17 The Babina toll plaza reported an AADC of ~INR 30 Lakhs in FY26 as compared to Vigakhet toll plaza which reported an AADC of ~INR 21 lakhs. TP1 observed a ~9% and TP2 at 9% increase in per day collection in FY26 which is mainly contributed by increased volume of LCV, 2A and MAV on the Asset. Since, both Asset carry similar traffic volumes, most of the revenue differences can be explained by the difference in toll rates charged, which in turn is due to the difference in tollable lengths.

Toll Frequencies

3.18 Toll frequency or segmentation is typically the share of each ticket category recorded for a particular vehicle type. This is based on the toll policy which forms a part of the concession agreement. Each vehicle category has different segmentation. As a part of historical analysis, we calculate the toll frequency for each vehicle category from the monthly data shared by the client. The most common ticket categories observed on a typical National Highway are: Single, Return, Monthly, Local and Exempt. Given the local nature of traffic, some toll plazas offer custom made local passes to attract the local commuters to opt for these passes instead of evading toll.

3.19 The following are the types of tickets being sold at the plazas of the Asset.

Table 3.8: Typical ticket types sold at NHAI plazas

Category	Description
Single	Allows the vehicle to cross the toll plaza once
Return	Allows for a return journey within a day with a 50% discount on the return trip.
Monthly Pass	Discounted single entry ticket for users who undertake multiple trips within a month can buy the monthly pass.
Local Personal	Discounted single entry pass only for private cars of residents within 20km radius of toll plaza
Local Commercial	50% discount on single trips for commercial vehicles registered in the local district. This pass allows single entry only
Exemptions	Officially exempted vehicles like ambulance, police cars, key political personnel etc.

3.20 Further, the toll plazas also record violations which are non-paying users, who are not officially allowed under exemptions category but are forced exemptions. For some Assets, the Exemption and violations are at time reported together.

3.21 Generally, over the period the shares of single/return/monthly tickets tend to stabilise within 2-3 years of Asset operations. Only in the cases where trip patterns are expected to change significantly due to urban expansion is where we expect these shares to change over the period or due to some external events impacting the trip patterns.

Introduction of Annual pass for CJVs

3.22 The National Highway Authority of India launched the "The FASTag Annual Pass" on August 15, 2025, a prepaid facility that allows private CJVs to travel across designated National Highway and National Expressway toll plazas. The annual pass is worth INR 3,000. The pass is valid for one year or 200 trips, whichever occurs first and is applicable only to private, non-commercial vehicles (Car/Jeep/Vans).

Since this pass has been introduced by NHAI, it is not valid on

- state governed toll plazas on highways
- state governed toll plazas expressways
- Parking areas or other non-NHAI tolling locations

3.23 The pass can be activated via the RajmargYatra app or the NHAI website, and links directly to an existing FASTag.

The Annual Pass aims to:

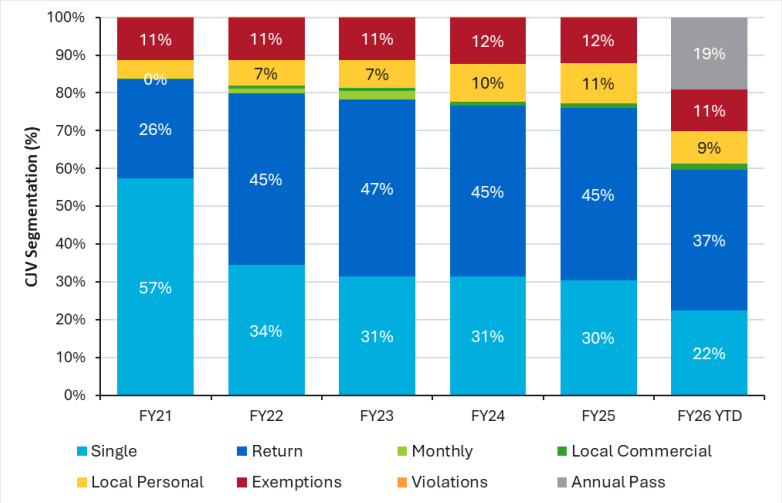
- Promote cashless and seamless travel on national highways.
- Reduce congestion and improve traffic flow at tolls
- Provide cost-effective travel for frequent users of NH/NE toll road

Share of traffic by payment type

3.24 Since the Asset is located closer to urban clusters, it caters to a considerable number of daily commuters. This local movement results in multiple CJV trips through the plaza, leading to a higher share of return tickets for CJVs. On TP1, the level of exemptions is influenced by the higher share of local traffic on the plaza.

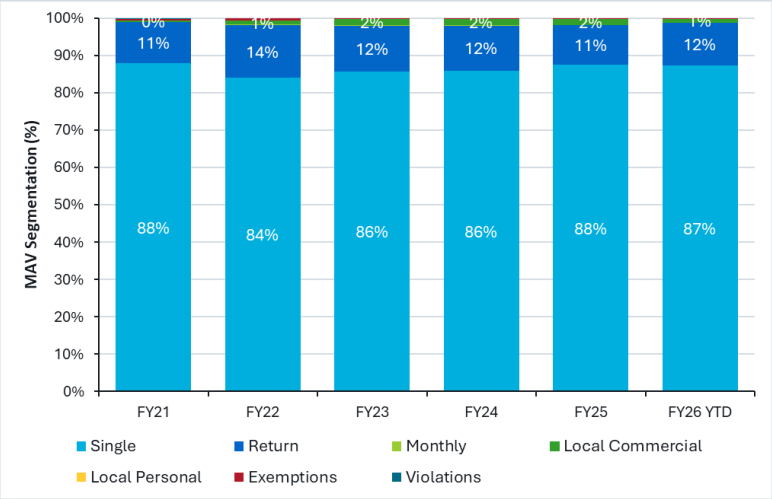
3.25 The CJV segmentation has decreased for single ticket type from FY22 to FY23 by approximately 3%, while the return ticket share increased by 2%. This minor shift can be attributed to the increasing adoption of FASTag by CJV users over the last three years. With the advent of annual passes, the segmentation of CJVs has also evolved since August 2025. The increase in annual passes can be seen to come from single and return categories primarily, with a marginal reduction also observed in exemptions and local personal ticket categories.

Figure 3-1: Ticket segmentation for CJV at TP1 Babina



Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21); FY26YTD is data for 5 months from Apr'24 to Feb'26

Figure 3-2: Ticket segmentation for MAV at TP1 Babina



Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21); FY26YTD is data for 11 months from Apr'25 to Feb'26

3.26 The trends observed in MAV segmentation for TP1 Babina are consistent between FY24 and FY26YTD. A considerable proportion of MAVs buying single tickets can be attributed to long-distance movement of traffic observed on the Asset. The same was verified from the OD data analysis with nearly 50% MAVs having trip lengths longer than 1,000kms and 50% MAVs having both ends of the trips out of Asset.

3.27 Table 3-9 presents data for FY26YTD (Apr'25 – Feb'26) segmentation for LCV, Bus, 2A and 3A category for Babina Toll Plaza:

Table 3-9: Ticket segmentation for LCV, Bus, 2A and 3A at TP1 Babina

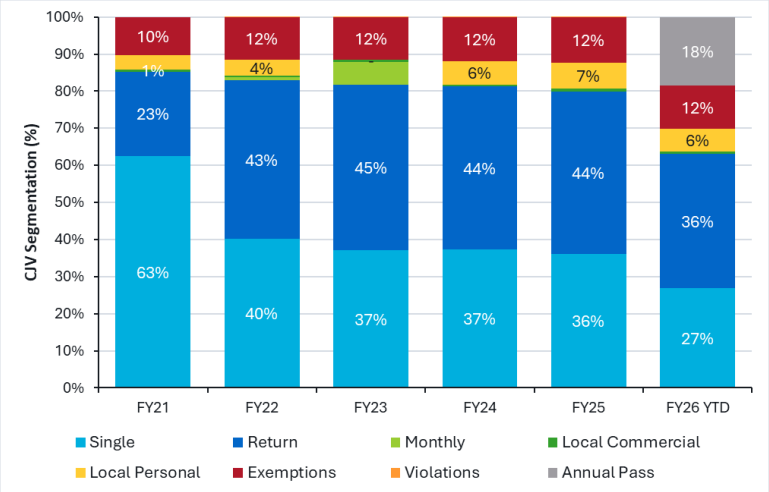
Ticket Category	LCV	Bus	2A	3A
Single	88%	36%	92%	96%
Return	11%	32%	6%	3%

Ticket Category	LCV	Bus	2A	3A
Local commercial	0%	31%	0%	0%
Exemption	1%	1%	2%	0%

Source: Steer analysis of Client data

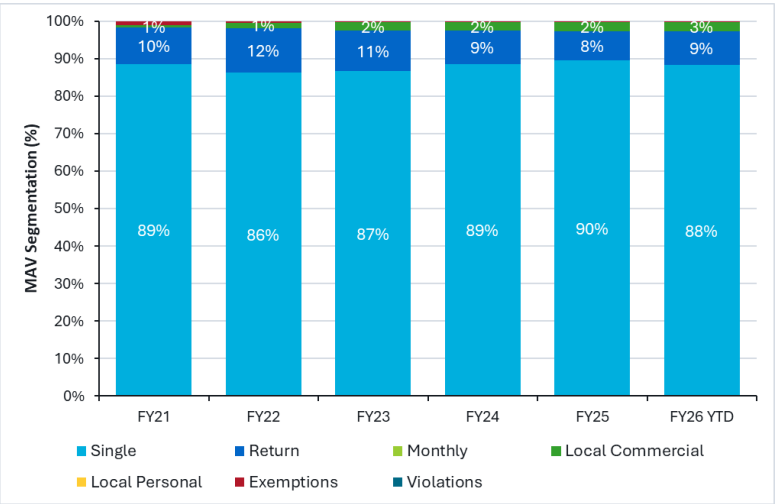
3.28 The segmentation for TP2, Vigakhet toll plaza is presented below:

Figure 3-3: Ticket segmentation for CJV at TP2 Vigakhet



Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21); FY26YTD is data for 11 months from Apr'25 to Feb'26

Figure 3-4: Ticket segmentation for MAV at TP2 Vigakhet



Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21); FY26YTD is data for 11 months from Apr'25 to Feb'26

3.29 Observations pertaining to ticket segmentation are similar on both toll plazas. The CJV segmentation shares have largely been consistent from FY23 and FY26YTD. On TP2 Vigakhet MAVs have exhibited similar trends when compared with previous years where single is dominant ticket category with more than ~85% share. These trips are primarily travelling between north and south India between Delhi NCR towards Bangalore and Chennai with trip lengths longer than 1,000kms.

3.30 Table 3-10 presents data for FY26YTD (Apr'25 – Feb'26) segmentation for LCV, Bus, 2A and 3A category for Vigakhet toll plaza:

Table 3-10: Ticket segmentation for LCV, Bus and 2A at TP2 Vigakhet

Ticket Category	LCV	Bus	2A	3A
Single	89%	40%	94%	96%
Return	9%	53%	4%	3%
Local commercial	1%	7%	0%	1%
Exemption	1%	0%	1%	0%

Source: Steer analysis of Client data

Data Collection exercise

3.31 As mentioned previously, to validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset in earlier commissions, comprising the surveys listed in the table below. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas, which Steer also commissioned with a third party. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

Table 3-11: Data collection exercise

Toll Plaza	3/7-day videography-based TVC			1-day OD survey	
	Start date	End date	Time (hrs)	Start date	Start time
TP1 Babina	29 Jan 2024	31 Jan 2024	0000-2359	30 Jan 2024	0900 hours
TP2 Vigakhet	23 Feb 2026	25 Feb 2026	0000-2359	24 Feb 2026	0900 hours

Source: Steer analysis of TVC data

3.32 It should be noted that, in our experience, traffic on national highways shows variation across the week due to the economic activities surrounding each road. To derive a representative TVC count considering daily variation, three-day to seven-day traffic counts are generally recommended, and hence, to fully understand the impact of this weekly fluctuation on the Asset, we collected three and seven-day counts respectively at each toll plaza.

Key findings of the TVC data analysis

WADT estimates

3.33 Taking an average of the three-day TVC counts (23 – 25 Feb 2026) at Vigakhet and three-day TVC count (29–31 Jan 2024) at Babina, we obtained the following average daily traffic (WADT) for each toll plaza. This WADT excludes non-tollable vehicles such as tractors, two-wheelers, bullock-carts, etc., but includes officially exempt vehicles such as police cars, ambulances, emergency response vehicles, government vehicles and other vehicle types officially allowed as 'exempted' under the concession agreement.

Table 3-12: WADT from TVC counts

Toll Plaza	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
TP1 Babina	3,238	623	390	151	1,118	1,140	1,731	**8,395**
TP2 Vigakhet	2,784	570	546	131	1,686	1,516	1,945	**9,180**

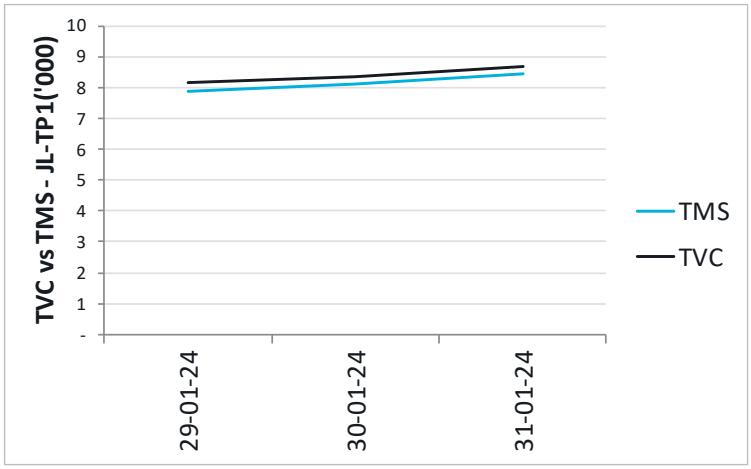
Source: Steer analysis of TVC data; Babina and Vigakhet average is of 3 days of data

TVC v/s TMS analysis

3.34 As we use the TMS data to estimate the base year AADT, we have used our TVC data to validate the TMS data on those days, as provided by the Client.

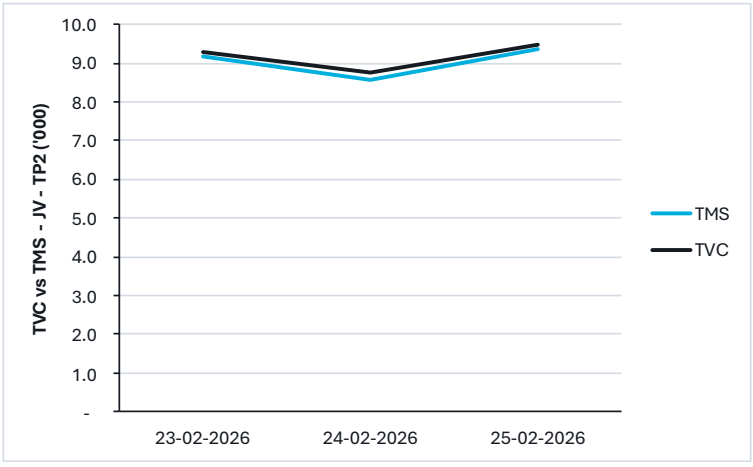
3.35 The following figures show the comparison between the daily traffic observed by TVC and TMS for the two toll plazas.

Figure 3-5: Comparison between TVC and TMS daily traffic data on TP1 Babina



Source: Steer analysis of TVC and Client TMS data

Figure 3-6: Comparison between TVC and TMS daily traffic data on TP2 Vigakhet

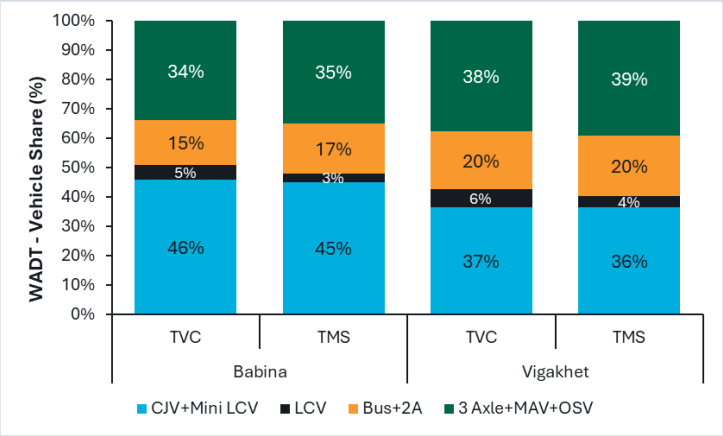


Source: Steer analysis of TVC and Client TMS data

3.36 Figure 3-7 compares the shares of vehicle types at both toll plazas observed by the TVC and TMS data. As can be seen, whilst the share of Bus+2A and 3A+MAV+OSV is marginally

higher in TMS compared to TVC, it is lower for CJV and LCV category. This difference can be attributed to common misclassification of vehicle categories.

Figure 3-7: Comparison between vehicle shares from TVC and TMS WADTs



Source: Steer analysis of TVC and Client TMS data

3.37 Considering the variation between the TVC and TMS data is within 2%, the TMS data is within the confidence levels and has accordingly been used to estimate base year traffic.

Key findings of origin-destination analysis

Overview

3.38 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Asset. As mentioned previously, the OD analysis presented here has been based on the data collected on 30th-31st January 2024 at TP1 and 24th-25th February 2026 at TP2.

3.39 As part of our previous assignment, we have analysed the regional drivers of demand based on the following analyses:

- Zonal influence
- Commodity distribution
- Top OD pairs
- Trip length distribution

3.40 While zonal analysis and the list of top OD pairs help to understand 'where' people and goods travel, commodity distribution sheds light on 'what' goods get transported. Trip length distribution show 'how far' vehicles and people travel, and goods get transported. This set of analyses is generally used to estimate the key drivers of traffic and aid the making of informed forecasting assumptions around traffic demand elasticities, growth drivers and exogenous impacts.

Sample rates

3.41 Sample rates help understand the reliability of OD data. They are calculated by dividing OD samples captured by the traffic counts (based on the TMS data) during the same time period. The Table 3-13 below presents the sample rates for key vehicle type aggregations at the toll plaza. We believe that the sample rates of the OD data are reasonable for the analysis required.

Table 3-13: Sample rates for OD data

Vehicle type	TP1 Babina	TP2 Vigakhet
Passenger (CJV+Bus)	18%	23%
Goods (LCV+2A+3A+MAV)	62%	45%

Source: Steer analysis of OD data

Zone categories

3.42 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones, and influenced by various towns, cities, states, and regions in the vicinity of the Asset, we have aggregated zonal data as described in Table 3-14 below. The methodology behind this aggregation of zones may vary as per the characteristics displayed by the different Asset being studied.

Table 3-14: Zone aggregations for zonal influence analysis

Aggregate Zone	Description
Local	Local zones are those that fall on or very close to the Asset.
IAOI (Immediate Area of Influence)	IAOI zones are the locations which generate traffic and lie within approximately 75-150 km distance from the Asset.
Rest of Uttar Pradesh	Rest of the cities/Districts in the state that Asset lies in (other than Local/IAOI)
Madhya Pradesh	Madhya Pradesh state
Delhi	Delhi State, including New Delhi
North India	Uttarakhand, Haryana, Punjab, Jammu and Kashmir
West India	Rajasthan, Gujarat
Central India	Chhattisgarh
East and North-eastern India	West Bengal, Jharkhand, and Northeast Indian states
South India	Tamil Nadu, Karnataka, Kerala, Andhra Pradesh

Source: Steer analysis

Zonal influence

3.43 The zonal influence is the contribution of the zone or the zonal aggregation to trips by a vehicle type. This section presents the zonal influence at each toll plaza of each Asset, based on zonal aggregation listed in the previous sub-section. It should be noted that zonal influence is analysed on trip ends and not trips.[6]

3.44 It can be seen from the figures below that CJV and Bus categories are dominated by local and IAOI trips on both the toll plazas. The share of local trips for CJVs is more on TP1 as it is in close vicinity of Jhansi whereas Vigakhet is comparably distant from Lalitpur.

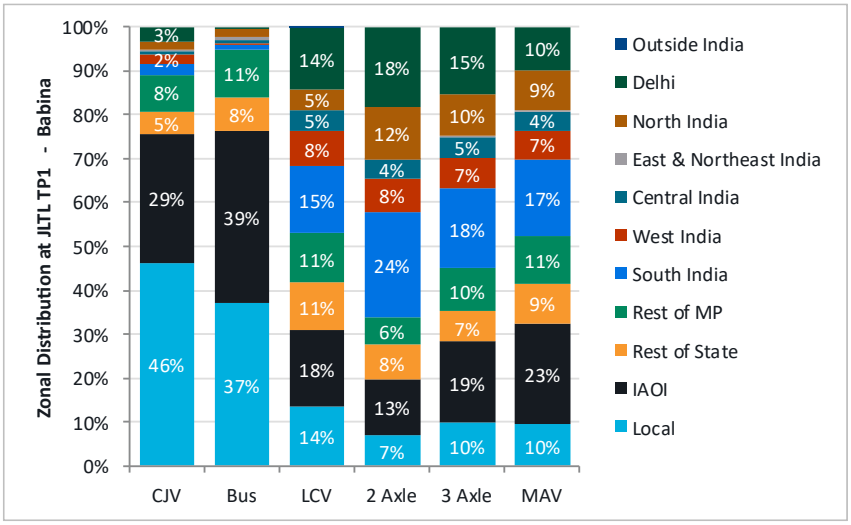
[6] For example, if out of 100 trips at a toll plaza on an Asset, 10 trips are between Hyderabad and Delhi and 90 trips are between Hyderabad and Chennai, then zonal influence of Hyderabad would be 50% since one end of all trips are at Hyderabad. Likewise, zonal influence of Delhi and Chennai would be 5% and 45%, respectively.

Moreover, Babina itself is economically more developed when compared to Vigakhet. Similarly, since Lalitpur is near Madhya Pradesh, significant number of Madhya Pradesh trips also get added on TP2.

3.45 Since the Asset lies on the preferred route for traffic commuting between Delhi-NCR and Bangalore, the southern India zones and the Delhi zones have the highest and the second highest proportion respectively on both the toll plazas across all goods categories. The shares of other zones are comparable across all the categories. Since TP1 is near NH27 (East-West corridor), the share of Northern India trips is higher on TP1 than TP2. Similarly, since TP2 is near Madhya Pradesh which witnesses the higher share of Madhya Pradesh trips.

3.46 In the charts shown below, it will be noticed that TP1 and TP2 despite being adjoining, show slightly different influences for MAVs. With the proximity of TP1 to Army base camp - the influence of local movement is higher on TP1 Babina. For this same reason, the share of Delhi/North bound trips on TP2 Vigakhet is higher around 28% than TP1 of 19%. Another reason which has affected the long-distance traffic results is the surveys undertaken on TP1 in 2024 was during January which was impacted due to dense fog situation. Therefore, resulting in affected long distance traffic movement.

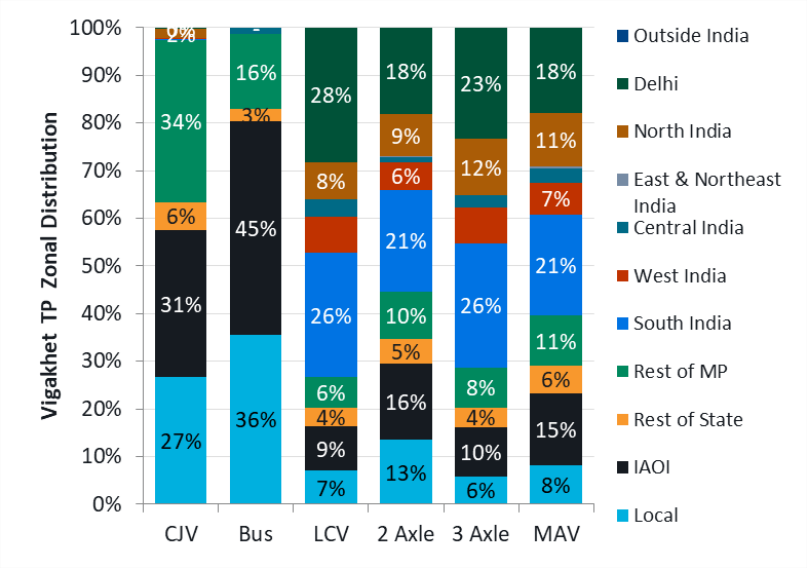
Figure 3-8: Zonal influence at TP1 Babina



Source: Steer analysis of OD data

3.47 In comparison to our previous OD results, it was found that influence of local movement and trips have increased on TP1 Babina where the share of Rest of State and Internal trips increased by 14% for MAVs. In terms of commodity distribution, the Agriculture and Grocery share has decreased from 28% to 20%, while the Manufacturing share has also increased by 5% from 14% in 2024 OD results when compared to 2023.

Figure 3-9: Zonal influence at TP2 Vigakhet



Source: Steer analysis of OD data

3.48 Given the strategic nature of the Asset, facilitating north-south movements via NH44 a, the zonal influence of this Asset is diverse. Significant zonal influence of Delhi-NCR, North India (UP, Haryana), South India (Tamil Nadu, and Karnataka) is observed for heavy vehicles (2A+3A+MAV).

3.49 Zones that are located within Uttar Pradesh, collectively contribute to 25-30% in case of 3A and MAV. The remaining 75% is a diverse mix of other zones, including Delhi, Haryana, Rajasthan, south India, Maharashtra, among others. The long-distance nature of this Asset is evident from ~25% share of zonal influence of South India in case of 2A/3A vehicles, followed by major shares of Delhi, Haryana, and Maharashtra.

Internal External analysis

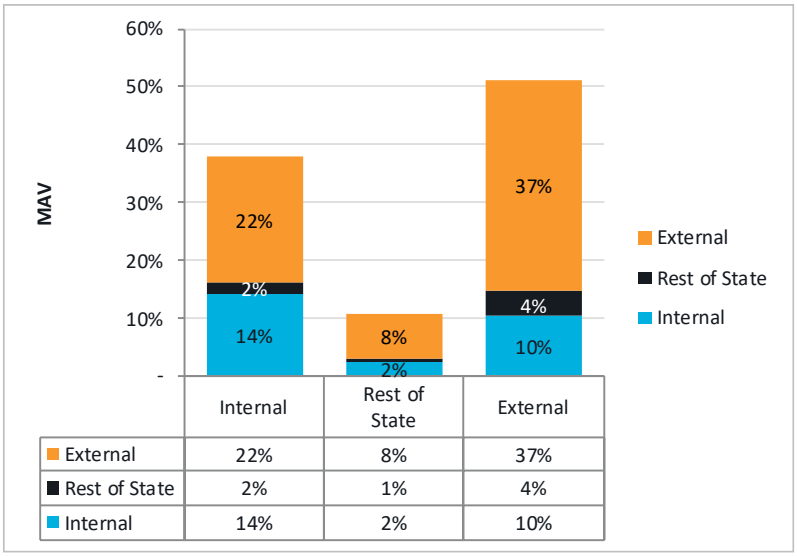
3.50 Internal-External analysis helps in identifying the trips which have both the origin and destination on the Asset (Internal-Internal or I-I), any one end on the Asset (Internal-External or I-E), or neither end on the Asset i.e., through trips (External-External or E-E). 'Internal' zones are those that were analysed as 'local' in the zonal influence analysis, i.e., lying on the Asset, while 'External' zones are all other zones.

3.51 The figures below show the distribution of trips for MAV for both TP1: Babina and TP2: Vigakhet. Understandably, these reflect the observations seen in the zonal influence presented earlier, at a higher level of aggregation.

3.52 The internal-external distribution further validates the strategic nature of the asset, with 60% influence pertaining to zones that are external at both the plazas. This is further to the zonal distribution that showed that Local and Rest of the State had relatively less influence on the Asset, while aggregate of the remaining zones categorized as External exert the significant proportion of influence on the traffic. This validates that the long-distance nature of the Asset, facilitating long distance through movement—that is trips that originate and end outside of Uttar Pradesh, traversing via the Asset. However, there is a difference in the External-External share at Babina is 17% lower for MAV than at Vigakhet. The high share of external trips infers the presence of majorly through long

distance traffic on the Asset. The Asset is used by through traffic commuting between Uttar Pradesh/Delhi/northern state and southern states of Karnataka and Chennai.

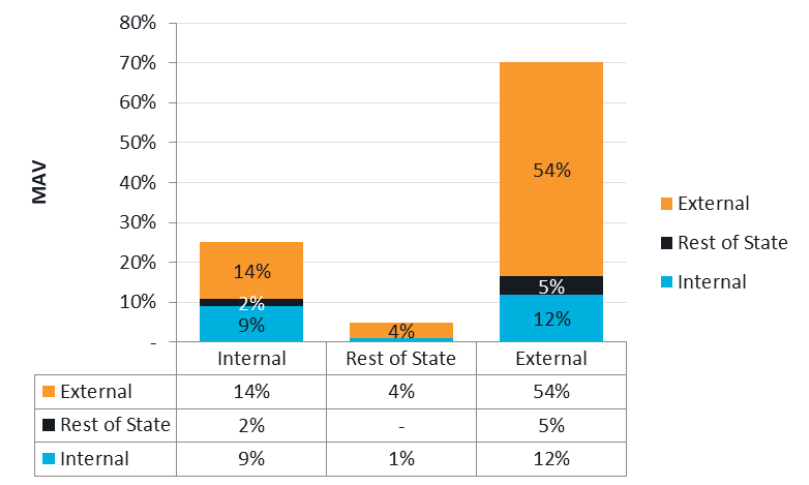
Figure 3-10 Internal-external distribution at TP1 Babina



	Internal	Rest of State	External
External	22%	8%	37%
Rest of State	2%	1%	4%
Internal	14%	2%	10%

Source: Steer analysis of OD data

Figure 3-11 Internal-external distribution at TP2 Vigakhet



	Internal	Rest of State	External
External	14%	4%	54%
Rest of State	2%	-	5%
Internal	9%	1%	12%

Source: Steer analysis of OD data

Commodity distribution

3.53 We have grouped various commodities into aggregate categories for ease of interpretation, as shown in the Table 3-15 below. The charts in the following sub-section present information in terms of aggregate commodity categories.

Table 3-15: Aggregate commodity categories

Commodity Description	Code	Combined codes used for charts
Agriculture Products / Cash crops (Wheat, Rice, Sugar cane,Maize etc.)	AGR	AGR
Cattle Food / Live Stock (sheep, ghoat, cow,cattle food etc)	LIV	

Commodity Description	Code	Combined codes used for charts
Perishable Items (Fruits, vegetables)	PER	GRO
Animal Products/Dairy/Eggs/Fish/Meat/Animals	DFM	
Groceries / Food items (Soap, Salt, Sugar, Pulses, Spices, Biscuits, bread,cool drinks, beer etc.)	GRO	
Building Material / Construction (Cement, Lime, Brick, fly ash, etc)	CNS	CNS
Sand/Clay	SND	
Stone (kota stone, marble, Granite, Aggregate stone etc.)	STN	
Ceramic	CRM	
Petroleum Products (Oil, LPG, CNG, etc.)	PET	PET
Chemicals / Fertilizers (Acids,Fertilizers etc.)	CHM	
Electrical/Manufacturing items (Electronic items, Medicine, Leather, Wine, Rubber/ Tyre, Plastics, Cloth, Paper etc.)	MAN	MAN
Raw Wood,Cork & Wood Products, Furn	WUD	
Machinery / Spare parts	MAC	
Automobiles (Finished products, auto parts, Car/bike manufacturing, New Chassis)	AUT	AUT
Basic / Fabricated Metals (Iron, Steel / Metal)	MET	MET
Mining Minerals (Coal, Gypsum, Cobalt etc.)	MIN	
Empty	EMT	EMT
Container	CTR	MSC
Miscellaneous (Parcel, Courier, House hold items etc.)	MSC	
Passengers	PAS	
Scrap	SCR	

3.54 The following figures present the commodity distribution for goods vehicles at the toll plaza at the total level and split by direction, towards Jhansi and towards Lalitpur.

3.55 As observed during our site visit, majority of the 2As and 3As at both the plazas were carrying miscellaneous commodities (parcels, couriers, household items). This is due to the fact the Asset connects Delhi-NCR to the Central India (Nagpur) and the e-commerce hub in Chennai, Bangalore, and Hyderabad. It must be noted that the trucks carrying such miscellaneous items are largely carrying e-commerce deliveries from various hubs.

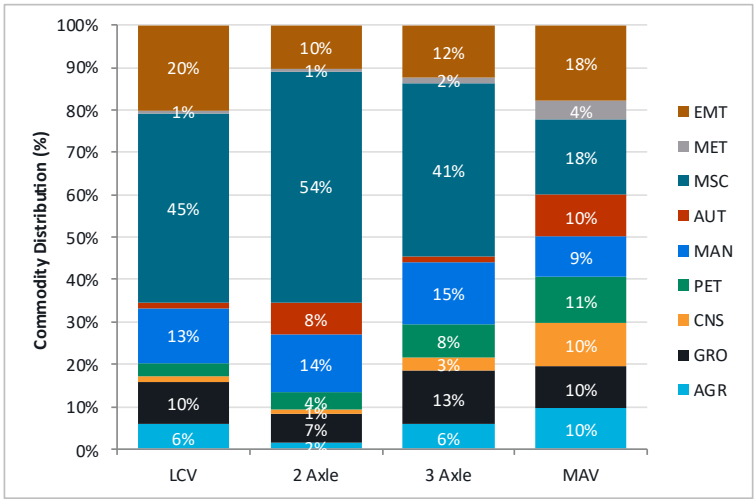
3.56 Automobiles are another significant commodity, with over 7% share of MAV on both plazas. This is because there are automobile manufacturing hubs both north (Delhi NCR) and south (Chennai, Bangalore) of the Asset.

3.57 Manufactured items are the Third most common commodity being transported using 3A and MAV trucks whereas automobiles are the second highest commodity of 2A. According to the OD analysis, manufactured items are transported using this route as it connects major hubs like Delhi-NCR, Chandigarh, Nagpur, Bhopal, Raipur, Bangalore, Hyderabad, and Kolkata.

3.58 Groceries also account for second most common commodities on TP2 and a significant proportion on TP1, transported on the Asset. s. Since the asset links cities such as Jhansi, Gwalior, Agra, Sagar and other key cities in Uttar Pradesh and Madhya Pradesh, these daily consumption items are observed in high proportion.

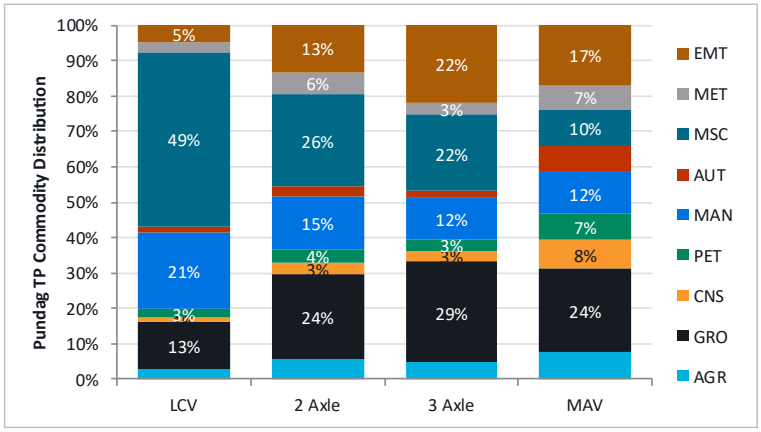
3.59 Commodities such as apples, wheat, potato, and mango are carried from northern states such as Uttar Pradesh, Punjab, Himachal Pradesh for consumption in southern states of Karnataka, Tamil Nadu and Telangana. Whereas commodities such as rice and banana are carried from southern cities of Bangalore, Puducherry, and Chennai for consumption in norther states of Delhi, Uttar Pradesh, Punjab.

Figure 3-12: Commodity distribution at TP1 Babina



Source: Steer analysis of OD data

Figure 3-13: Commodity distribution at TP2 Vigakhet



Source: Steer analysis of OD data

Trip length analysis

3.60 Trip-length distribution provides the distance-based profile of various vehicle types. This aids in validating assumptions around the share of macro-economic drivers, inputs from zonal influence and toll segmentation. For ease of interpretation, we have categorized distances into 5 groups – local (0-100km), short-distance (100-300 km), medium-distance (300-500 km), long-distance (500-1000 km) and very-long-distance (1,000 – 5,000 km).

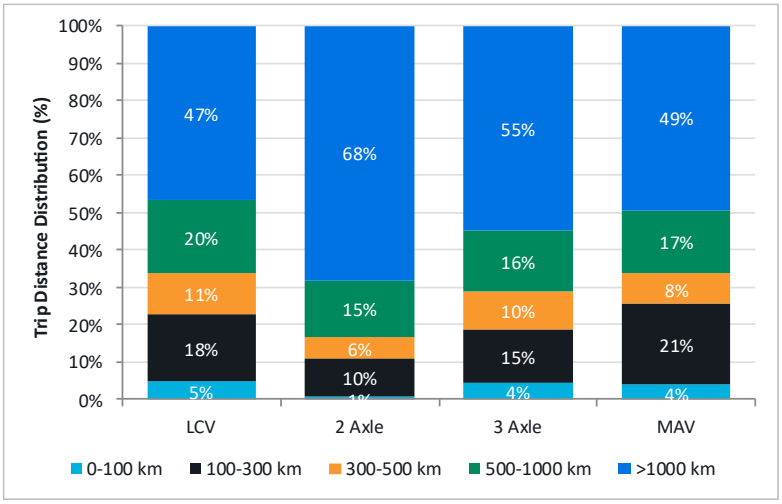
The trip distances were derived as driving distances from Google Distance Matrix Tool based on zonal coordinates for OD pairs.[7]

3.61 As observed in Internal-External analysis, the Asset is majorly being used by through traffic for goods vehicle categories. The same is validated by the figures below as for 2A/3A/MAV trucks, trips which cover greater than 1000 km distance have a high proportion on both the toll plazas. These trips are majorly between Delhi NCR/Punjab/Uttar Pradesh on one end and Nagpur, Hyderabad, Bangalore and Chennai on the other end.

3.62 As understood from the zonal distribution and commodities' distribution, that the strategic nature of this Asset serves long-distance north-south/west movements. Accordingly, over 60% of the trip distances in TP1 and 25% of the trip distances in TP2of 2 Axle, 3 Axle and MAV are traveling very long-distance movement of over 1,000 km.

3.63 There is a difference between the proportion of MAV travelling over 1000 km on both the plazas, with TP1 at 49% and TP2 at 32% respectively. This is likely on account of the survey at Babina being conducted two years prior to the survey conducted at Vighakhet.

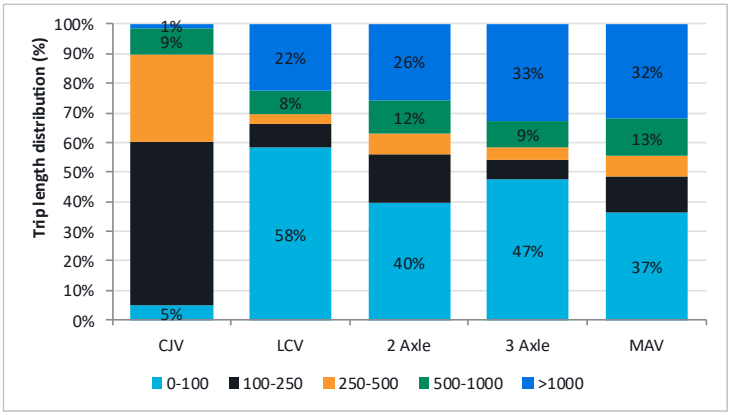
Figure 3.14: Trip distance distribution at TP1 Babina



Source: Steer analysis of OD data

[7] **Google Distance API is a tool that is available on a chargeable basis from Google Maps Platform. Link:** https://developers.google.com/maps/documentation/distance-matrix/start**. Travel distance and time information for driving/transit under various congestion scenarios can be extracted through this tool by Figure 3.using macro-enabled Excel, R, etc.**

Figure 3.15: Trip distance distribution at TP2 Vigakhet



Source: Steer analysis of OD data

Conclusions

3.64 Traffic on the Asset is dominated by CJVs which make up approximately 35% of the total composition on both the toll plazas. 3A and MAVs, collectively, make up around 40% of the total composition on both the toll plazas. Apart from the mentioned categories, both the toll plazas observe around 18% 2A, 2% Bus, and 5% LCV traffic. In terms of revenue, CJVs contribute around 10% to the total revenue, while commercial traffic (2A, 3A and MAV) contribute ~87% in terms of revenue.

3.65 For MAVs Single tickets have remained dominant, holding a share of over ~85% across years at both the plazas. The proportion of exemptions and local personal in CJV has remained constant ~10-12% and ~6-12% on both the plazas over the years. An analysis of LCV segmentation reveals an increasing share of single-ticket transactions by 1.8% and 1.4% at Babina and Vigakhet resp., suggesting a trend toward longer trip distances. The Asset observes almost negligible violations.

3.66 The TVC data shows minor variation on the TMS data, where at the total level of TVC is approximately 3% higher than the TMS data. However, the difference is negligible for the larger revenue generating categories (3A, MAV, and OSV combined), 0.4% at a total level.

3.67 The OD analysis found that in terms of zonal influence, both TP1 and TP2 observe high share of local and IAOI trips for CJV and bus categories. On the other hand, maximum trips for goods vehicles are originated/destined out of the state and hence both the toll plazas have average 26% local and IAOI trips only for MAVs vehicles. The key commodities transported on the Asset includes parcels, couriers, and grocery products, which when combined, make up around 42% of the commodity share for MAV traffic on both the toll plazas. Automobiles are another category which contribute nearly 10% of MAV traffic.

3.68 When considering the internal and external distribution, it is observed that External/Through trips dominate for 3A and MAV categories suggesting rest of states as origin and destination of truck traffic. Since, majority of the traffic is attributed to external zones, it can be inferred that the traffic is greatly through in nature and the growth of traffic is directly proportional to the growth of other influencing state. The trip analysis supports these findings, with 3A traffic having 55% and 33% share and MAV traffic having 49% and 32% share of trips ending post 1000 km distance on TP1 and TP2 respectively.

3.69 Overall, the Asset has benefitted from the strong traffic volumes observed on the NH44/7 corridor connecting Delhi in the north to cities like Nagpur, Hyderabad, Bangalore and Chennai in the central and southern region.

4 Socio economic context and traffic growth

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the roads are in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions in the regions where the Asset are located and the country. These include:

- Changes in factors such as population, economic growth (regional and national) and industrial production; and
- Other local factors such as strategic port growth, and growth in local industries near the Asset.

4.2 In turn, the change in the relative competitive position of the Asset (and thus of the traffic capture they can achieve) derives from how the relative offer for the roads changes, i.e. the service offered, and the tolls charged on the project roads, in comparison to that on competing roads; and whether any competing road facilities are planned.

4.3 In this chapter, we have assessed the trends of the above growth drivers, as indicators of the socio-economic conditions in the regions surrounding the Asset.

Population growth

4.4 We have analysed the key socioeconomic drivers of the background traffic demand in the Uttar Pradesh state, where the Asset are located.

National level

4.5 Table 4-1 below shows that the total population in India has grown at a Compound Annual Growth Rate (CAGR) of 1.5% since 2000, decreasing over the years. The World Bank forecasts this growth to decrease to 0.6% CAGR by the 2030-45 period.

Table 4-1: CAGR of population in India

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
1970 – 1985]	2.3%	1.9%	3.8%
1985 – 2000	2.0%	1.7%	2.9%
2000 – 2015	1.5%	1.0%	2.6%

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
2015 – 2030*	1.0%	0.3%	2.3%
2030 – 2045*	0.6%	-0.3%	1.9%

Source: World Bank Data on Health Nutrition and Population Statistics, *forecast population growth.

State level

4.6 Table 4-2 shows the evolution of population in Utter Pradesh state compared to that of the country. Overall, as can be seen, the trend observed at the country level is also noticeable at the state level, namely, a move towards urban agglomeration with the growth in rural population being slower than that of urban population. Further, the state has grown at a higher rate than the country average, between 2012-2024.

Table 4-2: Population Growth in Uttar Pradesh and India (2012-2024)

State	2012 Population (m)	2024 Population (m)	CAGR (2012 – 2024)
Uttar Pradesh	201	237	**1.4%**
India	1,210	1,395	**1.2%**

Source: MoSPI Estimates

4.7 Due to the complexities of the patterns in which urbanisation takes place, and the very dynamic nature of local population migration (which are very difficult to forecast with accuracy), we do not use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide a socio-economic context of the state/trends in the regions in which the Asset are located.

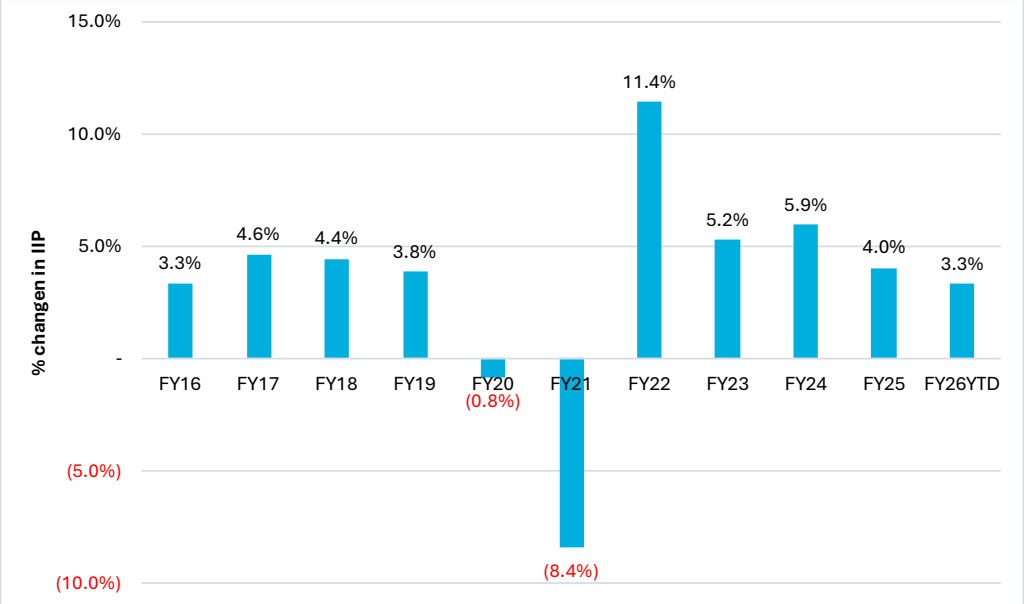
Economic Indicators

Industrial Production

4.8 The Index of Industrial Production (IIP) is a composite indicator that measures the short-term changes in the volume of production for a basket of industrial products. The IIP data tracks the manufacturing activity in different sectors of an economy, with mining, manufacturing, and electricity being the three broad sectors constituting the IIP.

4.9 The figure below shows that at an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20. In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. Post the immediate recovery in FY22, IIP growth has since stabilised, with FY25 recording 4%, and FY26YTD (till February 2026) recording 3.3% growth over FY25.

Figure 4-1: Annual growth – Index of Industrial Production (FY16-FY26YTD)



Source: Ministry of Statistics and Program Implementation (MoSPI). FY26YTD represents data till Feb'26

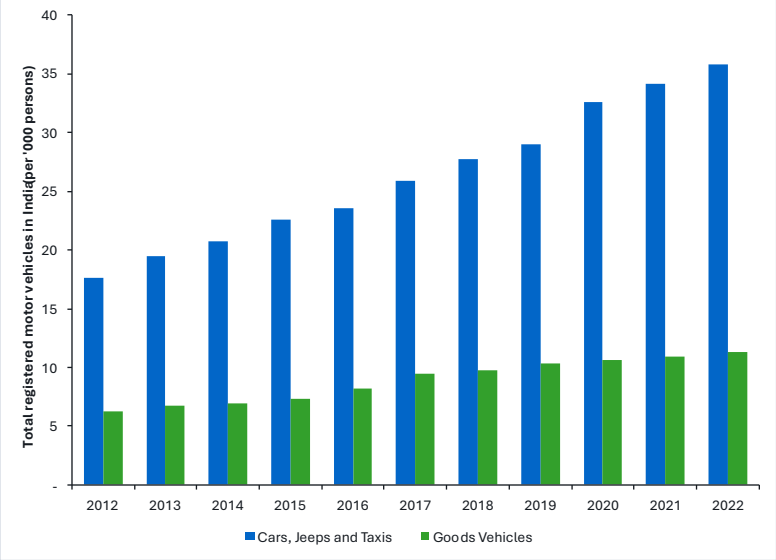
4.10 Since state-level IIP data is not as readily available as national-level IIP, we have presented national IIP here to indicate nationwide activity in key industrial sectors like power, manufacturing, and mining, all of which influence long-distance commercial movements across the nation, and not unique to this asset. We however, do not use it to forecast future travel demand growth since long-term forecast for IIP is not available through official sources such as MoSPI, RBI or through multilateral organisations like WB, or the IMF.

Vehicle Ownership

4.11 The gap in car ownership between India and developed nations remains substantial – with 36 cars/jeeps/taxis and 11 commercial vehicles per thousand people, as of FY22 (the latest year for which official data is available). However, with increasing per capita income levels, a booming economy and the subsequent increase in demand for mobility, the number of registered vehicles has been on a gradual upward trend

4.12 Overall, India still stands at a very nascent stage in the vehicle saturation curve, offering huge potential for growth going forward. Between FY12 and FY22, the CAGR for CJV and goods' vehicles registered in India was 8.6% and 7.3% respectively.

Figure 4-2: Total number of registered motor vehicles in India (per 1000 population)

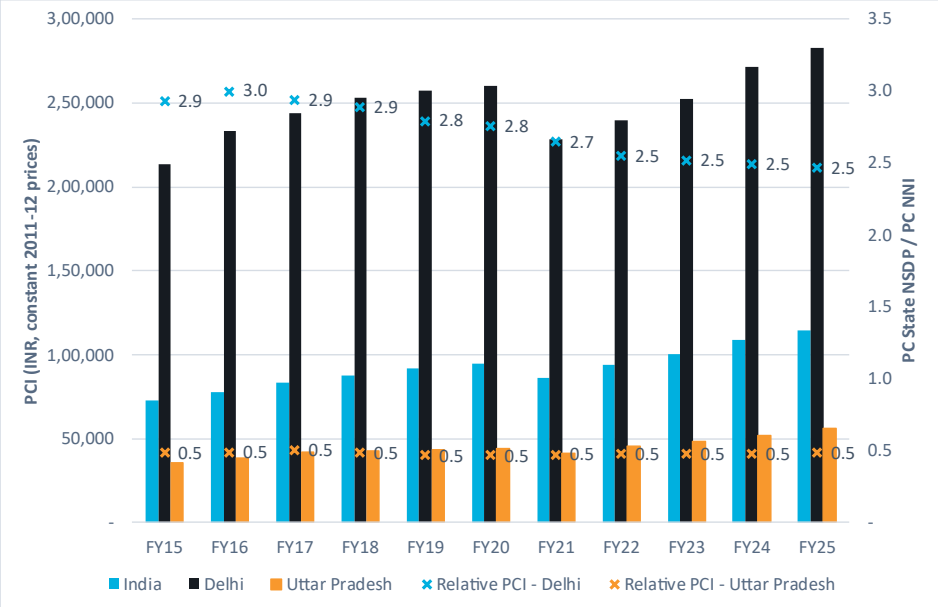


Source: Ministry of Road Transport and Highways (MoRTH)

Per Capita Income (PCI)

4.13 The per capita income of the state where the Assets lies i.e., Uttar Pradesh is lower as compared to the national average. In dollar terms, PCI of just $1,000 per head indicates that the state is at a very early stage of consumption curve. Going forward, we therefore expect local consumption to be strong which would drive the growth in both passenger and commercial traffic.

Figure 4.3: Per capita income



Source: Steer Analysis of MoSPI data

4.14 However, given the difficulty in obtaining granular district level PCI data it is not advisable to use this as a growth driver. Also, the long-term forecast for PCI is not available we therefore refrain from using it to forecast traffic.

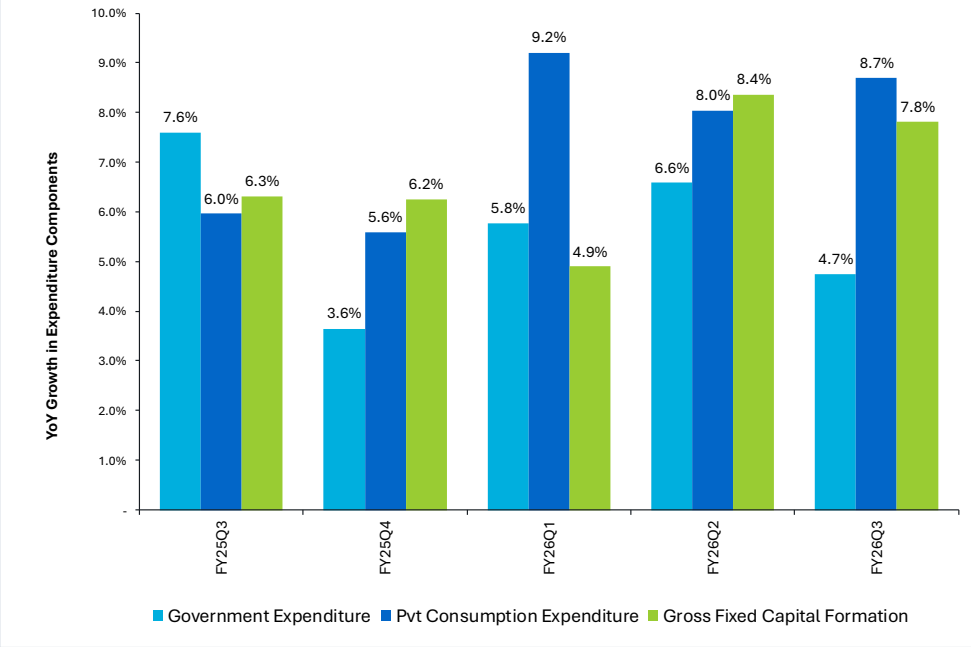
Economic growth

India's Performance

4.15 Despite a slowdown in the economy during H1FY25, the Indian economy has observed strong growth each quarter since FY25Q2, with the latest published estimates for FY26Q3 GDP at 7.8% over FY25Q3. This performance has been driven by strong growth in investment and consumption expenditures and higher consumer optimism for the year ahead[8].

4.16 The figure below, we present quarterly Y-o-Y growth in three major components of GDP – government expenditures, consumption expenditures, and business investment (gross fixed capital expenditure) over the past year (FY25Q3-FY26Q3).

Figure 4-4: YoY growth in expenditure components of GDP



Source: Steer Analysis of MOSPI Data

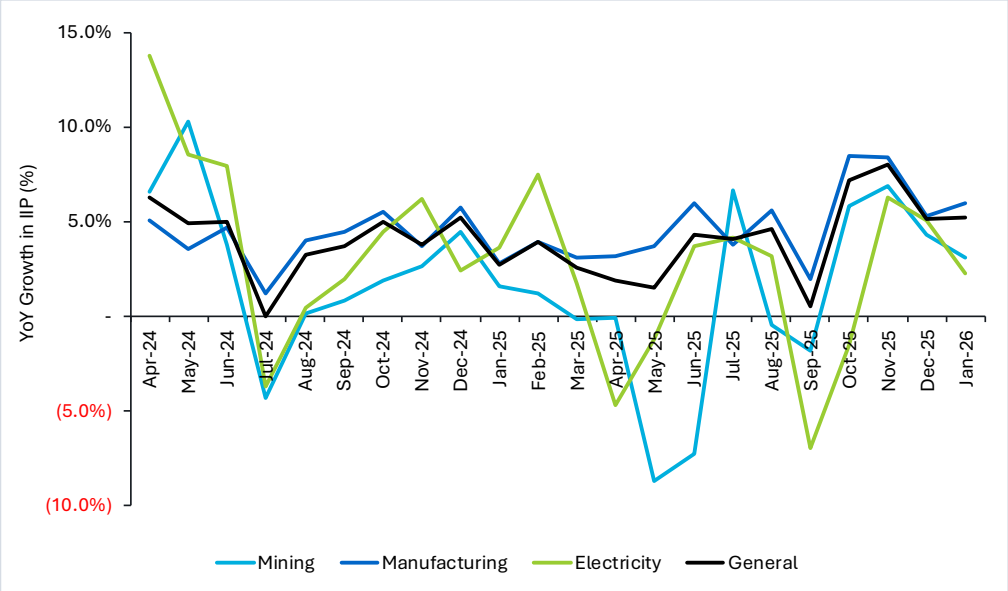
4.17 While consumption and investment expenditures have continued to show consistent growth over the past two quarters, government expenditures observed a marginal decline in FY25Q4. In FY26Q1, government expenditures rebounded, recording 5.8% growth over FY25Q1 levels.

4.18 Performance across different types of industrial activities (such as Mining, Manufacturing, and Power Generation) directly impact freight movement and commercial traffic volume growth across the country, including on the Asset. In the figure below, we present growth trends in IIP – a measure that tracks the performance of the economy across these activities. As of FY26YTD (Apr'25-Feb '26), the Manufacturing sector continues to perform strongly, recording positive y-o-y growth since FY25Q3. While industrial activity across the

[8] Gov**ernment of India PIB Release (27th February 2026)**

two other sectors (i.e., Power Generation and Mining) dropped between May and Jun/Jul '25, they have since rebounded and show signs of continued growth going forward.

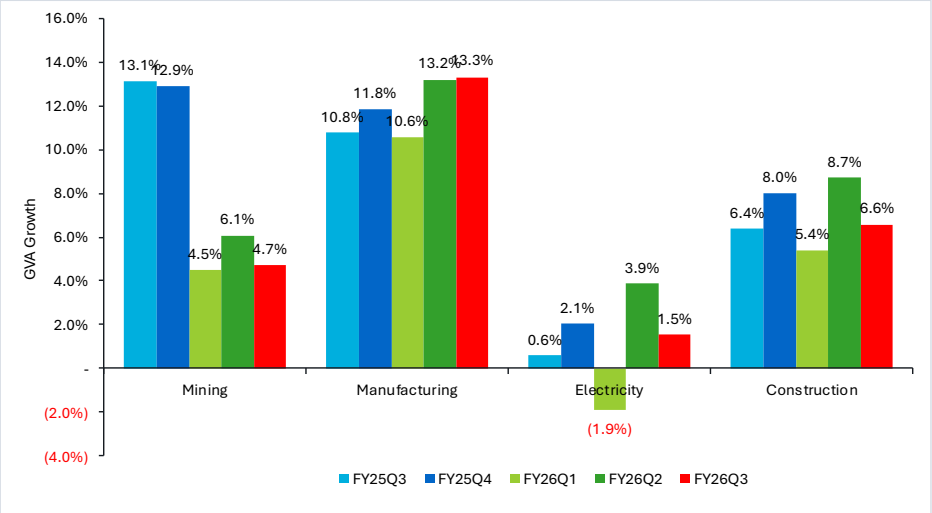
Figure 4-5: Month on Month IIP performance



Source: Steer Analysis of MOSPI Data

4.19 In addition to monthly trends in IIP, the figure below presents y-o-y growth of quarterly GVA in four industrial sectors - Mining (& Quarrying), Manufacturing, Electricity (and other Utilities), and Construction. While the Mining and Power sectors observed decline and muted growth in FY26Q1, the Manufacturing and Construction sectors experienced strong growth. While overall economic growth has remained resilient as of FY26YTD, performance across industries have varied, impacting economic growth across different regions and on the Asset as well.

Figure 4-6: Industrial components of GVA



Source: Steer Analysis of MOSPI Data

GDP and GSDP Growth

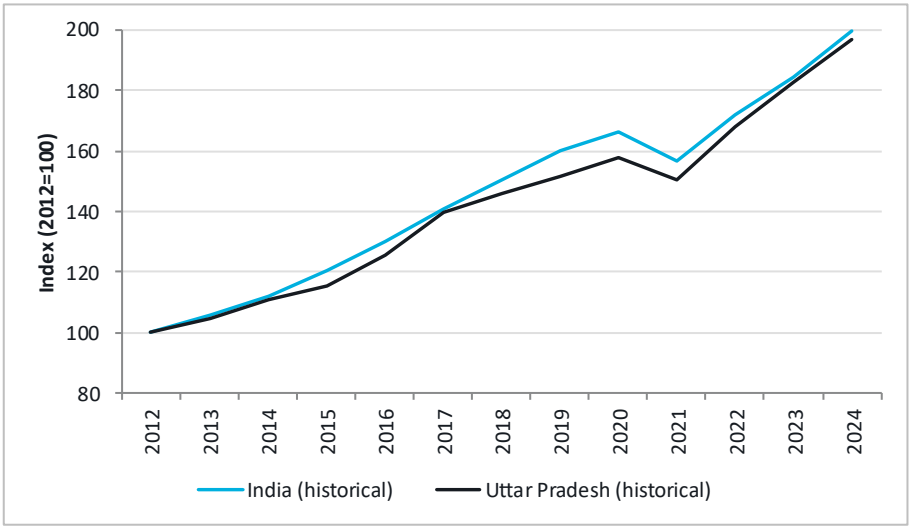
4.20 Over the period FY12-FY24, the Indian economic has grown at a CAGR of approx. 6% aided by growth in the tertiary sector which grew at a CAGR of approx. 6.9% over the same period. The economic growth of Uttar Pradesh (GSDP) has been slightly slower than the country overall. Uttar Pradesh's GSDP CAGR was 5.8% between FY12-24. Uttar Pradesh approximately contributes 8% to the India's GDP. In terms of per capita income, Uttar Pradesh's has lower per capita income than the country.

4.21 In terms of sectoral contribution to the state GDP, tertiary sector has the highest share (47%) followed by secondary (27%) and primary (24%), with the sectoral shares remaining stable over the last few years.

4.22 Uttar Pradesh is the most populous state in India with a population of ~237 million people. The state has a large pool of skilled, semi-skilled and unskilled labour. Uttar Pradesh is also considered the largest consumer base in the country. The tertiary sector has the highest sectoral contribution to the state GDP followed by the secondary and primary sectors. These shares have remained stable for the past decade.

4.23 The tourism and transport sector constitute a majority of the state's tertiary sector. Uttar Pradesh is considered a favoured tourist destination in India, with key tourist attractions being Agra, Varanasi, Mathura and Prayagraj. In 2023, the state contributed 16% share to national tourism pie which is second highest after Tamil Nadu9. The state holds third position in the country in foreign tourist arrivals with over 3.78 million[10]. Also, the state recorded a tourist footfall of 64.90 crore in 2024, a significant increase of over 17 crore from 2023 as per Union Ministry of Tourism[11]. Overall, Uttar Pradesh has 8.2% contribution to national GDP as per 2024 statistics.

Figure 4-7: Evolution of Uttar Pradesh's state GDP and national GDP



[9] 'UP is 2nd biggest contributor to domestic tourism' | Lucknow News - Times of India (indiatimes.com)

[10] http://tourism.gov.in/sites/default/files/Other/India%20Tourism%20Statistics%20at%20a%20Glance%202019.pdf

[11] up-sees-65-crore-tourists-in-2024-over-17-crore-more-from-2023

Source: Steer Analysis of MOSPI Data

4.24 In terms of secondary sector, the state has key industrial areas in Khurja (Ceramic); Moradabad (Metals); Meerut, Bareilly, Mirzapur and Lucknow (Handloom & Handicrafts); and Kanpur and Noida (Leather and tannery). The state also has an oil refinery in Mathura, operated by Indian Oil Corporation.

4.25 Uttar Pradesh has very fertile Gangetic land with a large share of population dependent upon agriculture sector for the livelihood. The key primary industries in the state include food processing, crop production and horticulture. The state is mainly known for production of wheat, sugarcane, potato and mango.

4.26 The official historical GDP and GSDP data for India are released by the Ministry of Statistics and Program Implementation (MoSPI). The GDP forecasts for India are available from various reliable sources such as Oxford Economics and Consensus Economics[12], but state-specific GSDP forecasts are not published by any such sources. To derive state GSDP forecasts, we rely on past trends of the relationship between GDP and GSDP, and develop GSDP forecasts as a function of our assumed GDP forecasts[13].

4.27 For any indicator to be used as a growth driver to forecast traffic, a reliable source of historical and forecast data availability for that indicator is the key requirement. Of the key socioeconomic indicators discussed above, GDP was assessed to be the only growth driver for which reliable data is available both in terms of historical and forecast data. Therefore, to forecast traffic, we use GDP/GSDP as our key growth drivers.

Forecasts for growth drivers

4.28 Following the discussion in Chapter 2 on the nature of economic activity in the state of Uttar Pradesh, in this section, we describe the assumptions in relation to forecasts of the key macro-economic drivers of traffic growth. Particularly, we have based our forecast on GSDP using forecasts of GDP as provided by the Client.

National GDP

4.29 After the last period of economic slowdown in FY11-12, the country experienced an economic downturn again in late FY19 with FY20 having reported a GDP growth of 4% (relative to an average growth rate of 7% per year between FY13 and FY19). India's GDP growth declined as domestic investment and consumption demand were already under stress because of the liquidity crunch before Covid-19. Other factors that contributed to the economic slowdown included reduced growth rates in automobile sales and production, liquidity crunch in credit markets and rising number of Non-Performing Assets (NPAs) within the banking sector, as well as lower manufacturing production and lower rural consumption.[14]

[12] **Consensus Economics - Economic Forecasts and Indicators**

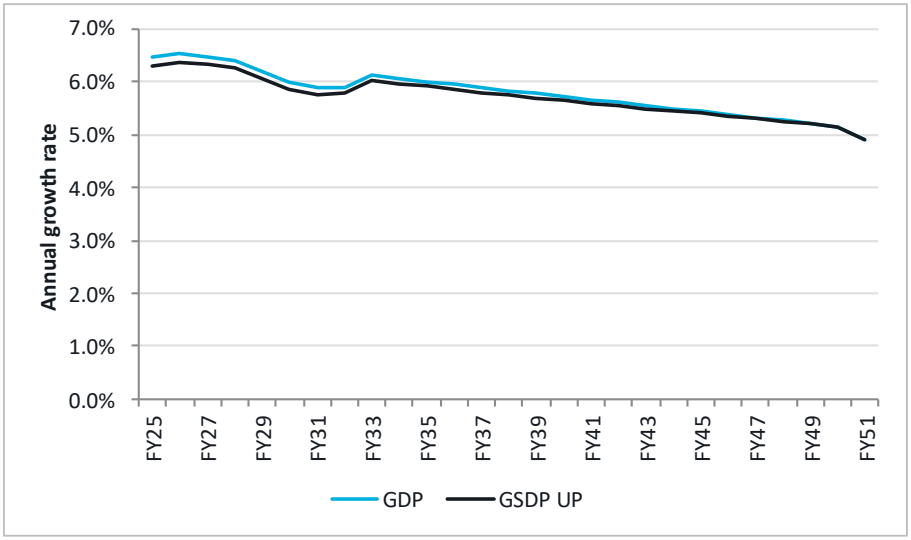
[13] Assuming that the historical long-term relationship between GSDP and GDP sustains over the short-term, we project future growth in GSDP as a function of our GDP growth forecast. We taper the relationship of GSDP growth to converge to GDP growth gradually over the long-term.

[14] **Data | India's GDP was on a downward slope even before COVID-19 wreaked havoc - The Hindu** (September 2020)

4.30 The Covid19 outbreak had a significant impact on the Indian economy during the first two quarters of FY21 as government mandated lockdowns across the country effectively stalled economic activity and growth. The growth momentum eventually picked up in Q3 of FY21, with a sharp rebound in the economy in FY22 (GDP recorded 9.7% growth over FY21) and has since observed a consistent growth of 7.6% in FY23, 9.2% in FY24 and 6.5% in FY25.

4.31 Figure 4-8 below shows client provided GDP projections for India. The India GDP growth forecast provided by the Client is broadly in line with other independent forecasts available from reliable sources such as IMF, World Bank and RBI[15] in the medium term.

Figure 4-8: GDP-GSDP forecast



Source: GDP forecast provided by the Client

[15] Survey of Professional Forecasters on Macroeconomic Indicators – Results of the 93rd Round (April 2025)

5 FY26 Base year AADT and Traffic growth Analysis

Introduction

5.1 In this section, we present our approach, assumptions, and estimates for base year AADT and background traffic growth for each vehicle category on the Asset.

5.2 Traffic growth is commonly related to a variety of macro-economic and industry- or commodity-specific factors (hereafter referred to as 'traffic growth drivers'). These growth drivers are typically identified from the results of the OD data analysis and the site visits that help us appreciate the nature of traffic movement – 'what' travels 'where' and 'why'.

5.3 In the absence of Historical data on the Asset, the option of running statistical method to estimate background growth relationships was not available, therefore we have undertaken a detailed benchmarking exercise, coupled with trip length and OD analysis to estimate the elasticities. These are discussed in detail below.

FY26 Base year AADT estimates

5.4 The base year is the year on which long-term background forecast growth rates are applied to derive year-wise average annual daily traffic (AADT) estimates for forecast years. This is therefore an important aspect of our forecasting approach as traffic and ultimately revenue forecasts for future years are built on top of the base year traffic estimate. We have used FY26 as the base year for AADT estimates for the forecast years.

5.5 As described previously in Chapter 3, to establish the base year (FY26) traffic position, we utilised information from various sources – including from the Client and our context knowledge, to assess a reasonable demand on the corridor.

Methodology

The base traffic for FY26 has been estimated using 11 months of actual traffic data (April to February). Each toll plaza's seasonality correction factors were applied on the actual MADTs of Apr-25 to Feb-26 to obtain seasonally corrected estimates for FY26 traffic. An average of these estimates was considered to be the FY26 base traffic.

Seasonal Correction Factors

5.6 Traffic on any Asset varies on a month-on-month level. Such variations maybe due to monsoons (typically Jul to Sept) or due to festivals in the region. For e.g. It is observed that typically the truck traffic during the first half of the financial year (April-September) is generally lower than the annual average, mainly because of peak summer season followed by monsoons affecting the freight movement patterns in large parts of the

country in the July-September period. In addition to these there may be other seasonal variations specific to the Asset.

5.7 To normalise for these variations across the year to provide an AADT estimate, Seasonality Correction Factors (SCF) are used. SCFs are estimated to convert the monthly traffic numbers to an AADT level while accounting for seasonal variation due to local/national festivals, weather changes and/or temporary external impacts. These are typically estimated using historical data for each plaza and vehicle category over multiple years. An SCF >1 means that the traffic for the month is lower than the annual average and vice-versa.

5.8 Historical traffic data was available for all toll vehicle categories starting October 2020 up-to February 2026. Therefore, in absence of longer-term historical data for the Asset where FY21 and FY22 are COVID-19 impacted years, we assume FY23 onwards to be normal years, thus average FY23 to FY25 seasonality is considered for FY26 base year estimation for all the vehicle categories except for MAVs. For MAVs average FY23-FY24 SCF are used due to impacted traffic in Feb'25 and Mar'25.

5.9 Table 5-1 and Table 5-2 below present the average FY23-FY25 SCF used to estimate the AADT for both the toll plazas (in the case of MAVs, FY23 and FY24 SCFs were used as FY25 was impacted):

Table 5-1 SCF values for JL TP1

Vehicle Category	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.03	0.98	1.00	1.08	1.04	1.11	1.02	0.95	0.94	1.01	0.90	1.00
LCV	1.06	1.07	1.02	1.01	1.04	0.95	0.96	1.02	0.97	1.04	0.95	0.94
Bus	0.97	0.98	1.05	1.00	1.01	1.04	1.05	1.04	0.98	1.04	0.90	0.99
2A	1.04	1.03	1.05	1.04	1.03	0.95	0.93	1.04	1.01	1.03	0.93	0.94
3A	1.01	0.96	1.00	1.00	0.99	0.97	0.99	1.06	1.02	1.08	0.96	0.97
MAV	1.03	1.00	1.01	1.06	1.05	1.03	1.02	0.99	0.96	1.02	0.91	0.94

Table 5-2: SCF Values for JL TP2

Vehicle Category	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	0.99	0.92	0.94	1.08	1.11	1.17	1.09	0.97	0.93	1.01	0.90	0.98
LCV	1.08	1.07	1.02	1.01	1.04	0.95	0.94	1.03	0.97	1.03	0.95	0.93
Bus	0.97	0.97	1.04	1.00	1.02	1.03	1.05	1.04	0.99	1.06	0.92	0.99
2A	1.06	1.04	1.05	1.04	1.03	0.94	0.92	1.04	1.01	1.02	0.92	0.94
3A	1.01	0.96	1.01	1.00	0.99	0.97	1.00	1.06	1.01	1.07	0.96	0.97
MAV	1.03	1.00	1.01	1.05	1.04	1.02	1.01	0.99	0.97	1.03	0.92	0.96

Source: Steer analysis based on benchmarks

Adopted base estimates

5.10 Based on the above methodology and inputs, the adopted base for both toll plazas have been shown below:

Table 5-3: Adopted base estimates: JL TP1

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	3,353	3,678	3,688	10.0%
LCV	311	334	336	8.0%
Bus	185	180	181	(2.2%)
2A	1,422	1,598	1,608	13.0%
3A	1,280	1,437	1,443	12.7%
MAV	2,010	1,931	1,941	(3.4%)
OSV	2	2	2	
Total	**8,563**	**9,160**	**9,199**	**7.4%**
PCUs	**19,279**	**20,342**	**20,440**	**6.1%**

Source: Steer analysis; FY25 actual full year, FY26YTD includes 11 months of FY26, FY26A is adopted base for FY26

Table 5-4: Adopted base estimates: JL TP2

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	2,575	2,747	2,757	7.1%
LCV	303	325	327	8.2%
Bus	168	164	165	(1.6%)
2A	1,379	1,547	1,557	12.9%
3A	1,305	1,439	1,444	10.6%
MAV	1,865	1,838	1,844	(1.1%)
OSV	2	2	2	
Total	**7,595**	**8,062**	**8,097**	**6.6%**
PCUs	**17,877**	**18,888**	**18,971**	**6.0%**

Source: Steer analysis; FY25 actual full year, FY26YTD includes 11 months of FY26, FY26A is adopted base for FY26

5.11 As can be seen from Table 5-3 and Table 5-4 above, the PCU growth for FY26A compared to FY25 is ~6% on both plazas. This increase is mostly driven by 2A and LCV and reflects the recent rapid development of the 2A using the corridor. Demand produced by places like Nagpur, Hyderabad, Bangalore, and Chennai has been the key driver of growth on this corridor. The success of 2A and LCVs along the NH44 routes has contributed to their growth. Hence, increase of approximately ~12% has been observed in 2A vehicle traffic across both plazas, reflecting a broader trend along the corridor. Conversely, the MAV growth has remained subdued, primarily attributed to traffic shift to Delhi Mumbai Expressway and the NH-30.

Estimation of background elasticities

Overview

5.12 For brownfield Asset, where sufficient historical traffic evolution is available, it is common practice to use regression model analysis to determine the relationship, expressed as

elasticity, between traffic growth and key socioeconomic drivers. This relationship is then applied to assumptions of future socio-economic evolution to estimate future traffic growth.

5.13 As for the Asset under consideration, a historical trend was not available since the Asset started tolling by the client in Oct-2020 and both FY21 and FY22 have been affected by Covid19 related disruptions. Therefore, we undertook a benchmarking exercise in order to estimate our forecast elasticities, Sources used included historical vehicle wise traffic growth on the Asset, outputs from the analysis of the OD data (refer chapter 3 for Commodity and trip length analysis) collected on the toll plaza. We have also undertaken a regional benchmarking against Asset having similar traffic profiles, which give us reasonable confidence the relationships proposed.

5.14 In terms of selection of growth drivers for vehicle types, in general we have assumed state GSDP as the key driving factor for the passenger traffic given this traffic is generally driven by the local economies of the cities and state containing the Asset. The heavier commercial vehicles generally ply long-distance, and the underlying growth is governed by the general economies of several states or nation as whole.

5.15 Given the nascent stage of India's logistics sector, characterized by a highly fragmented trucking industry (95% of operators owning fewer than five trucks) and low car ownership rates (30-35 per 1000 people), the forecast elasticities are projected to remain constant throughout the concession period. This assumption is grounded in historical trends and a long-term perspective on regional and national growth, suggesting market maturity is still several years away.

5.16 Table 5-5 below presents the growth drivers identified to model the forecast background traffic growth rates.

Table 5-5: Identified growth drivers to model traffic growth

Vehicle type	GDP India	GSDP Uttar Pradesh
Car		100%
LCV		100%
Bus		100%
2A	100%	
3A	100%	
MAV	100%	

Source: Steer Analysis

5.17 Further to developing estimates for FY25 AADT, the Asset has operational history between FY22 and FY25, proving us three years of traffic growth on the Asset. Table 5.6and Table 5.7 below summarise the volume growth across each of the vehicle categories. For this comparison we have normalised the FY22 AADT for COVID19 by adopting seasonally corrected H2FY22 as the FY22 normalised (FY22N).

Table 5.6: Passenger and Commercial growth with normalised FY22 – JL TP1

Vehicle type	FY22N	FY23	FY24	FY25	FY26A	FY22N-26 CAGR
CJV	2,872	3,040	3,157	3,353	3,688	6.5%

Vehicle type	FY22N	FY23	FY24	FY25	FY26A	FY22N-26 CAGR
LCV	220	236	253	311	336	11.1%
Bus	163	167	191	185	181	2.7%
2A	969	1,123	1,226	1,422	1,608	13.5%
3A	1,248	1,313	1,325	1,280	1,443	3.7%
MAV	1,611	1,761	1,818	2,010	1,941	4.8%
OSV	2	1	2	2	2	(3.2%)
Total	**7,085**	**7,641**	**7,971**	**8,563**	**9,199**	6.7%
PCUs	**15,781**	**17,146**	**17,897**	**19,266**	**20,440**	6.7%
Passenger	3,034	3,207	3,348	3,538	3,869	6.3%
Commercial	3,828	4,197	4,369	4,712	4,992	6.9%

Source: Steer Analysis; Note; Passenger includes CJV and LCV traffic whereas Commercial includes LCV/2A/3A/MAV traffic

Table 5.7: Passenger and Commercial growth with normalised FY22 – JL TP2

Vehicle type	FY22N	FY23	FY24	FY25	FY26A	FY22N-26 CAGR
CJV	2,284	2,376	2,447	2,575	2,757	4.8%
LCV	201	222	243	303	327	13.0%
Bus	148	148	176	168	165	2.7%
2A	929	1,073	1,178	1,379	1,557	13.8%
3A	1,230	1,301	1,310	1,305	1,444	4.1%
MAV	1,541	1,689	1,713	1,865	1,844	4.6%
OSV	2	1	1	2	2	(2.1%)
Total	**6,335**	**6,811**	**7,068**	**7,595**	**8,097**	6.3%
PCUs	**14,711**	**15,975**	**16,586**	**17,882**	**18,971**	6.6%
Passenger	2,432	2,525	2,623	2,743	2,923	4.7%
Commercial	3,700	4,063	4,201	4,548	4,845	7.0%

Source: Steer Analysis; Note; Passenger includes CJV and LCV traffic whereas Commercial includes LCV/2A/3A/MAV traffic

5.18 Babina toll plaza has grown at a CAGR of 6.3% from FY22N to FY26 at the PCU level, whereas Vigakhet has grown at 6.6%. Passenger traffic, which includes CJV and buses, is projected based on the state's GSDP, as the growth is driven by the regional local economy. Meanwhile, commercial traffic (2A/3A/MAV) is growing in relation to GDP, as the Asset lies on the NH44 corridor, which primarily facilitates north-south movement between Delhi and north and Chennai and south. Any growth observed on the Asset is influenced by regions along this north-south route.

5.19 The sections below detail out the reasoning for selection of respective growth driver(s) for each vehicle category.

5.20 It must be understood that, in recent historical traffic performance across national highway corridors, a notable trend has emerged: there is a discernible shift in axle preference towards 2As and MAVs, resulting in a dampening effect on the growth of 3As. This trend is mirrored in the Assets FY24 and FY25 performance as well. Consequent of these evolving axle preferences, it has been assumed that the relationship between 3As

and GDP will be relatively muted, whereas 2As and MAVs are expected to grow more closely in line with the country's GDP.

Table 5-8: Elasticity recommendations for the Asset (both sections)

Vehicle Category	Proposed	Growth Driver	Comments
CJV	1.0	Uttar Pradesh GSDP	CJV traffic is predominantly catering to the local demand of towns of Jhansi and Lalitpur. Generally, we would expect that in fast-growing economies, car traffic growth rates are in line with growth in GSDP/GDP i.e., suggesting elasticities at or just above 1.0.
Mini LCV	0.6	Uttar Pradesh GSDP	Mini LCV traffic is predominantly catering to the local demand of towns of Jhansi and Lalitpur. Historical growth observed is similar to LCVs on all plazas hence the same elasticity is assumed as LCVs.
Buses	0.4	Uttar Pradesh GSDP	Buses tend to grow as the intercity connections improves. With Uttar Pradesh being a large state, buses tend to play an important role linking key cities in the state. A large majority of trips are within 100-300 km.
LCV	0.5	Uttar Pradesh GSDP	As discussed in chapter 3, the trip lengths of LCV and 2A category (up to 72%) are predominantly long-distance trips. The origins and destinations are similar to those of 3A and MAVs on the Asset. These trucks are special trucks which carry commodities such as courier/parcel, and automobile and ancillary parts as well. In addition to long distance movement, they also made short distance local trips feeding into the local demand generated by the cities nearby. Therefore, considering the above observations, and our experience across other toll roads in the region, we believe that elasticities of 0.5 for LCV with respect to state GSDP are considered reasonable.
2A	0.9 tapered to 0.8 by FY35	GDP India	2A/3A/MAV are primarily long-distance traffic carrying a healthy mix of commodities. Agriculture products and groceries are the key commodities moving on the Asset. However, this Asset is becoming a key link between Delhi, Nagpur, Bangalore and Chennai forming part of the strategic NH7/44 corridor. Trip lengths for almost 55% of the MAV are more than 1000km, signifying long distance nature of the traffic. Therefore, a relation of 1 to GDP is considered reasonable for MAV. We believe 3A to grow slower as compared to MAV as there is an increasing preference to use MAVs for long-distance movements.
3A	0.3	GDP India	
MAV	1.0	GDP India	

Source: Steer Analysis

.

6 Forecast: Network overlays and forecasts

Introduction

6.1 Following the discussion on our forecast of background growth rates in the previous chapter, this chapter first covers the potential network impacts on traffic growth on the Asset. Thereafter, we present our assumptions around toll segmentation, trip factors and evolution of toll rates for the forecast period which are used to forecast revenues as derived from forecast traffic. In the final section, this chapter summarises traffic growth rates for the forecast years.

Analysis of potential network/developmental impacts

6.2 The section below details the impacts which we believe would affect traffic on the Asset during the concession period. As discussed in earlier Chapters, to assess the impacts on the Asset, whether positive or negative, we have studied developments (alternate roads, feeder roads and regulatory) in the surrounding road network.

Impact of Indore Hyderabad Economic Corridor (IHE) and Solapur-Chennai on Delhi- Chennai traffic

6.3 With the construction of the Akkalkot-Chennai section of the Nashik-Chennai expressway and the development of the Indore-Hyderabad economic corridor, traffic between Delhi-Chennai that is passing through the Asset currently, would have two viable alternatives.

6.4 The Akkalkot to Chennai section of the Nashik-Chennai expressway is expected to get completed by FY29. Therefore, traffic coming from north/north-west of Solapur and heading towards Chennai will find this to be a viable route.

6.5 Another route choice that has emerged is the Indore Hyderabad economic corridor which is undergoing 4-laning between Indore and Muktainagar. This is expected to get completed by FY27 following which an additional alternate route will be available for traffic between north India and Chennai.

Figure 6.1: Alternate Route via Delhi Mumbai Expressway and Surat Solapur Chennai

Source: Steer Cartography

6.6 The existing alignment between Indore and Hyderabad is currently being upgraded to 4 lanes throughout. Once the widening of the existing alignment is completed, the route via Indore, Khandwa, Muktainagar, Akola, Nanded will provide an alternate route traveling between Madhya Pradesh/ North and Hyderabad/South. An alternate route of this mentioned OD pairs already exists via NH52. The widening of the section will improve the LOS of the existing alternate route.

6.7 There are currently two key options for north south traffic movement between Delhi/north and Chennai via:

- using NH19/NH44 via Delhi-Agra-Gwalior-Sagar-Nagpur-Hyderabad-asset-Kurnool-Karnataka/Chennai
- using NE4/NH52/SCE via Delhi-Lalsot-Indore-Dhule-Aurangabad-Solapur-Kurnool-Karnataka/Chennai.
- using NH46/NH52 via Delhi-Gwalior-Indore and the IHE via Indore-Muktainagar-Nanded-Hyderabad-Chennai

6.8 Currently, the traffic is using NH44 corridor as it is cheaper and shorter for north-south travel. The proposed upgrades on NH52 coupled with upcoming Delhi-Mumbai Expressway (DME) and Surat-Solapur-Chennai Expressway (SCE) will improve the alternate route's overall attractiveness as long-distance corridor for traffic moving north and south. For this expressway 2 out of 13 packages have been awarded and rest are under bidding[16].

6.9 The users travelling from Delhi/north to Kurnool/south will have the option to divert to DME at Delhi instead of taking NH44/NH52. The users can then exit from DME at Indore where they can travel till Solapur on an upgraded 4-lane highway (NH52). At Solapur, the users can divert on the upcoming SCE to reach Chennai. Hence, the route via DME-NH52-SCE, which will be a mix of expressways and upgraded NH, will act as a competing route for the Asset.

6.10 The In-scope trips considered include movements between

- Delhi and north India including states of Haryana, Punjab, and
- parts of Tamil Nadu such as Chennai and Puducherry.

6.11 The benefits will also be most valued by long distance users which can make end to end movements as compared to those users with intermittent destinations. Given the novelty of the expressway and its expected impacts on a fragmented logistics market, we have assumed that 40% of impact will be realised within the first year of its completion whereas the 100% will occur in FY29 when the SCE becomes operationalised.

Table 6-1: Impact of IHE and SCE for TP1

Vehicle category	FY27	FY28	FY29 onwards
Staging	*40%*	*60%*	*100%*
2A	(3.4%)	(5.1%)	(8.5%)
3A	(4.8%)	(7.3%)	(12.1%)
MAV	(2.4%)	(3.5%)	(5.9%)

Source: Steer analysis, impact will be applicable in a phased manner from FY27.

Table 6-2: Impact of IHE and SCE for TP2

Vehicle category	FY27	FY28	FY29 onwards
Staging	*40%*	*60%*	*100%*
2A	(3.5%)	(5.3%)	(8.8%)
3A	(4.8%)	(7.3%)	(12.1%)
MAV	(2.5%)	(3.7%)	(6.2%)

Source: Steer analysis, impact will be applicable in a phased manner from FY27.

6.12 We expect such shifts to take place over course of time once the benefits of the expressway are fully visible and could be influenced by three factors:

- the last and first mile connectivity; and

[16] https://infrainfohub.com/surat-chennai-expressway-route-map-cost-progress-and-latest-updates/

- roadside facilities typically seen along the national highway network such as truck stops, rest/refresh areas, affordable food/drink facilities; and
- fuel and repair shops coming up along the expressway network.

Revenue forecasting assumptions

6.13 To forecast the revenues for a particular financial year, the traffic forecast for each vehicle type is converted into tickets sold, which is then multiplied with the corresponding toll rate, which grows over the years as defined in the Concession Agreement. While "trip factors" provide the conversion factor to the former, i.e., traffic (total trips) to tickets sold, "toll segmentation" provides the latter i.e., the breakup of trips paying each ticket type. This section discusses assumptions related to trip factors, toll segmentation and toll rates for the forecast period.

Toll segmentation

6.14 The Ministry of Road Transport & Highways has finalized a compensation formula for existing toll concessionaires to offset revenue loss from the Annual Pass scheme for non-commercial vehicles. To access the document, refer to the following link.

6.15 Across multiple assets, the share of annual pass trips has been rising on a monthly basis since August 5. A corresponding decline in other ticket categories including Single and Return journeys has been observed.

6.16 CJV Segmentation for FY26 has been developed using the pre annual pass segmentation till 14th August 2025, and post-annual pass segmentation from 15th August 2025 till 28th February 2026. The share of annual pass trips in March 2026 has been assumed to be the same as the share of annual pass trips in the last 10 days of February 2026.

6.17 The segmentation for CJVs in FY27 has been assumed to be the same as the estimated March 2026 segmentation as trends suggest that the share of annual pass trips have stabilised.For other vehicle categories we have analysed the historical TMS data split by ticket categories, to understand trends, as shown in Chapter 3. For the traffic and revenue forecast, FY26YTD (Apr- Feb) as discussed in the earlier sections, can be considered a normal period.

Table 6-3: Segmentation for forecast years, TP1 Babina

Ticket type	CJV FY26	CJV FY27	Mini LCV	Bus	LCV	2A	3A	MAV
Single	22%	17%	28.5%	36%	88%	92%	96%	87%
Return	37%	26%	47.5%	32%	11%	6%	3%	12%
Monthly	-	-	-	-	-	-	0%	0%
Local commercial	1.5%	1.4%	1%	31%	0%	0%	0%	1%
Local personal	8.5%	6%	11%	-	-	-	-	-
Exemptions	11%	10%	12%	1%	1%	2%	0%	0%
Annual Pass	20%	40%	-	-	-	-	-	-

Source: Steer analysis of Client TMS data

Table 6-4: Segmentation for forecast years, TP2 Vigakhet

Ticket type	CJV FY26	CJV FY27	Mini LCV	Bus	LCV	2A	3A	MAV
Single	26%	20%	34%	40%	89%	94%	96%	88%
Return	36%	27%	46%	53%	9%	4%	3%	9%
Monthly	-	-	-	-	-	-	-	-
Local Commercial	1%	0%	1%	7%	1%	0%	1%	3%
Local Personal	6%	5%	7%	-	-	-	-	-
Exemptions	12%	10%	12%	0%	1%	1%	0%	0%
Annual Pass	19%	38%						

Source: Steer analysis of Client TMS data

6.18 The Annual pass compensation is separately calculated using the formula prescribed by NHAI in the same circular. Following Table 6.5 presents the Annual pass compensation computed for the toll plaza.

Table 6.5: Annual pass compensation for CJVs (in Crore)

Toll Plaza	FY26	FY28	FY33	FY38	FY43	FY51
Babina	2.3	5.5	9.2	15.1	24.9	53.2
Vigakhet	1.2	2.9	4.7	7.8	12.9	27.5

6.19 Source: Steer Analysis

Trip factors

6.20 Trip factors are used to calculate the revenue for the trips made on passes such as return, local personal, monthly passes. The trip factors assumed are based on the latest data available and listed in the tables below:

Table 6-6: Trip factors at TP1 Babina

Forecast	CJV/Mini LCV	LCV	Bus	2A	3A	MAV
Single	1	1	1	1	1	1
Return	2	2	2	2	2	2
Monthly	45	45	7	45	45	50
Local commercial/Annual Pass	1	1	1	1	1	1
Local Personal	22	20	20	20	20	20

Source: steer analysis of Client TMS data

Table 6-7: Trip factors at TP2 Vigakhet

Forecast	CJV/Mini LCV	LCV	Bus	2A	3A	MAV
Single	1	1	1	1	1	1

Forecast	CJV/Mini LCV	LCV	Bus	2A	3A	MAV
Return	2	2	2	2	2	2
Monthly	45	45	50	45	45	45
Local commercial/Annual Pass	1	1	1	1	1	1
Local Personal	17	20	20	20	20	20

Source: steer analysis of Client TMS data

Toll evolution

6.21 Based on the concession agreement and the gazetted toll notification, we understand that base toll rates increase every year (revision month is April) based on WPI-linked inflation. These are rounded up to the nearest five to estimate the final toll rate charged to users.

6.22 We have used actual toll rates from the FY25 toll notifications and FY26 WPI to validate the modelling of future toll evolution. Increase in WPI was calculated based on the Client's WPI forecasts, as shown in the table below. These forecasts provided by the Client expect the Indian WPI to grow at an average of 4.0% between FY25-FY51. The WPI forecasts available from other independent forecasting agencies may vary from this assumption and could be lower or higher than that provided by the client.

Table 6-8: WPI growth forecast assumptions

Financial year	WPI growth (%)
FY26	2.57%
FY27	0.96%
FY28	5.0%
FY29	5.1%
FY30	4.9%
FY31	4.4%
FY32 onwards	4.1%

Source: Client inputs used for WPI FY28 onwards.

Revenue reconciliation

6.23 As part of validating the data provided by the Client, as well as our assumptions around toll calculations, we have reconciled the actual reported revenue on a monthly level for the Asset. To reconcile we have used the FY26YTD (April 2025 to January 2026) segmentation, FY26YTD AADT and compared it with the reported revenue at the AADC (Annual Average Daily Collection) for the year. The exercise was undertaken at an annual level. The comparison, as shown in Table 6-9 and Table 6-10 below, depicts the modelled revenue vs the reported revenue difference, and the difference lies within 0.5% for both, this gives us the confidence in the assumptions around segmentation and trip factors for future forecast purposes.

Table 6-9: Revenue reconciliation summary TP Babina at AADC level (INR lakhs)

Modelled	Reported	Delta
28.61	28.62	(0.01%)

Source: Steer comparison between modelled and reported revenue for FY26YTD

Table 6-10: Revenue reconciliation summary TP Vigakhet at AADC level (INR lakhs)

Modelled	Reported	Delta
20.05	20.04	0.04%

Source: Steer comparison between modelled and reported revenue for FY26YTD

Traffic and Revenue forecasts

6.24 Based on the traffic and revenue-related forecast assumptions discussed above, we have modelled the traffic and revenue forecasts for the forecast period for the Asset. The tables below present the AADT/PCU and revenue forecast growth rates and CAGRs on this Asset. Further, Appendix B presents the AADT and revenues for the forecast period.

Table 6-11: Forecast traffic for TP1 Babina

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	3,041	3,385	4,508	5,992	7,867	11,853
Mini LCV	647	697	830	986	1,163	1,491
Bus	181	190	214	240	268	317
LCV	336	357	413	478	548	675
2A	1,608	1,703	2,100	2,651	3,309	4,606
3A	1,443	1,390	1,440	1,574	1,712	1,941
MAV	1,941	2,122	2,772	3,700	4,874	7,354
OSV	2	2	3	4	5	8
AADT	**9,199**	**9,846**	**12,280**	**15,625**	**19,747**	**28,243**
PCU	**20,440**	**21,630**	**26,577**	**33,581**	**42,175**	**59,771**

Source: Steer analysis

Table 6-12: Forecast Traffic CAGR (%) for TP1 Babina

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	5.5%	5.9%	5.9%	5.6%	5.6%
Mini LCV	3.8%	3.5%	3.5%	3.4%	3.4%
Bus	2.5%	2.4%	2.3%	2.2%	2.3%
LCV	3.2%	2.9%	2.9%	2.8%	2.8%
2A	2.9%	4.3%	4.8%	4.5%	4.3%
3A	(1.8%)	0.7%	1.8%	1.7%	1.2%
MAV	4.5%	5.5%	5.9%	5.7%	5.5%
OSV	6.4%	6.0%	5.9%	5.7%	5.7%
AADT	**3.5%**	**4.5%**	**4.9%**	**4.8%**	**4.6%**
PCUs	**2.9%**	**4.2%**	**4.8%**	**4.7%**	**4.4%**

Source: Steer analysis

6.25

Table 6-13: Forecast Revenue for TP1 Babina (INR crores) including Annual Pass Compensation Revenue for CJV

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	9.4	11.8	19.8	32.5	53.8	115.1
Mini LCV	1.9	2.3	3.4	5.0	7.4	13.5
Bus	2.1	2.4	3.3	4.7	6.6	11.1
LCV	2.4	2.7	3.9	5.7	8.2	14.5
2A	23.8	27.1	42.3	66.5	104.0	207.3
3A	24.0	24.9	32.2	44.0	60.0	97.4
MAV	45.1	53.2	87.3	145.3	239.4	517.8
OSV	0.1	0.1	0.1	0.2	0.3	0.7
Total	**108.8**	**124.4**	**192.4**	**303.9**	**479.6**	**977.4**

Source: Steer analysis

Table 6-14: Forecast Revenue growth CAGR (%) for TP1 Babina

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	12.0%	10.9%	10.4%	10.6%	10.5%
Mini LCV	8.0%	8.5%	8.0%	8.2%	8.1%
Bus	6.4%	7.2%	6.9%	7.0%	6.9%
LCV	7.1%	7.7%	7.8%	7.5%	7.5%
2A	6.7%	9.3%	9.5%	9.4%	9.0%
3A	2.0%	5.3%	6.4%	6.4%	5.8%
MAV	8.6%	10.4%	10.7%	10.5%	10.3%
OSV	10.8%	11.0%	10.7%	10.4%	10.5%
Total	**7.0%**	**9.1%**	**9.6%**	**9.6%**	**9.2%**

Source: Steer analysis

Table 6-15: Forecast traffic for TP2 Vigakhet

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	2,273	2,531	3,371	4,480	5,883	8,863
Mini LCV	484	521	620	737	870	1,115
Bus	165	174	195	219	245	289
LCV	327	348	403	465	534	657
2A	1,557	1,645	2,027	2,559	3,193	4,445
3A	1,444	1,391	1,442	1,575	1,714	1,943
MAV	1,844	2,012	2,624	3,504	4,615	6,963
OSV	2	2	3	4	5	8
AADT	**8,097**	**8,625**	**10,685**	**13,543**	**17,059**	**24,282**
PCU	**18,971**	**19,997**	**24,446**	**30,803**	**38,591**	**54,501**

Source: Steer analysis

Table 6-16: Forecast Traffic CAGR (%) for TP2 Vigakhet

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	5.5%	5.9%	5.9%	5.6%	5.6%
Mini LCV	3.8%	3.5%	3.5%	3.4%	3.4%
Bus	2.5%	2.4%	2.3%	2.2%	2.3%
LCV	3.2%	2.9%	2.9%	2.8%	2.8%
2A	2.8%	4.3%	4.8%	4.5%	4.3%
3A	(1.8%)	0.7%	1.8%	1.7%	1.2%
MAV	4.4%	5.5%	5.9%	5.7%	5.5%
OSV	6.4%	6.0%	5.9%	5.7%	5.7%
AADT	**3.2%**	**4.4%**	**4.9%**	**4.7%**	**4.5%**
PCUs	**2.7%**	**4.1%**	**4.7%**	**4.6%**	**4.3%**

Source: Steer analysis

Table 6-17: Revenue Forecast for TP2 Vigakhet (INR crores) including Annual Pass Compensation Revenue for CJV

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	5.3	6.6	11.1	18.3	30.2	64.5
Mini LCV	1.1	1.3	2.0	2.9	4.3	7.9
Bus	1.5	1.7	2.5	3.5	4.8	8.2
LCV	1.7	2.0	2.8	4.1	5.8	10.3
2A	17.2	19.4	30.3	47.4	74.4	147.9
3A	17.4	18.3	23.6	32.3	43.7	71.3
MAV	31.4	36.9	60.5	101.0	166.3	360.0
OSV	0.0	0.1	0.1	0.1	0.2	0.5
Total	**75.7**	**86.3**	**132.8**	**209.6**	**330.0**	**670.5**

Source: Steer analysis

Table 6-18: Forecast Revenue growth CAGR (%) for TP2 Vigakhet

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	11.7%	10.8%	10.5%	10.6%	10.5%
Mini LCV	8.6%	8.4%	8.1%	8.2%	8.1%
Bus	6.2%	7.3%	6.9%	7.0%	6.9%
LCV	8.5%	7.6%	7.6%	7.3%	7.5%
2A	6.2%	9.3%	9.3%	9.5%	9.0%
3A	2.6%	5.2%	6.5%	6.3%	5.8%
MAV	8.3%	10.4%	10.8%	10.5%	10.2%
OSV	10.6%	11.0%	10.7%	10.5%	10.5%
Total	**6.8%**	**9.0%**	**9.6%**	**9.5%**	**9.1%**

Source: Steer analysis

Target revenues and modification of concession period

6.26 As per the concession agreement, the target revenue for TP1 and TP2 should be 7.9 Cr and 5.3 Cr for the month of March 2030 first calculation of target revenue and 18.9Cr and 12.8Cr for the month of March 2040 for the second calculation of target revenue. The traffic sampling will be undertaken for a continuous period of 7 days during anytime within 15 days prior to the date on the specified year, previous year and following year. The average thereof will be deemed as 'actual revenue.' If the target revenue for any section falls short or exceeds by 2.5%, the concession period shall be deemed to be modified using the laid-out conditions in the concession agreement. Table 6.19 and Table 6.20 below presents the summary of the analysis.

Table 6.19: Target Revenues for Extension 1

Asset	Target Month	Target Revenue	Estimated Revenue			Average Revenue	Variation (%)
		Cr	2029	2030	2031		
JL TP1	Mar-30	7.87	11.98	13.20	14.45	13.21	67.9%
JL TP2	Mar-30	5.28	8.33	9.13	10.02	9.16	73.5%

Source: Steer analysis

Table 6.20: Target Revenues for Extension 2

Asset	Target Month	Target Revenue	Estimated Revenue			Average Revenue	Variation (%)
		Cr	2039	2040	2041		
JL TP1	Mar-40	18.89	30.04	32.91	36.04	33.00	74.7%
JL TP2	Mar-40	12.81	20.68	22.71	24.78	22.72	77.4%

Source: Steer analysis

6.27 We have used the average AADT forecast for target year, previous year and following year as a proxy for 'actual traffic.' We have forecast seasonality of March month to adjust for seasonal trends and arrive at March traffic from AADT traffic, which is then segmented according to the forecast toll segmentation and trip factors and multiplied with respective estimated toll rates to get to a monthly revenue collection.

6.28 As seen from the tables above, the difference between actual and targeted revenue lies above the permitted 2.5% excess, a renegotiation of the length of the concession agreement is expected. As per the concession agreement, for every 1% excess target revenue, the concession period shall be decreased by 1.5%, with a capping at 20%. Therefore, for the excess traffic on these toll plazas, the concession period, originally 30 years, is expected to be decreased by 5 years from FY51, potentially reducing the last date of concession to FY45.

Upside and Downside cases

Upside and Downside scenario assumptions

6.29 We have developed our base case scenario considering a balanced view on the risks associated with input assumptions around GDP growth and traffic growth elasticities. There is always a risk that the outturn values of these inputs will vary as compared to the assumptions taken due to exogenous impacts, e.g. GDP growth could be influenced both positively and negatively by the impact of monsoons, export-import balances, political changes etc.

6.30 Similarly, traffic growth elasticities could be influenced by increased efficiencies achieved by technology, large shifts in commodity prices globally, changes in local manufacturing practices. However, at this stage we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

6.31 To account for the possible variations in the growth drivers, we are also presenting an Upside (optimistic) and a Downside (pessimistic) scenario. These scenarios are defined by the following variations from the base assumptions:

Table 6.21: Summary of Macro-economic Assumptions for upside and downside cases

Input	Upside	Downside
Macro Assumptions		
GDP/GSDP	+1% every year	-1% every year
WPI	+1% every year	-1% every year
Elasticities	+ 10%	- 10%

Source: Steer analysis

6.32 Further, network developments are highly dependent on governmental directions, policies, legal and financial measure which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside (pessimistic) case. However, at this stage, we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

Impacts-Upside Case

6.33 The upside case impacts included in forecasts are summarised in below.

Table 6.22: Summary of impacts on the Assets

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact	
			TP Babina	TP Vigakhet
Impact of IHE and Surat Solapur Chennai on Delhi- Chennai traffic	FY27*- 40%, FY28 – 60% FY29 – 100%	+25% of base case	2A: (6.4%) 3A: (9.1%) MAV: (4.4%)	2A: (6.6%) 3A: (9.1%) MAV: (4.6%)

Source: Steer analysis; *Same as the base case timeline

Impacts-Downside Case

6.34 The downside case impacts included in forecasts are summarised in below.

Table 6.23: Summary of impacts on the Assets

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact	
			TP Babina	TP Vigakhet
Impact of IHE and Surat Solapur Chennai on Delhi-Chennai traffic	FY27*- 40%, FY28 – 60% FY29 – 100%	- 25% of base case	2A: (10.6%) 3A: (15.1%) MAV: (7.3%)	2A: (11.0%) 3A: (15.1%) MAV: (7.7%)

Source: Steer analysis; *Same as the base case timeline

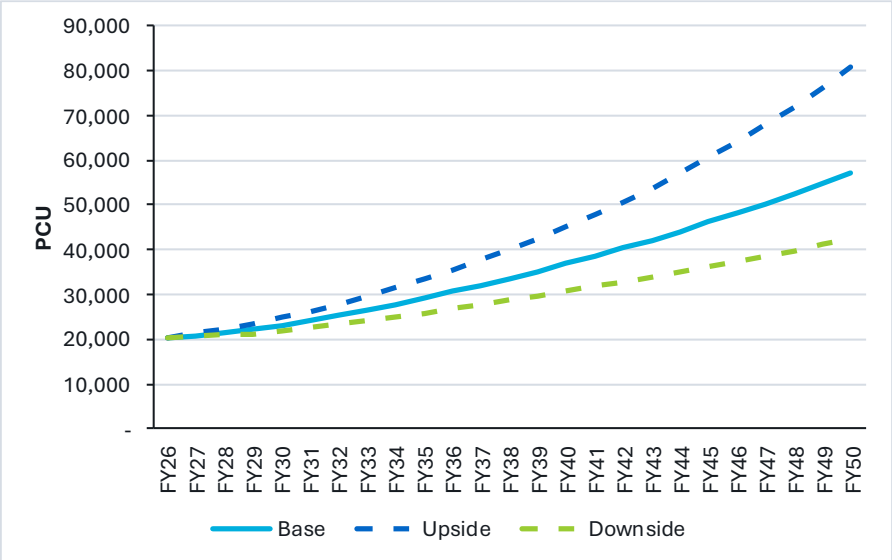
6.35 Based on the above assumptions for upside and downside scenarios, the following table summarizes the upside potential and downside risks associated with the PCU and the revenue for Babina and Vighkhet toll plazas at the end of the concession i.e. FY51.

Table 6.24: Upside potential and Downside PCU scenario – FY51

Toll Plaza	Upside Potential	Downside Risk
Babina	42.9%	(27.0%)
Vighakhet	42.7%	(26.9%)

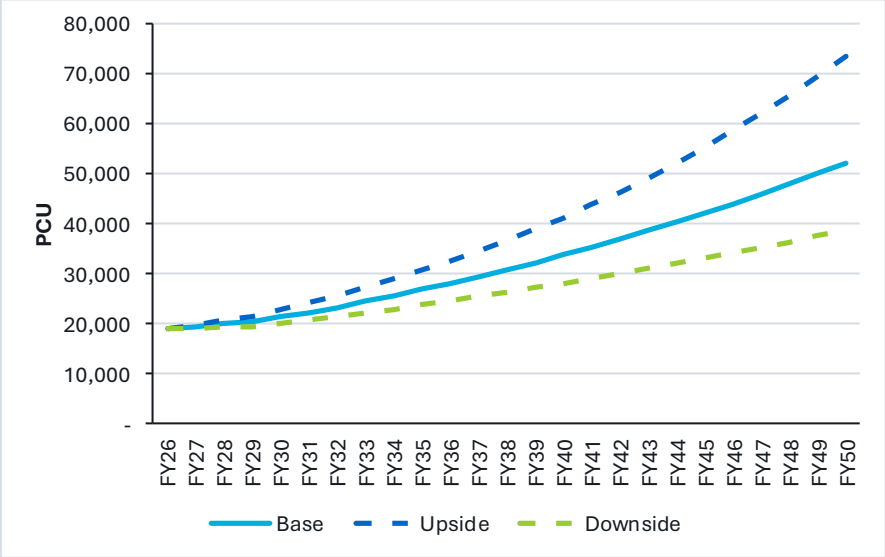
Source: Steer Analysis

Figure 6.2: Long-term PCU forecasts for Babina TP including upside and downside scenarios



Source: Steer Analaysis

Figure 6.3: Long-term PCU forecasts for Vigakhet TP including upside and downside scenarios



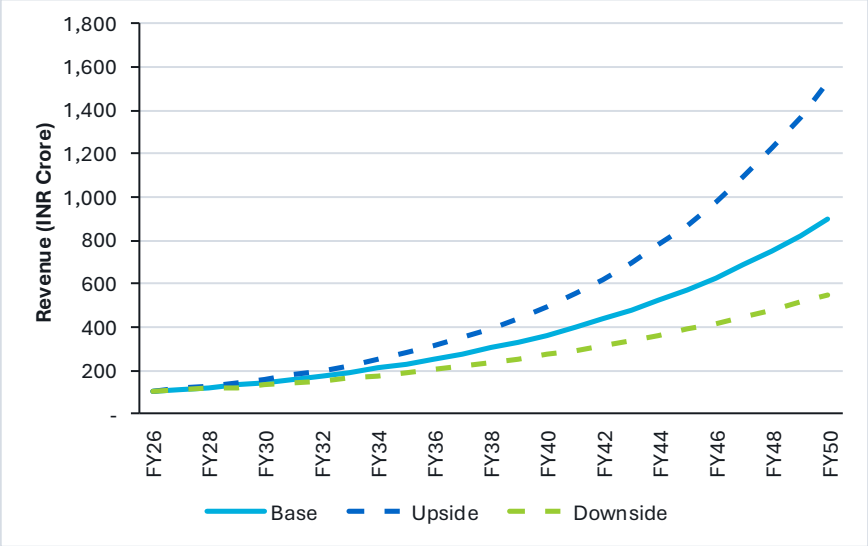
Source: Steer Analaysis

Table 6.25: Upside potential and Downside Revenue scenario – FY51

Toll Plaza	Upside Potential	Downside Risk
Babina	75.3%	(39.9%)
Vighakhet	74.9%	(65.6%)

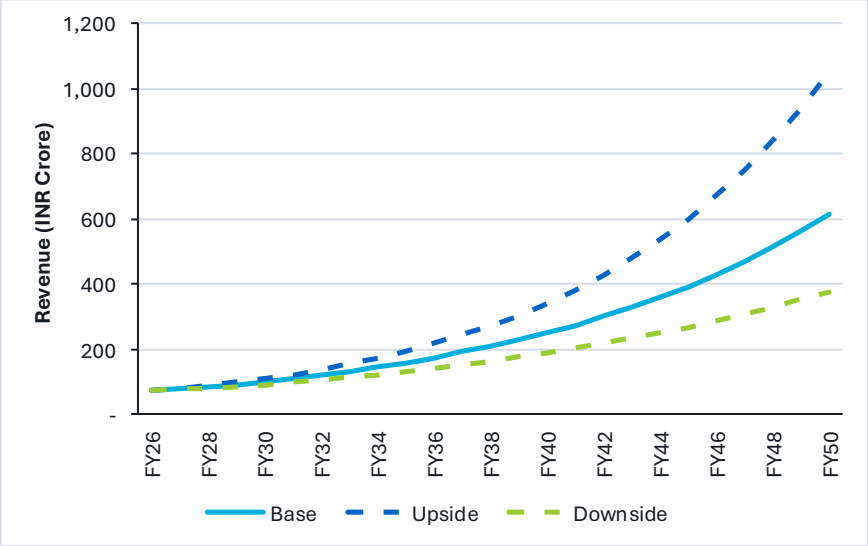
Source: Steer Analysis

Figure 6.4: Long-term revenue forecasts for Babina TP including upside and downside scenarios



Source: Steer Analaysis

Figure 6.4: Long-term revenue forecasts for Vigakhet TP including upside and downside scenarios



Source: Steer Analaysis

6.36 Revenue projections exhibit variability in both the upside and downside cases, driven by fluctuations in macro-economic factors such as WPI, GDP/GSDP, elasticities and the network impacts.

Summary outlook

6.37 Passenger movement on the Asset is largely local in nature, connecting the cities of Jhansi to Lalitpur over the short distance and northern cities of Kanpur and Lucknow to Sagar and Nagpur. Cars are expected to see a healthy growth on the Asset following the overall growth in income level and growth in the economy.

6.38 The biggest advantage for this Asset lies in its geographic location and strategic context, connecting the key movement between north India to the southern states of Madhya Pradesh, Karnataka, Telangana and Tamil Nadu. The overall network has been recently upgraded and provides a seamless connectivity for users. This is also demonstrated by the fact that almost 80% of truck users on this Asset cover distances of more than 500km.

6.39 Delhi Mumbai Expressway and Solapur Chennai Expressway is a key risk that has been identified which will impact the traffic on the corridor. As discussed in this chapter, a phased approach is taken to access the impact of DME, with 50% of estimated traffic loss in the first year of operation and the complete impact in the subsequent years.

6.40 Overall, we see a positive outlook for the region and the Asset, given that it caters to long distance movement to/from Chennai, Bangalore, Hyderabad etc to Delhi NCR. The underlying growth drivers of the corridor are strong and are expected to deliver long term sustained growth.

6.41 Our findings and estimates in this report are based on our understanding from the site visit, analysis of primary data available both from surveys and the toll management system (both historical and current), macroeconomic assumptions prescribed by Client, feedback from Client meetings and secondary publicly available data. There can be both positive and negative risks associated with assumptions and the forecasts using them as summarised below.

Appendices

A. Top 10 OD Pairs

6.42 Further to the OD analysis presented in Chapter 3, this appendix presents the top 10 OD pairs at each toll plaza. The tables below showcase data for both CJVs as well as MAVs and OSVs combined.

TP1 Babina

Table A.1: CJV top 10 OD pair shares at TP1 Babina

	OD Pair	Share
1.	Lalitpur-Karera	29%
2.	Lalitpur-Babina	10%
3.	Talbehat-Karera	10%
4.	Talbehat-Babina	5%
5.	Lalitpur-Kanpur nagar	3%
6.	Karera-Sagar	3%
7.	Babina-Betul	2%
8.	Kanpur nagar-Indore	2%
9.	Lalitpur-NCT of Delhi	1%
10.	Karera-Betul	1%

Source: Steer analysis of OD data

Table A.2: MAV and OSV top 10 OD pair shares at TP1 Babina

	OD Pair	Share
1.	Lalitpur-Karera	7%
2.	Tikamgarh-Sagar	5%
3.	Hyderabad-NCT of Delhi	5%
4.	Raipur-NCT of Delhi	4%
5.	Karera-Sagar	4%
6.	Nagpur-NCT of Delhi	3%
7.	Lalitpur-Tikamgarh	3%
8.	Bangalore-NCT of Delhi	3%
9.	Chennai-NCT of Delhi	2%
10.	Nagpur-Haryana	2%

Source: Steer analysis of OD data

TP2 Vigakhet

Table A.3: CJV top 10 OD pair shares at TP2 Vigakhet

	OD Pair	Share
1.	Lalitpur-Jhansi	19.0%
2.	Jhansi-Sagar	9.2%
3.	Jhansi-Ashoknagar	3.3%
4.	Lalitpur-Gwalior	3.1%
5.	Lalitpur-Datia	3.0%
6.	Jhansi-Vidisha	2.7%
7.	Gwalior-Sagar	2.4%
8.	Datia-Sagar	2.2%
9.	Jalaun-Sagar	2.0%
10.	Ashoknagar-Datia	1.6%

Source: Steer analysis of OD data

Table A.4: MAV and OSV top 10 OD pair shares at TP2 Vigakhet

	OD Pair	Share
1.	Karnataka-Puducherry	7.1%
2.	Chennai-Puducherry	6.0%
3.	Hyderabad-Puducherry	5.2%
4.	Lalitpur-Jhansi	5.0%
5.	Nagpur-Puducherry	5.0%
6.	Jhansi-Sagar	3.6%
7.	Sagar-Puducherry	2.9%
8.	Raipur-Puducherry	2.5%
9.	Haryana-Karnataka	2.2%
10.	Chennai-Haryana	2.0%

Source: Steer analysis of OD data

B. Data collection exercise

6.43 In order to validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

3/7-day TVC counts

Table B.1: TVC counts at TP1

Date	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
29-01-2024	2,963	665	366	146	1,117	1,147	1,741	4	8,149
30-01-2024	3,373	601	366	154	1,073	1,091	1,691	2	8,351
31-01-2024	3,379	602	439	154	1,165	1,183	1,762	2	8,686

Source: Steer analysis

Table B.2: TVC counts at TP2

Date	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
23-02-2026	2,551	577	553	129	1,768	1,634	2,087	1	9,300
24-02-2026	2,647	593	510	136	1,611	1,486	1,773	3	8,759
25-02-2026	3,154	540	575	128	1,680	1,429	1,974	-	9,480

Source: Steer analysis

TVC vs TMS comparison

Table B.3: TVC and TMS WADT

Toll Plaza	Source	CJV+ Mini LCV	LCV	Bus	2 Axle	3 Axle+ MAV	OSV	Total
TP1	TVC	3,861	390	151	1,118	2,872	3	8,395
	TMS	3,690	233	187	1,156	2,872	1	8,140
TP2	TVC	3,354	546	131	1,686	3,461	1	9,180
	TMS	3,293	351	172	1,670	3,548	3	9,037

Source: Steer analysis

Zone list

Table B.4: Zone list

Zone No	Zone name	State
1	Lalitpur	Uttar Pradesh
2	Ronda	Uttar Pradesh
3	Maharra	Uttar Pradesh
4	Ander	Uttar Pradesh
5	Saurai	Uttar Pradesh
6	Daulta	Uttar Pradesh
7	Terai	Uttar Pradesh
8	Bijrotha	Uttar Pradesh
9	Talbehat	Uttar Pradesh
10	Pawa	Uttar Pradesh
11	Sukwan	Uttar Pradesh
12	Babina	Uttar Pradesh
13	Rasoi	Uttar Pradesh
14	Tilak Nagar	Uttar Pradesh
15	Khailar	Uttar Pradesh
16	Safa	Uttar Pradesh
17	Bijoli	Uttar Pradesh
18	Saiyar	Uttar Pradesh
19	Dongri	Uttar Pradesh
20	Bamair	Uttar Pradesh
21	Parasai	Uttar Pradesh
22	Orchha	Uttar Pradesh
23	Jeron Khalsa	Madhya Pradesh
24	Jakhora	Uttar Pradesh
25	Sirsee	Uttar Pradesh
26	Dailwara	Uttar Pradesh
27	Gadyana	Uttar Pradesh
28	Kalyanpura	Uttar Pradesh
29	Dawani	Uttar Pradesh
30	Chiglaua	Uttar Pradesh
31	Bar	Uttar Pradesh
32	Kathwar	Uttar Pradesh
33	Chanderi	Madhya Pradesh

Zone No	Zone name	State
34	Tikamgarh	Madhya Pradesh
35	Karera	Madhya Pradesh
36	Jhansi	Uttar Pradesh
37	Gwalior	Madhya Pradesh
38	Pichhore	Madhya Pradesh
39	Gwalior	Madhya Pradesh
40	Agra	Uttar Pradesh
41	Bhopal	Madhya Pradesh
42	Agra	Uttar Pradesh
43	Agra	Uttar Pradesh
44	Allahabad	Uttar Pradesh
45	Ambedkar Nagar	Uttar Pradesh
46	Amethi	Uttar Pradesh
47	Amroha	Uttar Pradesh
48	Auraiya	Uttar Pradesh
49	Azamgarh	Uttar Pradesh
50	Badaun	Uttar Pradesh
51	Baghpat	Uttar Pradesh
52	Bahraich	Uttar Pradesh
53	Ballia	Uttar Pradesh
54	Balrampur	Uttar Pradesh
55	Banda	Uttar Pradesh
56	Barabanki	Uttar Pradesh
57	Bareilly	Uttar Pradesh
58	Basti	Uttar Pradesh
59	Bijnor	Uttar Pradesh
60	Bulandshahr	Uttar Pradesh
61	Chandauli	Uttar Pradesh
62	Chitrakoot	Uttar Pradesh
63	Deoria	Uttar Pradesh
64	Etah	Uttar Pradesh
65	Etawah	Uttar Pradesh
66	Faizabad	Uttar Pradesh
67	Farrukhabad	Uttar Pradesh
68	Fatehpur	Uttar Pradesh

Zone No	Zone name	State
69	Firozabad	Uttar Pradesh
70	Gautam Buddha Nagar	Uttar Pradesh
71	Ghaziabad	Uttar Pradesh
72	Ghazipur	Uttar Pradesh
73	Gonda	Uttar Pradesh
74	Gorakhpur	Uttar Pradesh
75	Hamirpur	Uttar Pradesh
76	Hapur	Uttar Pradesh
77	Hardoi	Uttar Pradesh
78	Hathras	Uttar Pradesh
79	Jalaun	Uttar Pradesh
80	Jaunpur	Uttar Pradesh
81	Jhansi	Uttar Pradesh
82	Kannauj	Uttar Pradesh
83	Kanpur Dehat	Uttar Pradesh
84	Kanpur nagar	Uttar Pradesh
85	kasganj	Uttar Pradesh
86	Kaushambi	Uttar Pradesh
87	Kushinagar	Uttar Pradesh
88	Lakhimpur Kheri	Uttar Pradesh
89	Lalitpur	Uttar Pradesh
90	Lucknow	Uttar Pradesh
91	Mahamaya Nagar	Uttar Pradesh
92	Maharajganj	Uttar Pradesh
93	Mahoba	Uttar Pradesh
94	Mainpuri	Uttar Pradesh
95	Mathura	Uttar Pradesh
96	Mau	Uttar Pradesh
97	Meerut	Uttar Pradesh
98	Mirzapur	Uttar Pradesh
99	Moradabad	Uttar Pradesh
100	Muzaffarnagar	Uttar Pradesh
101	Pilibhit	Uttar Pradesh
102	Pratapgarh	Uttar Pradesh
103	Raebareli	Uttar Pradesh

Zone No	Zone name	State
104	Rampur	Uttar Pradesh
105	Saharanpur	Uttar Pradesh
106	Sambhal	Uttar Pradesh
107	Sant Kabir Nagar	Uttar Pradesh
108	Sant Ravi Das Nagar(bhadohi)	Uttar Pradesh
109	Shahjahanpur	Uttar Pradesh
110	Shamli	Uttar Pradesh
111	Shrawasti	Uttar Pradesh
112	Siddharth Nagar	Uttar Pradesh
113	Sitapur	Uttar Pradesh
114	Sonbhadra	Uttar Pradesh
115	Sultanpur	Uttar Pradesh
116	Unnao	Uttar Pradesh
117	Varanasi	Uttar Pradesh
118	Alirajpur	Madhya Pradesh
119	Anuppur	Madhya Pradesh
120	Ashoknagar	Madhya Pradesh
121	Balaghat	Madhya Pradesh
122	Barwani	Madhya Pradesh
123	Betul	Madhya Pradesh
124	Bhind	Madhya Pradesh
125	Bhopal	Madhya Pradesh
126	Burhanpur	Madhya Pradesh
127	Chhatarpur	Madhya Pradesh
128	Chhindwara	Madhya Pradesh
129	Damoh	Madhya Pradesh
130	Datia	Madhya Pradesh
131	Dewas	Madhya Pradesh
132	Dhar	Madhya Pradesh
133	Dindori	Madhya Pradesh
134	East Nimar	Madhya Pradesh
135	Guna	Madhya Pradesh
136	Harda	Madhya Pradesh
137	Hoshangabad	Madhya Pradesh
138	Indore	Madhya Pradesh

Zone No	Zone name	State
139	Jabalpur	Madhya Pradesh
140	Jhabua	Madhya Pradesh
141	Katni	Madhya Pradesh
142	Mandla	Madhya Pradesh
143	Mandsaur	Madhya Pradesh
144	Morena	Madhya Pradesh
145	Narsimhapur	Madhya Pradesh
146	Neemuch	Madhya Pradesh
147	Panna	Madhya Pradesh
148	Raisen	Madhya Pradesh
149	Rajgarh	Madhya Pradesh
150	Ratlam	Madhya Pradesh
151	Rewa	Madhya Pradesh
152	Sagar	Madhya Pradesh
153	Satna	Madhya Pradesh
154	Sehore	Madhya Pradesh
155	Seoni	Madhya Pradesh
156	Shahdol	Madhya Pradesh
157	Shajapur	Madhya Pradesh
158	Sheopur	Madhya Pradesh
159	Shivpuri	Madhya Pradesh
160	Sidhi	Madhya Pradesh
161	Singrauli	Madhya Pradesh
162	Ujjain	Madhya Pradesh
163	Umaria	Madhya Pradesh
164	Vidisha	Madhya Pradesh
165	West Nimar	Madhya Pradesh
166	Anantapur	Andhra Pradesh
167	Nagpur	Maharashtra
168	Nashik	Maharashtra
169	Dhule	Maharashtra
170	Hyderabad	Telangana
171	Vijayawada	Andhra Pradesh
172	Guntur	Andhra Pradesh
173	Pune	Maharashtra

Zone No	Zone name	State
174	Mumbai	Maharashtra
175	Chennai	Tamil Nadu
176	Bangalore	Karnataka
177	Jaipur	Rajasthan
178	Visakhapatnam	Andhra Pradesh
179	Bilaspur	Chhattisgarh
180	Raipur	Chhattisgarh
181	Korba	Chhattisgarh
182	Andhra Pradesh	Andhra Pradesh
183	Arunanchal Pradesh	Arunanchal Pradesh
184	Assam	Assam
185	Bihar	Bihar
186	Chandigarh	Chandigarh
187	Chhattisgarh	Chhattisgarh
188	Dadara & Nagar Havelli	Dadara & Nagar Havelli
189	Daman & Diu	Daman & Diu
190	Goa	Goa
191	Gujarat	Gujarat
192	Haryana	Haryana
193	Himachal Pradesh	Himachal Pradesh
194	Jammu & Kashmir	Jammu & Kashmir
195	Chhattisgarh	Jharkhand
196	Karnataka	Karnataka
197	Kerala	Kerala
198	Maharashtra	Maharashtra
199	Manipur	Manipur
200	Meghalaya	Meghalaya
201	Mizoram	Mizoram
202	Nagaland	Nagaland
203	NCT of Delhi	NCT of Delhi
204	Puducherry	Puducherry
205	Punjab	Punjab
206	Rajasthan	Rajasthan
207	Sikkim	Sikkim
208	Tamil Nadu	Tamil Nadu

Zone No	Zone name	State
209	Telangana	Telangana
210	Tripura	Tripura
211	Uttarakhand	Uttarakhand
212	West Bengal	West Bengal
213	Odisha	Odisha

Direction wise commodity distribution

Table B.5: Commodity distribution (towards Lalitpur) at TP1

Commodity Category	LCV	2 Axle	3 Axle	MAV
Agriculture	3%	0%	5%	10%
Groceries	12%	4%	11%	5%
Construction	1%	1%	4%	20%
Petroleum	4%	3%	7%	12%
Manufacturing	13%	16%	15%	12%
Automobiles	1%	10%	2%	11%
Miscellaneous	43%	57%	45%	21%
Metals	1%	0%	1%	2%
Empty	22%	8%	9%	8%

Source: Steer analysis

Table B.6: Commodity distribution (towards Jhansi) at TP1

Commodity Category	LCV	2 Axle	3 Axle	MAV
Agriculture	8%	5%	7%	9%
Groceries	8%	13%	15%	13%
Construction	1%	2%	2%	3%
Petroleum	3%	5%	8%	10%
Manufacturing	13%	7%	14%	8%
Automobiles	1%	2%	1%	9%
Miscellaneous	46%	46%	36%	15%
Metals	1%	1%	2%	6%
Empty	19%	18%	16%	26%

Source: Steer analysis

Table B.7: Commodity distribution (towards Lalitpur) at TP2

Commodity Category	LCV	2A	3A	MAV
Agriculture	4%	7%	5%	8%
Groceries	9%	18%	26%	23%
Construction	1%	3%	2%	14%
Petroleum	-	-	-	-
Manufacturing	3%	4%	4%	8%
Automobiles	23%	17%	12%	14%
Miscellaneous	2%	3%	2%	7%
Metals	52%	34%	30%	14%
Empty	2%	5%	3%	6%

Source: Steer analysis

Table B.8: Commodity distribution (towards Jhansi) at TP2

Commodity Category	LCV	2A	3A	MAV
Agriculture	1%	4%	4%	7%
Groceries	25%	31%	31%	24%
Construction	2%	4%	4%	3%
Petroleum	-	-	-	-
Manufacturing	2%	4%	3%	7%
Automobiles	18%	13%	11%	10%
Miscellaneous	1%	3%	2%	8%
Metals	42%	18%	14%	7%
Empty	4%	7%	3%	7%

Source: Steer analysis

Trip length frequency

Table B.9: Trip length frequency at TP1

Distance range	LCV	2 Axle	3 Axle	MAV
0-100 km	5%	1%	4%	4%
100-300 km	18%	10%	15%	21%
300-500 km	11%	6%	10%	8%
500-1000 km	20%	15%	16%	17%
>1000 km	47%	68%	55%	49%

Source: Steer analysis of OD data

Table B.10: Trip length frequency at TP2

Distance range	LCV	2 Axle	3 Axle	MAV
0-50	1%	56%	36%	47%
50-100	4%	2%	4%	1%
100-250	55%	8%	16%	7%
250-500	29%	4%	7%	5%
500-1000	9%	8%	12%	9%

Source: Steer analysis of OD data

C. Detailed forecasts

6.44 Further to the summary of forecasts presented in Chapter 6, this appendix presents detailed forecasts.

Traffic forecasts

6.45 This section presents the detailed traffic forecasts for the forecast period until FY51, year of expected close of the concession. The following two tables show the traffic growth rates and AADT, respectively.

Table C.1: Forecasts for (background + impacts) traffic – TP1 Babina

	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	OSV	Total	PCU
FY27	**3,185**	**672**	**186**	**347**	**1,642**	**1,399**	**2,019**	**2**	**9,451**	**20,872**
FY28	3,385	697	190	357	1,703	1,390	2,122	2	9,846	21,630
FY29	3,590	723	195	368	1,729	1,342	2,198	2	10,147	22,083
FY30	3,801	748	199	379	1,817	1,366	2,330	2	10,642	23,128
FY31	4,020	774	204	390	1,906	1,390	2,467	3	11,154	24,208
FY32	4,252	801	209	401	2,000	1,414	2,612	3	11,692	25,341
FY33	4,508	830	214	413	2,100	1,440	2,772	3	12,280	26,577
FY34	4,777	859	219	426	2,203	1,467	2,940	3	12,893	27,865
FY35	5,059	890	224	438	2,309	1,493	3,116	3	13,533	29,205
FY36	5,355	921	229	451	2,419	1,520	3,302	3	14,201	30,603
FY37	5,666	953	235	464	2,533	1,546	3,496	4	14,898	32,061
FY38	5,992	986	240	478	2,651	1,574	3,700	4	15,625	33,581
FY39	6,334	1,020	246	491	2,774	1,601	3,914	4	16,383	35,164
FY40	6,691	1,054	251	505	2,901	1,628	4,138	4	17,173	36,813
FY41	7,066	1,090	257	519	3,032	1,656	4,373	5	17,996	38,530
FY42	7,457	1,126	262	534	3,168	1,684	4,618	5	18,854	40,317
FY43	7,867	1,163	268	548	3,309	1,712	4,874	5	19,747	42,175
FY44	8,296	1,201	274	563	3,455	1,740	5,142	5	20,677	44,108
FY45	8,744	1,240	280	578	3,605	1,769	5,422	6	21,644	46,116
FY46	9,213	1,280	286	594	3,760	1,797	5,714	6	22,649	48,202
FY47	9,702	1,321	292	610	3,920	1,826	6,018	6	23,695	50,368
FY48	10,212	1,362	298	626	4,086	1,855	6,335	7	24,781	52,616
FY49	10,744	1,405	304	642	4,256	1,884	6,666	7	25,908	54,948
FY50	11,299	1,448	311	659	4,432	1,913	7,010	7	27,077	57,364
FY51	11,853	1,491	317	675	4,606	1,941	7,354	8	28,243	59,771

Source: Steer analysis

Table C.2: Forecasts for (background + impacts) growth rates (%) – TP1 Babina

Vehicle Type	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	Total	PCU
FY27	4.8%	3.8%	2.5%	3.2%	2.1%	(3.0%)	4.0%	2.7%	2.1%
FY28	6.3%	3.8%	2.5%	3.1%	3.7%	(0.7%)	5.1%	4.2%	3.6%
FY29	6.1%	3.6%	2.4%	3.0%	1.5%	(3.5%)	3.6%	3.1%	2.1%
FY30	5.9%	3.5%	2.3%	2.9%	5.1%	1.8%	6.0%	4.9%	4.7%
FY31	5.8%	3.5%	2.3%	2.9%	4.9%	1.8%	5.9%	4.8%	4.7%
FY32	5.8%	3.5%	2.3%	2.9%	4.9%	1.8%	5.9%	4.8%	4.7%
FY33	6.0%	3.6%	2.4%	3.0%	5.0%	1.8%	6.1%	5.0%	4.9%
FY34	6.0%	3.6%	2.4%	3.0%	4.9%	1.8%	6.1%	5.0%	4.8%
FY35	5.9%	3.5%	2.4%	3.0%	4.8%	1.8%	6.0%	5.0%	4.8%
FY36	5.9%	3.5%	2.3%	2.9%	4.8%	1.8%	5.9%	4.9%	4.8%
FY37	5.8%	3.5%	2.3%	2.9%	4.7%	1.8%	5.9%	4.9%	4.8%
FY38	5.8%	3.5%	2.3%	2.9%	4.7%	1.8%	5.8%	4.9%	4.7%
FY39	5.7%	3.4%	2.3%	2.9%	4.6%	1.7%	5.8%	4.9%	4.7%
FY40	5.6%	3.4%	2.3%	2.8%	4.6%	1.7%	5.7%	4.8%	4.7%
FY41	5.6%	3.4%	2.2%	2.8%	4.5%	1.7%	5.7%	4.8%	4.7%
FY42	5.5%	3.3%	2.2%	2.8%	4.5%	1.7%	5.6%	4.8%	4.6%
FY43	5.5%	3.3%	2.2%	2.7%	4.4%	1.7%	5.6%	4.7%	4.6%
FY44	5.5%	3.3%	2.2%	2.7%	4.4%	1.6%	5.5%	4.7%	4.6%
FY45	5.4%	3.2%	2.2%	2.7%	4.4%	1.6%	5.4%	4.7%	4.6%
FY46	5.4%	3.2%	2.1%	2.7%	4.3%	1.6%	5.4%	4.6%	4.5%
FY47	5.3%	3.2%	2.1%	2.7%	4.3%	1.6%	5.3%	4.6%	4.5%
FY48	5.3%	3.2%	2.1%	2.6%	4.2%	1.6%	5.3%	4.6%	4.5%
FY49	5.2%	3.1%	2.1%	2.6%	4.2%	1.6%	5.2%	4.6%	4.4%
FY50	5.2%	3.1%	2.1%	2.6%	4.1%	1.5%	5.2%	4.5%	4.4%
FY51	4.9%	2.9%	2.0%	2.5%	3.9%	1.5%	4.9%	4.3%	4.2%

Source: Steer analysis

Table C.3: Forecasts for (background + impacts) traffic – TP2 Vigakhet

	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	OSV	Total	PCU
FY27	2,382	502	169	338	1,587	1,401	1,915	2	8,297	19,329
FY28	2,531	521	174	348	1,645	1,391	2,012	2	8,625	19,997
FY29	2,684	540	178	359	1,668	1,343	2,081	2	8,857	20,358
FY30	2,842	559	182	369	1,753	1,367	2,206	2	9,281	21,310
FY31	3,006	579	186	380	1,840	1,391	2,336	3	9,720	22,292
FY32	3,180	599	190	391	1,930	1,416	2,473	3	10,181	23,323
FY33	3,371	620	195	403	2,027	1,442	2,624	3	10,685	24,446
FY34	3,572	643	200	415	2,126	1,468	2,784	3	11,210	25,616
FY35	3,783	665	204	427	2,228	1,494	2,951	3	11,756	26,832
FY36	4,004	689	209	440	2,334	1,521	3,126	3	12,327	28,101
FY37	4,237	713	214	452	2,444	1,548	3,310	4	12,922	29,424
FY38	4,480	737	219	465	2,559	1,575	3,504	4	13,543	30,803

	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	OSV	Total	PCU
FY39	4,736	763	224	479	2,677	1,602	3,706	4	14,190	32,239
FY40	5,003	788	229	492	2,799	1,630	3,918	4	14,865	33,733
FY41	5,283	815	234	506	2,926	1,658	4,140	5	15,567	35,289
FY42	5,576	842	239	520	3,058	1,686	4,373	5	16,298	36,908
FY43	5,883	870	245	534	3,193	1,714	4,615	5	17,059	38,591
FY44	6,203	898	250	549	3,334	1,742	4,869	5	17,850	40,340
FY45	6,538	927	255	564	3,479	1,770	5,134	6	18,673	42,158
FY46	6,888	957	261	579	3,629	1,799	5,410	6	19,529	44,045
FY47	7,254	987	266	594	3,783	1,828	5,698	6	20,418	46,004
FY48	7,636	1,019	272	610	3,943	1,857	5,999	7	21,341	48,036
FY49	8,034	1,051	278	626	4,107	1,886	6,312	7	22,299	50,143
FY50	8,448	1,083	283	642	4,277	1,915	6,637	7	23,292	52,326
FY51	8,863	1,115	289	657	4,445	1,943	6,963	8	24,282	54,501

Source: Steer analysis

Table C.4: Forecasts for (background + impacts) growth rates (%) – TP2 Vigakhet

Vehicle Type	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	Total	PCU
FY27	4.8%	3.8%	2.5%	3.2%	2.0%	(3.0%)	3.8%	2.5%	1.9%
FY28	6.3%	3.8%	2.5%	3.1%	3.6%	(0.7%)	5.0%	4.0%	3.5%
FY29	6.1%	3.6%	2.4%	3.0%	1.4%	(3.5%)	3.5%	2.7%	1.8%
FY30	5.9%	3.5%	2.3%	2.9%	5.1%	1.8%	6.0%	4.8%	4.7%
FY31	5.8%	3.5%	2.3%	2.9%	4.9%	1.8%	5.9%	4.7%	4.6%
FY32	5.8%	3.5%	2.3%	2.9%	4.9%	1.8%	5.9%	4.7%	4.6%
FY33	6.0%	3.6%	2.4%	3.0%	5.0%	1.8%	6.1%	4.9%	4.8%
FY34	6.0%	3.6%	2.4%	3.0%	4.9%	1.8%	6.1%	4.9%	4.8%
FY35	5.9%	3.5%	2.4%	3.0%	4.8%	1.8%	6.0%	4.9%	4.7%
FY36	5.9%	3.5%	2.3%	2.9%	4.8%	1.8%	5.9%	4.9%	4.7%
FY37	5.8%	3.5%	2.3%	2.9%	4.7%	1.8%	5.9%	4.8%	4.7%
FY38	5.8%	3.5%	2.3%	2.9%	4.7%	1.8%	5.8%	4.8%	4.7%
FY39	5.7%	3.4%	2.3%	2.9%	4.6%	1.7%	5.8%	4.8%	4.7%
FY40	5.6%	3.4%	2.3%	2.8%	4.6%	1.7%	5.7%	4.7%	4.6%
FY41	5.6%	3.4%	2.2%	2.8%	4.5%	1.7%	5.7%	4.7%	4.6%
FY42	5.5%	3.3%	2.2%	2.8%	4.5%	1.7%	5.6%	4.7%	4.6%
FY43	5.5%	3.3%	2.2%	2.7%	4.4%	1.7%	5.6%	4.7%	4.6%
FY44	5.5%	3.3%	2.2%	2.7%	4.4%	1.6%	5.5%	4.6%	4.5%
FY45	5.4%	3.2%	2.2%	2.7%	4.4%	1.6%	5.4%	4.6%	4.5%
FY46	5.4%	3.2%	2.1%	2.7%	4.3%	1.6%	5.4%	4.6%	4.5%
FY47	5.3%	3.2%	2.1%	2.7%	4.3%	1.6%	5.3%	4.6%	4.4%
FY48	5.3%	3.2%	2.1%	2.6%	4.2%	1.6%	5.3%	4.5%	4.4%
FY49	5.2%	3.1%	2.1%	2.6%	4.2%	1.6%	5.2%	4.5%	4.4%
FY50	5.2%	3.1%	2.1%	2.6%	4.1%	1.5%	5.2%	4.5%	4.4%
FY51	4.9%	2.9%	2.0%	2.5%	3.9%	1.5%	4.9%	4.2%	4.2%

Source: Steer analysis

Revenue forecasts

Table C.5: Forecasts revenue (INR crores) – TP1 Babina

Vehicle Type	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	OSV	Total
FY27	10.3	2.0	2.2	2.5	24.9	23.7	48.0	0.1	113.8
FY28	11.8	2.3	2.4	2.7	27.1	24.9	53.2	0.1	124.4
FY29	13.0	2.4	2.6	2.9	29.0	25.2	57.7	0.1	132.8
FY30	14.3	2.6	2.7	3.2	32.1	26.9	64.4	0.1	146.3
FY31	16.1	2.9	2.9	3.4	35.0	28.6	71.2	0.1	160.2
FY32	17.6	3.1	3.1	3.7	38.6	30.5	78.9	0.1	175.6
FY33	19.8	3.4	3.3	3.9	42.3	32.2	87.3	0.1	192.4
FY34	21.7	3.7	3.6	4.3	46.3	34.4	96.8	0.1	210.8
FY35	24.1	4.0	3.8	4.5	50.9	36.7	107.0	0.1	231.2
FY36	26.5	4.3	4.1	4.9	55.7	39.1	118.9	0.2	253.6
FY37	29.3	4.6	4.4	5.3	60.8	41.3	131.1	0.2	277.0
FY38	32.5	5.0	4.7	5.7	66.5	44.0	145.3	0.2	303.9
FY39	36.0	5.4	5.0	6.1	72.9	46.8	160.6	0.2	333.1
FY40	39.9	5.9	5.4	6.6	79.6	50.1	178.2	0.2	365.9
FY41	43.8	6.3	5.7	7.1	87.2	52.9	196.3	0.3	399.7
FY42	48.2	6.8	6.1	7.6	95.1	56.2	217.0	0.3	437.3
FY43	53.8	7.4	6.6	8.2	104.0	60.0	239.4	0.3	479.6
FY44	59.0	8.0	7.0	8.8	113.7	63.9	265.0	0.3	525.9
FY45	64.6	8.6	7.5	9.4	123.5	67.7	291.1	0.4	572.6
FY46	71.5	9.3	8.0	10.1	134.8	72.0	320.8	0.4	626.9
FY47	78.9	10.0	8.5	10.9	147.4	76.5	353.8	0.5	686.5
FY48	87.4	10.9	9.1	11.7	161.3	81.6	390.3	0.5	752.8
FY49	95.7	11.7	9.7	12.5	175.0	86.4	428.3	0.6	819.9
FY50	105.2	12.6	10.4	13.4	190.9	91.9	471.4	0.6	896.3
FY51	115.1	13.5	11.1	14.5	207.3	97.4	517.8	0.7	977.4

Source: Steer analysis

Table C.6: Forecasts revenue (INR crores) – TP2 Vigakhet

Vehicle Type	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	OSV	Total
FY27	5.9	1.2	1.6	1.8	17.8	17.4	33.4	0.0	79.1
FY28	6.6	1.3	1.7	2.0	19.4	18.3	36.9	0.1	86.3
FY29	7.4	1.4	1.9	2.1	20.8	18.3	40.2	0.1	92.3
FY30	8.2	1.6	2.0	2.3	22.8	19.7	44.6	0.1	101.1
FY31	9.1	1.7	2.2	2.5	25.2	21.0	49.3	0.1	111.0
FY32	10.1	1.8	2.3	2.6	27.5	22.2	54.9	0.1	121.7
FY33	11.1	2.0	2.5	2.8	30.3	23.6	60.5	0.1	132.8
FY34	12.3	2.1	2.6	3.1	33.3	25.3	67.1	0.1	145.9

Vehicle Type	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	OSV	Total
FY35	13.5	2.3	2.8	3.3	36.5	26.9	74.7	0.1	160.1
FY36	14.9	2.5	3.0	3.6	40.0	28.5	82.7	0.1	175.2
FY37	16.7	2.7	3.2	3.8	43.5	30.3	91.4	0.1	191.8
FY38	18.3	2.9	3.5	4.1	47.4	32.3	101.0	0.1	209.6
FY39	20.0	3.1	3.7	4.4	51.9	34.3	111.5	0.2	229.1
FY40	22.5	3.4	4.0	4.8	56.9	36.7	123.7	0.2	252.2
FY41	24.5	3.7	4.2	5.1	62.0	38.7	136.2	0.2	274.5
FY42	27.2	4.0	4.5	5.5	68.0	41.2	150.7	0.2	301.3
FY43	30.2	4.3	4.8	5.8	74.4	43.7	166.3	0.2	330.0
FY44	33.0	4.7	5.2	6.3	81.5	46.8	183.7	0.3	361.4
FY45	36.3	5.0	5.5	6.7	88.5	49.6	202.2	0.3	394.2
FY46	40.0	5.4	5.9	7.2	96.2	52.7	222.6	0.3	430.4
FY47	44.1	5.8	6.3	7.8	105.0	56.2	245.5	0.3	471.1
FY48	48.6	6.3	6.8	8.4	115.4	59.6	270.8	0.4	516.1
FY49	54.0	6.8	7.2	9.0	125.0	63.4	297.5	0.4	563.4
FY50	59.0	7.3	7.7	9.6	136.2	67.1	327.9	0.5	615.4
FY51	64.5	7.9	8.2	10.3	147.9	71.3	360.0	0.5	670.5

Source: Steer analysis

Control Information

Prepared by

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002,
India
+91 124 441 8650
www.steergroup.com

Prepared for

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1,
Sector 16, Noida- 201301 (UP, India)

Steer project/proposal number

23741310

Client contract/project number

Transit 11.0

Author/originator

Vineet Karlapalem

Reviewer/approver

Vaibhav Gupta

Other contributors

Shipra Bhatia, Ayushman Rai, Harshit Garg, Samridha Kalaiyan

Distribution

Client: Cube Highways Steer:

Version control/issue number

Date

April 2026

steergroup.com

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence for Jaipur Mahua Toll way Limited

Cube Highways Fund Advisors Private Limited
Our ref: 23741311
Client ref: Transit 11.0

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence for Jaipur Mahua Toll way Limited

Prepared by:

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002,
India

+91 124 441 8650
www.steergroup.com

Prepared for:

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower,
Plot No. C - 1, Sector 16, Noida- 201301 (UP, India)

Client ref: Transit 11.0
Our ref: 23741311

Steer has prepared this material for Cube Highways Fund Advisors Private Limited. This material may only be used within the context and scope for which Steer has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer shall be deemed to confirm their agreement to indemnify Steer for all loss or damage resulting therefrom. Steer has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

steer

Table of Content

Disclaimer		**v**
Glossary Items		**vii**
1	**Introduction**	**1**
	The assignment	1
	Our approach	2
	Contents of this report	3
2	**The Asset**	**4**
	Introduction	4
	Strategic network	4
	Concession and tolling details	6
	Key economic activities	7
	Alternate Routes	9
3	**Traffic description**	**12**
	Introduction	12
	Historical trends	13
	Data collection and validation	20
	Key findings of the TVC data analysis	21
	Key findings of origin-destination analysis	23
	Conclusions	31
4	**Socio Economic Context**	**32**
	Introduction	32
	Population growth	32
	Economic Indicators	33
	Economic growth	36
	Forecasts for growth drivers	39
5	**FY26 Base year AADT and Traffic growth analysis**	**41**
	Introduction	41
	FY26 Base year AADT estimates	41
	Estimation of background elasticities	43
	Forecasts for background elasticities	47
6	**Forecasts: Network overlays and forecasts**	**49**
	Introduction	49
	Analysis of potential network/developmental impacts	49
	Revenue forecasting assumptions	52
	Traffic and Revenue forecasts	56
	Upside and Downside cases	59
	Summary outlook	63

Figures

Figure 2.1: Asset location in the regional network context 4
Figure 2.2: Asset context 5
Figure 2.3: Toll plazas on the Asset 6
Figure 3.1: Passenger Traffic trends on the Asset in FY25 and FY26 14
Figure 3.2 Ticket-segmentation for CJV at TP1 Sikandra 17
Figure 3.3 Ticket-segmentation for MAV at TP1 Sikandra 17
Figure 3.4 Ticket-segmentation for CJV at TP2 Rajadhok 18
Figure 3.5: Ticket-segmentation for MAV at TP2 Rajadhok 18
Figure 3.6 WADT at TP1 and TP2 21
Figure 3.7 Comparison between TVC and TMS daily traffic data on TP1 Sikandra (2023) 22
Figure 3.8: Comparison between TVC and TMS daily traffic data on TP2 Rajadhok (2026) 22
Figure 3.9 Comparison between vehicle shares from TVC and TMS WADTs 23
Figure 3.10 Zonal influence at TP1 Sikandra 25
Figure 3.11 Zonal influence at TP2 Rajadhok 25
Figure 3.12 Internal-external distribution at TP1 Sikandra 26
Figure 3.13 Internal-external distribution at TP2 Rajadhok 27
Figure 3.14 Commodity distribution at TP1 Sikandra (Both directions) 29
Figure 3.15 Commodity distribution at TP2 Rajadhok (Both directions) 29
Figure 3.16 Trip length distribution TP1 Sikandra 30
Figure 3.17 Trip length distribution TP2 Rajadhok 30
Figure 4.1: Annual growth – Index of Industrial Production 34
Figure 4.2: : Car ownership in India per 1,000 population 35
Figure 4.3: Relative Per Capita Income (FY15-FY25) 35
Figure 4.4: YoY growth in expenditure components of GDP 36
Figure 4.5: Month on Month IIP performance 37
Figure 4.6: Industrial components of GVA 37
Figure 4.7: Evolution of Rajasthan's state GDP and national GDP, FY12-25 38
Figure 4.8: GDP-GSDP forecast 40
Figure 5.1: Relationship between CJV traffic and Rajasthan GSDP 45
Figure 5.2: Relationship between Bus+LCV+2A combined traffic and Rajasthan GSDP 46
Figure 5.3: Relationship between 3A+MAV combined traffic and India GDP: 47
Figure 6.1: Alternate routes and Asset route shown against the regional network context 50
Figure 6.2: Traffic and growth rates for forecast PCUs - Background and final, TP1 Sikandra 59
Figure 6.3: Traffic and growth rates for forecast PCUs - Background and final, TP2 Rajadhok 59
Figure 6.4: Long-term PCU forecasts for TP1 Sikandra including upside and downside scenarios 61
Figure 6.5: Long-term PCU forecasts for TP2 Rajadhok including upside and downside scenarios 62
Figure 6.6: Long-term revenue forecasts for TP1 Sikandra including upside and downside scenarios 62

Figure 6.7: Long-term revenue forecasts for TP2 Rajadhok including upside and downside scenarios 63

Tables

Table 1.1: Scope of work and sources of data 1
Table 2.1: Summary of concession 6
Table 2.2: Single toll rates on the Asset (INR), applicable in FY26 7
Table 2.3: Section Wise Delhi Mumbai Expressway status 10
Table 3.1: PCU factors 12
Table 3.2: Historical evolution in AADT by vehicle class at TP1 – Sikandra 13
Table 3.3: Historical evolution in Tollable AADT by vehicle class at TP1 – Sikandra 13
Table 3.4: Historical evolution in AADT by vehicle class at TP2 – Rajadhok 13
Table 3.5: Historical evolution in Tollable AADT by vehicle class at TP2: Rajadhok 14
Table 3.6: Historical revenue collection (in INR crores) and AADC (in INR Lakh) : 15
Table 3.7: Typical ticket types sold at NHAI plazas 16
Table 3.8: Historical ticket segmentation at TP1 Sikandra (LCVs) 18
Table 3.9: Historical ticket segmentation at TP1 Sikandra (Bus) 19
Table 3.10: Historical ticket segmentation at TP1 Sikandra (2 Axle) 19
Table 3.11: Historical ticket segmentation at TP2 Rajadhok (LCV) 19
Table 3.12: Historical ticket segmentation at TP2 Rajadhok (Bus) 19
Table 3.13: Historical ticket segmentation at TP2 Rajadhok (2 Axle) 19
Table 3.14: Overloading shares at TP1 and TP2 (FY19-FY26YTD) 20
Table 3.15: Data collection schedule 20
Table 3.16: Sample rates for OD data 24
Table 3.17: Zone aggregations for zonal influence analysis 24
Table 3.18: Aggregate commodity categories 27
Table 4.1: CAGR of population in India 32
Table 4.2: Population Growth in Rajasthan and India (2012-2024) 33
Table 5.1: Seasonality correction factors for TP1 Sikandra 42
Table 5.2: Seasonality correction factors for TP2 Rajadhok 42
Table 5.3: Adopted base estimates: TP1 Sikandra 43
Table 5.4: Adopted base estimates: TP2 Rajadhok 43
Table 5.5: Identified growth drivers to model traffic growth at Asset level 44
Table 5.6: Derived implied elasticities and assumed forecast elasticities for background growth 48
Table 6.1: List of network/other developments 49
Table 6.2: Impact due to completion of Delhi-Mumbai Expressway Spur, TP1 Sikandra 51
Table 6.3: Impact due to completion of Delhi-Mumbai Expressway Spur, TP2 Rajadhok 51
Table 6.4: Completion of Agra-Gwalior Construction 52
Table 6.5: Summary of impact assessments 52
Table 6.6: Trip factors at TP1 Sikandra 53

Table 6.7: Trip factors at TP2 Rajadhok	53
Table 6.9: Forecast toll segmentation, FY26 onwards- TP1 Sikandra	54
Table 6.10: Forecast toll segmentation, FY26 onwards- TP2 Rajadhok	54
Table 6.11: Overloading assumptions for forecast years FY26 onwards	55
Table 6.12: WPI growth forecast assumptions	55
Table 6.13: Revenue reconciliation for FY26YTD	56
Table 6.14: Traffic forecasts (with impacts) forecast for TP1 Sikandra	56
Table 6.15: Traffic forecasts (with impacts) CAGR (%) for TP1 Sikandra	56
Table 6.16: Revenue forecast for TP1 Sikandra (INR crores)	57
Table 6.17: Revenue growth CAGR (%) for TP1 Sikandra	57
Table 6.18: Traffic forecast (with impacts) for TP2 Rajadhok	57
Table 6.19: Traffic forecast (with impacts) CAGR (%) for TP2 Rajadhok	58
Table 6.20: Revenue forecast for TP2 Rajadhok (INR crores)	58
Table 6.21: Revenue growth rates (%) for TP2 Rajadhok	58
Table 6.22: Summary of Macro-economic Assumptions for upside and downside cases	60
Table 6.23: Summary of impacts on the Assets	60
Table 6.24: Summary of impacts on the Assets	60
Table 6.25: Upside potential and Downside PCU scenario - FY32	61
Table 6.26: Upside potential and Downside Revenue scenario - FY32	61

Appendices

A	**Developments in sandmining**
B	**Top 10 OD Pairs**
C	**Detailed forecasts**
D	**Data Collection Exercise**

Disclaimer

This report has been produced for the sole benefit of Cube Highways Pte. Ltd ("the Client"). The report may only be relied upon by Approved Addressees in accordance with the terms of our engagement letter. This Report (the "Report") is confidential and disclosed only for information purposes, and it may not be relied upon by any party other than the Client or a Party to a Reliance Letter, and Steer: a) makes no warranty, expressed or implied, with respect to the use of any information or methods disclosed in this Report; and b) assumes no liability with respect to the use of any information or methods disclosed in this document. Any such party by its acceptance or use of this Report releases Steer from any liability for direct, indirect, consequential, or special loss or damage whether arising in contract, warranty, express or implied, tort or otherwise.

The Report is based on standard professional efforts, and information available to us at the time the review took place and is subject to time and budget constraints of the Report's scope of work. This Report, information and statements contained herein, are all based on third party data provided to us, or sourced by us, and Steer has not sought to establish the reliability of the data, except as specifically stated in the Report. Steer bears no responsibility for the results of any actions taken on the basis of third-party data. Certain forward-looking statements in the Report are estimates based on interpretations or assessments of information available at the time of writing. The Report is thus to be viewed as an assessment that is time-relevant, specifically referring to conditions at the time of the review. Steer undertakes no obligation to update the Report for any reason. While the estimates contained in the Report are not precise forecasts, they do represent, in our view a reasonable expectation of the future, based on information we have been provided with or sourced. However, the estimates necessarily rely on numerous assumptions and judgements, and circumstances may occur over the timeframe of the project that go counter to these assumptions and judgements and that affect the project's realized revenues. Actual events may differ from those assumed, and events are subject to change. Therefore, Steer makes or provides no warranty, whether implied or otherwise, as to the accuracy of forward-looking information presented. Further, it is important to note that forecasts presented represent long term growth profiles; the results for individual time periods may vary from forecasted values.

Traffic Consultant developed the relationships in the models used to produce the forecasts for the projects based on data available through February 2026. This report does not consider variations in traffic performance due to changing macro and force majeure events such (but not limited to) as global wars, economic uncertainty (high inflation, global recession), and changes in the regulatory environment. The situation remains dynamic and is subject to significant change in the short and medium term. In this challenging context, Traffic Consultant has produced base forecasts with a view on a possible scenario for the traffic forecasts. However, it is important to note that this is only one view, and there continues to remain uncertainty as to the short-term, intermediate or prolonged effects of and responses to such macro-economic/force majeure events. As a result, no assurance can be provided by Traffic Consultant that the scenarios and assumptions Traffic Consultant has identified will prove to be accurate. Given the uncertainty inherent in this scenario, Traffic Consultant advises that all readers of the Report consider the Report in the context of their own assessment of the impact of such events.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE ISSUE OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES.

Glossary Items

Acronym	Meaning
2A/ Truck	2 Axle/ Truck
3A	3 Axle
AADT	Annual Average Daily Traffic
BOT	Build Operate Transfer
CAGR	Compound Annual Growth Rate
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DPR	Detailed Project Report
ETC	Electronic Toll Collection, also referred to as FASTag
FY	Financial Year
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HAM	Hybrid Annuity Model
HCM/ EME	Heavy Commercial Vehicles/ Earth Moving Machinery
IE reports	Independent Engineers' reports
IHMCL	Indian Highway Management Company Limited
INR	Indian Rupees
InvIT	Infrastructure Investment Trust
km	Kilometer
LCV/ LGV	Light Commercial Vehicles/ Light Goods Vehicle
LMV	Light motor vehicles
MADT	Monthly average daily traffic
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NSDP	National State Domestic Production
OD	Origin Destination
OSV	Over sized vehicles
PCU	Passenger Car Unit; it is a measure of standard vehicle unit to convert all vehicle classes to a single unit by using PCU factors to compute total traffic on an Asset.
Q1	Quarter 1 of financial year, from April to June
Q2	Quarter 2 of financial year, from July to September
Q3	Quarter 3 of financial year, from October to December
Q4	Quarter 4 of financial year, from January to March
RNP	Registered Number Plate
SCF	Seasonality Correction Factor

Acronym	Meaning
SH	State Highway
T&R	Traffic and Revenue
TMS	Traffic Management System
TVC	Traffic Volume Count
WADT	Weekly average daily traffic
YTD	Year to Date

1 Introduction

The assignment

1.1 The Cube Highways Fund Advisors Private Limited (the "Client") has commissioned Steer Davies Gleave India Private Limited ("Steer") for a traffic due diligence to be carried out on the Jaipur Mahua Toll Road (hereafter called "Asset"). This report forms part of the annual fair market valuation (FMV) undertaken as part of the "Transit 11 project". This report presents an update of the traffic and revenue forecasts based on actual traffic data available up to February 2026 and latest macro-economic, and network assumptions.

1.2 The Asset Jaipur-Mahua consists of a single stretch of toll road with two toll plazas. For the purpose of this report, we hereafter call the toll plazas present on the Asset as TP1 and TP2 respectively.

- TP1 – Sikandra
- TP2 – Rajadhok

1.3 Our scope of work for the traffic and revenue forecasting process includes:

Table 1.1: Scope of work and sources of data

Scope of work	Data source
• Review of historical Traffic Management System (TMS) data, Origin-Destination (OD) data, Vendor reports and documents	• Provided by client for the period between April 2009 and March 2026 for TP1 and September 2010 and March 2026 in case of TP2, with FY26 base AADT and forecasts considering data up to Feb'26
• Historical analysis and forecasts for baseline growth, including; — Background growth, — Seasonality	• Historical toll plaza data provided by Client
• Validation of Revenue reported in FY26YTD	• TMS data provided by Client. • Revenue reconciliation using toll plaza traffic and ticket type data to calculate revenue and reconciling it with toll plaza reported revenue.
• Origin Destination (OD) analysis to understand growth drivers: — Zonal influence and Top OD pairs — Commodity distribution — Trip length distribution	• Origin Destination (OD) surveys undertaken by Steer on Rajadhok in Feb'26 and on Sikandra in June 2023 under previous study.
• Analysis of upcoming network improvements and other developments, that may have future impacts on traffic	• Secondary research and our in-house experience of working in the vicinity of the Asset. Impact analysis to be conducted by

Scope of work	Data source
	Steer based on Generalised Journey Cost spreadsheet-based analysis
• Historical revenue analysis and forecasts for revenue estimation, including — Toll segmentation and trip factors, — Overloading shares	• Calculated from historical data provided by Client
• Final traffic growth forecasts including baseline growth rates and potential future impacts	• Elasticity based base growth and potential impacts from secondary research and Steer's in-house experience of working in the vicinity of the Asset
• Toll revenue estimation for the entire concession including toll evolution	• Toll evolution based on toll notification published by National Highway Authority of India (NHAI); and Gross Domestic Product (GDP) & Wholesale Price Index (WPI) trends as shared by the client

Our approach

1.4 The approach employed by Steer in the preparation of these forecasts was developed to take advantage of existing knowledge of the Asset and available data from various sources made available by the Client as well as publicly sourced. It follows well-established practices for forecasting ongoing traffic growth on an existing/brownfield Asset.

1.5 The analysis focused on two sets of issues, namely:

- understanding the traffic that is currently using the Asset; and
- identifying how and why that traffic is likely to change in the future.

1.6 To understand the current traffic on the Asset, we have analysed traffic data from multiple independent sources:

- Client-provided secondary data, including:
  - TMS data starting from FY09 up to February 2026. The historical traffic and revenue presented in Chapter 3 considers information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated
  - Concession agreement and toll notifications for FY25 and FY26
  - Previous studies related to traffic and revenue
  - Steer-commissioned OD surveys on the two plazas of the Asset to validate any change in growth drivers and travel patterns. The latest survey on TP1 was conducted on 26th June 2023 and on TP2 on 17th Feb'26.
  - Steer-commissioned a 4-day TVC counts on TP1 Sikandra from 26th June to 29th June 2023 in the previous study in 2023 and a 3-day TVC counts on TP2 Rajadhok from 17th Feb'26 to 19th Feb'26.
- We undertook revenue reconciliation for FY26YTD, by building up revenue from the traffic reported by each of the toll plaza and subsequently match it to the reported revenue for FY26YTD using the prevalent toll rates and reported segmentation/toll-frequencies for FY26YTD, this is a key part of our analysis to validate the

segmentation/toll-frequency assumptions and the Annual Average Daily Traffic (AADT) reported for each of the toll plaza.

1.7 The estimation of future traffic demand on the Asset was undertaken through:

- Estimating FY26 base year position by applying seasonality correction factors (SCFs) on the 11 months of actual traffic data available (April to February).
- Secondary research to understand plans for new developments and progress of ongoing developments on the Asset.
- Steer independent primary surveys and site visits to validate our network and contextual understanding.
- Developing a bespoke growth model for each Asset/plaza/toll class to forecast year-on-year traffic growth from FY26 to the end of concession period.
- Investigating the elasticity of historical traffic growth compared to state (GSDP) and national (GDP) growth. Where historical data is limited, we have benchmarked the Asset against our Steer knowledge base (e.g., similar Asset types in the same state or on the same corridor), to derive appropriate elasticities.
- Applying our elasticities to independent GDP forecasts as provided by client.
- Identifying and analysing the potential impacts of any relevant changes to the competitive position of each Asset – these include impacts of changes to road network including expressways and opening of competitive modes of travel.
- Identifying and analysing any other potential impacts to traffic and revenue on each Asset – these include axle load norms; axle shift for heavy goods.
- Considering changes in trends of segmentation over time and making suggestions for changes in exemptions in the future
- Preparing traffic and revenue forecast for the Asset for the complete length of concession. The analysis here includes the specific impacts of network, or other exogenous factors specific to the Asset. We have developed a set of forecasting assumptions for three scenarios: a base case and upside and downside scenarios.

Contents of this report

1.8 The report has been divided into the following chapters, including Chapter 1 providing an introduction:

- Chapter 1 introduces the methodology and approach to undertake the traffic and revenue due diligence;
- Chapter 2 describes the key characteristics of the Asset and its surrounding road network, primarily based on site visits;
- Chapter 3 summarises the current and historical traffic on the Asset, including results from the TMS, TVC and OD analysis;
- Chapter 4 presents the socio-economic context of the corridor and region/state containing the Asset, along with our approach and results on estimating background traffic demand growth; and
- Chapter 5 presents our baseline year forecast and summarises our results on estimating background traffic demand growth
- Chapter 6 summarises our assessment of network impacts and presents concession traffic and revenue forecasts for the Asset along with the assumptions for upside and downside cases.

2 The Asset

Introduction

2.1 This chapter provides a description of the Asset, based on concession agreement, site observations, our understanding of the region and network surrounding the Asset. We cover the strategic network context, followed by key economic activities and network developments around the Asset.

Strategic network

2.2 The Asset is situated in the state of Rajasthan, connecting the state capital Jaipur to Mahua on the east, near the border of Rajasthan with Uttar Pradesh (UP). The Asset carries considerable passenger volumes between the three nodes of India's Golden Triangle - Delhi, Jaipur and Agra engaged in tourism and related activities. Figure 2.1 shows the regional road network in which the Asset is located.

Figure 2.1: Asset location in the regional network context

Source: Steer cartography using OpenStreetMap data

2.3 This Asset primarily caters to three types of strategic movements:

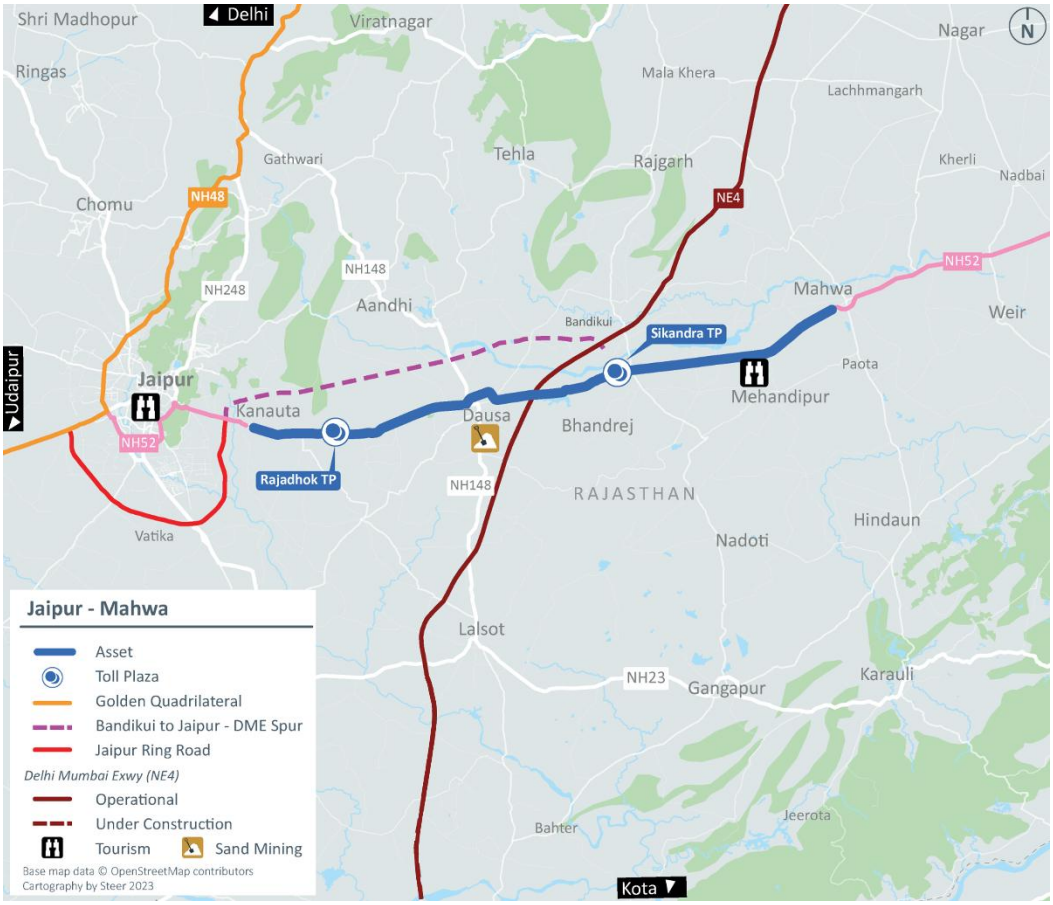
Short-distance trips including tourism and leisure trips between some of the key tourist destinations in India. Such trips are mostly comprising of CJVs which are either local or run between key tourist locations of Agra and Bharatpur at one end and Jaipur on the other.

Medium-distance trips between Rajasthan and Uttar Pradesh connect marble and sandstone processing sites of Rajasthan to its consumption sites in Uttar Pradesh. The Asset also transports significant number of manufactured products across the states of UP and Rajasthan.

Long-distance trips between Gujarat and southern Rajasthan, and UP/East India connects ports and industries of western India to major consumption and production centres in North India.

2.4 The Asset is a 109.09-km toll road which forms a part of the NH 21 (Jaipur – Agra – Bareilly) in Rajasthan and Uttar Pradesh. It is a four-lane Asset with two toll plazas, namely, Sikandra (TP1) at Km 156.6 (closer to Mahua) and Rajadhok (TP2) at Km 204.7 (closer to Jaipur). Figure 2.2 provides a closer view of the Asset in the context of its immediate surroundings and location of toll plazas.

Figure 2.2: Asset context



Source: Steer cartography using OpenStreetMap data

Concession and tolling details

2.5 The toll plazas on the Asset have been operational since April (TP1) and September (TP2) 2009 and the Client took over its operations in May 2015. There are 6 years left in the concession period which ends in FY32. Table 2.1 table presents a summary of the concession.

Table 2.1: Summary of concession

Particulars	Details
State	Rajasthan
Highway and lane configuration	NH 21 four lane
Toll plazas	• TP1: Sikandra • TP2: Rajadhok
Length (km) as per concession agreement, applicable	• TP1: 54.73 km • TP2: 54.36 km
Commencement of operations	• TP1: April 2009 • TP2: September 2009
Operated by Client since	May 2015
Concession period	25 years
Last year of concession	FY32

Source: Client data

2.6 The figure below shows a typical cross-section of the Asset and its toll plazas.

Figure 2.3: Toll plazas on the Asset

Source: Steer site visit

2.7 The tolls on the Asset are collected for following vehicle categories with rates as shown in Table 2.2. The toll plazas have dedicated ETC/FASTag lanes for electronic tolling.

Table 2.2: Single toll rates on the Asset (INR), applicable in FY26

Type of Vehicle	Single Journey Fee	
	TP1 Sikandra	TP2 Rajadhok
CJV	80	80
LCV	140	140
Bus/Truck	285	280
3A/MAV	455	450
HCM/EME/OSV	455	450

Source: NHAI Revision of User fee Rate w.e.f 01.07.2025

2.8 The Asset currently issues tickets including single, local commercial, monthly, and local personal under NHAI concession. There are no return tickets issued on either of the two toll plazas, but TP2 Rajadhok plaza issues local passes. The local personal ticket category is a discounted single-entry pass issued to trips originating within 10kms of the Asset. Whereas local commercial is another single-entry discounted pass issued at the Asset Plaza to commercial vehicles registered within the Asset district. Further, detailed information on this have been provided in Chapter 3 of the report.

Key economic activities

2.9 Rajasthan is the largest state in India by area, sharing borders with five major states- Uttar Pradesh, Haryana, Punjab, Madhya Pradesh and Gujarat. It is rich in natural resources particularly minerals and produces about 57 different minerals.[1] Predominantly an agrarian economy and a major producer of grains, oilseeds and edible oil, the recent

[1] http://www.mines.rajasthan.gov.in/dmgcms/page?menuName=YzCjPSj/AU7RGgRfpUoY5A==#:~:text=Rajasthan%20is%20the%20richest%20state,zinc%20ores%2C%20selenite%20and%20wollastonite.

times has seen a high rise in the service sector growth wherein the sector contributed to 45% to state's GSDP in 2024-25 followed by agriculture at 30% and industries at 25%.[2]

Urban centres, business and tourism

2.10 The state of Rajasthan and its bordering cities in UP (e.g. Agra and Mathura) are known for their tourist destinations. This contributes significantly to high passenger traffic volumes both within cities and on highways. The Bharatpur area with the Keoladeo Ghana National Park is a major attraction for tourists, known for its birds. The capital city of Jaipur, located on one end of the Asset, is a thriving urban city which is the main centre of administration, governance, culture, education, business, and service sector in the state. It is a prominent tourism destination contributing majorly to the flourishing hospitality industry in the state. This reflects in considerable passenger volumes between the three nodes of India's Golden Triangle - Delhi, Jaipur and Agra – observed on the Asset engaged in tourism and related activities. In recent times, the city has also emerged as a promising hub for global outsourcing and IT industry. Jaipur's strategic location on the golden quadrilateral connects it with major industrial, agricultural, and cultural centres of Chennai, Kolkata, Delhi, and Mumbai.

Marble, cement, and sand

2.11 The State is also a leading producer of Masonry stone with around 136.1 million tonnes of production in FY24.[3] Places like Kishangarh, Kota and Dausa produce stone and sand, apart from being a hub of major marble processing centres, with a history of supplying marble to the rest of India.

2.12 Rajasthan accounts for 70 per cent of the country's stone production. There are 4,920 mining leases in the state[4]. Rajasthan produces 90 percent of the marble and sandstone in the country. In terms of Granite, in FY24 Rajasthan produced more than 10.4 million tonnes compared to 9.3 million tonnes in FY23[5]. This is due to the increased export demand from countries like US, China and Europe.

2.13 Sandmining in India has long faced issues of corruption involving local mafias and a lack of proper implementation of mining policies by the government. In November FY18, when Supreme Court order ruled the requirement of environmental clearances for all sand mines, including those less than five hectares of size, there was a reported drop in traffic carrying construction-related commodities on the Asset, particularly sand. However, in 2020, following the implementation of the Major and Minor Mineral Policy, the mining industry in the state was regularized by imposing a ban on illegal mining activities. Additionally, sand mining leases were reduced to two years, with an improved replenishment cycle. The policy also mandated the use of 25% M-Sand (manufactured sand) as an alternative to riverbed sand for construction activities in Rajasthan.

2.14 After the policy implementation, the combination of reduced legalized sand mining, award of leases, and increasing demand for construction material for local activities led

[2]MoSPI data

[3]**Minor mineral production in Rajasthan**

[4] **70% of stone production in India comes from Rajasthan: RIICO Chairman (knnindia.co.in)**

[5] **Granite production in Rajasthan**

to a continued demand for sand and other construction materials in the region. In terms of lease tenure related to this commodity within the Rajasthan mining policy:

- Sand mining leases- 2 years (re-award of new leases after 2 years): Additionally, to reduce illegal mining and allow for the full replenishment cycle of rivers in the region, the state government has reduced the validity of sand mining leases from the existing five years to two years.
- Aggregate mining leases- 5 years (re-award of new leases after 5 years)

2.15 While the main sand mining policy came in 2020, a revised version is issued in 2024. in which the Rajasthan government introduced the Rajasthan Mineral Policy 2024 and the M-Sand Policy 2024 to address illegal mining and promote sustainable practices. To strengthen enforcement, 27 monitoring teams were deployed across the state. Therefore, there is no ban on sandmining/construction material mining; however illegal mining is prohibited.

Alternate Routes

2.16 For long-distance trips connecting Gujarat and southern Rajasthan to Uttar Pradesh and other eastward states, there is an alternative route along NH 27 that joins Udaipur and Kanpur via Chittorgarh-Kota-Jhansi. Majority of travel patterns are already well established and the choice between using NH27 vs. NH48 and the Asset for east-west movements has been established over a number of years. However, for a small proportion of traffic on NH27; the route via the Asset is expected to become more attractive as the key feeders of the Asset improve.

2.17 The Dausa-Lalsot corridor connects to the Asset between the two toll plazas. It acts as a feeder to the Asset. For medium-distance trips between southern Rajasthan and east of Dausa, there is an alternate road that bypasses TP2 Rajadhok through the Tonk-Lalsot-Dausa connection. This corridor is operational since 2021 with a positive impact of increasing traffic on Sikandra plaza of the Asset with a slight traffic dip on Rajadhok plaza. This traffic started appearing on the Asset in FY23 volumes and no further adjustments have been made to the traffics.

Delhi-Mumbai Expressway

2.18 The Delhi-Mumbai Expressway is a 1290-KM long greenfield expressway that is being developed to provide an improved 8-lane route to long-distance traffic between North India to Mumbai. The competing movements which may choose to take the DME are as follows:

1. Traffic originating near Lalsot destined to Alwar
   i. Vehicles making trips between Lalsot and Alwar, which earlier made the trip via Dausa – Sikandra – Mahwa – Laxmangarh – Alwar, now has an alternative available in the form of the DME which provides direct connectivity from Lalsot – Dausa – Alwar via NE4.
2. Traffic originating near Lalsot destined to Faridabad/North
   i. Trips originating near Lalsot destined to regions in Faridabad/north including Delhi, Ghaziabad, Gurugram, which earlier made the trip via Dausa – Sikandra – Bharatpur – Mathura via SH33 – Faridabad, will now have an alternative route available.

ii. The alternative route will materialise as a conjunction of the DME and the Faridabad bypass. It will provide connectivity from Dausa – NE4 – Faridabad bypass at Kaligaon.
iii. By virtue of the route being supplemented by the Faridabad bypass, traffic destined to Delhi and north will get access to smoother passage by being able to avoid entering the city altogether.
iv. In addition, the Bandikui spur provides an alternate to traffic between Jaipur and north India as well as east-west movement between Agra/Firozabad and Jaipur. Such trips can avoid Rajadhok toll plaza by entering Jaipur via the Bandikui spur.

2.19 A few sections of the greenfield expressway have been made operational with Sohna-Dausa-Lalsot section (Feb'23), Madhya Pradesh section (Sep'23), Vadodara-Bharuch section (Feb'24), Lalsot-Sawai-Madhopur section (Feb'24) and the Kota-Bundi Section (Dec'24) already being operationalised. Additionally, the Bandikui spur opened in August 2025 [6], leading to a traffic dropping on TP2 Rajadhok, since the spur acts as an effective alternate route for vehicles travelling to/from Jaipu, thereby bypassing the Delhi-Jaipur NH48 section to reach Jaipur directly

2.20 The potential shift of traffic that was expected on this stretch has already been witnessed on TP1 Sikandra in goods vehicles, due to the operationalisation of the initial sections. The NE4 in conjunction with the Faridabad bypass now provides a better alternative to vehicles moving between Lalsot, Jaipur, Faridabad, Delhi, Gurugram, etc. However, Sikandra has seen an increase in CJV volume due to the presence of famous temples near Sikandra, therefore CJV traffic from DME is crossing the Sikandra plaza to visit the popular pilgrimage destination Shri Khatu Shayam Temple and Mehendipur Balaji Temple.

2.21 In absence of an official update on the construction status of DME, based on the publicly available information, the section wise update on the Delhi Mumbai Expressway section is given below:

Table 2.3: Section Wise Delhi Mumbai Expressway status

S. No	Section	Length (in km)	Sub-Section	State	Status	Expected Data of Completion
1	Delhi-Faridabad-KMP	59	Faridabad-KMP	Delhi, Haryana	Operational	Opened Nov'24
2	Sohna-KMP-Vadodara	844	Sohna – Sawai Moadhopur	Haryana	Operational	Opened Sept'23
			Sawai-Madhopur-Jhalawar	Sawai-Madhopur-Jhalawar	Under Construction	Operational under trial on one side.
			Jhalawar-Timarwani	Jhalawar-Timarwani	Operational	Opened Sept'23

[6] Bandikui-Jaipur Expressway open to public, cuts Delhi-Jaipur travel time to 3 hours| India News

S. No	Section	Length (in km)	Sub-Section	State	Status	Expected Data of Completion
			Timarwani-Vadodara	Madhya Pradesh, Gujarat	Under Construction	Expected Dec 2026 (90% construction completed)[7]
3	Vadodara – Virar	354	Vadodara-Bharuch	Gujarat	Operational	Opened Feb'24
			Bharuch-Virar	Gujarat, Maharashtra	Under Construction	Expected in early 2028[8]
4	Virar- JNPT	92	Virar- JNPT	Maharashtra	Under Construction	Expected FY28
Spur Development						
5	Jaipur – Bandikui Expressway	67	Jaipur – Bandikui	Rajasthan	Operational	Operational since July 2025

2.22 No major micro-diversions through local roads were observed close to the toll plazas.

[7] https://deshgujarat.com/2025/07/25/delhi-mumbai-expressway-in-gujarat-latest-section-wise-progress-update/

[8] https://deshgujarat.com/2025/05/31/delhi-mumbai-expressway-in-gujarat-section-wise-progress-update/.

3 Traffic description

Introduction

3.1 This chapter outlines the historical and current traffic and revenues on the Asset, as well as our analysis of origin-destination (OD) data and traffic volume count (TVC) data. This includes data collected as a part of this study and previous studies of this Asset, as well as data provided by the Client.

3.2 Traffic data is generally collected and analysed to understand the volume and vehicle composition of traffic currently using the Asset, while OD data is used to obtain a better understanding of commodity movements, travel patterns, trip lengths, trip purposes and areas of influence in the vicinity of the Asset as well as the commodities being moved by the goods vehicle. This analysis, combined with our understanding of the Asset (based on our site visits), enables us to identify the key drivers of demand on the Asset.

3.3 Actual toll plaza data is used as the basis from which the current/base year annual average daily traffic (AADT) is established. This data is typically provided by the Client and independently analysed and validated by us using traffic volume count (TVC) information.

3.4 The below sections present historical traffic and revenue information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.

PCU factors considered for reporting

3.5 The PCU values have been taken from 'IRC 64:1990- Guidelines for Capacity of Roads in Rural Areas'. For MAV, based on the discussion with the Client, we have referred to the rigid and trailer splits in the latest TVC counts conducted in 2023 for calculating the effective PCU for MAVs. For rigid trailer trucks we have assumed a PCU factor of 3, whereas for trailer trucks we have assumed a PCU factor of 4.5. These factors have been used to arrive at the PCU values presented in the following sections.

Table 3.1: PCU factors

Vehicle Category	PCU Factor
CJV	1.0
Mini LCV	1.0
LCV	1.5
Bus/2A/3A	3.0
MAV	4.15
OSV	4.5

Source: Steer analysis and IRC64,1990

Historical trends

3.6 The following table presents the historical variation in traffic volume at both the Asset plazas, in terms of total AADT, vehicle shares and yearly volume growth. TP1 Sikandra started operation in April FY10 while TP2 started September FY11. The table below shows the traffic evolution on TP1 and TP2 for recent years FY16-26YTD.

Table 3.2: Historical evolution in AADT by vehicle class at TP1 – Sikandra

Class	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY16-26
CJV	6,613	6,299	6,541	6,663	6,744	7,402	8,356	10,046	10,588	11,580	11,993	6.1%
LCV	1,547	1,519	1,249	1,206	1,135	709	428	424	373	364	352	(13.8%)
Bus/2A	1,320	1,291	1,664	1,656	1,658	1,512	1,880	2,124	2,166	2,353	2424	6.3%
3A/MAV	3,671	3,900	4,297	3,679	3,692	3,930	3,947	3,896	3,814	3,933	4,070	1.0%
OSV	-	-	-	-	-	-	-	-	-	-	-	-
Total	**13,151**	**13,009**	**13,751**	**13,204**	**13,229**	**13,553**	**14,611**	**16,490**	**16,940**	**18,230**	**18,839**	**3.7%**
PCU	**28,116**	**28,624**	**31,226**	**28,696**	**28,730**	**29,297**	**31,006**	**33,210**	**33,460**	**35,496**	**36,669**	**2.7%**

Source: Steer analysis of Client data; FY26 AADT represents the full year actual (April to March); Note: On this toll plaza, we have 3A/MAV combined volumes. However, for PCU calculations, to maintain consistency, we have used the shares derived from the latest TVC on the plaza

Table 3.3: Historical evolution in Tollable AADT by vehicle class at TP1 – Sikandra

Class	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY16-26
CJV	5,195	5,093	5,565	5,980	6,287	6,909	7,974	9,644	10,159	11,118	11,551	8.3%
LCV	1,460	1,413	1,154	1,125	1,078	686	412	414	364	355	347	(13.4%)
Bus/2A	1293	1245	1650	1640	1647	1495	1865	2,048	2,112	2,335	2,414	6.4%
3A/MAV	3,615	3,776	4,270	3,655	3,678	3,928	3,931	3,881	3,800	3,917	4,064	1.2%
OSV	-	-	-	-	-	-	-	-	-	-	-	-
Total	**11,563**	**11,527**	**12,639**	**12,400**	**12,690**	**13,019**	**14,182**	**15,988**	**16,435**	**17,725**	**18,377**	**4.7%**
PCU	**26,254**	**26,606**	**29,953**	**27,744**	**28,097**	**28,711**	**30,488**	**32,694**	**32,914**	**34,898**	**36,166**	**3.3%**

Source: Steer analysis of Client data; FY26 AADT represents the full year actual (April to March); tollable traffic excludes exemptions and violations

Table 3.4: Historical evolution in AADT by vehicle class at TP2 – Rajadhok

Class	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY16-26
CJV	8,205	8,375	8,921	8,641	8,691	8,982	9,686	11,764	16,447	18,299	14,487	5.9%

Class	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY16-26
LCV	1,335	1,388	1,293	1,190	1,086	663	416	442	461	484	398	(11.4%)
Bus/ 2A	1248	1230	1547	1474	1441	1242	1521	1797	2124	2,418	2,204	7.6%
3A/ MAV	2,675	2,650	2,763	2,548	2,550	2,713	2,725	2,737	3,331	3,553	3,052	1.3%
OSV	-	-	-	-	-	-	-	-	-	-	-	-
Total	**13,404**	**13,398**	**14,524**	**13,853**	**13,788**	**13,631**	**14,349**	**16,740**	**22,363**	**24,753**	**20,141**	**4.1%**
PCU	**25,106**	**25,362**	**26,959**	**25,414**	**25,200**	**24,925**	**26,173**	**29,180**	**37,324**	**41,011**	**34,352**	**3.2%**

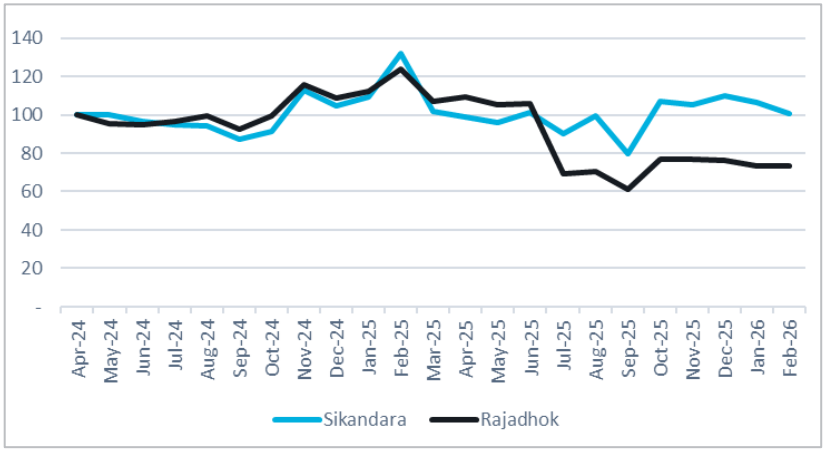
Source: Steer analysis of Client data; FY26 AADT represents the full year actual (April to March); Note: On this toll plaza, we have 3A/MAV combined volumes. However, for PCU calculations, to maintain consistency, we have used the shares derived from the latest TVC on the plaza.

Table 3.5: Historical evolution in Tollable AADT by vehicle class at TP2: Rajadhok

Class	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY16-26
CJV	7,134	7,324	8,148	8,191	8,291	8,541	9,419	11,432	16,004	17,714	14,471	7.3%
LCV	1,291	1,331	1,266	1,173	1,075	647	406	435	455	476	397	(11.1%)
Bus/2A	1224	1189	1531	1460	1434	1227	1508	1,599	1,999	2,399	2,204	6.1%
3A/MAV	2,658	2,630	2,753	2,536	2,541	2,706	2,720	2,730	3,324	3,543	3,052	1.4%
OSV	-	-	-	-	-	-	-	-	-	-	-	-
Total	**12,307**	**12,474**	**13,698**	**13,359**	**13,340**	**13,121**	**14,053**	**16,196**	**21,783**	**24,131**	**20,125**	**5.0%**
PCU	**23,765**	**23,793**	**26,056**	**24,847**	**24,742**	**24,414**	**25,831**	**28,202**	**36,467**	**40,317**	**34,335**	**3.7%**

Source: Steer analysis of Client data; FY26 AADT represents the full year actual (April to March); tollable traffic excludes exemptions and violations

Figure 3.1: Passenger Traffic trends on the Asset in FY25 and FY26



Source: Steer analysis of Client data

3.7 In terms of vehicle composition, CJVs are biggest contributor on the Asset with a share of over 60% on TP1 and 70% on TP2, in FY26. Traffic growth on TP2 Rajadhok plaza of this Asset has been stronger than TP1 and is driven by the rapid car growth influenced by the urban characteristic of Jaipur which generates heavy daily passenger trips.

3.8 Additionally, there was a notable rise in car volumes during Jan'25, as seen in Figure 3.1 above, driven by increased travel to the 2025 Maha Kumbh Mela in Prayagraj [9]. As a result, passenger traffic on the Asset witnessed a substantial increase in pilgrim-related volumes during Jan 2025 on both toll plazas

3.9 At TP1 Sikandra, the 8.3% CAGR in tollable AADT for CJVs can be attributed to pilgrimage-related traffic to and from popular pilgrimage destinations such as Shri Khatu Shyam Temple and Mehandipur Balaji Temple.

3.10 Rajadhok, on the other hand, recorded a healthy growth across all vehicle categories between FY16 and FY25. However, in FY26, Rajadhok saw a 16.2% drop in traffic in PCU terms from FY25. This is attributable to the opening of the Bandikui spur. The spur provides an effective alternate route for traffic travelling between Jaipur and Delhi NCR via the DME and allows traffic to bypass TP2 completely.

3.11 Additionally, although 2A and Buses share the same toll rate, the current TMS reports them as separate categories. In contrast, 3A and MAV are combined into a single category. However, post FASTag implementation there has been a reclassification of Buses and 2As which are now tolled basis their vehicle mapping. To accurately assess the historical growth of these categories and adjust for any discrepancies due to this reclassification, we have combined the 2A and Bus categories for our analysis.

3.12 To further validate individual growth of each category (Bus/2A/3A/MAV), we conducted independent counts at various points in time to ensure the true representation of individual volumes for the asset. The results of the split are presented in the 'Key findings of the TVC data analysis' section of Chapter 3 of the report. Therefore, the split that we have derived from our counts is the split we are using in our projection to forecast the growth of each individual category for this Asset.

Historical Revenue

3.13 Table 3.6 presents the reported historical revenue of the Asset.

Table 3.6: Historical revenue collection (in INR crores) and AADC (in INR Lakh) :

		FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR (FY16-26)
TP1	Total	66.1	64.0	78.7	74.2	79.1	77.3	94.9	109.0	114.0	120.5	127.9	-
	AADC	18.1	17.5	21.5	20.3	21.6	21.2	25.9	29.9	31.1	33.0	35.0	6.8%
TP2	Total	56.2	53.3	63.9	62.5	64.4	61.1	74.2	89.0	120.8	132.7	113.5	-
	AADC	15.4	14.6	17.5	17.1	17.6	16.7	20.3	24.4	33.0	36.3	31.1	7.3%

[9] **The Maha Kumbh Mela, held once every 144 years, is regarded as a once-in-a-lifetime spiritual event, significantly influencing regional traffic patterns.**

	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR (FY16-26)
Total(Cr)	122.4	117.3	142.5	136.7	143.5	138.4	169.0	198.0	234.8	253.2	241.4	7.0%

Source: Steer analysis of the Client data. FY26 represents full year actual (April to March).

3.14 The Asset has demonstrated a strong total revenue CAGR of 7.0% between FY16 and FY26. This growth can be attributed to various factors, including increased traffic volumes resulting from network enhancements including operationalisation of DME till Lalsot in Feb'23 which led to positive traffic increase. The gradual increase in revenue post-FY23 is due to post-pandemic recovery, as discussed earlier.

3.15 The opening of the Bandikui spur in August 2025, which allows traffic to bypass TP2 Rajadhok and directly enter Jaipur – led to a ~14.4% decrease in average daily collections (from INR 36.3 lakhs in FY25 to INR 31.1 lakhs in FY26).

Toll Frequencies

3.16 Table below shows the toll segmentation assumed for the period of forecast. The following are the types of tickets being sold at the plazas of the Asset.

Table 3.7: Typical ticket types sold at NHAI plazas

Category	Description
Single	Allows the vehicle to cross the toll plaza once
Local Personal	Discounted single entry pass only for private cars of residents within 10km radius of toll plaza
Local Commercial	50% discount on single trips for commercial vehicles registered in the local district. This pass allows single entry only
Exemptions	Officially exempted vehicles like ambulance, police cars, key political personnel etc.

3.17 In addition to the above ticket categories, a special category pass of "Monthly" is also being sold on Rajadhok plaza the Asset for CJV and LCV vehicle category. Under this, the user is charged 1/3rd the fee of Single ticket applicable on the plaza for 50 allowed trips.

Traffic Segmentation

3.18 CJV segmentation observed on the Asset remained stable between FY20 and FY25, with the share of single trips observed to be in the range of 91%-94% for TP1 and 87%-92% for TP2. However, the introduction of annual passes for CJVs in August 2025 by the NHAI has led to the respective shares being 78% and 76% as of FY26YTD. The rapid adoption of the pass can be seen by the 17% and 16% shares observed at TP1 and TP2 respectively, over the same period.

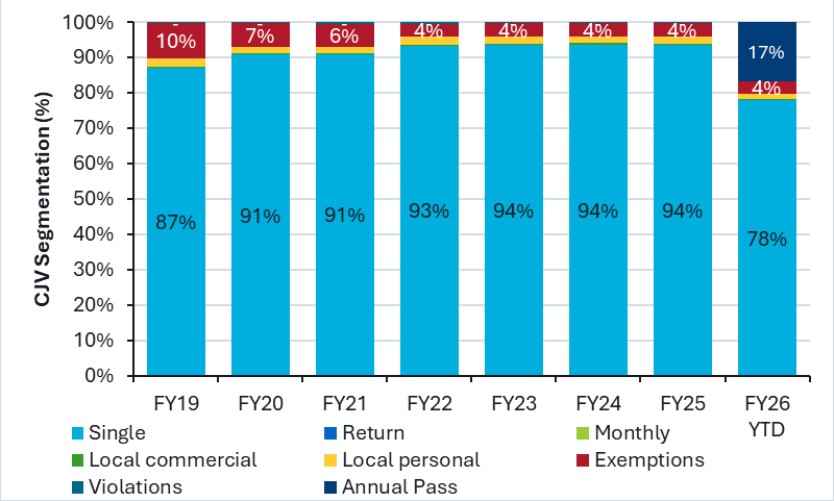
3.19 It is important to note that the Asset does not offer a return ticket option, which explains the disproportionately high proportion of single-ticket transactions in the toll segmentation. Furthermore, CJVs operating on the Asset typically undertake short- to medium-distance trips, generally within a 300 km radius, as reflected in the OD analysis (Figure 3.16 and Figure 3.17) below

3.20 It is also observed that for CJVs there has been a steady decline in the number of exemptions reported on the Asset starting FY16 towards FY26YTD from 10% to 4% at TP1

and 10% to 4% at TP2. This decline can be attributed to the local nature of the Asset and its proximity to the tourist city of Jaipur, which experiences heavy daily traffic movement.

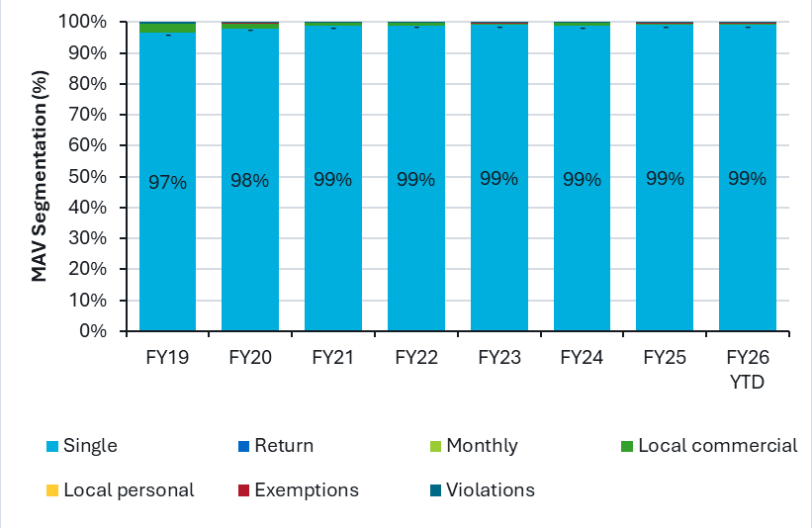
3.21 Figure 3.2 through Figure 3.5 below present the toll segmentation for the historical years FY19- FY26 YTD at TP1 Sikandra and TP2 Rajadhok for CJVs and MAVs. Table 3.8 through Table 3.13 below present the same for all other vehicle categories.

Figure 3.2 Ticket-segmentation for CJV at TP1 Sikandra



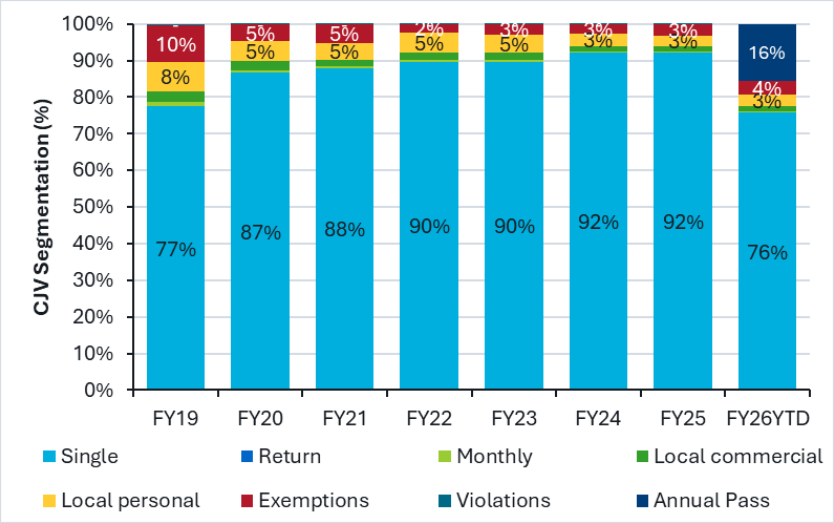
Source: Steer analysis of the Client data, FY26 YTD includes 11 months of data from Apr-Feb'26

Figure 3.3 Ticket-segmentation for MAV at TP1 Sikandra



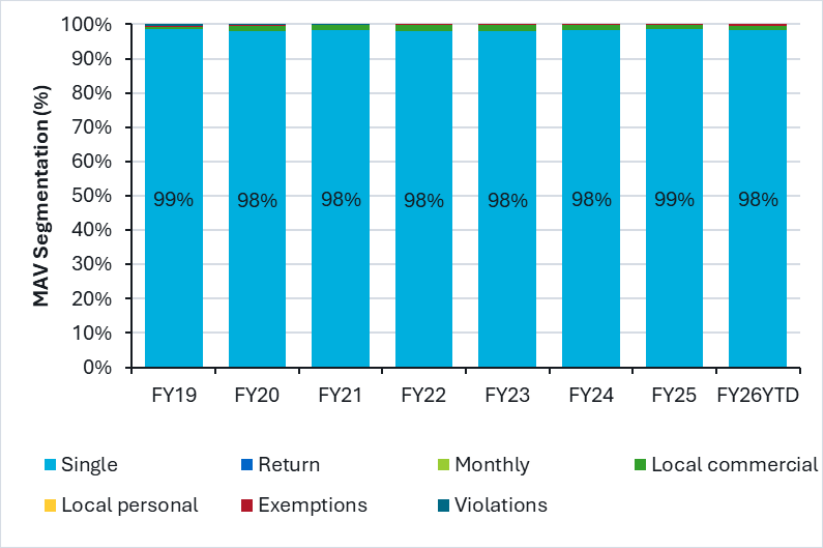
Source: Steer analysis of the Client data, FY26 YTD includes 11 months of data from Apr-Feb'25

Figure 3.4 Ticket-segmentation for CJV at TP2 Rajadhok



Source: Steer analysis of the Client data, FY26 YTD includes 11 months of data from Apr-Feb'26

Figure 3.5: Ticket-segmentation for MAV at TP2 Rajadhok



Source: Steer analysis of the Client data, FY26 YTD includes 5 months of data from Apr-Feb'26

3.22 Most MAVs at both TP1 and TP2 are observed to have high shares of single tickets with the share of MAVs buying single tickets, reaching as high as 99% at TP1 and 98% at TP2 in FY26YTD in line with previous years. This reflects the long-distance and through nature of heavy truck movement on the Asset. The high share of single ticket type is due to other tickets such as return and monthly being not available as per the toll notification. As expected, there is a negligible share of violations for MAVs.

Table 3.8: Historical ticket segmentation at TP1 Sikandra (LCVs)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26YTD
Single	86.7%	90.0%	94.5%	94.5%	95.6%	96.0%	95.9%	97.0%
Local commercial	6.5%	4.5%	2.0%	2.4%	2.1%	1.5%	1.6%	1.6%
Violation	0.1%	0.1%	0.1%	0.5%	0.1%	0.1%	0.2%	0.0%

Exemption	6.7%	5.4%	3.3%	2.6%	2.2%	2.5%	2.3%	1.4%

Table 3.9: Historical ticket segmentation at TP1 Sikandra (Bus)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26YTD
Single	98.4%	98.8%	98.6%	99.4%	99.4%	99.2%	98.5%	99.2%
Local commercial	0.9%	0.8%	0.3%	0.4%	0.5%	0.5%	0.7%	0.7%
Violation	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
Exemption	0.6%	0.4%	1.0%	0.2%	0.1%	0.3%	0.6%	0.1%

Table 3.10: Historical ticket segmentation at TP1 Sikandra (2 Axle)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26YTD
Single	97.4%	97.5%	95.1%	89.3%	94.1%	96.1%	98.5%	98.3%
Local commercial	1.2%	0.8%	1.7%	4.9%	2.4%	1.4%	0.7%	0.9%
Violation	0.2%	0.2%	0.1%	0.0%	0.0%	0.1%	0.1%	0.0%
Exemption	1.2%	1.4%	3.1%	5.7%	3.6%	2.4%	0.6%	0.8%

Source: Steer analysis of the Client data, FY26 YTD includes 11 months of data from Apr'25-Feb'26

Table 3.11: Historical ticket segmentation at TP2 Rajadhok (LCV)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26YTD
Single	80.0%	82.6%	87.4%	76.0%	77.5%	80.9%	84.7%	82.6%
Local commercial	16.0%	12.8%	7.8%	17.0%	16.7%	15.7%	13.4%	16.1%
Monthly	1.9%	3.1%	2.1%	5.1%	4.4%	2.1%	0.3%	-
Violation	0.3%	0.1%	0.2%	0.2%	0.1%	0.2%	0.0%	0.0%
Exemption	1.8%	1.4%	2.5%	1.7%	1.3%	1.1%	1.5%	1.2%

Table 3.12: Historical ticket segmentation at TP2 Rajadhok (Bus)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26YTD
Single	93.4%	95.6%	96.6%	97.3%	97.5%	97.8%	97.4%	97.8%
Local commercial	6.1%	4.2%	2.5%	2.6%	2.5%	2.1%	1.8%	2.1%
Violation	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Exemption	0.4%	0.2%	0.9%	0.1%	0.0%	0.2%	0.8%	0.1%

Table 3.13: Historical ticket segmentation at TP2 Rajadhok (2 Axle)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26YTD
Single	92.5%	92.5%	88.4%	77.7%	79.1%	89.5%	97.4%	97.7%
Local commercial	4.1%	4.3%	5.5%	14.4%	9.8%	4.6%	1.8%	0.7%
Violation	0.2%	0.4%	1.2%	0.1%	0.0%	0.0%	0.0%	0.0%

Exemption	3.2%	2.7%	4.9%	7.8%	11.0%	5.9%	0.8%	1.6%

Source: Steer analysis of the Client data, FY26 YTD includes 11 months of data from Apr'25-Feb'26

Overloading

3.23 The Asset being a part of NHAI concession follows the NHAI Overloading policy released in 2016 which bans the overloading of commercial vehicle on any NHAI toll plaza. In case of non-compliance, overloaded vehicles on the Asset are charged twice the toll fee they would otherwise pay for a Single ticket at the toll plaza.

3.24 The plaza currently charges overloading under single and local commercial category. These shares are determined using the total single journey traffic and total local commercial traffic. Table 3.14 shows the share of overloaded vehicles until FY25YTD paying twice the Single journey toll fee on each toll plaza.

Table 3.14: Overloading shares at TP1 and TP2 (FY19-FY26YTD)

Overloading shares														
	TP1 Sikandra							TP2 Rajadhok						
	FY19	FY20	FY22	FY23	FY24	FY25	FY26 YTD	FY19	FY20	FY22	FY23	FY24	FY25	FY26 YTD
Single Overloading shares														
LCV	-	1.6%	5.9%	2.9%	1.8%	3.1%	1.8%	0.5%	2.0%	4.7%	3.5%	1.2%	1.4%	1.5%
2A	-	2.9%	16.8 %	4.9%	2.0%	4.3%	2.2%	0.4%	1.8%	20.8 %	5.6%	2.2%	3.0%	3.2%
3A/ MAV	-	4.5%	7.3%	3.5%	2.6%	4.2%	3.0%	0.7%	2.8%	6.7%	4.5%	4.1%	3.6%	2.5%
Local Commercial Overloading shares														
LCV	-	-	2.4%	1.7%	0.0%	0.0%	0.0%	-	-	-	0.1%	0.0%	0.0%	0.0%
2A	-	-	4.3%	4.6%	0.1%	0.3%	0.1%	-	-	0.5%	0.4%	0.0%	0.0%	0.0%
3A/ MAV	-	-	2.4%	16.2 %	0.1%	0.0%	0.0%	-	-	4.6%	1.4%	0.0%	0.0%	0.0%

Source: Steer review of Client TMS data, FY26 YTD includes 11 months of data from Apr-Feb'26

Data collection and validation

Overview

3.25 As mentioned previously, in order to validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset, comprising the surveys listed in Table 3.15 below. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas, which Steer also commissioned with a third party. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

Table 3.15: Data collection schedule

TP	4-day videography-based TVC			1-day OD survey	
	Start date	End date	Time (hrs)	Start date	State time

TP	4-day videography-based TVC			1-day OD survey	
TP1 Sikandra	26th June 2023	29th June 2023	0000-2359	26th June 2023	0800 hours
TP2 Rajadhok	17th February 2026	19th February 2026	0000-2359	17th February 2026	0800 hours

Source: Steer analysis

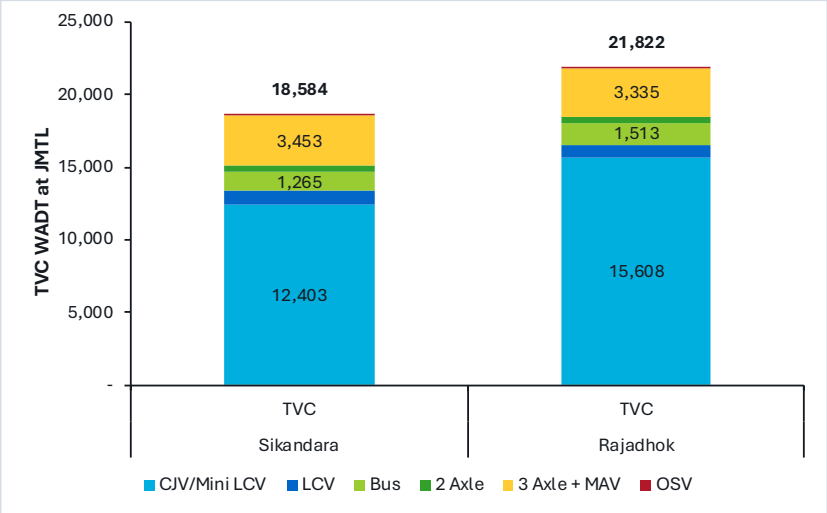
3.26 It should be noted that, in our experience, traffic on national highways shows variation across the week due to the economic activities surrounding each road. To derive a representative TVC count considering daily variation, three-day to seven-day traffic counts are generally recommended, and hence, in order to fully understand the impact of this weekly fluctuation on the Asset, we collected four-day counts at each toll plaza.

Key findings of the TVC data analysis

WADT estimates

3.27 Taking an average of the three-day TVC counts (26th June – 29th June 2023, 0000-2359 hours) at TP1 and at TP2 (17th Feb – 19th Feb 2026, 0000-2359 hours), we obtained the following weekly average daily traffic (WADT) for each toll plaza. This WADT excludes non-toll able vehicles such as tractors, two-wheelers, bullock-carts, etc., but includes officially exempt vehicles such as police cars, ambulances, emergency response vehicles, government vehicles and other vehicle types officially allowed as 'exempted' under the concession agreement.

Figure 3.6 WADT at TP1 and TP2



Source: Steer analysis of TVC data

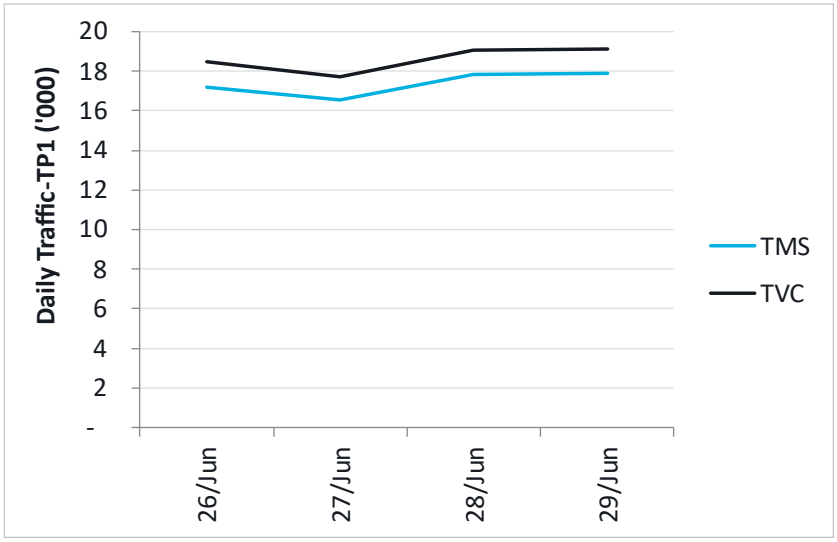
TVC v/s TMS analysis

3.28 As we use the TMS data to estimate the base year AADT, we have used our TVC data to validate the TMS data on those particular days, as provided by the Client.

3.29 The following figures show the comparison between the daily traffic observed by TVC and TMS for the two toll plazas. As shown in Figure 3.7 and Figure 3.8 below, the TVC and TMS

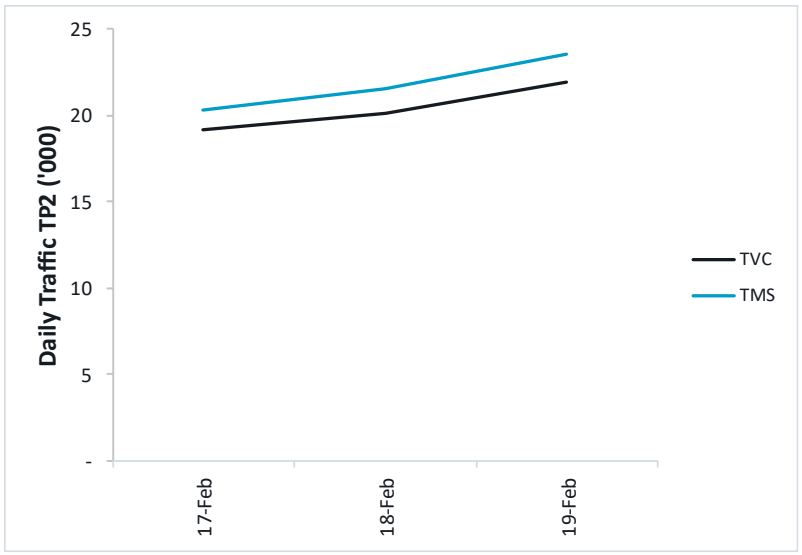
overall are within the acceptable range of variation. The vehicle category which is causing this variation is CJV which is attributable to a small proportion of local users who are not being captured by the TMS.

Figure 3.7 Comparison between TVC and TMS daily traffic data on TP1 Sikandra (2023)



Source: Steer analysis of TVC and Client TMS data

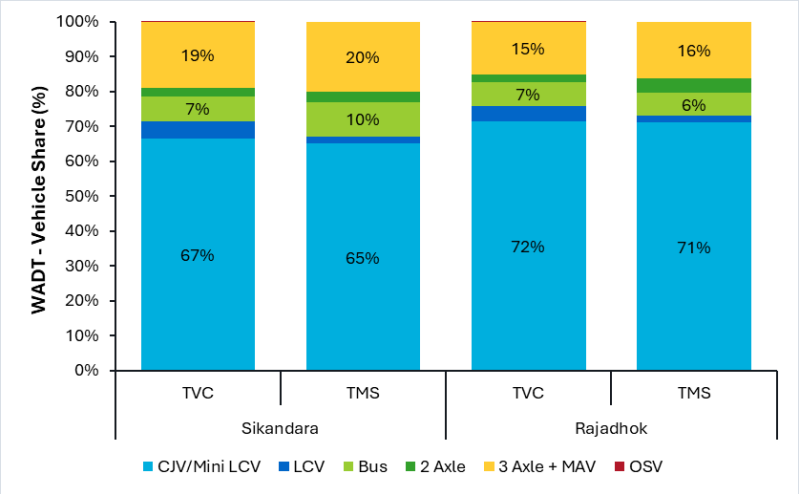
Figure 3.8: Comparison between TVC and TMS daily traffic data on TP2 Rajadhok (2026)



Source: Steer analysis of TVC and Client TMS data

3.30 The Figure 3.9 below compares the shares of vehicle types at both toll plazas observed by the TVC and TMS data. However, this difference varies across different vehicle categories. As can be seen, whilst the share of CJVs is higher for TVC compared to TMS, it is vice-versa for other vehicle categories. This difference can be attributed to common misclassification of vehicle categories as well as the TMS not recording a portion of the local mini LCVs.

Figure 3.9 Comparison between vehicle shares from TVC and TMS WADTs



Source: Steer analysis of TVC and Client TMS data

3.31 Considering the lower variation between the TVC and TMS data for the largest revenue generator 3A+MAVs, and an approximate match in the traffic volumes, the base year traffic calculated using the Client data has been used to estimate base year traffic.

3.32 As mentioned earlier, the current TMS reports 2A and Bus as separate categories. However, for comparison purposes, their volumes are being combined, as ETC single ticket 2A volumes have declined since March 2024, while Bus volumes have increased in a manner that suggests potential misclassification.

3.33 Therefore, the split that we have derived from our counts is the split we are using in our projection to forecast the growth of each individual category for this Asset.

Key findings of origin-destination analysis

Overview

3.34 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Asset. The OD analysis presented here is based on data collected on behalf of the Client in June 2023 at TP1 and February 2026 at TP2. More recent OD survey on TP1 was not undertaken as it has a long operational history and we did not believe material changes in these patterns would have occurred during this period.

3.35 We have analysed the regional drivers of demand based on the following analyses:

- Zonal influence
- Commodity distribution
- Top OD pairs
- Trip length distribution

3.36 While zonal analysis and the list of top OD pairs help to understand ‘where’ people and goods travel, commodity distribution sheds light on ‘what’ goods get transported on this Asset. Trip length distribution shows ‘how far’ vehicles and people travel, and goods get transported. This set of analysis is used to estimate key drivers of traffic and aid in making informed forecasting assumptions related to traffic demand elasticities, growth drivers and exogenous impacts.

Sample rates

3.37 Sample rates help understand the reliability of OD data. They are calculated by dividing OD samples captured by the traffic counts (based on the TMS data) during the same period. Table 3.16 below presents the sample rates for key vehicle type aggregations at both toll plazas. We believe that the sample rates of the OD data are reasonable for the analysis required and that the high sample rate for goods traffic at TP1 could be due to Mini LCV-CJV related difference in classification in the TMS data.

Table 3.16: Sample rates for OD data

Traffic type	TP1	TP2
Passenger (CJV+Bus)	19%	15%
Goods (LCV+2A+3A+MAV)	72%	46%

Source: Steer analysis of OD data

Zone categories

3.38 To facilitate better understanding of key regional traffic drivers as determined by their OD zones, and influenced by various towns, cities, states and regions in the vicinity of the Asset, we have aggregated zonal data as described in Table 3.17 below. The methodology behind this aggregation of zones may vary as per the characteristics displayed by the different Assets being studied.

Table 3.17: Zone aggregations for zonal influence analysis

Aggregate Zone	Description
Local	Local zones are those that fall on or very close to the Asset.
IAOI (Immediate Area of Influence)	IAOI zones are the locations which generate traffic and lie within approximately 75-150 km distance from the Asset.
Rest of Rajasthan	Rest of the cities/Districts in the state that Asset lies in (other than Local/IAOI)
Rest of Uttar Pradesh	Uttar Pradesh excluding parts of Uttar Pradesh which are a part of IAOI
Rest of North India	Uttarakhand, Haryana, Punjab, Jammu and Kashmir
Central NCR	Delhi State, including New Delhi
Gujarat & Maharashtra	Gujarat and Maharashtra (including Mumbai)
Central India	Madhya Pradesh, Chhattisgarh
South India	Tamil Nadu, Karnataka, Kerala, Andhra Pradesh
East & Northeast India	West Bengal, Orissa, Jharkhand and Northeast Indian states
Outside India	Nepal, Bhutan, Bangladesh

Zonal influence

3.39 The zonal influence is the contribution of the zone or the zonal aggregation to trips by a vehicle type. This section presents the zonal influence at each toll plaza of each Asset, based on zonal aggregation listed in the previous sub-section. it should be noted that zonal influence is analysed based on trip ends and not trips.

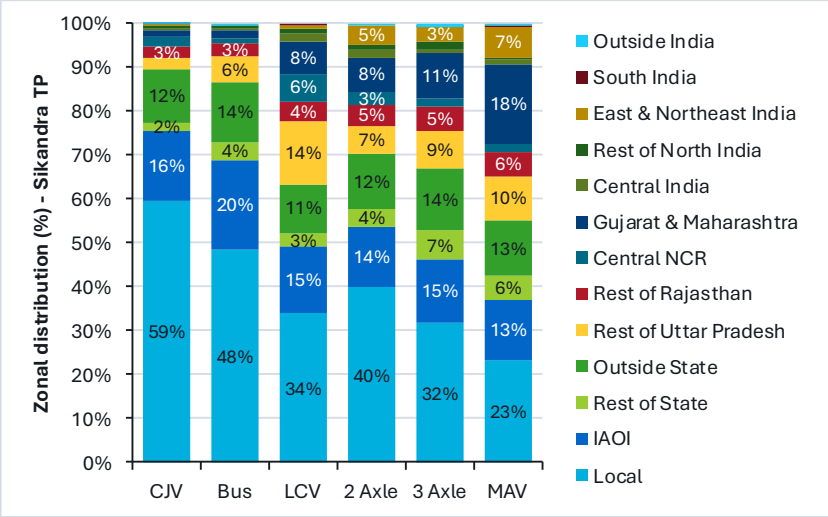
3.40 From Figure 3.10 and Figure 3.11 below, it can be seen that the influence of local + IAOI zones (trip ends in the Asset's proximity) has one of the highest shares across vehicle types. In terms of CJVs, TP1 and TP2 have a 75% and 65% share of such trips, while for MAVs, the corresponding figures are 36% and 31%. Analysing the two zone categories

separately, it is observed that as TP2 is closer to Jaipur and surrounded by an area of high urban population density, it results in a higher IAOI influence at the plaza.

3.41 In terms of MAVs, a substantial share of influence is observed from Uttar Pradesh (10% at TP1 and 15% at TP2); Gujarat & Maharashtra (18% each) as well as East & Northeast India (7% and 6% respectively)

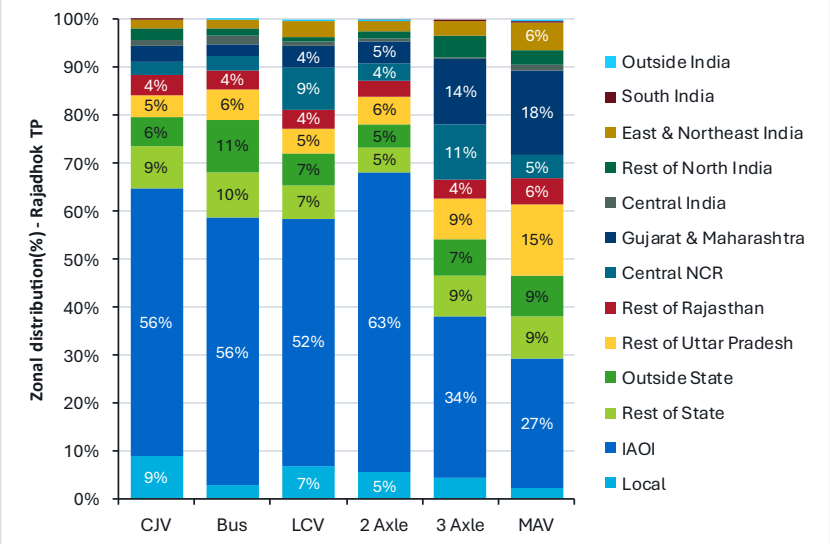
3.42 With DME becoming operational between Sohna and Dausa, the Rajadhok plaza has observed 6% of the Central NCR MAV traffic whereas Sikandra observes 2% of the Central NCR MAV traffic.

Figure 3.10 Zonal influence at TP1 Sikandra



Source: Steer analysis of OD data

Figure 3.11 Zonal influence at TP2 Rajadhok



Source: Steer analysis of OD data

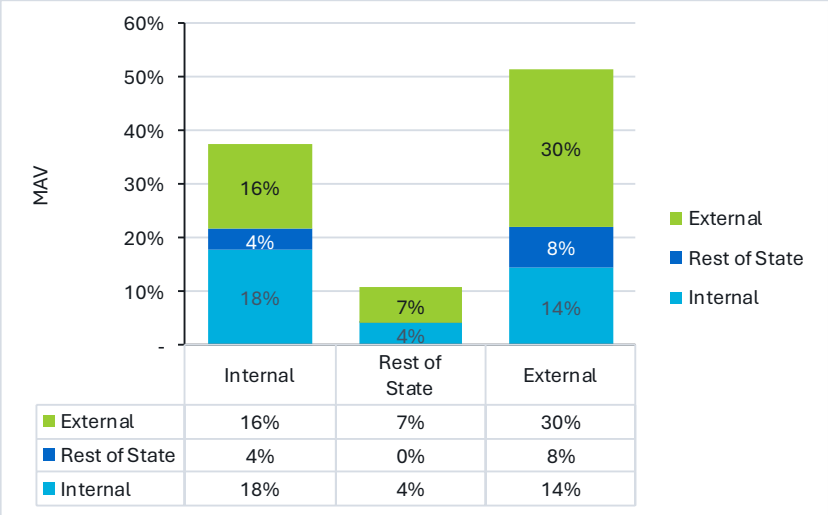
Internal External analysis

3.43 Internal-External analysis helps in identifying the trips which have both the origin and destination on or near the Asset i.e. local/IAOI zones (Internal-Internal or I-I), any one end on the Asset (Internal-External or I-E), or neither end on the Asset i.e. through trips (External-External or E-E). RoS here represents areas within the state which are neither local nor IAOI. 'Internal' zones are those that were analysed as 'local' and 'IAOI' in the zonal influence analysis, i.e. lying on the Asset, while 'External' zones are areas lying outside the state.

3.44 Figure 3.12 and Figure 3.13 below show the distribution of trips based on these categories. Understandably, these reflect the observations seen in the zonal influence presented earlier, at a higher level of aggregation.

3.45 We see that on both the plazas ~30% of trips are E-E trips for MAVs. This is due to long-distance trips observed on the Asset which joins the Asset through Dausa. These are strategic movements moving between western and eastern regions in the immediate vicinity of the corridor, e.g. North Gujarat-Wester Uttar Pradesh, and therefore prefer using the Asset due to the connectivity it offers to these regions.

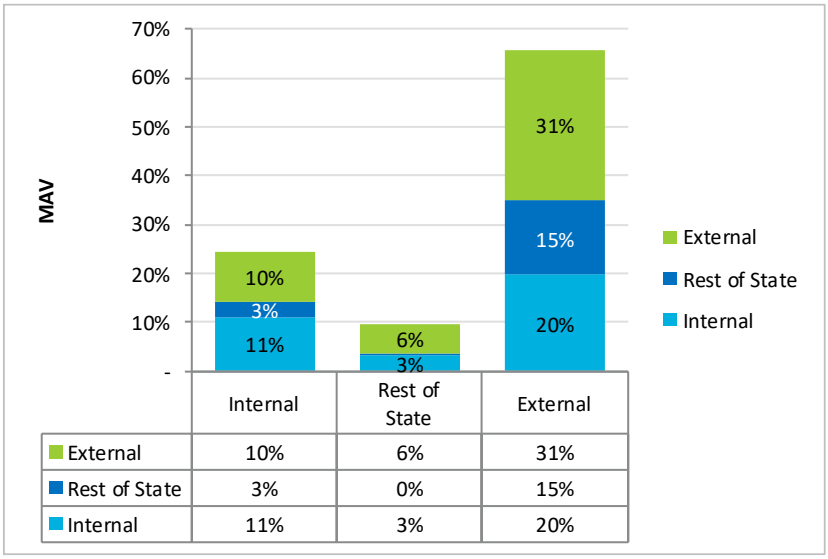
Figure 3.12 Internal-external distribution at TP1 Sikandra



	Internal	Rest of State	External
External	16%	7%	30%
Rest of State	4%	0%	8%
Internal	18%	4%	14%

Source: Steer analysis of OD data

Figure 3.13 Internal-external distribution at TP2 Rajadhok



	Internal	Rest of State	External
External	10%	6%	31%
Rest of State	3%	0%	15%
Internal	11%	3%	20%

Source: Steer analysis of OD data

3.46 Furthermore, in Chapter 6 we present the impacts analysis which gives an estimation of captive traffic. The non-captive traffic is a minority share, with the impacts being insignificant for all but the impact of Delhi-Mumbai expressway on TP2 Rajadhok.

Commodity distribution

3.47 We have grouped various commodities into aggregate categories for ease of interpretation, as shown in Table 3.18 below. The charts in the following sub-section present information in terms of aggregate commodity categories.

Table 3.18: Aggregate commodity categories

Commodity Description	Code	Combined codes used for charts
Agriculture Products / Cash crops (Wheat, Rice, Sugar cane,Maize etc.)	AGR	**AGR**
Cattle Food / Live Stock (sheep, ghoat, cow,cattle food etc)	LIV	
Perishable Items (Fruits, vegetables)	PER	**GRO**
Animal Products/Dairy/Eggs/Fish/Meat/Animals	DFM	
Groceries / Food items (Soap, Salt, Sugar, Pulses, Spices, Biscuits, bread, cool drinks, beer etc.)	GRO	
Building Material / Construction (Cement, Lime, Brick, fly ash, etc)	CNS	**CNS**
Sand/Clay	SND	
Stone (kota stone, marble, Granite, Aggregate stone etc.)	STN	
Ceramic	CRM	
Petroleum Products (Oil, LPG, CNG, etc.)	PET	**PET**
Chemicals / Fertilizers (Acids, Fertilizers etc.)	CHM	

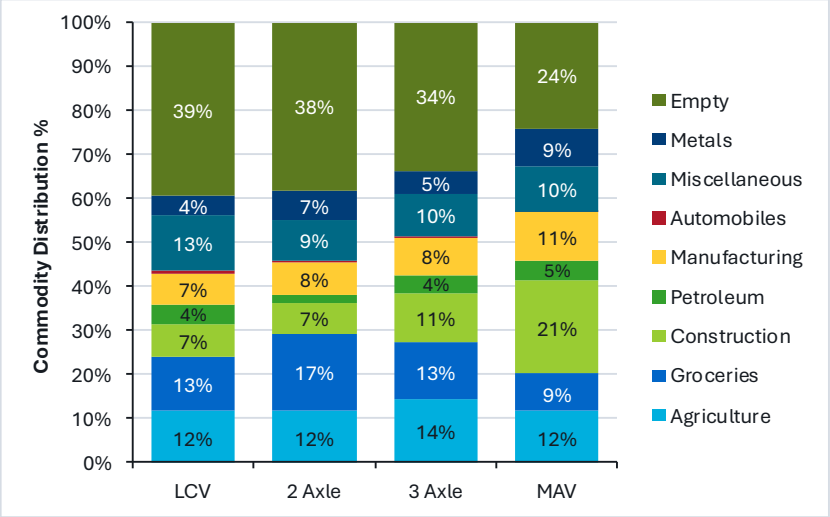
Electrical/Manufacturing items (Electronic items, medicine, Leather, Wine, Rubber/ Tyre, Plastics, Cloth, Paper etc.)	MAN	**MAN**
Raw Wood, Cork & Wood Products, Furn	WUD	
Machinery / Spare parts	MAC	
Automobiles (Finished products, auto parts, Car/bike manufacturing, New Chassis)	AUT	**AUT**
Basic / Fabricated Metals (Iron, Steel / Metal)	MET	**MET**
Mining Minerals (Coal, Gypsum, Cobalt etc.)	MIN	
Empty	EMT	**EMT**
Container	CTR	**MSC**
Miscellaneous (Parcel, Courier, Household items etc.)	MSC	
Passengers	PAS	
Scrap	SCR	

Source: Steer analysis

3.48 Figure 3.14 and Figure 3.15 present the commodity distribution for goods vehicles at the two toll plazas, at the total level as well as split by direction, towards Jaipur and Agra. As observed during our site visit, the figures below indicate that agricultural and groceries products make up about 20 - 25% of commodity share across the two toll plazas. MAVs also carry a significant share of a variety of manufactured goods between Udaipur and Gujarat at one end and Uttar Pradesh, Bihar and the rest of eastern India at the other end. Construction goods have 21% and 24% share respectively at TP1 and TP2, which includes marble being transported from Rajasthan and Gujarat towards Uttar Pradesh, Bihar, Odisha etc. Agricultural produce is mostly transported within the state of Rajasthan and manufactured products have Rajasthan, Uttar Pradesh and Delhi NCR as the top origins or destinations.

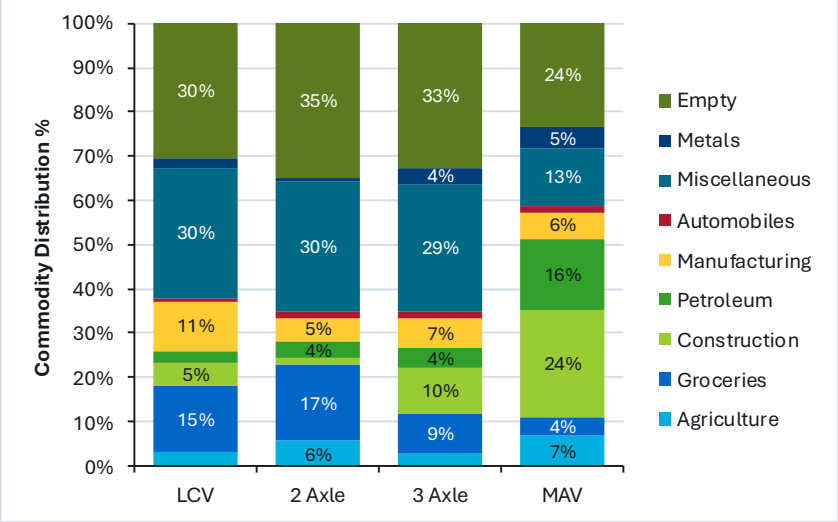
3.49 Looking by direction, a greater share of vehicles also travels empty towards Jaipur, than those travelling in the opposite direction towards Agra. Also, agricultural and grocery products make up a significant commodity shares for vehicles travelling towards Jaipur, then those travelling towards Agra. However, other commodity groups hold a greater commodity share in the direction towards Agra as compared to Jaipur, including stone, construction and petroleum products. The above is true for both TP1 and TP2.

Figure 3.14 Commodity distribution at TP1 Sikandra (Both directions)



Source: Steer analysis of OD data

Figure 3.15 Commodity distribution at TP2 Rajadhok (Both directions)



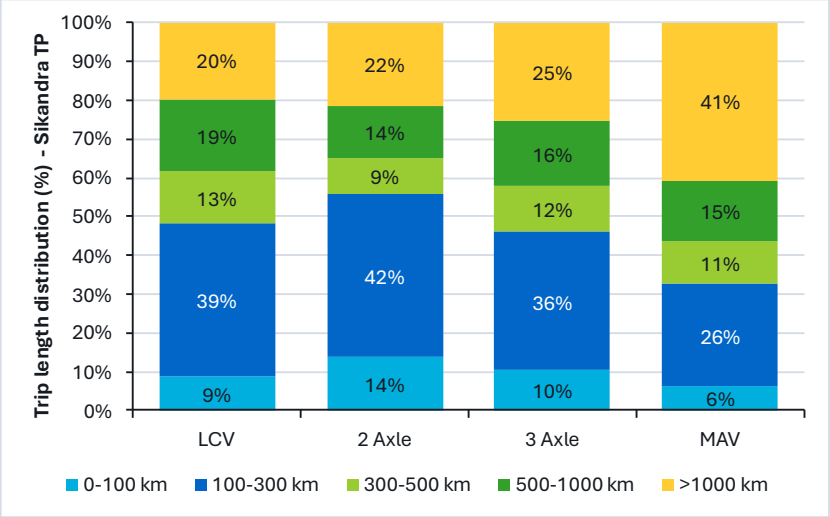
Source: Steer analysis of OD data

Trip length analysis

3.50 Trip-length distribution provides the distance-based profile of various vehicle categories. This aids in validating assumptions around the share of macro-economic drivers, inputs from zonal influence and toll segmentation. For ease of interpretation, we have categorised distances into 5 groups – local (0-100km), short-distance (100-300 km), medium-distance (300-500 km), long-distance (500-1000 km) and very-long-distance (+1,000 km). The trip distances were derived as driving distances from Google Distance Matrix Tool based on zonal coordinates for OD pairs.[10]

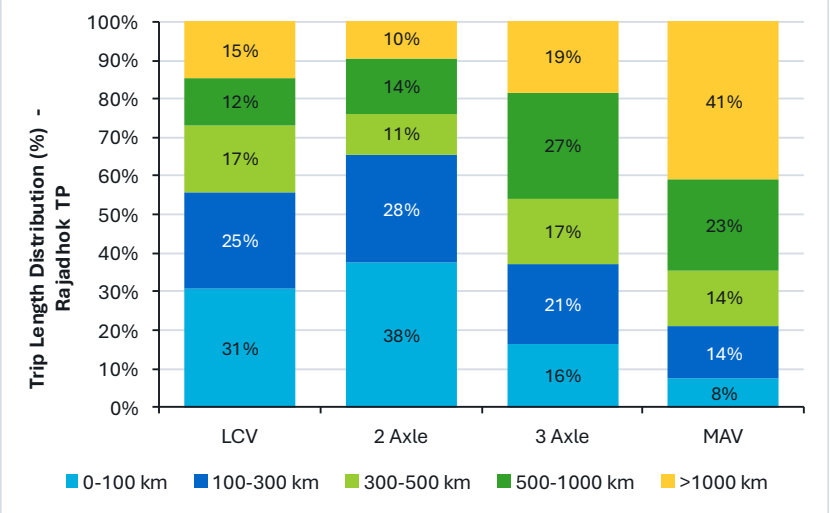
[10] Google Distance API is a tool that is available on a chargeable basis from Google Maps Platform. Link: https://developers.google.com/maps/documentation/distance-matrix/start. Travel

Figure 3.16 Trip length distribution TP1 Sikandra



Source: Steer analysis of OD data

Figure 3.17 Trip length distribution TP2 Rajadhok



Source: Steer analysis of OD data

3.51 As observed in above figures and the internal-external analysis, TP2 has a large share of local and short-medium-distance trips (up to 300 km), ranging from 21% for MAVs to 56% for LCVs, this share is lower at TP1 Sikandra, ranging from 32% for MAVs to 49% for LCVs .

3.52 In terms of long-distance and very-long-distance trips more than 500 km long, CJVs understandably do not have a significant proportion, as has been seen across other Assets around the country. As expected, MAVs show a much higher share, up to 56% at TP1 and 64% at TP2 due to long distance movements between western and eastern India. 2A vehicles at TP2 have 24% share of trips being greater than 500 km.

distance and time information for driving/transit under various congestion scenarios can be extracted through this tool by using macro-enabled Excel, R, etc.

Conclusions

3.53 In FY26 the Asset witnessed a total AADT of 18,839 at TP1 Sikandra and 20,141 at TP2 Rajadhok. Looking at the vehicle shares of this Asset, the dominant vehicle class is CJV, holding 64% of vehicle share at TP1 and 72% at TP2. Further, MAVs at TP1 has a higher share (22% compared to 15% at TP2). Shares of other vehicle category volumes are consistent between the two toll plazas. Traffic has shown significant recovery starting FY22 when the Dausa-Lalsot section and Jaipur Ring Road was commissioned resulting in improved connectivity to Delhi and South.

3.54 Rajadhok's traffic in PCU terms reduced by 16.2% between FY25 and FY26 due to the opening of Bandikui spur in July 2025, leading to traffic diversion to Delhi Mumbai Expressway away from Rajadhok.

3.55 The TVC counts does show variation on the TMS, at the total level TMS is 6% lower than TVC at TP1, and 6.9% lower than TVC at TP2, primarily attributable to local CJV users. However, the differences are smaller for the larger revenue generating categories (3A, MAV and OSV combined), 1% and -4% at TP1 and TP2 respectively, which gives us confidence in the data moving forward.

3.56 The OD analysis found that in terms of zonal influence, TP1 had a higher share of IAOI trips compared to TP1, which is explained by TP2's proximity to Jaipur and a higher urban population density. CJV and Bus traffic driven with origins and destinations at both ends of the Asset corridor is seen to be driven by the urban population and tourism related drivers. The key commodities transported on the Asset on 3A/MAV trucks include construction materials, which make up around 20 - 25% of the commodity share at both plazas. Agricultural products also holds a respectable share, at 12% and 7% at TP1 and TP2 respectively. Majority of the traffic is sticky to the Asset with only 8% being external-external in PCU terms which is using the Asset as it offers excellent connectivity to the regions in the immediate vicinity of the corridor.

3.57 The overall characteristic of the Asset is strategic is nature connecting several key urban and economic activity centres of Jaipur, Agra, Bharatpur in immediate vicinity with wider generators and attractors of south Rajasthan, Gujarat, Maharashtra to Uttar Pradesh and Delhi NCR also being connected by the Asset. Urban population and tourism linked growth is seen as an added advantage for CJV and Bus traffic.

4 Socio Economic Context

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the Asset is in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions of the region where the Asset is located and conditions on a national scale. These include:

Changes in factors such as population, economic growth (regional and national) and industrial production; and
Other local factors such as strategic port growth, and growth in local industries near the Assets.

4.2 In turn, the change in the competitive position of the Asset (and thus of the traffic capture it will achieve) derives from how the service offered and the prices charged on the Asset change in comparison to competing roads; and whether any new competing road facilities are available.

4.3 In this chapter, we assess the socio-economic indicators relevant to traffic growth on the Asset.

Population growth

4.4 We have analysed the key socioeconomic drivers of the background traffic demand in the state of Rajasthan where the Asset is located.

National Level

4.5 The total population in India has grown at a Compound Annual Growth Rate (CAGR) of 1.5% since 2000, decreasing over the years, as shown in Table 4.1 below. The World Bank forecasts this growth to decrease to 0.6% CAGR by the 2030-45 period.

Table 4.1: CAGR of population in India

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
1970 - 1985	2.3%	1.9%	3.8%
1985 - 2000	2.0%	1.7%	2.9%
2000 - 2015	1.5%	1.0%	2.6%
2015 – 2030*	1.0%	0.3%	2.3%
2030 – 2045*	0.6%	-0.3%	1.9%

Source: World Bank Data on Health Nutrition and Population Statistics, *forecast population growth

State Level

4.6 As Table 4.2 shows, the populations of Rajasthan has grown at a faster pace compared to that of India, between FY12 and FY24. As of FY24, accounts for 5.8% f India's population

4.7 Table 4.2 shows the evolution of population in the state of Rajasthan (containing the Asset), compared to that of the country.

4.8 As Table 4.2 shows, the populations of Rajasthan has grown at a faster pace compared to that of India, between FY12 and FY24. As of FY24, accounts for 5.8% f India's population

Table 4.2: Population Growth in Rajasthan and India (2012-2024)

State	2012 Population (m)	2024 Population (m)	CAGR (2012 – 2024)
Rajasthan	69.1	82.4	1.4%
India	1,210	1,395	1.2%

Source: MoSPI estimates

4.9 Due to the complexities of patterns of urbanisation, and the very dynamic nature of local population migration (which are very difficult to forecast with accuracy), we do not use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide the underlying socio-economic context of the state/trends in the regions in which the Asset is located.

Economic Indicators

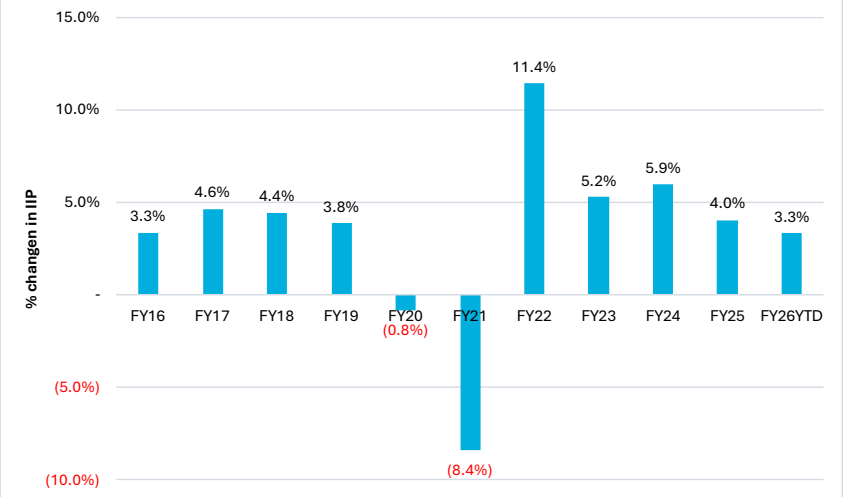
Industrial Production

4.10 The Index of Industrial Production (IIP) is a composite indicator that measures the short-term changes in the volume of production for a basket of industrial products. The IIP data tracks the manufacturing activity in different sectors of an economy, with mining, manufacturing, and electricity being the three broad sectors constituting the IIP.

4.11 At an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20 (as presented in Figure 4.1 below). In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. However, with the gradual opening up of economy post the pandemic, and recovery in consumption demand, industrial activity also recovered with time with IIP recording growth of 5% in FY23 and 6% in FY24.

4.12 The figure below shows that at an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20. In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. Post the immediate recovery in FY22, IIP growth has since stabilised, with FY25 recording 4%, and FY26YTD (till February 2026) recording 3.3% growth over FY25.

Figure 4.1: Annual growth – Index of Industrial Production



Source: Steer analysis of MoSPI data

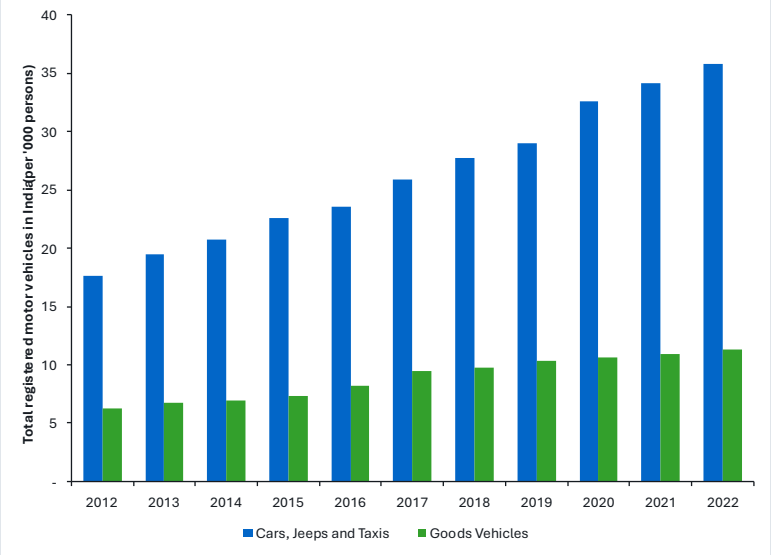
4.13 Since state-level IIP data is not as readily available as national level IIP, we have presented national IIP here to indicate nationwide activity in key industrial sectors like power, manufacturing, and mining, all of which influence long-distance commercial movements across the nation, and not unique to this asset. We however, do not use it to forecast future travel demand growth since long-term forecast for IIP is not available through official sources such as MOSPI, RBI or through multilateral organisations like WB, or the IMF.

Vehicle Ownership

4.14 The gap in car ownership between India and developed nations remains substantial – with 36 cars/jeeps/taxis and 11 commercial vehicles per thousand people, as of FY22 (the latest year for which official data is available). However, with increasing per capita income levels, a booming economy and the subsequent increase in demand for mobility, the number of registered vehicles has been on a gradual upward trend.

4.15 Overall, India still stands at a very nascent stage in the vehicle saturation curve, offering huge potential for growth going forward. Between FY12 and FY22, the CAGR for CJV and goods' vehicles registered in India was 8.6% and 7.3% respectively.

Figure 4.2: : Car ownership in India per 1,000 population

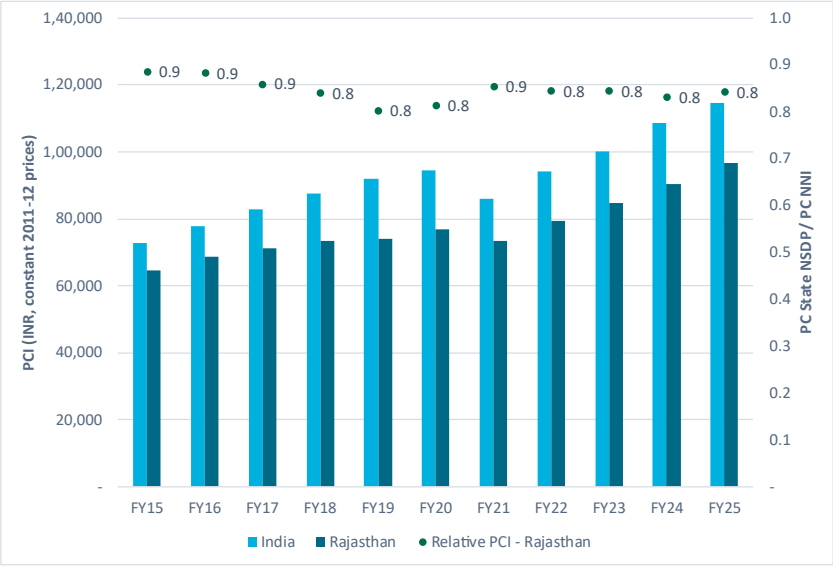


Source: International Energy Agency (IEA)

Per Capita Income (PCI)

4.16 The per capita income of the state where the Asset lies (i.e., Rajasthan) has historically varied slightly below the national average, trending at 80-90% of the national per capita income over the period FY15-FY25. While the statewide per capita income has remained below the national average, incomes near and around the Asset are higher given its proximity to Jaipur city (the state's capital). In recent years (FY22-FY25), Rajasthan recorded higher per capita income growth than observed pre-COVID (FY12-FY19) owing to strong consumption growth in the state. Going forward, we expect strong local consumption demand to drive growth in both passenger and commercial traffic.

Figure 4.3: Relative Per Capita Income (FY15-FY25)



Source: Steer analysis of MoSPI data

4.17 However, given the difficulty in obtaining granular district level PCI data it is not advisable to use this as a growth driver. Also, the long-term forecast for PCI is not available we therefore refrain from using it to forecast traffic.

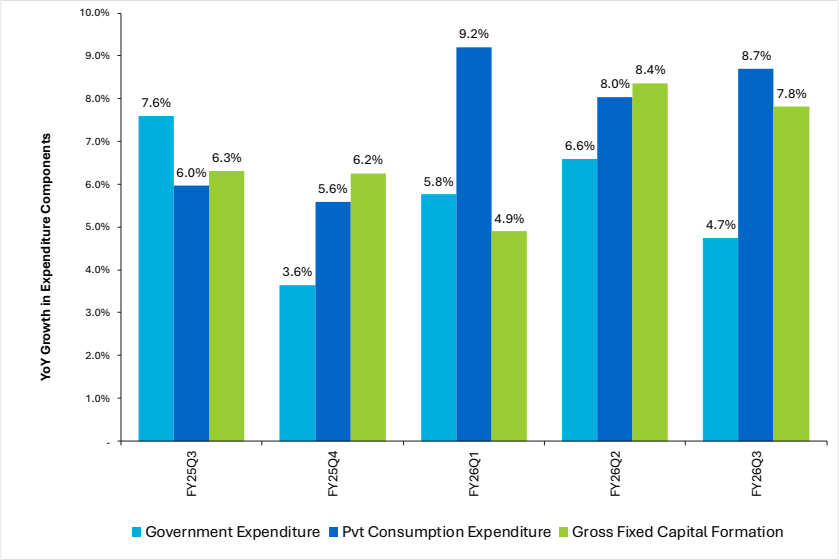
Economic growth

India's Performance

4.18 Despite a slowdown in the economy during H1FY25, the Indian economy has observed strong growth each quarter since FY25Q2, with the latest published estimates for FY26Q3 GDP at 7.8% over FY25Q3. This performance has been driven by strong growth in investment and consumption expenditures and higher consumer optimism for the year ahead[11].

4.19 The figure below, we present quarterly Y-o-Y growth in three major components of GDP – government expenditures, consumption expenditures, and business investment (gross fixed capital expenditure) over the past year (FY25Q3-FY26Q3).

Figure 4.4: YoY growth in expenditure components of GDP



Source: Steer Analysis of MOSPI Data

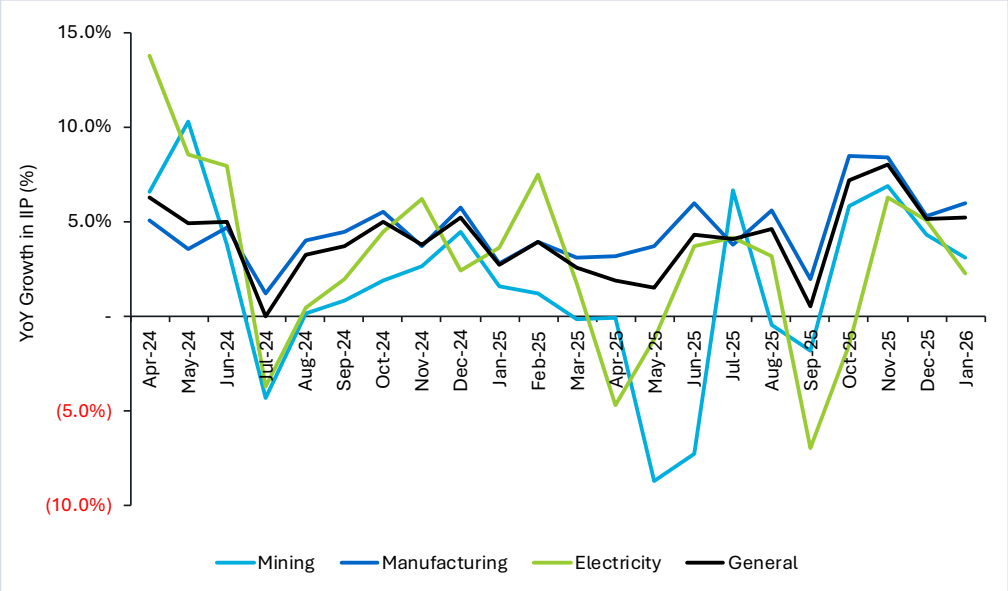
4.20 While consumption and investment expenditures have continued to show consistent growth over the past two quarters, government expenditures observed a marginal decline in FY25Q4. In FY26Q1, government expenditures rebounded, recording 5.8% growth over FY25Q1 levels.

4.21 Performance across different types of industrial activities (such as Mining, Manufacturing, and Power Generation) directly impact freight movement and commercial traffic volume growth across the country, including on the Asset. In the figure below, we present growth trends in IIP – a measure that tracks the performance of the economy across these activities. As of FY26YTD (Apr'25-Feb '26), the Manufacturing sector continues to perform strongly, recording positive y-o-y growth since FY25Q3. While industrial activity across the

[11] Gov**ernment of India PIB Release (27th February 2026)**

two other sectors (i.e., Power Generation and Mining) dropped between May and Jun/Jul '25, they have since rebounded and show signs of continued growth going forward

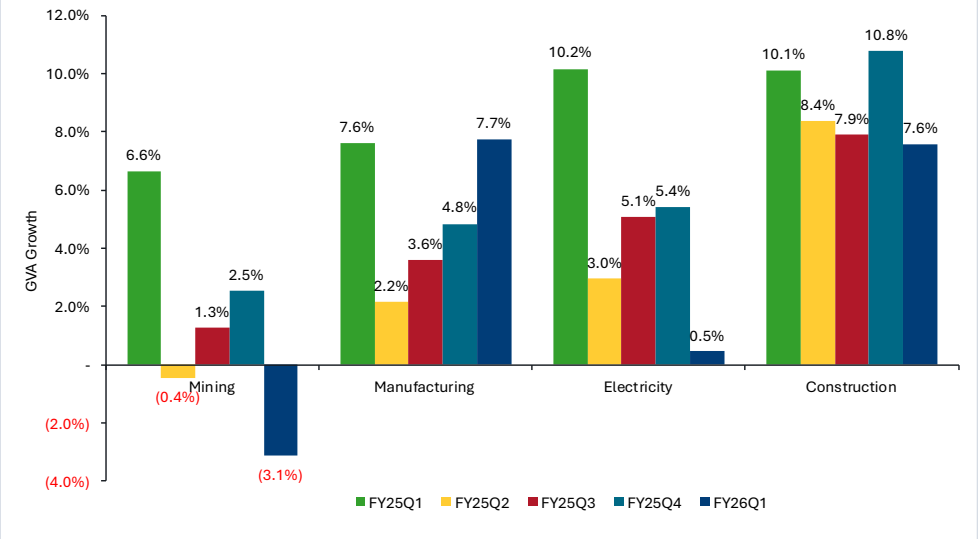
Figure 4.5: Month on Month IIP performance



Source: Steer Analysis of MOSPI Data

4.22 In addition to monthly trends in IIP, the figure below presents y-o-y growth of quarterly GVA in four industrial sectors - Mining (& Quarrying), Manufacturing, Electricity (and other Utilities), and Construction. While the Mining and Power sectors observed decline and muted growth in FY26Q1, the Manufacturing and Construction sectors experienced strong growth. While overall economic growth has remained resilient as of FY26YTD, performance across industries have varied, impacting economic growth across different regions and on the Asset as well.

Figure 4.6: Industrial components of GVA



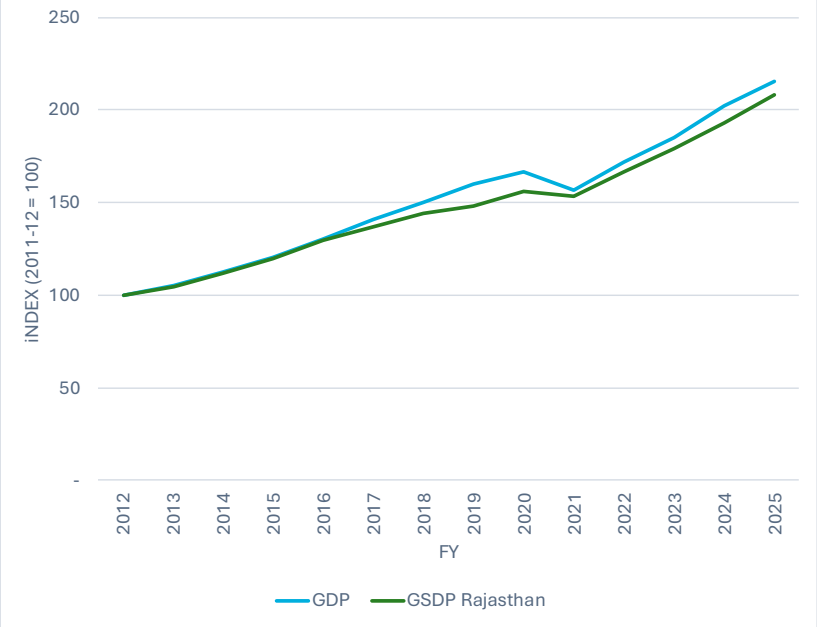
Source: Steer Analysis of MOSPI Data

GDP and GSDP Growth

4.23 Over the period FY12-FY25, the Indian economic has grown at a CAGR of approx. 6% aided by growth in the tertiary sector which grew at a CAGR of approx. 6.9% over the same period. The economic growth of Rajasthan (state GSDP) has been somewhat slower than the country overall for the past 5 years but it seems to have caught up with the national rate since the COVID19 pandemic. [12]

4.24 The Asset Jaipur - Mahua, lies in the state of Rajasthan. The state contributes approximately 5% to India's GDP. Figure 4.7 illustrates the evolution of India and Rajasthan GDP.

Figure 4.7: Evolution of Rajasthan's state GDP and national GDP, FY12-25



Source: Ministry of Statistics and Program Implementation (MoSPI)

Economic activity in the state

4.25 Rajasthan, the largest (area-wise) state in India, is in the north-western part of the country. In terms of sectoral contribution to the state GDP, tertiary sector has the highest share followed by primary and secondary, with the shares remaining stable during the last six years (i.e., 2019-2025).

4.26 The tourism and transport sector constitutes a major share of state's tertiary sector, accounting for roughly 15% of the state's economy as of 2024[13]. Rajasthan is considered a favoured tourist destination in India, with key tourist destinations being Jaipur, Jodhpur, Jaisalmer, Bharatpur and Udaipur. In 2018, the state attracted over 50 million domestic

[12] GSDP is the Gross State Domestic Product i.e., the GDP equivalent for a particular state, it is the final value of goods and services produced by a particular state

[13] Rajasthan Tourism sector

tourist arrivals in the country whereas, in terms of foreign tourist arrivals it holds fifth position in the country with over 1.7 million[14] tourist visiting state every year.

4.27 In terms of secondary sector, the state has key industrial areas in Kishangarh (marble); Manesar (automobile), Pali and Jodhpur (textiles), Chittorgarh -Neemuch (cement), Kota (stone). Rajasthan is one of the largest minerals producing state in India and is the sole producer of lead and zinc ores in India. The state has one of the largest limestone reserves, making it a hub for cement industries. In terms of agricultural produce, the state is largely known for its production of wheat, cotton, cereals and pulses.

Forecasts for growth drivers

4.28 Following the discussion in Chapter 4 on the nature of economic activity in the state of Rajasthan, in this section, we describe the assumptions in relation to forecasts of the key macro-economic drivers of traffic growth. Particularly, we have based our forecast on GSDP using forecasts of GDP as provided by the Client.

National GDP

4.29 After the last period of economic slowdown in FY11-12, the country experienced an economic downturn again in late FY19 with FY20 having reported a GDP growth of 4% (relative to an average growth rate of 7% per year between FY13 and FY19). India's GDP growth declined as domestic investment and consumption demand were already under stress because of the liquidity crunch before Covid-19. Other factors that contributed to the economic slowdown included reduced growth rates in automobile sales and production, liquidity crunch in credit markets and rising number of Non-Performing Assets (NPAs) within the banking sector, as well as lower manufacturing production and lower rural consumption.[15]

4.30 The Covid19 outbreak had a significant impact on the Indian economy during the first two quarters of FY21 as government mandated lockdowns across the country effectively stalled economic activity and growth. The growth momentum eventually picked up in Q3 of FY21, with a sharp rebound in the economy in FY22 (GDP recorded 9.7% growth over FY21) and has since observed a consistent growth of 7.6% in FY23, 9.2% in FY24 and 6.5% in FY25. GDP growth remained strong through FY26, with quarterly growth of 7.8% in Q1, 8.4% in Q2 and 7.8% in Q3, while the RBI estimates full-year FY26 growth at 7.6% under the revised GDP series.

4.31 Figure 4.8 below shows client provided GDP projections for India. The forecast provided by the Client expects the India GDP to grow at 6.5% between FY25-FY27 and gradually tapering down to 4.1% by FY32, end of concession. The India GDP growth forecast provided by the Client is broadly in line with other independent forecasts available from reliable sources such as IMF, World Bank and RBI[16] in the medium term.

---

[14] http://tourism.gov.in/sites/default/files/Other/India%20Tourism%20Statistics%20at%20a%20Glance%202019.pdf

[15] **Data | India's GDP was on a downward slope even before COVID-19 wreaked havoc - The Hindu** (September 2020)

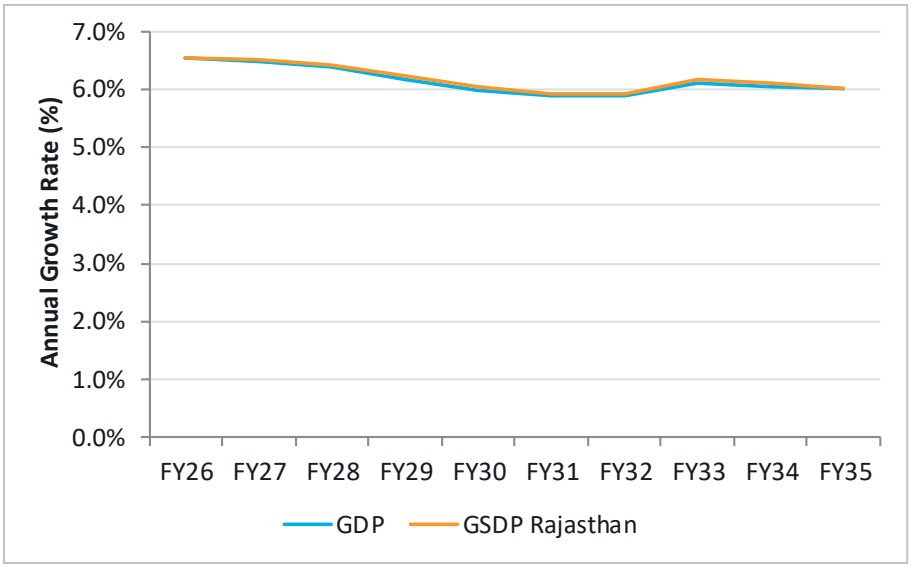
[16] **Survey of Professional Forecasters on Macroeconomic Indicators – Results of the 93rd Round (April 2025)**

4.32 Over the near term, Rajasthan's GSDP growth assumes to continue outpacing the national GDP throughout the concession period. We believe this is a realistic position based on the current and future development plans of local and state governments.

4.33 There are significant investments expected to take place as part of the state's plan and Rajasthan is expected to receive a significant proportion of these investments, given its leading position in industrial investments. Higher than expected GSDP growth rate across the concession period could be achieved if such investments were realised as they are expected to give an additional boost to Rajasthan's state economy.

4.34 In the long term, we believe that as other smaller state economies of India catch up with the national economic growth, the gap between growth rates of larger state economies, such as Gujarat, Maharashtra and Karnataka, and the national GDP growth rate will start reducing.

Figure 4.8: GDP-GSDP forecast



Source: GDP forecast provided Client, GSDP based on Steer analysis

5 FY26 Base year AADT and Traffic growth analysis

Introduction

5.1 In this chapter, we present our approach, assumptions, and results for base (or background) traffic growth for each vehicle category on the Asset.

5.2 Traffic growth is commonly related to a variety of macro-economic and industry- or commodity-specific factors (hereafter referred to as 'traffic growth drivers'). These growth drivers are typically identified from the results of the OD data analysis and the site visits that help us appreciate the nature of traffic movement – 'what' travels 'where' and 'why'. To understand the historical traffic trends in relation to these growth drivers, we carry out regression analysis to determine the historical relationship between traffic belonging to each major vehicle category and its macroeconomic growth driver at each toll plaza. The traffic demand is the dependent variable while the one or more identified growth drivers are the independent or explanatory variables.

5.3 Typically, passenger and light commercial vehicles like cars, buses, LCVs and 2-axle trucks grow in line with the GSDP of the state where the toll road is located. Heavy vehicle traffic like 3-axle trucks and MAVs grow in line with the national GDP. This is because most light vehicles tend to travel shorter distances within the state, whereas a significant proportion of heavy vehicles carry commodities for long-distances across the country. These commodities also tend to be part of industry ecosystems whose demand-supply relationships are scattered across the country and therefore relate more with GDP growth.

FY26 Base year AADT estimates

5.4 The base year is the year on which long-term background forecast growth rates are applied to derive year-wise average annual daily traffic (AADT) estimates for forecast years. This is therefore an important aspect of our forecasting approach as traffic and ultimately revenue forecasts for future years are built on top of the base year traffic estimate. We have used FY26 as the base year for AADT estimates for the forecast years.

5.5 As described previously in Chapter 3, to establish the base year (FY26) traffic position, we utilized information from various sources – including from the Client and our context knowledge, to assess a reasonable demand on the corridor.

Methodology

5.6 The base traffic for FY26 has been estimated using 11 months of actual traffic data (April to February). Each toll plaza's seasonality correction factors were applied on the actual

MADTs of Apr-25 to Feb-26 to obtain seasonally corrected estimates for FY26 traffic. An average of these estimates was considered to be the FY26 base traffic.

Seasonal Correction Factors

5.7 Traffic on any Asset varies on a month-on-month level. Such variations maybe due to monsoons (typically Jul to Sept) or due to festivals in the region. For e.g. It is observed that typically the truck traffic during the first half of the financial year (April-September) is generally lower than the annual average, mainly because of peak summer season followed by monsoons affecting the freight movement patterns in large parts of the country in the July-September period. In addition to these there may be other seasonal variations specific to the Asset.

5.8 In order to normalise for these variations across the year to provide an AADT estimate, Seasonality Correction Factors (SCF) are used. SCFs are estimated to convert the monthly traffic numbers to an AADT level while accounting for seasonal variation due to local/national festivals, weather changes and/or temporary external impacts. These are typically estimated using historical data for each plaza and vehicle category over multiple years. An SCF >1 means that the traffic for the month is lower than the annual average and vice-versa.

5.9 To achieve this, we studied the seasonality between monthly average daily traffic (MADT) – We have analysed the seasonality trends between monthly average daily traffic (MADT) and AADT for data during the historical years of tolling (as described in Chapter 3), excluding the years that were impacted by specific events. This averaged seasonality trend is then applied to the monthly traffic to obtain AADT as mentioned in the previous sections.

5.10 Table 5.1 and Table 5.2 present the assumptions in SCF used to estimate the AADT:

Table 5.1: Seasonality correction factors for TP1 Sikandra

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	0.99	1.02	1.00	1.07	1.07	1.14	1.12	0.92	0.98	1.00	0.85	0.95
LCV	0.90	0.98	1.00	1.10	1.12	1.09	1.00	0.97	1.00	1.06	0.87	1.02
Bus/ 2A	1.02	1.01	1.00	1.08	1.08	1.04	1.00	0.95	0.98	1.02	0.90	0.96
3A/ MAV	1.01	1.02	1.02	1.08	1.12	1.05	1.01	1.03	0.93	0.96	0.89	0.94

Source: Steer analysis of Client historical TMS data

Table 5.2: Seasonality correction factors for TP2 Rajadhok

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.03	1.06	1.06	1.11	1.08	1.13	1.05	0.93	0.99	0.99	0.81	0.89
LCV	0.97	1.01	1.04	1.09	1.06	1.03	0.97	0.97	1.00	1.04	0.86	1.00
Bus/ 2A	1.07	1.04	1.01	1.07	1.06	1.01	0.98	0.95	0.98	1.02	0.89	0.94
3A/ MAV	1.03	1.06	1.05	1.10	1.11	1.03	0.99	1.04	0.95	0.95	0.87	0.90

Source: Steer analysis of Client historical TMS data

Adopted FY26 base estimates

6.1 Based on the above methodology and inputs, the adopted base for toll plaza has been shown below:

Table 5.3: Adopted base estimates: TP1 Sikandra

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	11,580	11,858	11,982	3.5%
LCV	364	351	353	(3.2%)
Bus/2A	2,353	2,421	2,436	3.5%
3A/MAV	3,933	4,060	4,087	3.9%
Total	**18,230**	**18,690**	**18,857**	**3.4%**
PCUs	**34,983**	**36,085**	**36,364**	**3.9%**

Table 5.4: Adopted base estimates: TP2 Rajadhok

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	18,299	14,537	14,835	(18.9%)
LCV	484	400	402	(17.0%)
Bus/2A	2,418	2,212	2,234	(7.6%)
3A/MAV	3,553	3,075	3,121	(12.1%)
Total	**24,753**	**20,223**	**20,593**	**(16.8%)**
PCUs	**40,640**	**34,201**	**34,761**	**(14.5%)**

Source: Steer analysis; FY25 actual full year, FY26YTD includes 11 months (Apr-Feb) of FY26, FY26A is adopted base for FY26

5.11 As we can see from Table 5.3 and Table 5.4, FY26A AADT estimates are 3.4% higher and 16.8% lower than FY25 AADT for TP1 Sikandra and TP2 Rajadhok respectively. Rajadhok's adopted base traffic in FY26 is lower than FY25 as the diversion of traffic from the Asset to Bandikui spur of the Delhi Mumbai expressway towards Jaipur took place.

5.12 Sikandra's CJV volume in FY26 is expected to remain at FY25 levels in in FY26 as FY25 witnessed high traffic on account of the Mahakumbh resulting in an one-time increase in volumes on both Sikandra and Rajadhok toll plaza.

5.13 We have combined Bus and 2A volumes for our base estimation because as mentioned before, TMS reports discrepancies in the data. Therefore, the split that we have derived from our counts is the split we are using in our projection to forecast the growth of each individual category for this Asset.

Estimation of background elasticities

5.14 Elasticities, in the case of traffic growth are the relationships between traffic and growth drivers. Multiplied with forecasts of growth drivers like GDP or GSDP, they provide the forecasts of background traffic growth rates.

5.15 The below table presents the growth drivers identified to model the forecast background traffic growth rates.

Table 5.5: Identified growth drivers to model traffic growth at Asset level

Vehicle type	GDP India	GSDP Rajasthan
Car		100%
LCV		100%
Bus		100%
2A	100%	
3A	100%	
MAV	100%	

Source: Steer analysis of Client data

5.16 The TMS data for the Asset reports 3A and MAV together where Bus and 2A reported separately, hence splits were required to understand the 3A and MAV growth pattern. For this Asset Car, Bus and LCV do more regional movement as validate from OD trip length and zonal analysis hence the growth of this vehicle category is more influenced by Rajasthan GSDP. Whereas 2A, 3A and MAV carry heavy commodities like construction material and agricultural products from Rajasthan across states and internationally hence more linked to GDP growth.

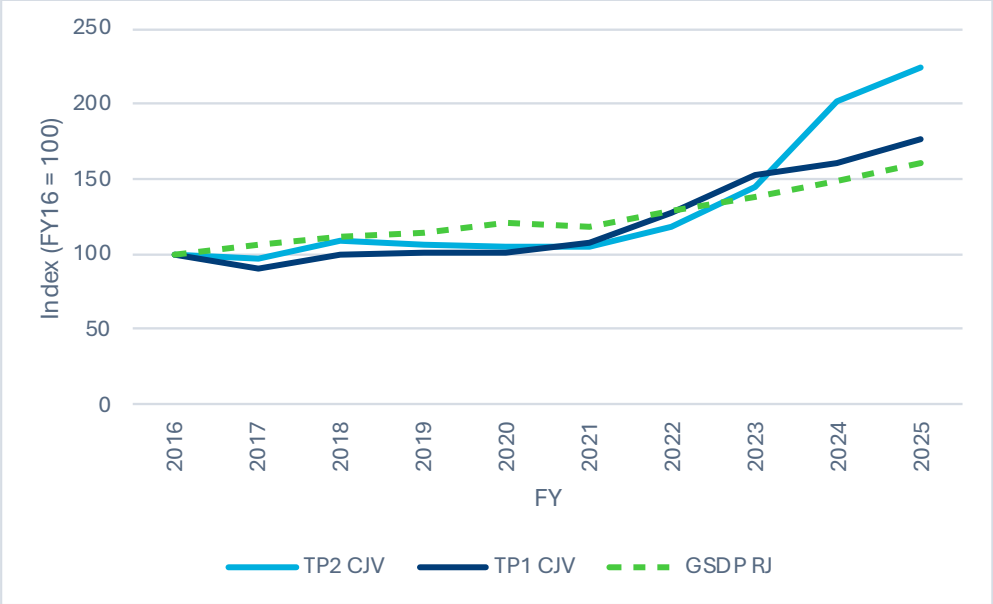
5.17 For the purpose of regression analysis we have considered the period of FY16-25. FY16 and before were chequered period for the Asset with combination of illegal mining and overloading ban. The commercial traffic did not witness significant negative impact on volumes except for first nation-wide lockdown in March and April 2021. Hence, we have considered FY21 and FY22 for the regression analysis.

5.18 In recent historical traffic performance across national highway corridors, a notable trend has emerged: there is a noticeable shift in axle preference towards 2As and MAVs, resulting in a dampening effect on the growth of 3As. This trend is mirrored in the Assets FY23 and FY24 performance as well, which has been discussed in detail in the subsequent sections. As a consequence of these evolving axle preferences, it has been assumed that the relationship between 3As and GDP will be relatively muted, whereas 2As and MAVs are expected to grow more closely in line with the country's GDP.

CJV

5.19 It was observed from the OD data, that CJVs primarily cater to regional movements between Jaipur, Bharatpur, Agra and other towns lying in the vicinity of the Asset. We have therefore assumed Rajasthan GSDP to be the growth driver for modelling growth of CJV traffic. Figure 5.1 shows the relationship between indexed values of CJV traffic and Rajasthan GSDP at TP1 Sikandra and TP2 Rajadhok. CJV traffic on TP1 has shown 6% growth from FY16-24 while for the same period TP2 recorded 9%.

Figure 5.1: Relationship between CJV traffic and Rajasthan GSDP



Source: Steer analysis of Client TMS data and publicly available GSDP data

5.20 Generally, we would expect that in fast-growing economies with relatively low car ownership levels, car traffic growth rates are often in line with or are slightly higher than growth in GSDP/GDP (i.e. suggesting elasticities just above 1.0). Further, the opening of the Delhi Mumbai section upto Lalsot has had a significant impact on Car traffic on the corridor on both toll plazas adding additional impetus to car growth. This has also increased the influence of tourism related movement on the Asset, due to the significant volumes contributed by DME onto the corridor and hence it is expected that car growth will remain robust on the Asset. In addition there is an expected increase in car ownership proportion of overall population as the economy grows.

5.21 Taking note of the positive outlook for passenger traffic on the tourism-driven Asset we have assumed a forecast background elasticity of 1.10 with respect to Rajasthan GSDP for CJV at both the toll plazas.

LCV, Bus, 2A

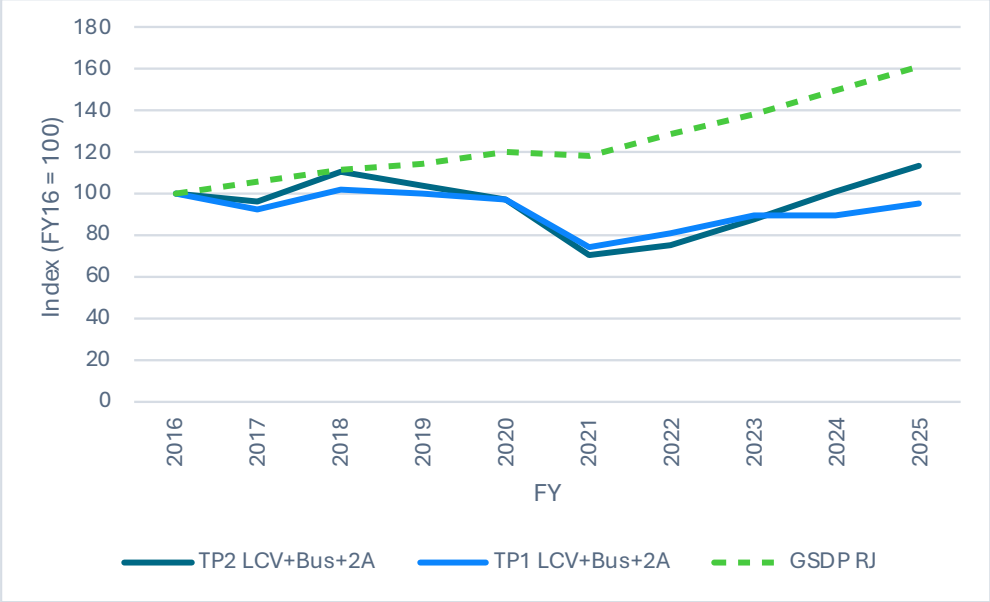
5.22 As discussed in the OD data analysis, LCV, Buses, and 2As are employed for more regional travels within the state - Rajasthan in this example - than heavier vehicles such as 3A and MAV. More than 80% of LCVs and Buses, and 70% of 2As, complete their journey in Rajasthan. As a result, we assumed that the Rajasthan GSDP would be a better growth driver to predict the increase in Bus+LCV traffic. Figure 5.2 below depicts the link between the indexed values of combined Bus+LCV traffic and Rajasthan's GSDP.

5.23 In many sections of the country, bus growth is entirely supply-driven, with new buses purchased and deployed by the government at varying intervals. According to our experience across the country, buses on inter-urban and tourism corridors have elasticities ranging from 0.4 to 0.6 in relation to the GSDP. We estimated an elasticity of 0.5 with regard to GSDP Rajasthan based on the regression results and benchmarks.

5.24 Between 2016 and 2024, the growth rate of Bus+2A+LCV remained flat. During this time period, it was noticed that disaggregate traffic for LCVs rose slower than traffic for Buses

and 2As. This could be attributable to a variety of factors, one of which is the reclassification of LCVs and 2As, which has been seen as a prevalent tendency across the country's toll highways. However, beginning in 2022, the combined volume of Bus+LCV+2A has began to show indications of recovery, as shown in the graph below.

Figure 5.2: Relationship between Bus+LCV+2A combined traffic and Rajasthan GSDP



Source: Steer analysis of Client TMS data and publicly available GSDP data

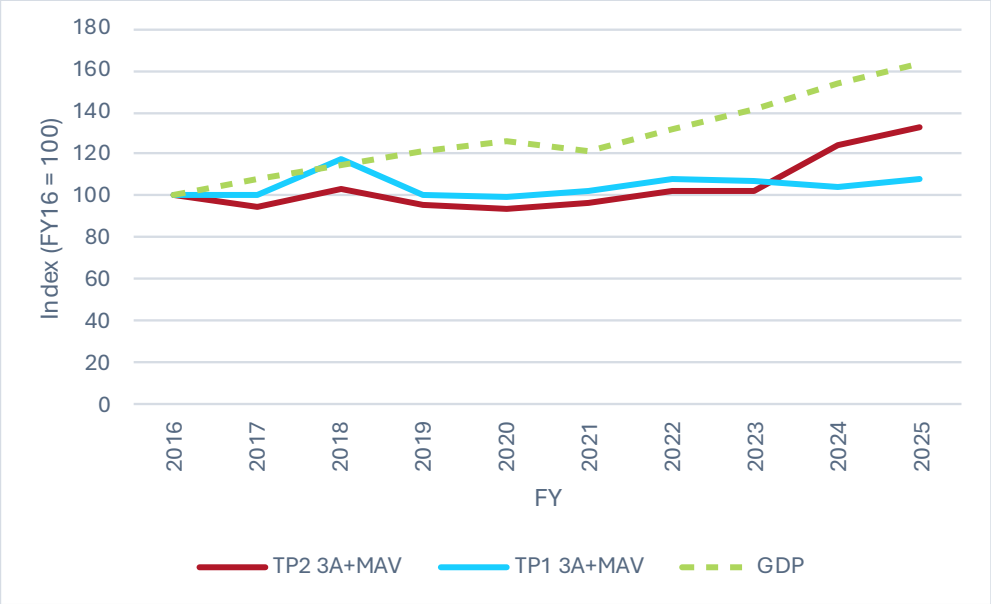
5.25 Based on the results of the regression, analysis of historical trends on the Asset, as well as our previous experience on benchmark Assets the elasticity assumption for LCVs is 0.3 on both TPs, and for Bus which have witnessed relatively stronger growth is 0.5 for both toll plazas. 2A have benefited from increase in Courier/Parcel movement and continued on a positive growth profile over the last 3-4 years and are expected to have an 0.8 elasticity to GDP.

3A/MAV Trucks

5.26 In comparison to lighter vehicles such as LCV and 2A, 3A and MAV have more national or long-distance movements that span multiple states. Given that manufacturing-related commodities tend to dominate commodity distribution, resulting in traffic growth in 3A and MAV vehicle categories to be dependent on industry demand-supply ecosystems spread across the country, we have assumed GDP as the growth driver to model traffic growth in 3A and MAV vehicle categories. Figure 5.3 below depicts the relationship between the indexed values of 3A+MAV combined traffic and India's GDP.

5.27 Historically, 3A+MAV combined traffic grew positively in the FY16-18 period at 8.2% at TP1 Sikandra and 1.4% at TP2, before losing volumes in FY19 and FY20.

Figure 5.3: Relationship between 3A+MAV combined traffic and India GDP:



Source: Steer analysis of Client TMS data and publicly available GDP data

5.28 Major reasons associated with this slower growth is implementation of stringent sand mining policy 2020 in Rajasthan which reduced the illegal sand mining and associated 3A and MAV traffic (FY18-FY20) in the region. Completion of Jaipur Ring Road improving access of regions beyond Jaipur. Opening of DME, which resulted in higher 3A and MAV traffic on Rajadhok plaza, whereas the Sikandra plaza lost commercial traffic which as destined to Alwar which earlier used to cross the Sikandra plaza but now diverts via DME. Between FY23 and FY25 the Asset registered negative 2% 3A+MAV growth on Sikandra and 21% on Rajadhok. Since DME is now operational for more than 12 months now, we expect very minimal loss on Sikandra and return of normal traffic growth on Rajadhok plaza.

5.29 The Asset reports 3A+MAV combined, in our experience of other toll roads, 3As to grow slower than MAVs due to an increasing preference seen for MAVs instead of 3As for long-distance movements. This is because MAVs have higher load capacity which generate economies of scale resulting in lower costs. However, it is unlikely that 3A trucks will disappear from the market completely as there are best suited for certain commodities or movements.

5.30 Based on the above points, we have assumed elasticities of 0.40 and 0.85 for 3A and MAV trucks respectively, with respect to India GDP growth.

Forecasts for background elasticities

5.31 Table 5.6 presents a summary of the results of the regression analysis carried out on historical toll plaza data and the macroeconomic (GDP/GDSP) growth, along with the assumed forecast elasticities for background traffic growth.

5.32 The forecast elasticities are assumed to remain constant over the concession period as the logistics sector in still in early stages of development in India (95% of trucks still owned by operators owning less than 5 trucks). Car ownership levels are still around 30-35 per 1000 people, and it is likely to take a few years before the market reaches maturity.

These trends are based on a long-term understanding of historical relationships and an overall outlook on the growth of the region and the country.

Table 5.6: Derived implied elasticities and assumed forecast elasticities for background growth

Vehicle type	Growth driver	History		Forecast	
		Derived elasticity	Period Considered (Without Dummy)	Assumed forecast elasticity	Evolution of elasticity
TP1 Sikandra					
Car	GSDP Rajasthan	1.20	FY16-25	1.10	No change
LCV*	GSDP Rajasthan	(0.10) *(LCV+2A+Bus)*	FY16-25	0.30	No change
Bus*	GSDP Rajasthan		FY16-25	0.60	No change
2A*	GDP		FY16-25	0.80	No change
3A*	GDP	0.15 (3A+MAV)	FY16-25	0.10	No change
MAV*	GDP			0.85	No change
TP2 Rajadhok					
Car	GSDP Rajasthan	1.73	FY16-25	1.10	No change
LCV*	GSDP Rajasthan	0.25 *(LCV+2A+Bus)*	FY16-25	0.30	No change
Bus*	GSDP Rajasthan		FY16-25	0.60	No change
2A*	GDP		FY16-25	0.80	No change
3A*	GDP	0.57 (3A+MAV)	FY16-25	0.10	No change
MAV*	GDP			0.85	No change

Source: Steer analysis of Client data; *The results of the regression yielded insignificant results based on the t stat values of the analysis.

6 Forecasts: Network overlays and forecasts

Introduction

6.1 Following the discussion on estimated and assumed forecast background growth rates in the previous chapter, this chapter first deals with the forecasting assumptions around base year AADT and potential impacts on traffic growth on the Asset. Thereafter, we present our assumptions around toll segmentation, trip factors and growth of toll rates for the forecast period which have been used to forecast revenues as derived from forecast traffic. This chapter summarises traffic growth rates for the forecast years.

6.2 All traffic is presented as AADT for vehicle category at each plaza, for financial years (April-March). All revenue is presented in INR (nominal terms). Though FY32 is the last year of concession, we have developed our forecasts until FY32 for the Client's reference.

Analysis of potential network/developmental impacts

Summary of alternate routes and planned changes

6.3 This section details the impacts which we believe would affect traffic on the Asset during the concession period. As discussed in previous chapters, to assess the impacts on the Asset, whether positive or negative, we have studied developments (alternate roads, feeder roads and regulatory) in the surrounding road network.

6.4 We have estimated impacts of potential network changes and developments around the Asset. These are indicated in Table 6.1.

Table 6.1: List of network/other developments

	Development	Route affected	Year of completion	Impact (+/-)	Plaza
1.	Completion of construction of Delhi-Mumbai Expressway	Asset route: Delhi-Dausa+Dausa-Kota+Dausa-Godhra Alternate route: Jaipur-Delhi via DME Spur	FY27	-ve	TP1 & TP2
2.	Completion of Agra-Gwalior Construction		FY27	+ve	TP1 & TP2

Source: Steer analysis.

6.5 The map below shows the immediate road network surrounding the Asset.

Figure 6.1: Alternate routes and Asset route shown against the regional network context

Source: Steer analysis and cartography

Impact assessment for network/other developments

6.6 As seen in the previous sub-section, the assessed impacts primarily fall into either the category of road network developments or development in other modes of transport. Under network developments, changes in the road network could be either brownfield (upgrade to existing road) or greenfield (development of new road). We typically assess impacts of the changes in costs and travel time on routes in these networks using binary logit models that compare generalised journey costs (GJC) between Asset and alternate routes. However, each impact is dealt individually in its own network or industry context.

6.7 'Summary of impact assessments' below include a narrative of each of the improvements, and impacts associated from each of these on our traffic forecasts. Please note that all traffic volumes for impacts were estimated, and impact rates were applied on FY25 AADT.

Diversion due to the Delhi-Mumbai Expressway

6.8 The Delhi-Mumbai Expressway is a greenfield expressway being developed to provide an improved level of service to long-distance traffic between North and Western India, compared to the existing network of national highways that are already operating at high levels of utilisation. Though the Asset currently does not directly serve north-south movement (e.g., Delhi-Jaipur and Jaipur-Gujarat) as the NH8 directly provides connectivity to them, the Delhi-Lalsot section of the expressway has been

operationalized since Q4 FY23 which provides faster and unhindered connectivity through an interchange with the Asset near Dausa at km-169. As illustrated in the alternate route map, the diverted traffic through the expressway would pass only through TP2 Rajadhok.

6.9 We have considered the following three types of north-south movements for this impact:

- **Delhi-Jaipur**: These movements currently use the NH8 via Neemrana. The route through the proposed expressway via Dausa provides a competitive alternate with high time savings and good end-to-end connectivity, despite higher toll rates.
- **Gujarat and southern Gujarat-Jaipur**: These movements currently use the NH8 via Kishangarh. The route through proposed expressway via Dausa does not provide a competitive alternate given the Chittorgarh-Kota non-expressway section slows down the journey.
- **Southern Rajasthan-Jaipur**: These movements currently use the NH8 via Kishangarh. The route through the proposed expressway via Dausa provides a competitive alternate with high time savings and good end-to-end connectivity, despite higher toll rates.
- **Agra-Jaipur:** East-west movements between Agra and Jaipur are also diverting to Bandikui spur at Dausa, thereby avoiding Rajadhok toll plaza.

6.10 Key sections of the expressway are already open to traffic, including the Sohna–Dausa–Lalsot segment (inaugurated February 2023), the Madhya Pradesh section (opened September 2023), the Vadodara–Bharuch segment (opened February 2024), and the Kota–Bundi section (opened December 2024). Additionally, the 67-km Bandikui to Jaipur Ring Road spur is anticipated to become operational end of 2025. Despite these advancements, the overall project has faced delays due to factors such as slow contractor progress, land acquisition challenges, and force majeure events, particularly affecting a 140-km stretch between Surat and the Gujarat-Maharashtra border.

6.11 A 67-KM Spur of DME between Jaipur and Dausa known as Badnikui spur has been discussed, and its construction contract was awarded in Mar'22. This has been open to the public from July 2025 and is expected to lead to a further decline in traffic on Rajadhok as it provides a faster alternate route. While FY26A base traffic of Rajadhok accounts for the expected decline in the forecast months of FY26 (October 2025 to March 2026), FY27 is likely to see a further decline over FY26 as the impact did not fully play out in FY26. We have accordingly assumed a further decline in traffic from FY27. Since the Bandikui spur allows traffic to bypass Rajadhok and not Sikandra, the magnitude of the impact at Rajadhok is larger.

Table 6.2: Impact due to completion of Delhi-Mumbai Expressway Spur, TP1 Sikandra

Vehicle type	FY27 onwards
2A	(0.3%)
3A	(0.5%)
MAV	(0.3%)

Table 6.3: Impact due to completion of Delhi-Mumbai Expressway Spur, TP2 Rajadhok

Vehicle type	FY27 onwards
CJV	(11.0%)
LCV	(9.6%)
Bus	(5.2%)

Vehicle type	FY27 onwards
2A	(5.2%)
3A	(8.9%)
MAV	(6.7%)

Source: Steer analysis

Completion of Agra-Gwalior Construction

6.12 Additional construction material required for the Agra-Gwalior Expressway will be transported through the JMTL Asset, which will further increase MAV traffic from FY26 onwards. However, we assume that this impact will taper off by FY29, as the expressway construction is expected to be completed by then. The phasing of the impact will see partial impact in FY27, and 100% of the impact playing out in FY28.

Table 6.4: Completion of Agra-Gwalior Construction

Impact	TP1 Sikandra		TP2 Rajadhok	
	FY27	FY28/FY29	FY27	FY28/FY29
MAV	1.1%	1.4%	1.2%	1.5%

Source: Steer analysis of OD data, Client TMS data and publicly available information

Summary of impact assessments

6.13 Table 6.5 below summarises the potential impacts on the Asset due to the various ongoing and planned road network changes, and other related regulatory developments.

Table 6.5: Summary of impact assessments

Impact	Year of impact	Probability/ scale of impact	Magnitude of impact	
			TP1 Sikandra	TP2 Rajadhok
Jaipur spur of Delhi-Mumbai Expressway: Delhi-Jaipur connection through the expressway via Dausa interchange is expected to provide faster connectivity and improved level of service on the alternate	FY27 onwards	High/High	2A: (0.3%) 3A: (0.5%) MAV: (0.3%)	CJV: (11.0%) LCV: (9.6%) Bus: (5.2%) 2A: (5.2%) 3A: (8.9%) MAV: (6.7%)
Completion of Agra-Gwalior Construction – Additional construction material required for the Agra-Gwalior Expressway will be sourced from Alwar and transported via JMTL	FY27 onwards	Medium/ Medium	MAV: 1.4%	MAV: 1.5%

Source: Steer analysis of OD data, GJC analysis and Client TMS data and publicly available information

Revenue forecasting assumptions

6.14 To forecast the revenues for a particular year, the traffic forecast for each vehicle type is converted into tickets sold, which is then multiplied with the corresponding toll rate,

which grows over the years as defined in the Concession Agreement. While "trip factors" provide the conversion factor to the former, i.e., traffic (trips) to tickets sold, "toll segmentation" provides the latter i.e. the breakup of trips paying each ticket type. This section discusses assumptions related to trip factors, toll segmentation and toll rates for the forecasts.

Trip factors

6.15 Trip factors are used to calculate the revenue for the trips made on passes such as return, local personal, monthly passes. The trip factors assumed are based on the latest FY25 data available and listed in the table below:

Table 6.6: Trip factors at TP1 Sikandra

Forecast	CJV/Mini LCV	LCV	Bus	2A	3A/MAV
Single	1	1	1	1	1
Return	2	2	2	2	2
Monthly	45	45	50	45	45
Local commercial	1	1	1	1	1
Local Personal	1	1	1	1	1

Source: Steer analysis of Client TMS data

Table 6.7: Trip factors at TP2 Rajadhok

Forecast	CJV/Mini LCV	LCV	Bus	2A	3A/MAV
Single	1	1	1	1	1
Return	2	2	2	2	2
Monthly	45	45	50	45	45
Local commercial	1	1	1	1	1
Local Personal	1	1	1	1	1

Source: Steer analysis of Client TMS data

Toll segmentation

6.16 The Ministry of Road Transport & Highways has finalized a compensation formula for existing toll concessionaires to offset revenue loss from the Annual Pass scheme for non-commercial vehicles[17].

6.17 Across multiple assets, the share of annual pass trips has been rising on a monthly basis since August 5. A corresponding decline in other ticket categories including Single and Return journeys has been observed.

6.18 CJV Segmentation for FY26 has been developed using the pre annual pass segmentation till 14th August 2025, and post-annual pass segmentation from 15th August 2025 till 28th

[17] Finalization-Concessionaire-Annual-Pass-Facility-on-NHs-01092025.pdf

February 2026. The share of annual pass trips in March 2026 has been assumed to be the same as the share of annual pass trips in the last 10 days of February 2026.

6.19 The segmentation for CJVs in FY27 has been assumed to be the same as the estimated March 2026 segmentation as trends suggest that the share of annual pass trips have stabilised.For other vehicle categories we have analysed the historical TMS data split by ticket categories, to understand trends, as shown in Chapter 3. For the traffic and revenue forecast, FY26YTD (Apr- Feb) as discussed in the earlier sections, can be considered a normal period.

6.20 The tables below summarise the forecast segmentation assumptions for each of the toll plazas.

Table 6.8: Forecast toll segmentation, FY26 onwards- TP1 Sikandra

Ticket type	CJV (FY26)	CJV (FY27)	Mini LCV	LCV	Bus	2A	3A/MAV
Single	78%	62%	93%	96%	95%	95%	99%
Local commercial	0%	0%	0%	2%	2%	2%	1%
Local personal	1%	1%	2%	-	-	-	-
Exemptions	4%	3%	4%	2%	2%	2%	0%
Violations	0%	0%	0%	0%	0%	0%	0%
Annual Pass	17%	33%	-	-	-	-	-

Source: Steer analysis of Client TMS data

Table 6.9: Forecast toll segmentation, FY26 onwards- TP2 Rajadhok

Ticket type	CJV (FY26)	CJV (FY27)	Mini LCV	LCV	Bus	2A	3A/MAV
Single	76%	61%	91%	83%	98%	98%	99%
Monthly	0%	0%	0%	-	-	-	-
Local commercial	2%	2%	1%	16%	1%	1%	1%
Local personal	3%	2%	3%	-	-	-	-
Exemptions	4%	3%	4%	1%	2%	2%	0%
Violations	0%	0%	0%	0%	0%	0%	0%
Annual Pass	16%	31%	-	-	-	-	-

Source: Steer analysis of Client TMS data

Overloading

6.21 Overloaded vehicles on the Asset are charged twice the toll fee they would otherwise pay for a Single ticket at the toll plaza. We have considered FY25 actual overloading shares and assumed that they would continue in the forecast years. Table 6.10 shows the

assumptions for share of overloaded Single journey vehicles that are considered to pay twice the Single journey toll fee due to overloading.

Table 6.10: Overloading assumptions for forecast years FY26 onwards

Vehicle type	Single	Local Commercial
TP1 Sikandra		
LCV	1.8%	0.0%
Bus	0.1%	0.0%
2A	2.2%	0.1%
3A/MAV	3.0%	0.0%
TP2 Rajadhok		
LCV	1.5%	0.0%
Bus	0.5%	0.0%
2A	3.2%	0.0%
3A/MAV	2.5%	0.0%

Source: Steer analysis of Client data

Toll evolution

6.22 Based on the concession agreement and the gazetted toll notification, we understand that base toll rates increase every year (revision month is July) based on WPI-linked inflation. These are rounded up to the nearest five to estimate the final toll rate charged to users.

6.23 We have used actual toll rates from the FY26 toll notifications and latest print WPI for the month of March'25[18] for FY26 to validate the modelling of future toll evolution. Increase in WPI was calculated based on the Client's WPI forecasts, as shown in Table 6.11 below. The upward trend in inflation is expected to continue in the medium term, before gradually tapering to 4.1% by FY32 when the concession period ends.

6.24 These WPI forecasts provided by the Client. The WPI forecasts available from other independent forecasting agencies may vary from this assumption and could be lower or higher than that provided by the Client.

Table 6.11: WPI growth forecast assumptions

Financial year	WPI growth (%)
FY26	2.05%
FY27	3.88%
FY28	5.0%
FY29	5.1%
FY30	4.9%
FY31	4.4%
FY32	4.1%

[18] Latest release WPI

Source: FY27 onwards WPI print as per client inputs

Revenue reconciliation

6.25 As part of validating the data provided by the Client, as well as our assumptions around toll calculations, we have reconciled the actual reported revenue against the modelled revenue. For the Asset we have reconciled daily level reported revenue for FY26YTD with the modelled revenue based on FY26YTD MADT and forecast assumptions on toll segmentation, trip factors and toll rates.

6.26 The comparison, as shown in Table 6.12 below, shows that modelled revenue overall is within a variation of 0.2-0.3% on average from the reported revenue. This gives us confidence that the revenues estimated using the traffic data in our forecasts are accurately representing the revenues being reported from the Asset.

Table 6.12: Revenue reconciliation for FY26YTD

Toll Plaza	Steer modelled daily revenue (INR lakhs)	Reported daily revenue (INR lakhs)	Difference (%)
TP1 Sikandra	25.22	25.25	0.1%
TP2 Rajadhok	20.06	20.09	0.2%

Source: Steer comparison between modelled and reported revenue for FY26YTD

Traffic and Revenue forecasts

6.27 Based on the traffic and revenue-related forecast assumptions discussed above, we have modelled the traffic and revenue for the forecast period for the Asset. The table below presents the AADT/PCU and revenue forecast growth rates and CAGRs on this Asset. Further, Appendix C presents the AADT and revenues for the forecast period.

Table 6.13: Traffic forecasts (with impacts) forecast for TP1 Sikandra

Vehicle Type	FY26	FY27	FY28	FY30	FY32
CJV	10,830	11,605	12,427	14,164	16,075
Mini LCV	1,152	1,212	1,274	1,402	1,539
LCV	353	360	367	380	394
Bus	1,782	1,852	1,924	2,068	2,218
2A	653	685	720	792	868
3A	350	351	353	357	361
MAV	3,737	3,974	4,202	4,582	5,052
AADT	**18,857**	**20,038**	**21,266**	**23,746**	**26,507**
PCU's	**36,364**	**38,499**	**40,665**	**44,788**	**49,496**

Source: Steer analysis

Table 6.14: Traffic forecasts (with impacts) CAGR (%) for TP1 Sikandra

Vehicle Type	FY26-FY27	FY27-FY28	FY28-FY30	FY30-FY32	FY26-FY32
CJV	7.2%	7.1%	6.8%	6.5%	6.8%
Mini LCV	5.2%	5.2%	4.9%	4.8%	4.9%
LCV	2.0%	1.9%	1.8%	1.8%	1.9%
Bus	3.9%	3.9%	3.7%	3.6%	3.7%

Vehicle Type	FY26-FY27	FY27-FY28	FY28-FY30	FY30-FY32	FY26-FY32
2A	4.9%	5.1%	4.9%	4.7%	4.9%
3A	0.2%	0.6%	0.6%	0.6%	0.5%
MAV	6.3%	5.7%	4.4%	5.0%	5.2%
AADT	**6.3%**	**6.1%**	**5.7%**	**5.7%**	**5.8%**
PCU's	**5.9%**	**5.6%**	**4.9%**	**5.1%**	**5.3%**

Source: Steer analysis

Table 6.15: Revenue forecast for TP1 Sikandra (INR crores)

Vehicle Type	FY26	FY27	FY28	FY30	FY32
CJV	24.8	22.2	25.3	30.8	38.2
Mini LCV	3.2	3.5	3.9	4.6	5.5
LCV	1.8	1.9	2.0	2.3	2.6
Bus	17.7	19.1	20.5	24.5	28.7
2A	6.6	7.2	7.9	9.6	11.5
3A	5.7	6.0	6.3	7.0	7.7
MAV	63.1	69.7	77.1	92.8	111.4
Total	**123.0**	**129.5**	**143.3**	**171.5**	**205.6**

Source: Steer analysis

Table 6.16: Revenue growth CAGR (%) for TP1 Sikandra

Vehicle Type	FY26-FY27	FY27-FY28	FY28-FY30	FY30-FY32	FY26-FY32
CJV	(5.4%)	13.8%	10.3%	11.5%	6.4%
Mini LCV	4.9%	11.7%	8.4%	9.6%	8.2%
LCV	2.3%	8.4%	6.6%	6.8%	5.7%
Bus	3.7%	9.1%	8.5%	8.2%	7.1%
2A	4.2%	10.4%	9.7%	9.4%	8.1%
3A	2.0%	5.2%	5.7%	4.9%	4.4%
MAV	5.1%	10.5%	9.7%	9.5%	8.4%
Total	2.6%	10.6%	9.4%	9.5%	7.6%

Source: Steer analysis

Table 6.17: Traffic forecast (with impacts) for TP2 Rajadhok

Vehicle Type	FY26	FY27	FY28	FY30	FY32
CJV	13,758	13,123	14,052	16,016	18,177
Mini LCV	1,078	1,134	1,192	1,312	1,440
LCV	402	370	377	392	406
Bus	1,647	1,622	1,685	1,811	1,943
2A	587	585	615	676	742
3A	283	260	261	264	268
MAV	2,838	2,830	2,993	3,258	3,592
AADT	**20,593**	**19,924**	**21,177**	**23,730**	**26,566**
PCU's	**34,761**	**33,949**	**35,908**	**39,681**	**43,975**

Source: Steer analysis

Table 6.18: Traffic forecast (with impacts) CAGR (%) for TP2 Rajadhok

Vehicle Type	FY26-FY27	FY27-FY28	FY28-FY30	FY30-FY32	FY26-FY32
CJV	(4.6%)	7.1%	6.8%	6.5%	4.8%
Mini LCV	5.2%	5.2%	4.9%	4.8%	4.9%
LCV	(7.8%)	1.9%	1.8%	1.8%	0.2%
Bus	(1.5%)	3.9%	3.7%	3.6%	2.8%
2A	(0.3%)	5.1%	4.9%	4.7%	4.0%
3A	(8.3%)	0.6%	0.6%	0.6%	(0.9%)
MAV	(0.3%)	5.8%	4.3%	5.0%	4.0%
AADT	(3.2%)	6.3%	5.9%	5.8%	4.3%
PCU's	(2.3%)	5.8%	5.1%	5.3%	4.0%

Source: Steer analysis

Table 6.19: Revenue forecast for TP2 Rajadhok (INR crores)

Vehicle Type	FY26	FY27	FY28	FY30	FY32
CJV	31.1	25.2	28.7	34.5	43.4
Mini LCV	2.9	3.2	3.6	4.2	5.1
LCV	1.9	1.8	1.9	2.2	2.5
Bus	16.5	16.8	18.3	21.9	25.6
2A	6.0	6.2	6.9	8.4	10.1
3A	4.6	4.4	4.6	5.1	5.7
MAV	47.0	48.7	54.3	65.0	78.0
Total	**110.1**	**106.3**	**118.3**	**141.3**	**170.4**

Source: Steer analysis

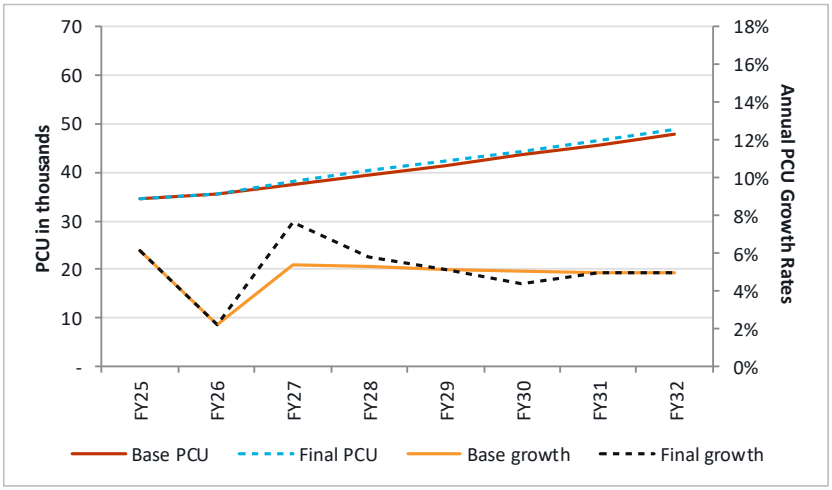
Table 6.20: Revenue growth rates (%) for TP2 Rajadhok

Vehicle Type	FY26-FY27	FY27-FY28	FY28-FY30	FY30-FY32	FY26-FY32
CJV	(10.0%)	13.8%	9.7%	12.2%	4.9%
Mini LCV	4.9%	11.7%	7.8%	10.3%	8.2%
LCV	(2.2%)	8.0%	6.7%	6.3%	4.1%
Bus	0.8%	9.1%	9.4%	8.2%	6.5%
2A	1.4%	10.5%	10.6%	9.4%	7.6%
3A	(2.4%)	6.1%	5.5%	5.0%	3.1%
MAV	1.8%	11.5%	9.4%	9.6%	7.5%
Total	(1.7%)	11.3%	9.3%	9.8%	6.4%

Source: Steer analysis

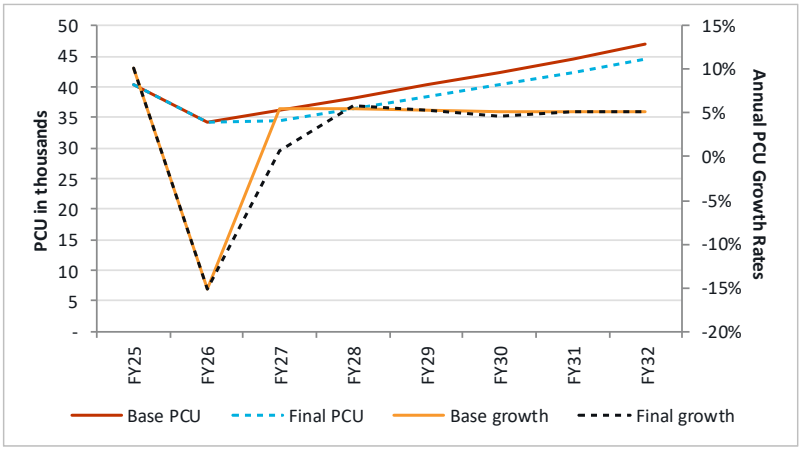
6.28 As presented in the table above, CAGRs (FY26-FY32) in terms of PCUs for traffic forecasts (plus impacts) growth rates is 5.1% at TP1 Sikandra, and 1.1% at TP2 Rajadhok.

Figure 6.2: Traffic and growth rates for forecast PCUs - Background and final, TP1 Sikandra



Source: Steer analysis

Figure 6.3: Traffic and growth rates for forecast PCUs - Background and final, TP2 Rajadhok



Source: Steer analysis

Upside and Downside cases

Upside and Downside scenario assumptions

6.29 We have developed our base case scenario considering a balanced view on the risks associated with input assumptions around GDP growth and traffic growth elasticities. There is always a risk that the outturn values of these inputs will vary as compared to the assumptions taken due to exogenous impacts, e.g. GDP growth could be influenced both positively and negatively by the impact of monsoons, export-import balances, political changes etc.

6.30 Similarly, traffic growth elasticities could be influenced by increased efficiencies achieved by technology, large shifts in commodity prices globally, changes in local manufacturing practices. However, at this stage we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

6.31 To account for the possible variations in the growth drivers, we are also presenting an Upside (optimistic) and a Downside (pessimistic) scenario. These scenarios are defined by the following variations from the base assumptions:

Table 6.21: Summary of Macro-economic Assumptions for upside and downside cases

Input	Upside	Downside
Macro Assumptions		
GDP/GSDP	+1% every year	-1% every year
WPI	+1% every year	-1% every year
Elasticities	+ 10%	- 10%

Source: Steer analysis

6.32 Further, network developments are highly dependent on governmental directions, policies, legal and financial measure which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside (pessimistic) case. However, at this stage, we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

Impacts-Upside Case

6.33 The upside case impacts included in forecasts are summarised in below.

Table 6.22: Summary of impacts on the Assets

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact	
			TP1 Sikandra	TP2 Rajadhok
Completion of construction of Delhi-Mumbai Expressway	FY27	+25% of base case	2A: (0.2%) 3A: (0.3%) MAV: (0.3%)	CJV: (8.2%) LCV: (7.2%) Bus: (3.9%) 2A: (3.9%) 3A: (6.7%) MAV: (5.0%)
Completion of Agra-Gwalior Construction	FY27*		MAV: 1.8%	MAV: 1.9%

Source: Steer analysis, * Same as base case timeline

Impacts-Downside Case

6.34 The downside case impacts included in forecasts are summarised in below.

Table 6.23: Summary of impacts on the Assets

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact	
			TP1 Sikandra	TP2 Rajadhok
Completion of construction of Delhi-Mumbai Expressway	FY27*	-25% of base case	2A: (0.3%) 3A: (0.6%) MAV: (0.4%)	CJV: (13.7%) LCV: (12.0%) Bus: (6.5%) 2A: (6.5%) 3A: (11.1%) MAV: (8.4%)

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact	
			TP1 Sikandra	TP2 Rajadhok
Completion of Agra-Gwalior Construction	FY27*		MAV: 1.1%	MAV: 1.1%

Source: Steer analysis, * Same as base case timeline

Upside and Downside Forecasts

6.35 Based on the above assumptions for upside and downside scenarios, the following table summarizes the upside potential and downside risks associated with the PCU and the revenue for Sikandra and Rajadhok toll plazas at the end of the concession i.e. FY32.

Table 6.24: Upside potential and Downside PCU scenario - FY32

Toll Plaza	Upside Potential	Downside Risk
Sikandra	8.9%	(7.3%)
Rajadhok	11.5%	(9.5%)

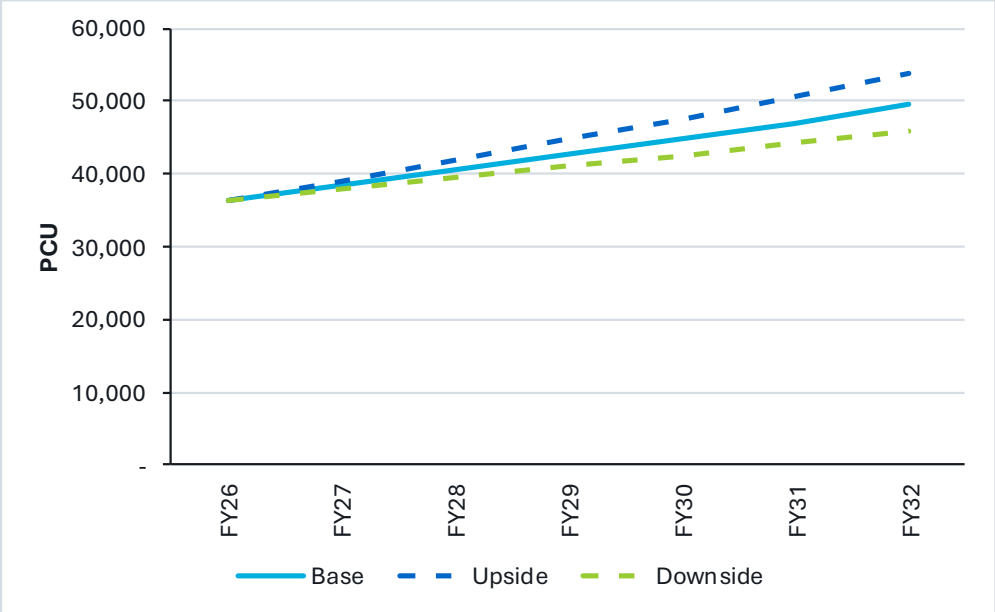
Source: Steer Analysis of client data

Table 6.25: Upside potential and Downside Revenue scenario - FY32

Toll Plaza	Upside Potential	Downside Risk
Sikandra	14.0%	(11.2%)
Rajadhok	16.2%	(13.4%)

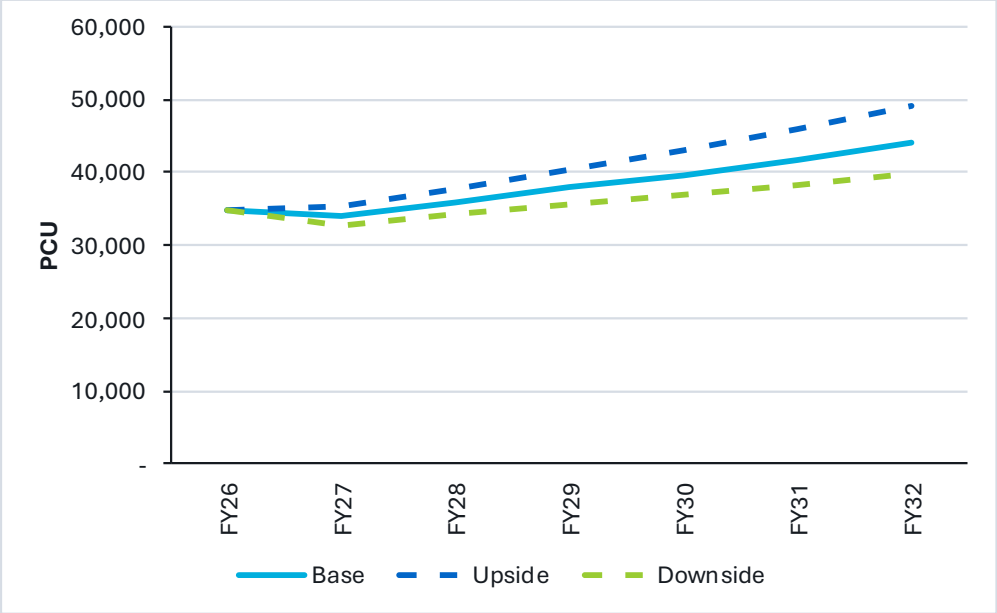
Source: Steer Analysis of client data

Figure 6.4: Long-term PCU forecasts for TP1 Sikandra including upside and downside scenarios



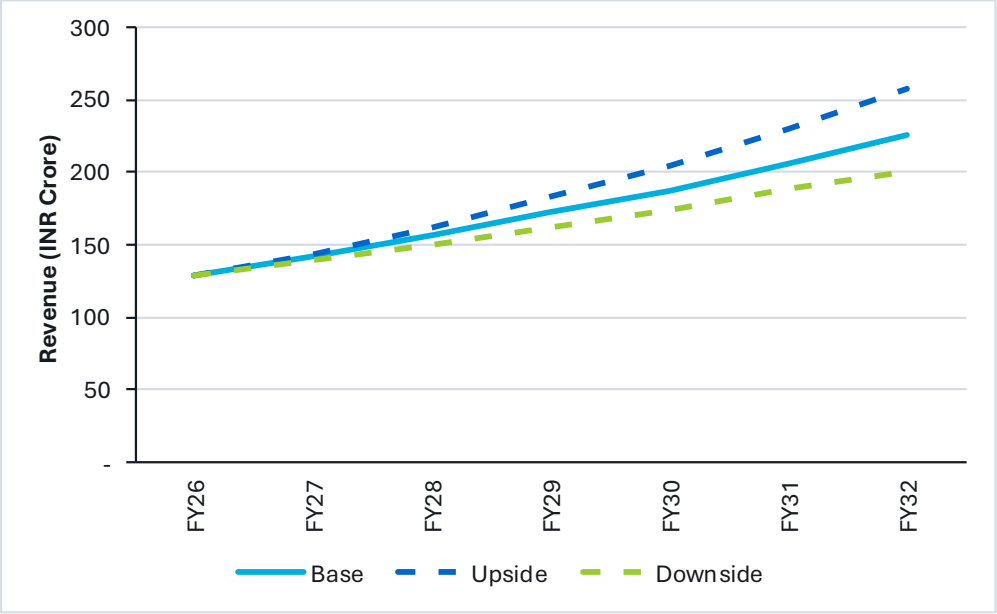
Source: Steer Analysis

Figure 6.5: Long-term PCU forecasts for TP2 Rajadhok including upside and downside scenarios



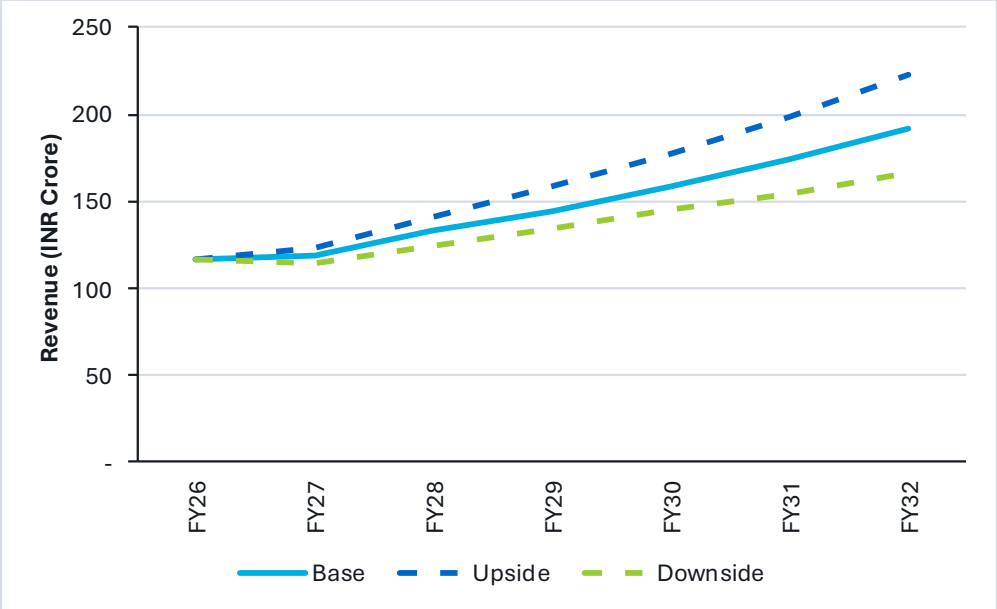
Source: Steer Analysis

Figure 6.6: Long-term revenue forecasts for TP1 Sikandra including upside and downside scenarios



Source: Steer Analysis

Figure 6.7: Long-term revenue forecasts for TP2 Rajadhok including upside and downside scenarios



Source: Steer Analysis

Summary outlook

6.36 Passenger traffic on the Asset is driven by local movements connecting key urban centers of Jaipur, Agra, Alwar, and Bharatpur. Tourism and leisure travel between Jaipur at one end and Bharatpur and Agra at the other also contributes to passenger and bus movements, as the Asset is part of the Golden Triangle corridor (Delhi NCR, Agra, Jaipur). Even though the recent pandemic impacted passenger and tourism-related traffic, the trend of increased use of personal vehicles has led to a good recovery of car traffic in recent months. TP2 Rajadhok has shown stronger traffic growth, especially in the CJV category, due to its proximity to Jaipur and the operationalization of the DME spur to Lalsot in February 2023 and until Sawai Madhopur in September 2024, enhancing connectivity to Delhi. However, with the new 67-km Bandikui to Jaipur Ring Road spur (part of the DME) opening in July 2025 this incremental traffic for TP2 has diverted to the spur (as can be seen in the FY26 traffic at Rajadhok), as the new link offers a faster and shorter route between Delhi and Jaipur.

6.37 Goods traffic is driven by agricultural commodities, construction-related traffic including stone and sand, apart from a good spread of consumption-related commodities meeting urban demand. The completion of large-scale construction activity in the vicinity of the Asset, combined with limited sand movement and network developments like the construction of the Delhi Mumbai Expressway, had temporarily caused a slowdown in the Asset's traffic growth. These effects have largely receded in recent years. As the economic recovery gathers pace, the Asset is expected to see traffic growth aligned with the historical trends observed in the long term. The strong recovery in recent months has shown underlying strength in the traffic growth drivers along the Asset corridor, which is expected to continue driving growth. Heavy vehicles (3A/MAV) primarily cater to long-distance movements between western and eastern India.

6.38 Our findings and estimates in this report are based on our understanding from the site visit, analysis of primary data available both from surveys (including OD surveys from June 2023 at TP1 and February 2026 at TP2) and the toll management system (both historical and current, up to March 2026), macroeconomic assumptions prescribed by the Client, feedback from Client meetings, and secondary publicly available data. There can be both positive and negative risks associated with assumptions and the forecasts using them as summarized.

6.39 Overall, we see a positive outlook for the region and the Asset, given that it serves major urban centers of Jaipur, Agra, Bharatpur, Alwar, and Delhi NCR. It is also the primary route on the tourism corridor connecting Jaipur with Bharatpur and Agra. The underlying growth drivers of the corridor are strong and are expected to deliver long-term sustained growth.

Appendices

A Developments in sandmining

A.1 This appendix provides a chronological account of developments – policy, regulatory and judicial – in sandmining applicable across India and particularly in Rajasthan. Please note that this list is not exhaustive and is meant to gain a high-level understanding of the issues surrounding sandmining that affect movement of sand on the Asset.

Table A.1: History of policy and regulatory changes, and court judgements affecting sandmining

Event	Timeline
National	
Recommendations of MoEF core group	2010
SC ruling - Orders MoEF to formulate guidelines for sustainable sand - mining	Feb FY12
MoEFCC Sustainable Sand Mining Management Guidelines - Calls for site-specific surveys by district administration - Environmental clearance mandatory for all sand mines - DEAC and DEIAA committees for less than 5-hectare mines Stop of mining during monsoon months (June-September)	Mar FY16
Amendment of EIA Notification 2006 - EI clearance mandatory for all small-scale sand mines Treat cluster mines within 500 m as single mine	May FY17
SC ban on sandmining; prohibits 82 large sandmining lease holders	Nov FY18
SC refuses to remove ban	Jan, Aug FY19
Rajasthan	
Mining policy	2015
NGT: Even existing licence holders need to get environmental clearance	Jan FY15
Not clear if manufactured sand can meet demand and quality needs	FY19
"Mining ban give rise to sand mafia"	Oct FY19
SC stays Rajasthan HC order that allowed sandmining at mines with issued LoIs	May FY20
Manufactured sand policy being considered and licences for small plots being allowed	Sept FY19, Jul FY20
Replenishment study of sand mines to be taken up	Aug FY20
Rajasthan HC asks PS (RJ) to issue compounding fee on vehicle – apply consistent approach	Sept FY20
Rajasthan M-sand policy announced	2020
Revised M-sand policy and 27 monitoring teams deployed across the state	2024

Source: Steer research

B Top 10 OD pairs

B.1 Further to the OD analysis presented in Chapter 3 this appendix presents the top 10 OD pairs at each toll plaza. Please see this data for both CJVs and MAVs and OSVs combined below.

TP1 Sikandra

Table B.1: CJV top 10 OD pair shares at TP1 Sikandra

	OD Pair	Share
1.	Agra-Jaipur	10.46%
2.	Jaipur-Sikandra	9.79%
3.	Dausa-Sikandra	6.68%
4.	Bharatpur-Jaipur	5.85%
5.	Jaipur-Mahwa	4.19%
6.	Mathura-Jaipur	3.53%
7.	Alwar-Jaipur	3.07%
8.	Alwar-Dausa	3.07%
9.	Mahwa-Dausa	3.07%
10.	Agra-Dausa	2.78%

Source: Steer analysis of OD data

Table B.2: MAV and OSV top 10 OD pair shares at TP1 Sikandra

	OD Pair	Share
1.	Agra-Jaipur	7.22%
2.	Bhuj-Agra	5.13%
3.	Jaipur-Sikandra	2.79%
4.	Bharatpur-Jaipur	2.75%
5.	Bhuj-Kolkata	2.60%
6.	Bhuj-Kanpur Nagar	1.80%
7.	Bhuj-Lucknow	1.72%
8.	Alwar-Jaipur	1.58%
9.	Bhuj-Bharatpur	1.43%
10.	Ajmer-Agra	1.43%

Source: Steer analysis of OD data

TP2 Rajadhok

Table B.3: CJV top 10 OD pair shares at TP2 Rajadhok

	OD Pair	Share
1.	Dausa-Jaipur	19.2%
2.	Agra-Jaipur	4.9%
3.	Robertsganj-Jaipur	4.1%
4.	Alwar-Jaipur	4.0%
5.	Jaipur-Bharatpur	3.6%
6.	Delhi-Jaipur	3.1%
7.	Mathura-Jaipur	2.4%
8.	Karauli-Jaipur	2.2%
9.	Julana-Jaipur	1.9%
10.	Dhaulpur-Jaipur	1.9%

Source: Steer analysis of OD data

Table B.4: MAV and OSV top 10 OD pair shares at TP2 Rajadhok

	OD Pair	Share
1.	Dausa-Jaipur	5.0%
2.	Bhuj-Agra	2.8%
3.	Bhuj-Kanpur Nagar	2.8%
4.	Agra-Jaipur	2.6%
5.	Mathura-Jaipur	2.0%
6.	Bhuj-Delhi	1.9%
7.	Bhuj-Lucknow	1.8%
8.	Bihar-Bhuj	1.6%
9.	Alwar-Jaipur	1.5%
10.	Bhuj-Robertsganj	1.4%

Source: Steer analysis of OD data

C Detailed forecasts

C.1 Further to the summary of forecasts presented in Chapter 6, this appendix presents detailed forecasts.

Traffic forecasts (with Impacts)

C.2 This section presents the detailed traffic forecasts for the forecast period until FY32, year of expected close of the concession. The following two tables show the traffic growth rates and AADT, respectively.

Table C.1: Traffic forecasts (base + impacts) traffic – TP1 Sikandra

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY27	11,605	1,212	360	1,852	685	351	3,974	**20,038**	**38,499**
FY28	12,427	1,274	367	1,924	720	353	4,202	**21,266**	**40,665**
FY29	13,281	1,338	374	1,996	756	355	4,423	**22,522**	**42,839**
FY30	14,164	1,402	380	2,068	792	357	4,582	**23,746**	**44,788**
FY31	15,089	1,469	387	2,142	829	359	4,811	**25,087**	**47,080**
FY32	16,075	1,539	394	2,218	868	361	5,052	**26,507**	**49,496**

Table C.2: Traffic forecasts (base + impacts) traffic – TP2 Rajadhok

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY27	13,123	1,134	370	1,622	585	260	2,830	**19,924**	**33,949**
FY28	14,052	1,192	377	1,685	615	261	2,993	**21,177**	**35,908**
FY29	15,018	1,252	385	1,748	646	263	3,151	**22,462**	**37,882**
FY30	16,016	1,312	392	1,811	676	264	3,258	**23,730**	**39,681**
FY31	17,062	1,375	399	1,876	708	266	3,421	**25,106**	**41,770**
FY32	18,177	1,440	406	1,943	742	268	3,592	**26,566**	**43,975**

Source: Steer analysis

Revenue forecasts (with Impacts)

C.3 The following table presents the year-wise annual revenue forecasts for the forecast period until FY32.

Table C.3: Forecasts revenue (INR crores) – TP1 Sikandra

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	34.1	3.5	1.9	19.1	7.2	6.0	69.7	**141.4**
FY28	38.8	3.9	2.0	20.8	7.9	6.3	77.1	**156.8**
FY29	43.6	4.3	2.1	22.6	8.7	6.6	84.8	**172.8**
FY30	47.0	4.6	2.3	24.5	9.6	7.0	92.8	**187.7**
FY31	52.2	5.0	2.5	26.5	10.5	7.4	101.5	**205.5**
FY32	58.6	5.5	2.6	28.7	11.5	7.7	111.4	**225.9**

Source: Steer analysis

Table C.4: Forecasts revenue (INR crores) – TP2 Rajadhok

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	37.8	3.2	1.8	16.8	6.2	4.4	48.7	**118.9**
FY28	43.0	3.6	1.9	18.3	6.9	4.6	54.3	**132.7**
FY29	46.4	3.8	2.0	20.1	7.6	4.9	60.0	**144.8**
FY30	51.8	4.2	2.2	21.9	8.4	5.1	65.0	**158.6**
FY31	58.0	4.6	2.3	23.7	9.2	5.4	71.4	**174.7**
FY32	65.1	5.1	2.5	25.6	10.1	5.7	78.0	**192.1**

Source: Steer analysis

D Data collection exercise

D.1 To validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

TVC counts

Table D.1: 4-day TVC counts at TP1 Sikandra

Date	Toll Plaza	CJV	MLCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
26-06-23	TP1	11,027	1,297	937	1,303	388	404	3,105	7	**18,468**
27-06-23	TP1	10,281	1,237	1,004	1,293	478	404	3,002	7	**17,706**
28-06-23	TP1	11,585	1,255	1,069	1,269	453	363	3,061	7	**19,062**
29-06-23	TP1	11,843	1,085	994	1,194	506	398	3,075	6	**19,101**

Source: Steer analysis

Table D.2: 3-day TVC counts at TP2 Rajadhok

Date	Toll Plaza	CJV	MLCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
17-02-26	TP2	12,703	1,373	901	1,501	406	315	3,139	1	**20,339**
18-02-26	TP2	13,964	1,406	967	1,563	474	253	2,912	-	**21,539**
19-02-26	TP2	15,978	1,401	917	1,476	429	240	3,145	1	**23,587**

Source: Steer analysis

Table D.3: Weekly average daily traffic of TVC vs TMS

TP	Source	CJV+ MLCV	LCV	Bus	2 Axle	3A+ MAV	OSV	Total
TP1 Sikandra	TVC	12,403	1,001	1,265	456	4,904	8	**17,300**
	TMS	11,359	365	1,705	467	4,965	-	**16,191**
TP2 Rajadhok	TVC	15,608	928	1,513	436	269	3,065	**21,822**
	TMS	14,504	411	1,318	835	-	3,343	**20,412**

Source: Steer analysis, TMS=Traffic data shared by Client

Zone list

Table D.4: Zone list used for OD analysis

Zone No	Zone Name	State
1	Andaman & Nicobar Island	Andaman & Nicobar Island

Zone No	Zone Name	State
2	Visakhapatnam	
3	Itanagar	
4	Assam	Assam
5	Bihar	Bihar
6	Chandigarh	Chandigarh
7	Chhattisgarh	Chhattisgarh
8	Dadara & Nagar Havelli	Dadara & Nagar Havelli
9	Daman & Diu	Daman & Diu
10	Goa	Goa
11	Bhuj	
12	Julana	
13	Shmila	
14	Srinagar	
15	Jharkhand	Jharkhand
16	Karnataka	Karnataka
17	Kochi	
18	Lakshadweep	Lakshadweep
19	Hanumana	
20	Maharashtra	Maharashtra
21	Manipur	Manipur
22	Meghalaya	Meghalaya
23	Mizoram	Mizoram
24	Nagaland	Nagaland
25	Rest of NCT of Delhi	Rest of NCT of Delhi
26	Puducherry	Puducherry
27	Punjab	Punjab
28	Rawatbhata	
29	Sikkim	Sikkim
30	Chennai	
31	Telangana	Telangana
32	Tripura	Tripura
33	Robertsganj	
34	Dehradun	
35	Kolkata	
36	Odisha	Odisha
37	Jhalawar	Rajasthan
38	Agra	Uttar Pradesh

Zone No	Zone Name	State
39	Jhansi	Uttar Pradesh
40	Ahmadabad	Gujarat
41	Sheopur	Madhya Pradesh
42	Jhunjhunun	Rajasthan
43	Jodhpur	Rajasthan
44	Ajmer	
45	Shivpuri	Madhya Pradesh
46	Junagadh	Gujarat
47	Shrawasti	Uttar Pradesh
48	Jyotiba Phule Nagar	Uttar Pradesh
49	Kachchh	Gujarat
50	Aligarh	Uttar Pradesh
51	Alirajpur	Madhya Pradesh
52	Siddharth Nagar	Uttar Pradesh
53	Kaithal	Haryana
54	Allahabad	Uttar Pradesh
55	Sidhi	Madhya Pradesh
56	Sikar	Rajasthan
57	Alwar	
58	Ambala	Haryana
59	Ambedkar Nagar	Uttar Pradesh
60	Singrauli	Madhya Pradesh
61	Amreli	Gujarat
62	Sirohi	Rajasthan
63	Sirsa	Haryana
64	Kannauj	Uttar Pradesh
65	Anand	Gujarat
66	Sitapur	Uttar Pradesh
67	Kanpur Dehat	Uttar Pradesh
68	Kanpur Nagar	Uttar Pradesh
69	Kansiram Nagar	Uttar Pradesh
70	Anuppur	Madhya Pradesh
71	Sonbhadra	Uttar Pradesh
72	Ashoknagar	Madhya Pradesh
73	Sonipat	Haryana
74	Auraiya	Uttar Pradesh
75	Delhi	

Zone No	Zone Name	State
76	Karnal	Haryana
77	Azamgarh	Uttar Pradesh
78	Katni	Madhya Pradesh
79	Baghpat	Uttar Pradesh
80	Delhi	
81	Kaushambi	Uttar Pradesh
82	Bahraich	Uttar Pradesh
83	Balaghat	Madhya Pradesh
84	Sultanpur	Uttar Pradesh
85	Kheda	Gujarat
86	Ballia	Uttar Pradesh
87	Surat	Gujarat
88	Kheri	Uttar Pradesh
89	Balrampur	Uttar Pradesh
90	Surendranagar	Gujarat
91	Banas Kantha	Gujarat
92	Banda	Uttar Pradesh
93	Banswara	Rajasthan
94	The Dangs	Gujarat
95	Bara Banki	Uttar Pradesh
96	Baran	Rajasthan
97	Bareilly	Uttar Pradesh
98	Barmer	Rajasthan
99	Tikamgarh	Madhya Pradesh
100	Barwani	Madhya Pradesh
101	Basti	Uttar Pradesh
102	Kota	Rajasthan
103	Tonk	Rajasthan
104	Betul	Madhya Pradesh
105	Udaipur	Rajasthan
106	Kurukshetra	Haryana
107	Bharartpur	
108	Bharuch	Gujarat
109	Kushinagar	Uttar Pradesh
110	Bhavnagar	Gujarat
111	Ujjain	Madhya Pradesh
112	Bhilwara	Rajasthan

Zone No	Zone Name	State
113	Bhind	Madhya Pradesh
114	Umaria	Madhya Pradesh
115	Bhiwani	Haryana
116	Lalitpur	Uttar Pradesh
117	Unnao	Uttar Pradesh
118	Bhopal	Madhya Pradesh
119	Bijnor	Uttar Pradesh
120	Vadodara	Gujarat
121	Bikaner	Rajasthan
122	Valsad	Gujarat
123	Varanasi	Uttar Pradesh
124	Lucknow	Uttar Pradesh
125	Vidisha	Madhya Pradesh
126	Budaun	Uttar Pradesh
127	Bulandshahr	Uttar Pradesh
128	Maharajganj	Uttar Pradesh
129	Bundi	Rajasthan
130	Burhanpur	Madhya Pradesh
131	Mahendragarh	Haryana
132	Delhi	
133	Mahesana	Gujarat
134	Delhi	
135	Mahoba	Uttar Pradesh
136	Mainpuri	Uttar Pradesh
137	West Nimar	Madhya Pradesh
138	Chandauli	Uttar Pradesh
139	Mandla	Madhya Pradesh
140	Mandsaur	Madhya Pradesh
141	Mathura	
142	Chhatarpur	Madhya Pradesh
143	Yamunanagar	Haryana
144	Mau	Uttar Pradesh
145	Chhindwara	Madhya Pradesh
146	Jind	Haryana
147	Dausa	Rajasthan
148	Karauli	
149	Meerut	Uttar Pradesh

Zone No	Zone Name	State
150	Sawai Madhopur	Rajasthan
151	Mewat	Haryana
152	Mirzapur	Uttar Pradesh
153	Chitrakoot	Uttar Pradesh
154	Chittaurgarh	Rajasthan
155	Moradabad	Uttar Pradesh
156	Churu	Rajasthan
157	Morena	Madhya Pradesh
158	Tapi	Gujarat
159	Muzaffarnagar	Uttar Pradesh
160	Damoh	Madhya Pradesh
161	Nagaur	
162	Datia	Madhya Pradesh
163	Deoria	Uttar Pradesh
164	Dewas	Madhya Pradesh
165	Narmada	Gujarat
166	Narsimhapur	Madhya Pradesh
167	Dhar	Madhya Pradesh
168	Navsari	Gujarat
169	Dhaulpur	Rajasthan
170	Neemuch	Madhya Pradesh
171	New Delhi	NCT of Delhi
172	Delhi	
173	Dindori	Madhya Pradesh
174	Delhi	
175	Dohad	Gujarat
176	Delhi	
177	Dungarpur	Rajasthan
178	Delhi	
179	Pali	Rajasthan
180	Palwal	Haryana
181	Panch Mahals	Gujarat
182	Panchkula	Haryana
183	East Nimar	Madhya Pradesh
184	Panipat	Haryana
185	Panna	Madhya Pradesh

Zone No	Zone Name	State
186	Etah	Uttar Pradesh
187	Etawah	Uttar Pradesh
188	Faizabad	Uttar Pradesh
189	Faridabad	Haryana
190	Patan	Gujarat
191	Farrukhabad	Uttar Pradesh
192	Fatehabad	Haryana
193	Fatehpur	Uttar Pradesh
194	Firozabad	Uttar Pradesh
195	Pilibhit	Uttar Pradesh
196	Porbandar	Gujarat
197	Gandhinagar	Gujarat
198	Pratapgarh	Rajasthan
199	Ganganagar	Rajasthan
200	Gautam Bhuddha Nagar	
201	Ghaziabad	Uttar Pradesh
202	Ghazipur	Uttar Pradesh
203	Rae Bareli	Uttar Pradesh
204	Gonda	Uttar Pradesh
205	Gorakhpur	Uttar Pradesh
206	Raisen	Madhya Pradesh
207	Rajgarh	Madhya Pradesh
208	Guna	Madhya Pradesh
209	Rajkot	Gujarat
210	Rajsamand	Rajasthan
211	Gurgaon	Haryana
212	Gwalior	Madhya Pradesh
213	Hamirpur	Uttar Pradesh
214	Rampur	Uttar Pradesh
215	Hanumangarh	Rajasthan
216	Harda	Madhya Pradesh
217	Ratlam	Madhya Pradesh
218	Hardoi	Uttar Pradesh
219	Mahamaya Nagar	Uttar Pradesh
220	Rewa	Madhya Pradesh
221	Rewari	Haryana

Zone No	Zone Name	State
222	Rohtak	Haryana
223	Hisar	Haryana
224	Hoshangabad	Madhya Pradesh
225	Sabar Kantha	Gujarat
226	Sagar	Madhya Pradesh
227	Saharanpur	Uttar Pradesh
228	Indore	Madhya Pradesh
229	Jabalpur	Madhya Pradesh
230	Jaipur	Rajasthan
231	Jaisalmer	Rajasthan
232	Jalaun	Uttar Pradesh
233	Sant Kabir Nagar	Uttar Pradesh
234	Sant Ravi Das Nagar(bhadohi)	Uttar Pradesh
235	Jalor	Rajasthan
236	Satna	Madhya Pradesh
237	Jamnagar	Gujarat
238	Sehore	Madhya Pradesh
239	Seoni	Madhya Pradesh
240	Shahdol	Madhya Pradesh
241	Jaunpur	Uttar Pradesh
242	Jhabua	Madhya Pradesh
243	Shahjahanpur	Uttar Pradesh
244	Jhajjar	Haryana
245	Shajapur	Madhya Pradesh
246	Agra	Uttar Pradesh
247	Fatehpur Sikri	Uttar Pradesh
248	Vrindavan	Uttar Pradesh
t249	Mehandipur	Rajasthan
250	Bharatpur	Rajasthan
251	Mandwar	Rajasthan
252	Jaipur	Rajasthan
253	Mahwa	Rajasthan
254	Balaheri	Rajasthan
255	Bandikui	Rajasthan
256	Banetha	Rajasthan
257	Banskho	Rajasthan

Zone No	Zone Name	State
258	Bhangarh	Rajasthan
259	Brahmbad	Rajasthan
260	Chandrana	Rajasthan
261	Chomu	Rajasthan
262	Dhanawar	Rajasthan
263	Dhiradi	Rajasthan
264	Dolika	Rajasthan
265	Hindaun	Rajasthan
266	Kherli	Rajasthan
267	Kumher	Rajasthan
268	Merta	Rajasthan
269	Nadoti	Rajasthan
270	Neemrana	Rajasthan
271	Nihalpura	Rajasthan
272	Paparda	Rajasthan
273	Arauda	Rajasthan
274	Bagrana	Rajasthan
275	Bamanpura	Rajasthan
276	Bassi	Rajasthan
277	Baswa	Rajasthan
278	Bayana	Rajasthan
279	Bhainsa	Rajasthan
280	Bhandana	Rajasthan
281	Bhandrej	Rajasthan
282	Bhot	Rajasthan
283	Bhusawar	Rajasthan
284	Binua	Rajasthan
285	Chainpura	Rajasthan
286	Chaksu	Rajasthan
287	Dausa	Rajasthan
288	Deeg	Rajasthan
289	Doodhli	Rajasthan
290	Dopur	Rajasthan
291	Dubbi	Rajasthan
292	Geejgarh	Rajasthan
293	Halena	Rajasthan

Zone No	Zone Name	State
294	Helak	Rajasthan
295	Jasota	Rajasthan
296	Jhar	Rajasthan
297	Jhera	Rajasthan
298	Kalera	Rajasthan
299	Kanauta	Rajasthan
300	Kanjoli	Rajasthan
301	Khairwal	Rajasthan
302	Khan Bhankri	Rajasthan
303	Kharkara	Rajasthan
304	Kishangarh	Rajasthan
305	Kolwa	Rajasthan
306	Kumha	Rajasthan
307	Lalwas	Rajasthan
308	Lotwara	Rajasthan
309	Lulhara	Rajasthan
310	Luniawas	Rajasthan
311	Madoli	Rajasthan
312	Mariyada	Rajasthan
313	Mehandipur	Rajasthan
314	Mitrapura	Rajasthan
315	Nadbai	Rajasthan
316	Paharsar	Rajasthan
317	Paota	Rajasthan
318	Pipalkhera	Rajasthan
319	Ramshighpura	Rajasthan
320	Raniwas	Rajasthan
321	Rohtaspura	Rajasthan
322	Sainthal	Rajasthan
323	Sikindra	Rajasthan
324	Sindoli	Rajasthan
325	Singwara	Rajasthan
326	Sinpini	Rajasthan
327	Somara	Rajasthan
328	Sujanpura	Rajasthan

Zone No	Zone Name	State
329	Sukhawali	Rajasthan
330	Todabhim	Rajasthan
331	Vamanpura	Rajasthan
332	Weir	Rajasthan
333	Rajadhok	Rajasthan
334	Sikandra	Rajasthan
335	Myanmar	Myanmar
336	Bhutan	Bhutan
337	Bangladesh	Bangladesh
338	Noida	Uttar Pradesh
339	Bhutan	Bhutan
340	Chokawada	Chattisgarh

Source: Steer Analysis

Direction-wise commodity distribution

Table D.5: Commodity distribution towards Jaipur for TP1 Sikandara

Commodity Category	Mini LCV + LCV	2A Truck	3A Truck	MAV + OSV
Agriculture	15%	16%	20%	20%
Groceries	19%	17%	15%	9%
Construction	5%	10%	8%	10%
Petroleum	2%	-	4%	3%
Manufacturing	-	4%	5%	4%
Automobiles	-	-	1%	0%
Miscellaneous	10%	8%	9%	6%
Metals	-	2%	3%	7%
Empty	49%	44%	37%	41%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer Analysis

Table D.6: Commodity distribution towards Agra for TP1 Sikandara

Commodity Category	Mini LCV + LCV	2A Truck	3A Truck	MAV + OSV
Agriculture	8%	7%	8%	5%
Groceries	6%	18%	11%	8%
Construction	11%	12%	19%	36%
Petroleum	8%	3%	5%	6%
Manufacturing	15%	12%	13%	15%
Automobiles	2%	1%	-	0%

Miscellaneous	15%	10%	8%	13%
Metals	8%	5%	6%	5%
Empty	28%	32%	31%	11%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer Analysis

Table D.7: Commodity distribution towards Jaipur for TP2 Rajadhok

Commodity Category	Mini LCV + LCV	2A Truck	3A Truck	MAV + OSV
Agriculture	5%	8%	5%	15%
Groceries	12%	23%	7%	5%
Construction	2%	1%	10%	5%
Petroleum	3%	4%	3%	8%
Manufacturing	9%	5%	7%	3%
Automobiles	1%	1%	2%	2%
Miscellaneous	21%	13%	16%	6%
Metals	2%	1%	7%	5%
Empty	44%	43%	43%	50%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer Analysis

Table D.8: Commodity distribution towards Agra for TP1 Rajadhok

Commodity Category	Mini LCV + LCV	2A Truck	3A Truck	MAV + OSV
Agriculture	2%	2%	1%	2%
Groceries	17%	10%	10%	4%
Construction	7%	2%	10%	35%
Petroleum	2%	3%	5%	21%
Manufacturing	12%	6%	6%	7%
Automobiles	-	2%	1%	1%
Miscellaneous	35%	50%	39%	17%
Metals	2%	-	1%	4%
Empty	22%	24%	25%	9%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer Analysis

Trip length distribution

Table D.9:Trip length frequency for TP1 Sikandra

Distance range	LCV	2 Axle	3 Axle	MAV
0-100 km	9%	14%	10%	6%

Distance range	LCV	2 Axle	3 Axle	MAV
100-300 km	39%	42%	36%	26%
300-500 km	13%	9%	12%	11%
500-1000 km	19%	14%	16%	15%
>1000 km	20%	22%	25%	41%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer Analysis

Table D.10: Trip length frequency for TP2 Rajadhok

Distance range	LCV	2 Axle	3 Axle	MAV
0-100 km	31%	38%	16%	8%
100-300 km	25%	28%	21%	14%
300-500 km	17%	11%	17%	14%
500-1000 km	12%	14%	27%	23%
>1000 km	15%	10%	19%	41%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer Analysis

Control Information

Prepared by

Steer
Suite No. S3, Vatika Business Centre, Vatika Triangle, MG Road, Gurgaon, Haryana, 122002, India
+91 124 441 8650
www.steergroup.com

Prepared for

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1, Sector 16, Noida- 201301 (UP, India)

Steer project/proposal number

23741311

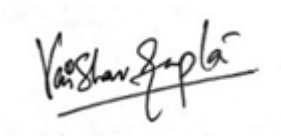
Client contract/project number

11.0

Author/originator

Vineet Karlapalem

Reviewer/approver



Vaibhav Gupta

Other contributors

Shipra Bhatia, Ayushman Rai, Samridha K, Harshit Garg

Distribution

Client: Cube Highways Pvt. Ltd Steer:

Version control/issue number

Date

April 2026

steergroup.com

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence Kotwa-Muzaffarpur Tollway Limited

Cube Highways Fund Advisors Private Limited
Our ref: 23741311

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence Kotwa-Muzaffarpur Tollway Limited

Prepared by:

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002,
India

+91 124 441 8650
www.steergroup.com

Prepared for:

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1, Sector 16, Noida- 201301 (UP, India)

Client ref: Transit 11
Our ref: 23741311

Steer has prepared this material for Cube Highways Fund Advisors Private Limited. This material may only be used within the context and scope for which Steer has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer shall be deemed to confirm their agreement to indemnify Steer for all loss or damage resulting therefrom. Steer has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

steer

Table of Contents

Disclaimer		**v**
Glossary Items		**i**
1	**Introduction**	**1**
	The assignment	1
	Our approach	2
	Contents of this report	3
2	**The Asset**	**4**
	Introduction	4
	Strategic network	4
	Concession and tolling details	6
	Key economic activities	7
	Alternate Routes	9
3	**Traffic Description**	**10**
	Introduction	10
	Historical trends	11
	Key findings of the TVC data analysis	16
	Key findings of origin-destination analysis	18
	Conclusions	29
4	**Socio economic context and traffic growth**	**31**
	Introduction	31
	Population growth	31
	Economic Indicators	32
	Economic growth	35
	Forecasts for growth drivers	38
5	**FY26 base year AADT and Traffic Growth Analysis**	**40**
	FY26 base year AADT estimates	40
	Estimation of background elasticities	42
	Overview	42
6	**Forecast: Network overlays and forecasts**	**46**
	Introduction	46
	Analysis of potential network/developmental impacts	46
1.9%	**48**	
	Revenue forecasting assumptions	49
	Traffic and Revenue forecasts	51
	Target revenues and modification of concession period	53
	Upside and Downside cases	54
	Summary Outlook	57

Figures

Figure 2.1: Asset location in the regional network context 4
Figure 2.2: Asset Context 5
Figure 2.3: Typical cross-sections and toll plazas on the Asset 6
Figure 3.1: Ticket-segmentation for CJV at TP1 14
Figure 3.2: Ticket-segmentation for MAV at TP1 15
Figure 3.3: Comparison between TVC and TMS total daily traffic data on TP1 Parsoni Khem 17
Figure 3.4: Comparison between vehicle shares from TVC and TMS WADTs 17
Figure 3.5: Zonal influence at TP1 Parsoni Khem 20
Figure 3.6: Zonal influence at Sahebganj (Open OD) 20
Figure 3.7: Zonal influence at Benipur (Open OD) 21
Figure 3.8: Internal-external distribution at TP1 Parsoni Khem 22
Figure 3.9: Internal-external distribution at Sahebganj 22
Figure 3.10: Internal-external distribution at Benipur 23
Figure 3.11: Commodity distribution at TP1 Parsoni Khem (Total) 25
Figure 3.12: Commodity distribution at Sahebganj (Total) 25
Figure 3.13: Commodity distribution at Benipur (Total) 26
Figure 3.14: Trip length distribution TP1 Parsoni Khem 27
Figure 3.15: Trip length distribution at Sahebganj 28
Figure 3.16: Trip length distribution at Benipur 28
Figure 4.1: Annual growth – Index of Industrial Production (FY16-FY26YTD) 33
Figure 4.2: Total number of registered motor vehicles in India (per 1000 population 34
Figure 4.3: Per Capita Income 34
Figure 4.4: YoY growth in expenditure components of GDP 35
Figure 4.5: Month on Month IIP performance 36
Figure 4.6: Industrial components of GVA 36
Figure 4.7: Evolution of Bihar's state GDP and National GDP 37
Figure 4.8: GDP-GSDP forecast 39
Figure 6.1: Proposed Alignment of Gorakhpur Siliguri Expressway 47
Figure 6.2: Long-term PCU forecasts for Parsoni Khem TP including upside and downside scenarios 56
Figure 6.3: Long-term revenue forecasts for Parsoni Khem TP including upside and downside scenarios 56

Tables

Table 1.1: Scope of work and sources of data 1
Table 2.1: Summary of Concession 6
Table 2.2: Single toll rates on the Asset (INR), applicable FY26 7
Table 3.1: PCU factors 10

Table 3.2: Traffic Levels at TP1 Parsoni Khem	11
Table 3.3: Tollable Traffic Levels at TP1 Parsoni Khem	11
Table 3.4: Total Revenue (INR Crores) by vehicle type at TP1 Parsoni Khem, and AADC (average annual daily collection in lakhs)	13
Table 3.5: Typical ticket types sold at NHAI plazas	13
Table 3.6: Ticket-segmentation for LCV, Bus, 2A and 3A Categories at TP1 Parsoni Khem	15
Table 3.7: Data collection schedule	16
Table 3.8: ADT from TVC counts	16
Table 3.9: sample rates for OD data	18
Table 3.10: Zone aggregations for zonal influence analysis	18
Table 3.11: Commodity categories	23
Table 3.12: Average trip length (in km) at TP1 Parsoni Khem	27
Table 3.13: Average trip length (in km) at Sahebganj	28
Table 3.14: Average trip length (in km) at Benipur	29
Table 4.1: CAGR of population in India	31
Table 4.2: Population Growth in India (2012 – 2024)	32
Table 5.1: Adopted SCF for the Asset, FY23 and FY24 average	41
Table 5.2: Adopted base estimates AADT: TP1: Parsoni Khem	41
Table 5.3: Identified growth drivers to model traffic growth	42
Table 5.4: Passenger and Commercial growth with normalised FY22	44
Table 5.5: Elasticity recommendations for the Asset (Kotwa- Muzaffarpur)	44
Table 6.1: Toll & Time Comparison between Asset and Alternate	47
Table 6.2 Impact of Gorakhpur Siliguri Expressway	48
Table 6.3: Impact of 6 laning LOS improvement	48
Table 6.4: Trip factors at TP1 Parsoni Khem	49
Table 6.5: Toll segmentation FY26 onwards, TP1 Parsoni Khem	50
Table 6.6: Annual pass compensation for CJVs (in Crore)	50
Table 6.7: WPI growth forecast assumptions	50
Table 6.8: FY26 Revenue reconciliation summary (INR Lakhs)	51
Table 6.9: Traffic forecast (with impacts) for TP1 Parsoni Khem	51
Table 6.10: Traffic CAGR (%) for TP1 Parsoni Khem	52
Table 6.11: Revenue forecast (with impacts) for TP1 Parsoni Khem (INR crores) including Annual Pass Compensation revenue for CJVs	52
Table 6.12: Revenue growth CAGR (%) for TP1 Parsoni Khem	52
Table 6.13: Target Revenues for Extension 1	53
Table 6.14: Target Revenues for Extension 2	53
Table 6.15: Summary of Macro-economic Assumptions for upside and downside cases	54
Table 6.16: Summary of impacts on the Assets (upside)	55
Table 6.17: Summary of impacts on the Assets (downside)	55
Table 6.18: Upside potential and Downside PCU scenario – FY51	55
Table 6.19: Upside potential and Downside Revenue scenario – FY51	56

Appendices

A Top 10 OD pairs

B Detailed Forecasts

C Data Collection Exercise

Disclaimer

This report has been produced for the sole benefit of Cube Highways Pvt. Ltd ("the Client"). The report may only be relied upon by Approved Addressees in accordance with the terms of our engagement letter. This Report (the "Report") is confidential and disclosed only for information purposes, and it may not be relied upon by any party other than the Client or a Party to a Reliance Letter, and Steer: a) makes no warranty, expressed or implied, with respect to the use of any information or methods disclosed in this Report; and b) assumes no liability with respect to the use of any information or methods disclosed in this document. Any such party by its acceptance or use of this Report releases Steer from any liability for direct, indirect, consequential, or special loss or damage whether arising in contract, warranty, express or implied, tort or otherwise.

The Report is based on standard professional efforts, and information available to us at the time the review took place and is subject to time and budget constraints of the Report's scope of work. This Report, information and statements contained herein, are all based on third party data provided to us, or sourced by us, and Steer has not sought to establish the reliability of the data, except as specifically stated in the Report. Steer bears no responsibility for the results of any actions taken on the basis of third-party data. Certain forward-looking statements in the Report are estimates based on interpretations or assessments of information available at the time of writing. The Report is thus to be viewed as an assessment that is time-relevant, specifically referring to conditions at the time of the review. Steer undertakes no obligation to update the Report for any reason. While the estimates contained in the Report are not precise forecasts, they do represent, in our view a reasonable expectation of the future, based on information we have been provided with or sourced. However, the estimates necessarily rely on numerous assumptions and judgements, and circumstances may occur over the timeframe of the project that go counter to these assumptions and judgements and that affect the project's realized revenues. Actual events may differ from those assumed, and events are subject to change. Therefore, Steer makes or provides no warranty, whether implied or otherwise, as to the accuracy of forward-looking information presented. Further, it is important to note that forecasts presented represent long term growth profiles; the results for individual time periods may vary from forecasted values.

Traffic Consultant developed the relationships in the models used to produce the forecasts for the projects based on data available through February 2026. This report does not consider variations in traffic performance due to changing macro and force majeure events such (but not limited to) as global wars, economic uncertainty (high inflation, global recession), and changes in the regulatory environment. The situation remains dynamic and is subject to significant change in the short and medium term. In this challenging context, Traffic Consultant has produced base forecasts with a view on a possible scenario for the traffic forecasts. However, it is important to note that this is only one view, and there continues to remain uncertainty as to the short-term, intermediate or prolonged effects of and responses to such macro-economic/force majeure events. As a result, no assurance can be provided by Traffic Consultant that the scenarios and assumptions Traffic Consultant has identified will prove to be accurate. Given the uncertainty inherent in this scenario, Traffic Consultant advises that all readers of the Report consider the Report in the context of their own assessment of the impact of such events.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE ISSUE OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES.

Glossary Items

Acronym	Meaning
2A/ Truck	2 Axle/ Truck
3A	3 Axle
AADT	Annual Average Daily Traffic
BOT	Build Operate Transfer
CAGR	Compound Annual Growth Rate
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DPR	Detailed Project Report
ETC	Electronic Toll Collection, also referred to as FASTag
FY	Financial Year
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HAM	Hybrid Annuity Model
HCM/ EME	Heavy Commercial Vehicles/ Earth Moving Machinery
IE reports	Independent Engineers' reports
IHMCL	Indian Highway Management Company Limited
INR	Indian Rupees
InvIT	Infrastructure Investment Trust
Km	Kilometer
LCV/ LGV	Light Commercial Vehicles/ Light Goods Vehicle
LMV	Light motor vehicles
MADT	Monthly average daily traffic
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NSDP	National State Domestic Production
OD	Origin Destination
OSV	Oversized vehicles
PCU	Passenger Car Unit: it is a measure of standard vehicle unit to convert all vehicle classes to a single unit by using PCU factors to compute total traffic on an Asset.
Q1	Quarter 1 of financial year, from April to June
Q2	Quarter 2 of financial year, from July to September
Q3	Quarter 3 of financial year, from October to December
Q4	Quarter 4 of financial year, from January to March
RNP	Registered Number Plate
SCF	Seasonality Correction Factor
SH	State Highway

Acronym	Meaning
T&R	Traffic and Revenue
TMS	Traffic Management System
TVC	Traffic Volume Count
WADT	Weekly average daily traffic
YTD	Year to Date

1 Introduction

The assignment

1.1 The Cube Highways Fund Advisors Private Limited (the "Client") has commissioned Steer Davies Gleave India Private Limited ("Steer") for a traffic due diligence to be carried out on the Kotwa - Muzaffarpur Tollway Road (hereafter called "Asset"). This report forms part of the annual fair market valuation (FMV) undertaken as part of the "Transit 11 project". This report presents an update of the traffic and revenue forecasts based on actual traffic data available up to February 2026 and latest macro-economic assumptions.

1.2 The Asset Kotwa-Muzaffarpur consists of a single toll road section. For this report, we hereafter call the toll plaza on the Asset as TP1.

- Kotwa-Muzaffarpur Tollway Limited: KMTL: TP1 – Parsoni Khem

Our scope of work for the traffic and revenue forecasting process includes:

Table 1.1: Scope of work and sources of data

Scope of work	Data source
• Review of historical Traffic Management System (TMS) data, Vendor reports and documents	• Provided by client for the period between Oct'20 and Mar '26, with FY26 base AADT and forecasts considering data up to Feb'26
• Historical analysis and forecasts for baseline growth, including; — Background growth, and — Seasonality trends	• Historical data provided by the Client and benchmarking using plazas in the vicinity or of similar nature of the Asset has been done wherever sufficient data was unavailable.
• Validation of revenue reported in FY26YTD	• TMS data provided by Client • Revenue reconciliation using toll plaza traffic and ticket type data to calculate revenue and reconciling it with toll plaza reported revenue
• Origin Destination (OD) analysis to understand growth drivers: — Zonal influence and Top OD pairs — Commodity distribution — Trip length distribution	• Origin Destination (OD) surveys undertaken by a survey agency appointed by Steer. The latest surveys were undertaken in 2026 at the TP.
• Analysis of upcoming network improvements and other developments, that may have future impacts on traffic	• Secondary research and our in-house experience of working in the vicinity of the Asset. Impact analysis conducted by Steer based on Generalised Journey Cost spreadsheet-based analysis

Scope of work	Data source
• Historical revenue analysis and forecasts for revenue estimation, including — Toll segmentation and trip factors, — Overloading shares	• Calculated from historical data provided by Client
• Final traffic growth forecasts including baseline growth rates and potential future impacts	• Elasticity based base growth and potential impacts from secondary research and Steer's in-house experience of working in the vicinity of the Asset
• Toll revenue estimation for the entire concession, including toll evolution	• Toll evolution based on toll notification published by National Highway Authority of India (NHAI); and latest Wholesale Price Index (WPI) trends as shared by the client

Our approach

1.3 Our approach follows well-established practices for forecasting ongoing traffic growth on an existing/brownfield Asset. The analysis focused on two sets of issues, namely:

- understanding the traffic that is currently using the Asset; and
- identifying how and why that traffic is likely to change in the future.

1.4 To understand the current traffic on the Asset, we have analysed traffic data from multiple independent sources:

- Client-provided secondary data, including:
  - TMS data starting October 2020 to February 2026. The historical traffic and revenue presented in Chapter 3 considers information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.
  - Concession agreement and toll notifications for FY25 and FY26
  - Previous studies related to traffic and revenue
  - In previous studies Steer-commissioned OD surveys on 23rd Jan 2025 on the Asset and an additional survey on the 24 Jan 2025 on the SH74 (alternate route) to validate any change in growth drivers and travel patterns.
  - Steer-commissioned three-day TVC survey between 23rd January and 25th Jan 2025 as a part of study.
  - As part of this study Steer-commissioned OD surveys on 14th Feb 2026 on the Asset and TVC surveys from 20th -22nd Feb 2026.
- We undertook revenue reconciliation for FY26YTD, by building up revenue from the traffic reported by the toll plaza and subsequently matched it to the reported revenue for FY26YTD using the prevalent toll rates and reported segmentation/toll-frequencies for FY26YTD, this is a key part of our analysis to validate the segmentation/toll-frequency assumptions and the Annual Average Daily Traffic (AADT) reported for each of the toll plaza.

1.5 The estimation of future traffic demand on the Asset was undertaken through:

- Estimating FY26 base year position. The FY25 AADT was calculated using the monthly traffic data for FY25. The annual FY25 AADT was then grown with elasticity linked GDP/GSDP growth to arrive at the FY26 expected traffic. To determine the adopted FY26, the expected FY26 traffic was validated against the 11 months of actual traffic (Apr-Feb) and necessary adjustments were made where required.
- Secondary research to understand plans for new developments and progress of ongoing developments on the Asset.
- Steer independent primary surveys and site visits to validate our network and contextual understanding.
- Developing a bespoke growth model for each Asset/plaza/toll class to forecast year-on-year traffic growth from FY26 to the end of concession period.
- Investigating the elasticity of historical traffic growth compared to state (GSDP) and national (GDP) growth. Where historical data is limited, we have benchmarked the Asset against our Steer knowledge base (e.g., similar Asset types in the same state or on the same corridor), to derive appropriate elasticities.
- Applying our elasticities to independent GDP forecasts as provided by client.
- Identifying and analysing the potential impacts of any relevant changes to the competitive position of each Asset – these include impacts of changes to road network including expressways and opening of competitive modes of travel.
- Identifying and analysing any other potential impacts to traffic and revenue on each Asset – these include axle load norms, axle shift for heavy goods, FASTag implementation.
- Considering changes in trends of segmentation over time and making suggestions for changes in exemptions in the future.
- Preparing traffic and revenue forecast for the Asset for the complete length of concession. The analysis here includes the specific impacts of network, or other exogenous factors specific to the Asset. We have developed a set of forecasting assumptions for three scenarios: a base case and upside and downside scenarios.

Contents of this report

1.6 The report has been divided into the following chapters, including Chapter 1 providing an introduction:

- Chapter 1 introduces the methodology and approach to undertake the traffic and revenue due diligence;
- Chapter 2 describes the key characteristics of the Asset and its surrounding road network, primarily based on site visits;
- Chapter 3 summarises the current and historical traffic trends on the Asset, including results from the TMS, TVC and OD analysis;
- Chapter 4 presents the socio-economic context of India, the corridor and region/state containing the Asset, along with our approach and results on estimating background along with our key forecasting assumptions,
- Chapter 5 presents our baseline year forecast and summarises our results on estimating background traffic demand growth
- Chapter 6 summarises our assessment of network impacts and presents concession traffic and revenue forecasts for the Asset along with the assumptions for upside and downside cases

2 The Asset

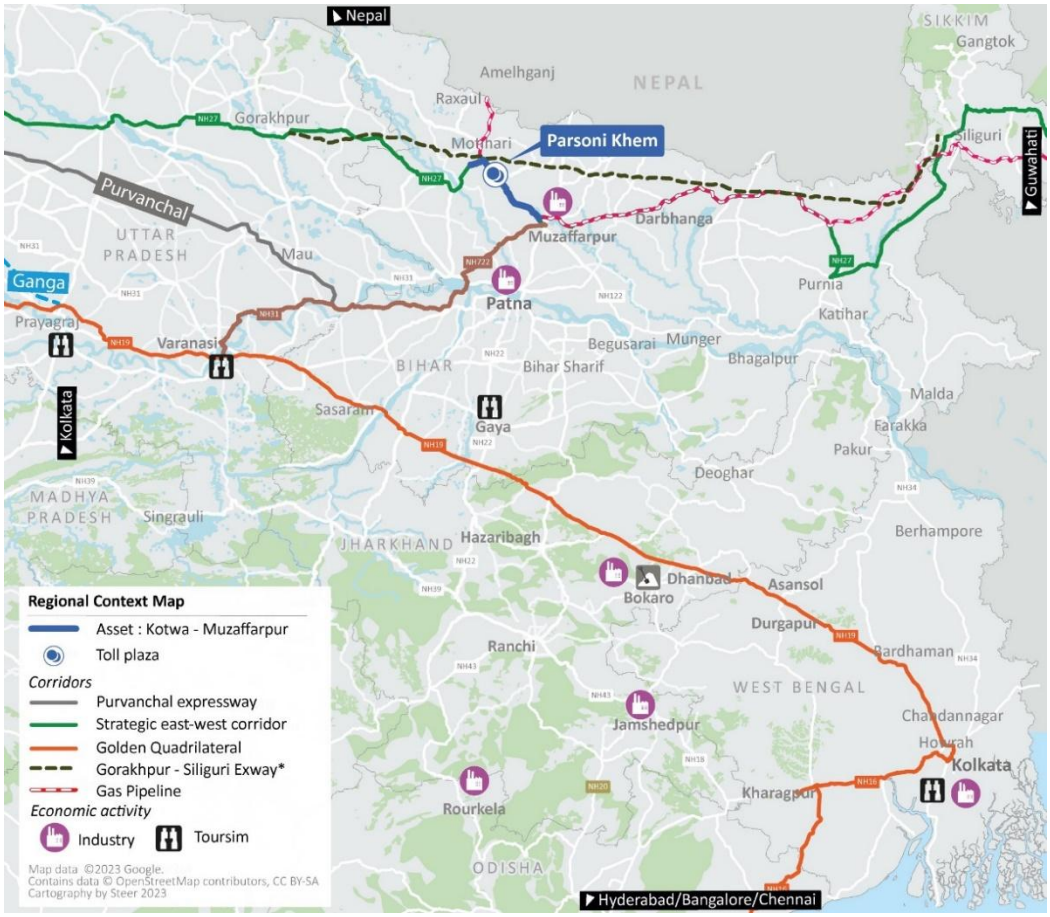
Introduction

2.1 This chapter provides a description of the Asset, based on both primary data (from site visits), and our understanding of the region and network surrounding the Asset. We cover the strategic network context, followed by key economic activities and network developments around the Asset.

Strategic network

2.2 The Asset is situated in the state of Bihar, connecting the cities of Muzaffarpur and Kotwa in the north-west part of Bihar. Figure 2.1 below shows the regional road network in which the Asset is located.

Figure 2.1: Asset location in the regional network context



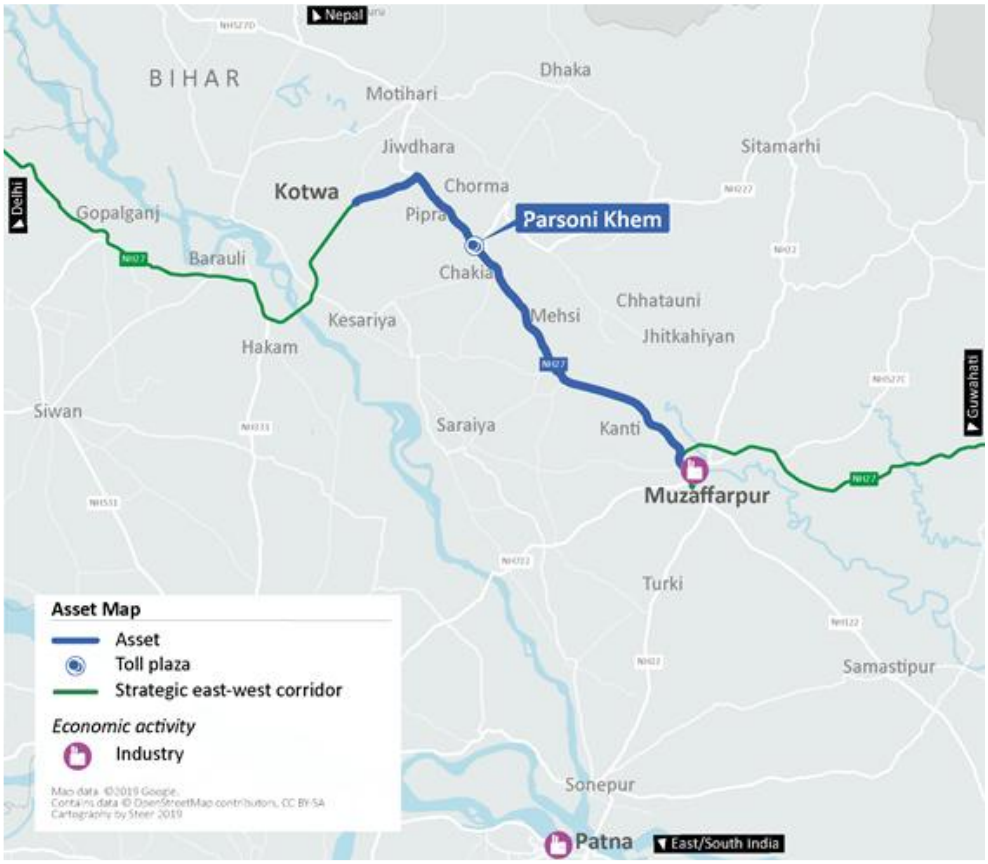
Source: Steer cartography using OpenStreetMap data

2.3 This Asset primarily caters to three different types of strategic movements:

- **Short distance** trips made by cars for local movement between places such as Muzaffarpur, Motihari, Chakia, Motipur and other local destinations mostly for work related purpose.
- **Medium-distance** trips made by light and heavy goods vehicles covering places such as Patna in the southern part of the state and Raxaul near the India-Nepal border thereby catering to the heavy movement of trucks between the two countries for trade purpose.
- **Long-distance** trips made by heavy goods vehicles to provide the east-west connectivity between states such as Uttar Pradesh, Uttarakhand and Delhi, and West Bengal and North-eastern states. The Asset also caters to movement of trucks to countries such as Nepal, Bangladesh and Bhutan.

2.4 The Asset is an 80 km toll road which forms part of the NH 27 in Bihar. It is a four-lane road with one toll plaza, namely, Parsoni Khem (TP1) at Km 467.700 (closer to Kotwa). Figure 2.2 below provides a closer view of the Asset in the context of its immediate surroundings. The Asset lies between the East Champaran and Muzaffarpur districts with Motihari, Chakia, Madhuban, Motipur, Kanti and Muzaffarpur being some of the key settlements along the Asset stretch. It is also located near other traffic generators such as Bettiah, Gopalganj, Patna and Raxual.

Figure 2.2: Asset Context



Source: Steer cartography using OpenStreetMap data

Concession and tolling details

2.5 The toll plaza on the Asset has been operational since December 2012, and the client took over the operations in October 2020. There are still 25 years left from April 2026 in the concession period which ends in FY51. Table 2.1 below presents a summary of the Asset.

Table 2.1: Summary of Concession

Particulars	Details
State	Bihar
Highway and lane configuration	NH 27, four lane
Toll plazas	TP1: Parsoni Khem
Length (km) as per concession agreement, applicable	TP1: 80 km
Commencement of operations	TP1: December 2012
Operated by Client since	October 2020
Concession period	30 years
Last year of concession	FY51

Source: Client data

Figure 2.3 below shows a typical cross-section of the Asset and its toll plazas.

Figure 2.3: Typical cross-sections and toll plazas on the Asset

Source: Steer site visit

Table 2.2: Single toll rates on the Asset (INR), applicable FY26

Type of Vehicle	Single Journey Fee
	TP1 Parsoni Khem
CJV	130
LCV	210
Bus/Truck	440
3A	480
HCM/EME/MAV	690
OSV	840

Source: NHAI Revision of User Fee Rate w.e.f 01 Apr'25

2.6 Apart from single tickets, the typical NHAI ticket categories like return, monthly, local personal and local commercial passes are also available on the Asset.

Key economic activities

2.7 Bihar's economic progress hinges on agriculture, which serves as its fundamental pillar. This sector employs a significant 77% of the workforce and contributes approximately 24.84% to the State's Domestic Product. An estimated 77% of Bihar's population is engaged in agricultural production, a figure considerably higher than the national average. In 2011-12, agriculture, including forestry and fishing, accounted for nearly 24.84% of the state's GDP[1].

2.8 Muzaffarpur situated on one end of the Asset is considered the commercial hub of north Bihar. It is majorly an agriculture and food processing led region with rice as the main crop grown followed by maize. It is also famous for its Lichi and Mangoes which are supplied all over the country. Some of the key large-scale industries in the region includes a thermal power plant in Kanti and Indian Drug Pharmaceutical Limited long with other medium to small scale industries producing biscuits, cloths, flours etc. There is also a food park in Muzaffarpur along with several chemical factories[2].

2.9 In 2025, Bihar Chief Minister Shri. Nitish Kumar laid the foundation stone for development projects worth ₹574.16 crore in Muzaffarpur. These include a Railway Over Bridge (ROB)-cum-approach road between Ramdayalu Nagar and Muzaffarpur railway station (₹167.68 crore), a road from Muzaffarpur-Pusa Road to Chandwara bridge approach (₹120.93 crore) and widening and strengthening of roads such as Chandni Chowk to Bakhri (₹89.77 crore). The initiative also included social welfare measures like increasing pension amounts and incentives for ASHA workers, and support for self-help groups under the Jeevika program.[3]

2.10 In addition to this, In May 2025, the Bihar State Investment Promotion Board approved 18 new industrial units in Muzaffarpur under the Bihar Industrial Policy 2025. These units, located in Bela and Motipur BIADA zones, span sectors such as bakery and food

[1] **Agriculture Department**

[2] As verified during Steer's site visit in 2025

[3] **Muzaffarpur ROB**

processing, plastic bottle manufacturing, organic food products, furniture production, and amusement parks. The projects are expected to generate approximately 10,000 jobs and provide market access to local farmers, especially those engaged in organic agriculture.[4]

2.11 East Champaran district located on the other end of the Asset is largely an agricultural area with presence of small-scale industries like fisheries industry, agro-based industry, and the pearl industry at Mehsi located about 20 km away from the toll plaza. The town of Raxaul, situated about 60 km from Kotwa is India's gateway to Nepal as it's the only point in India which is connected to Nepal through railways. In April 2023, Muzaffarpur got state's second ethanol plant at Motipur in the Muzaffarpur district with a daily production capacity of 110 kl from Maize/Rice.[5]

2.12 Gas Supply is one of the key economic activities of Bihar where the state is witnessing with increased construction of gas and oil infrastructure. In April 2023[6], the remaining portion of Baruni Guwahati Natural Gas Pipeline commissioned by GAIL got completed which connects to six districts of Bihar and further connecting to Assam in north-east. The project was under Pradhan Mantri Urja Ganga (PMUG) with about 729km. With the start of supply the north-eastern states will now be connected to national grid meeting the fuel demand in the region.

2.13 With increasing focus of the government as of 2024 the state with announced with several infrastructure investment which in-turn create positive impact on the traffic performance with increasing demand. In May 2024[7,] 109km Indian Oil Corporation (IOC) LPG pipeline between Muzaffarnagar- Motihari for the benefit of providing cleaner fuel access in the state and also to bordering countries like Nepal. For the same the construction of IOC bottling plant and storage terminal is announced at Motihari. The pipeline would serve 8 districts of North Bihar i.e. East Champaran, West Champaran, Gopalganj, Siwan, Muzaffarpur, Sheohar, Sitamarhi and Madhubani.

2.14 Also to cater the demand of petrol and kerosene in Nepal[89], the Motihari pipeline is announced by Indian Oil Corporation and Nepal Oil Corporation to get extended to Amlekhganj depot which is at Bihar- Nepal border. This is South Asia's first cross border petroleum project pipeline. The infrastructure construction of this ongoing is nearly completed and expected to be commissioned in next few months with its supply to Nepal.

2.15 In 2024 it was announced that the prime minister of India, Shri. Narendra Modi is set to launch initiatives worth ₹4,027 crore in the petroleum and natural sector. This project includes setting up a City Gas Distribution (CGD) network across five districts in Bihar — Darbhanga, Madhubani, Supaul, Sitamarhi, and Sheohar worth ₹3,638 crores by Bharat

---

[4] Industrial revolution in Muzaffarpur

[5] Nitish Kumar opens Bihar's 2nd ethanol unit at Motipur in Muzaffarpur | Patna News - Times of India (indiatimes.com)

[6] Bihar portion of the Barauni-Guwahati Natural Gas Pipeline Project completed - CGDIndia

[7] PM to inaugurate Muzaffarpur - Motihari LPG pipeline (indianchemicalnews.com)

[8] Construction of Motihari-Amlekhganj petroleum pipeline reaches final stage - myRepublica - The New York Times Partner, Latest news of Nepal in English, Latest News Articles (nagariknetwork.com)

[9] Motihari-Amlekhgunj Pipeline - Drishti IAS

petroleum corporation limited (BPCL). This initiative aims at expanding the cities piped natural gas supplies to households and factories alike. In addition, ₹389 crore Bitumen Manufacturing Unit will be set up at Indian Oil's Barauni Refinery to reduce reliance on imported bitumen and meet its rising demand caused by infrastructure developments such as the Bharatmala Pariyojna[10].

Alternate Routes

2.16 SH74 acts as an alternate connection between Muzaffarpur and NH27. SH74 is state highway with towns and villages on route. Providing an attractive alternate option in terms of shorter distance and improved speeds. Vehicles travelling from UP and west towards Northeastern parts of the country such as Siliguri, Assam, Guwahati, etc. may use this alternate route to save time and toll, which they would have to otherwise pay if the use the Asset. In order the use this route, vehicles travelling from UP and east towards Darbhanga and west may enter the alternate route from Rampur Khajuria and travel down, parallel to the Asset where they make the decision at Kesariya to exit from Chakia or exit from Motipur by travelling from Sahebganj.

2.17 As a part of Bharatmala Pariyaojna, 568 km long greenfield Gorakhpur Siliguri Expressway has been approved in 2025[11]. The expressway besides reducing travel time to six hours will boost the inter-state tourism and industrialisation between Uttar Pradesh, Bihar, and West Bengal. The expressway will pass through Gorakhpur in Uttar Pradesh, Gopalganj, Champaran, Kotwa and Muzaffarpur in Bihar and Siliguri in West Bengal. Since the alignment of the expressway runs parallel to the Asset, we believe once operational, trips moving from Uttar Pradesh, Bihar towards West Bengal/Northeast will have an alternate option to use the expressway and impact the traffic moving on the Asset.

2.18 The exact share of such traffic assumed to shift due to alternate routes is presented in detail in Chapter 6 of the report.

[10] **PM Modi Clean Fuel Initiatives: PM Modi to launch ₹4,027 cr clean fuel, infrastructure projects in Bihar, ET EnergyWorld**

[11] **Centre approves Gorakhpur-Siliguri 6-lane expressway | Patna News - The Times of India**

3 Traffic Description

Introduction

3.1 This chapter outlines the current traffic and revenue on the Asset, as well as Steer's analysis of origin-destination (OD) data as also traffic count data. This covers data which was collected as a part of this study and data that was provided by the Client.

3.2 Traffic demand data is generally collected and analysed to understand the volume and vehicle composition of demand currently using the Asset, while OD data is used to obtain a better understanding of travel patterns, trip lengths, trip purposes and areas of influence in the vicinity of the Asset, and the commodities being moved by goods vehicles. This analysis, combined with our understanding of the Asset (based on our site visits), enables us to identify the key drivers of demand on the Asset.

3.3 Actual toll plaza data is used as the basis from which the current/base year Monthly Average Daily Traffic (MADT) is established. This data is typically provided by the Client and independently analysed and validated by us using Traffic Volume Count (TVC) information.

3.4 The below sections present historical traffic and revenue information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.

PCU Factor assumption for reporting

3.5 The PCU values have been taken from 'IRC 64:1990- Guidelines[12] for Capacity of Roads in Rural Areas'. For MAV, based on the discussion with the Client, we have referred to the rigid and trailer splits in the latest TVC counts for calculating the effective PCU for MAVs. For rigid trailer trucks we have assumed a PCU factor of 3, whereas for trailer trucks we have assumed a PCU factor of 4.5. These factors have been used to arrive at the PCU values presented in Table 3.1 below.

Table 3.1: PCU factors

Vehicle Category	PCU Factor
CJV/Mini LCV	1.0
LCV	1.5
Bus/2A/3A	3.0
MAV*	3.6

[12] IRC 064: Guidelines for Capacity of Roads in Rural Areas (First Revision)

OSV	4.5

Source: Steer analysis, * Based on Rigid-Trailer split

Historical trends

3.6 Table 3.2 and Table 3.3 below present traffic and tollable traffic data for the asset between October 2020 and March 2026.

Table 3.2: Traffic Levels at TP1 Parsoni Khem

Vehicle Category	FY21*	FY22	FY23	FY24	FY25	FY26	CAGR FY23 FY26
CJV	3,791	4,118	3,978	4,229	4,489	4,954	7.6%
LCV	629	483	491	468	386	394	(7.1%)
Bus	660	439	397	361	489	530	10.2%
2A	1,058	1,042	1,105	1,121	1,190	1,280	5.0%
3A	1,061	1,083	1,081	1,072	1,005	977	(3.3%)
MAV	2,428	2,349	2,346	2,394	2,468	2,556	2.9%
OSV	-	-	2	2	1	1	
Total	**9,627**	**9,514**	**9,401**	**9,648**	**10,029**	**10,693**	**4.4%**
PCU	**21,909**	**21,084**	**21,013**	**21,319**	**22,109**	**23,215**	**3.4%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21); FY26 AADT represents the full year actual (April to March)

Table 3.3: Tollable Traffic Levels at TP1 Parsoni Khem

Vehicle Category	FY21*	FY22	FY23	FY24	FY25	FY26	CAGR FY23-FY26
CJV	3,356	3,299	3,555	3,746	4,026	4,388	7.3%
LCV	623	476	485	460	374	379	(7.9%)
Bus	640	520	394	359	483	519	9.6%
2A	1,051	998	1,097	1,114	1,182	1,272	5.0%
3A	1,085	1,026	1,075	1,071	1,038	970	(3.4%)
MAV	2,495	2,292	2,342	2,392	2,428	2,549	2.9%
OSV	2	2	2	2	1	1	
Tollable AADT	**9,251**	**8,612**	**8,949**	**9,141**	**9,532**	**10,078**	**4.0%**
Tollable PCU	**21,709**	**19,996**	**20,514**	**20,783**	**21,538**	**22,523**	**3.2%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21); FY26 includes represents the full year actual (April to March); Tollable AADT excludes exemptions and violations

3.7 Between FY23 and FY26, total traffic grew at a CAGR of 3.4% indicating moderate traffic growth in terms of PCU. In FY26, growth of 5% was seen at a total PCU level which was driven by an increase in CJVs (10.4%), 2A (7.6%), and Bus (8.4%).

3.8 3As experienced a consistent decline since FY23, primarily due to an industry-wide shift of axle configurations towards MAVs. The reduction in 3A volume is a result of the

declining demand for 3A vehicles, which are being replaced by 2A and MAVs. MAVs offer higher tonnage capacity making them more cost-effective for transporters. While the increase in 2A volume reflects the growing preference for these vehicles due to favourable changes in the legal permissible loads for 2As and their suitability for e-commerce-related freight, particularly high-value, low-volume goods over medium to long distances. This is consistent with our discussion with various transporters and OEMs across the country who are favouring 2A and 5A vehicles for commodity movement due to better unit economics.

3.9 Furthermore, effective May 2024, minibuses previously tolled as LCVs have been reclassified under the bus category. This reclassification is based on a passenger count system, replacing the earlier gross vehicle weight-based classification. Travel patterns in FY25 and FY26 remain largely consistent.

3.10 As of FY26, about 46% of vehicles on the Asset are cars, which are predominantly used for local travel by commuters between Motihari, Bettiah, Muzaffarpur, Patna and other local destinations along the Asset for purposes such as work, education and medical.

3.11 Heavy commercial vehicle on the Asset constitutes 45% to the total traffic (2A, 3A and MAV) on the Asset, owing to the strategic location of the Asset as a facilitator of east-west movement between northern and eastern parts of India. The Asset provides connectivity between industrial cities of Uttar Pradesh, Uttarakhand, Punjab, Haryana to West Bengal, Bihar and north-eastern states along with providing connectivity with Nepal border at Raxaul, Bihar.

3.12 In FY26, CJVs have the highest share of 46% and are followed by MAVs, which have a share of around 24% in traffic but contribute to approximately half of the revenue generated on the Asset.

3.13 The Asset has experienced subdued growth in the goods vehicle category, due to several factors including reduced trade with Nepal due to ongoing economic and political changes in Nepal. Additionally, the near completion of the Motihari - Amlekhganj pipeline, connecting Bihar to Nepal, has resulted in a shift of petroleum and oil transportation from road to pipeline, contributing to a decline in goods traffic[13].

3.14 The high growth observed in CJVs, Buses, and 2As is also attributable to a low base effect as in FY25, overall traffic growth was impacted during Q1 of FY25 due to nationwide general elections.

3.15 FY26 performance indicates recovery in traffic with MAVs growing by 4% and healthy growth of over 10% observed in CJVs. Buses in the region have also seen a significant growth of over 8%, while 3As continue to decline.

Historical Revenue

3.16 Table 3.4 shows the revenue (in INR Crores) and AADC (in INR Lakhs) by each vehicle type at the toll plaza between FY21 to FY26.

[13] **Motihari-Amlekhganj Petroleum Pipeline Project: Preparations to bring petrol thru pipeline in three months**

Table 3.4: Total Revenue (INR Crores) by vehicle type at TP1 Parsoni Khem, and AADC (average annual daily collection in lakhs)

FY	CJV	LCV	Bus	2A	3A	MAV	OSV	Total	AADC	AADC Growth
FY21*	5.4	1.5	3.3	5.6	6.4	21.7	0.0	**44.0**	**26**	-
FY22	10.4	2.4	6.0	12.1	13.7	45.8	0.0	**90.4**	**25**	**(3.8%)**
FY23	12.3	2.8	4.8	14.6	16.0	51.8	0.1	**102.2**	**28**	**12.0%**
FY24	13.9	2.8	4.6	15.7	16.7	55.6	0.1	**109.4**	**30**	**7.1%**
FY25	15.1	2.4	6.1	17.0	16.2	58.4	0.0	**115.3**	**32**	**5.7%**
FY26	16.5	2.9	7.2	19.3	16.8	63.3	0.4	**126.5**	**35**	**9.7%**

Source: Steer analysis of Client data, (FY21* From Oct-20 (last 12 days) to Mar-21; AADC represents Average Annual Daily Collection; FY26 represents full year actual (April to March).

3.17 MAVs are the highest revenue contributor on the Asset with approximately 51% share in FY26. CJVs which have the highest share in traffic, contributing to approximately 13% in terms of revenue in FY26. The average daily revenue collected at the toll plaza has been approx. INR 34.6 lakhs in FY26 compared to approx. INR 29.9 lakhs in FY24.

Toll Frequencies

3.18 Toll frequency or segmentation is typically the share of each ticket category recorded for a particular vehicle type. This is based on the toll policy which forms a part of the concession agreement. Each vehicle category has different segmentation. As a part of historical analysis, we calculate the toll frequency for each vehicle category from the monthly data shared by the client. The most common ticket categories observed on a typical National Highway are: Single, Return, Monthly, Local and Exempt. Given the local nature of traffic, some toll plazas offer custom made local passes to attract the local commuters to opt for these passes instead of evading toll.

3.19 The following are the types of tickets being sold at the plazas of the Asset.

Table 3.5: Typical ticket types sold at NHAI plazas

Category	Description
Single	Allows the vehicle to cross the toll plaza once
Return	Allows for a return journey within a day with a 50% discount on the return trip.
Monthly Pass	Discounted single entry ticket for users who undertake multiple trips within a month can buy the monthly pass.
Local Personal	Discounted single entry pass only for private cars of residents within 20km radius of toll plaza
Local Commercial	50% discount on single trips for commercial vehicles registered in the local district. This pass allows single entry only
Exemptions	Officially exempted vehicles like ambulance, police cars, key political personnel etc.

3.20 Further, the toll plazas also record violations which are non-paying users, who are not officially allowed under exemptions category but are forced exemptions. For some Assets, the Exemption and violations are at time reported together.

3.21 Generally, over the period the shares of single/return/monthly tickets tend to stabilise within 2-3 years of Asset operations. Only in the cases where trip patterns are expected to change significantly due to urban expansion is where we expect these shares to change over the period or due to some external events impacting the trip patterns.

Introduction of Annual pass for CJVs

3.22 The National Highway Authority of India launched the "The FASTag Annual Pass" on August 15, 2025, a prepaid facility that allows private CJVs to travel across designated National Highway and National Expressway toll plazas. The annual pass is worth INR 3,000. The pass is valid for one year or 200 trips, whichever occurs first and is applicable only to private, non-commercial vehicles (Car/Jeep/Vans).

Since this pass has been introduced by NHAI, it is not valid on

- state governed toll plazas on highways
- state governed toll plazas expressways
- Parking areas or other non-NHAI tolling locations

3.23 The pass can be activated via the RajmargYatra app or the NHAI website, and links directly to an existing FASTag.

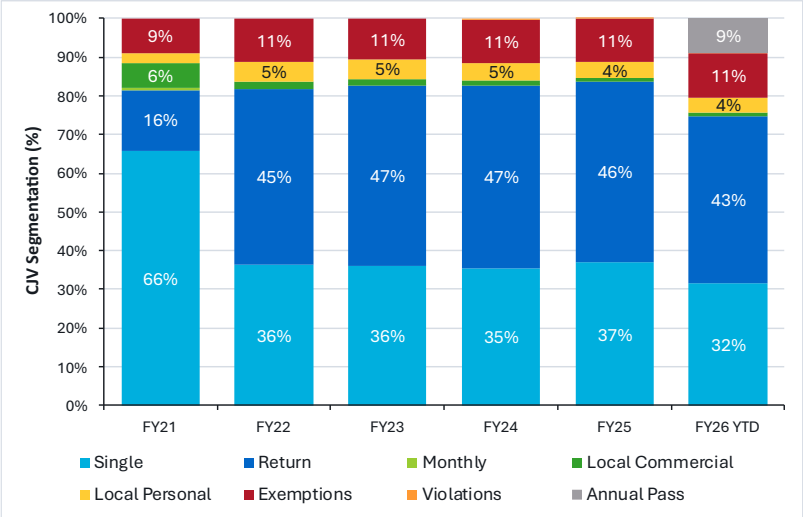
The Annual Pass aims to:

- Promote cashless and seamless travel on national highways.
- Reduce congestion and improve traffic flow at tolls
- Provide cost-effective travel for frequent users of NH/NE toll roads

Share of traffic by payment type

3.24 Figure 3.1 and Figure 3.2 below show ticket segmentation for CJV and MAV categories, between FY21 to FY26YTD for the Asset.

Figure 3.1: Ticket-segmentation for CJV at TP1

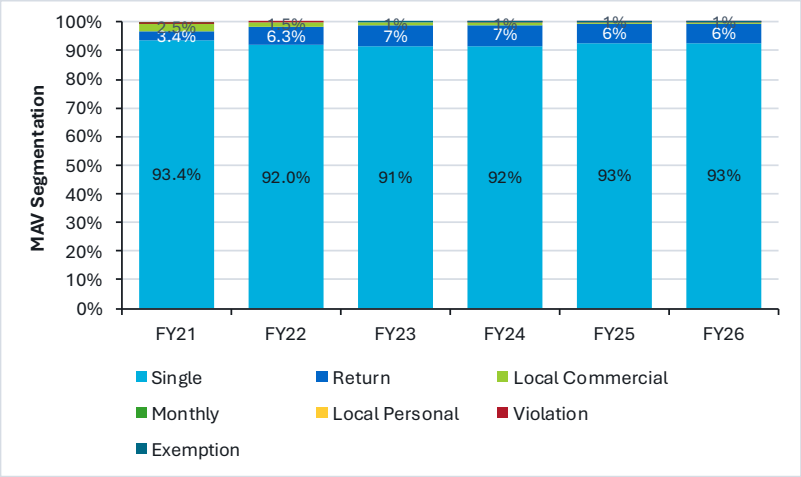


Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21); FY26 YTD* considers Apr'25-Feb'26

3.25 The introduction of annual passes for private CJVs from 15 August 2025 has impacted the ticket segmentation of CJVs. While exemptions and local personal trips have remained at

the same levels as FY25, it can be observed that the share of single and return trips have reduced.

Figure 3.2: Ticket-segmentation for MAV at TP1



Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21); FY26YTD includes Apr'25- Feb'26

3.26 In FY26YTD, MAV category has been observed to have high share of ~93% single tickets which is aligned to the observation of MAVs doing medium to long distance trips on the Asset between North- East states, Bangladesh, Nepal and West Bengal. As discussed and validated from the OD data. A slight increase in return tickets post-FY21 is visible due to implementation of FASTag, allowing trucks to avail return journey discounts, if they return within 24 hrs.

3.27 Table 3.6 below depicts the FY26YTD segmentation for LCV, Bus, 2A, 3A and OSV category for the Parsoni Khem toll plaza.

Table 3.6: Ticket-segmentation for LCV, Bus, 2A and 3A Categories at TP1 Parsoni Khem

Ticket Category	LCV	Bus	2A	3A	MAV
Single	54%	31%	73%	88%	92.8%
Return	41%	63%	23%	9%	6.5%
Local commercial	1%	3%	3%	3%	0.5%
Violation	0%	0%	0%	0%	0.0%
Exemption	4%	2%	1%	1%	0.2%

Source: Steer analysis of Client data; FY26YTD includes 06 months Apr-Feb'26

3.28 The share of return in LCV/Bus is higher compared to 2 Axle trucks attributing to the fact that they make shorter distance local trips while 2A having higher average trip length has higher share of single trips. This has been discussed in detail in the subsequent sections.

Data Collection exercise

3.29 As mentioned previously, to validate and inform various inputs used in our earlier forecasting, we undertook OD data collection on the Asset in this study, comprising the surveys listed in the table below. While TVC surveys were commissioned by Steer by contracting a third party in the study of our earlier commission. OD data collection

typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas, which Steer also commissioned with a third party. TVC data is comprehensive; where collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

Table 3.7: Data collection schedule

TP	3-day videography-based TVC			1-day OD survey			
	Start date	End date	Time (hrs)	Start date	Start time	End Date	End time
TP1 Parsoni Khem	20th Feb 2026	22nd Feb 2026	0000-2359	14th Feb 2026	0800 hours	15th Feb 2026	0800 hours
SH-74	23 Jan 2025	25 Jan 2025	0000-2359	24th Jan 2025	0800 hours	24th Jan 2025	0800 hours

Source: Steer analysis

3.30 It should be noted that, in our experience, traffic on national highways shows variation across the week due to the economic activities surrounding each road. To derive a representative TVC count considering daily variation, three-day to seven-day traffic counts are generally recommended, and hence, to fully understand the impact of this weekly fluctuation on the Asset, we collected three-day counts at the toll plaza and the alternate route mentioned in the table above.

Key findings of the TVC data analysis

WADT estimates

3.31 Taking an average of the three-day TVC counts (20th Feb – 22nd Feb 2026, 0000-2359), we obtained the following average daily traffic (ADT). This ADT excludes non-tollable vehicles such as tractors, two-wheelers, bullock-carts, etc., but includes officially exempt vehicles such as police cars, ambulances, emergency response vehicles, government vehicles and other vehicle types officially allowed as 'exempted' under the concession agreement.

Table 3.8: ADT from TVC counts

Location	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total
Parsoni Khem	4,763	1,064	979	602	1,063	1,082	2,739	3	**12,296**
SH74 (Alternate Route)	1,209	516	255	131	128	86	704	0	**3,029**

Source: Steer analysis of TVC data

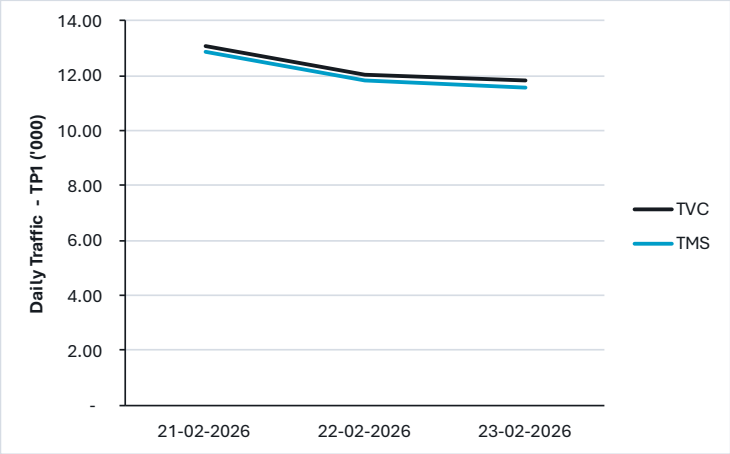
TVC v/s TMS analysis

3.32 As we use the TMS data to estimate the base year MADT, we have used our TVC data to validate the TMS data for those days, as provided by the Client.

3.33 Figure 3.3 below show the comparison between the daily traffic observed by TVC and TMS for the two toll plazas.

Parsoni Khem

Figure 3.3: Comparison between TVC and TMS total daily traffic data on TP1 Parsoni Khem

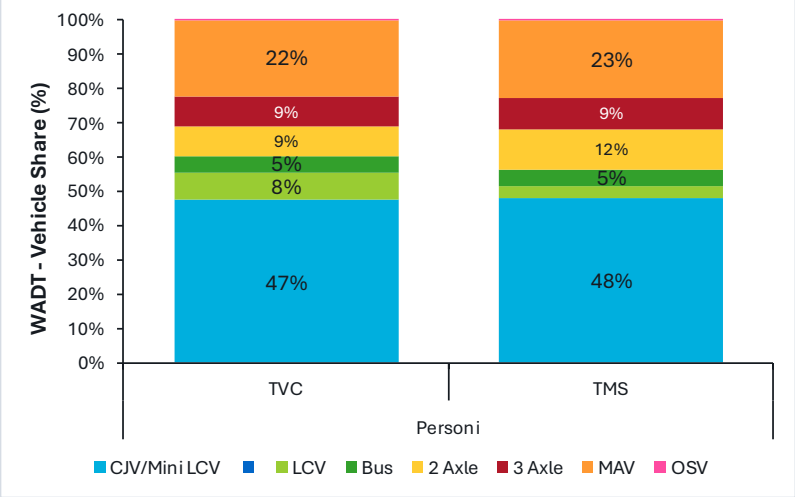


Source: Steer analysis of TVC and Client TMS data

3.34 Figure 3.3 shows that the total WADT count as provided by TVC data is c.1% higher than those reported by the TMS data. Since, the difference is minimal, the TMS data has been used to build up FY26 base traffic and forecasts without any adjustments for unreported exemptions.

3.35 Figure 3.4 compares the shares of vehicle types as observed through the TVC and TMS data. As can be seen, whilst the share of CJVs is higher in TVC data, share of LCVs and Bus is lower. These differences can be attributed to misclassification of vehicle categories.

Figure 3.4: Comparison between vehicle shares from TVC and TMS WADTs



Source: Steer analysis of TVC and Client TMS data

3.36 Considering the variation between the TVC and TMS data is ~1%, TVC-TMS analysis gives us confidence that the base year traffic calculated using the Client data forms a reliable base year traffic estimate.

Key findings of origin-destination analysis

Overview

3.37 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Asset. We have analysed the regional drivers of demand based on the following analyses:

- Zonal influence
- Commodity distribution
- Top OD pairs
- Trip length distribution

3.38 While zonal analysis and the list of top OD pairs help to understand 'where' people and goods travel, commodity distribution sheds light on 'what' goods get transported. Trip length distribution show 'how far' vehicles and people travel, and goods get transported. This set of analyses is generally used to estimate the key drivers of traffic and aid the making of informed forecasting assumptions around traffic demand elasticities, growth drivers and exogenous impacts

3.39 OD surveys were conducted at two locations along the alternate route SH74—Sahebganj and Benipur—to assess the volume and nature of traffic using this corridor. The objective was to identify the extent to which traffic that would otherwise use the Asset is instead traversing the toll-free SH74, which also offers shorter travel time.

Sample rates

3.40 Sample rates help understand the reliability of OD data. They are calculated by dividing OD samples by the TVC count observed on the same date for each vehicle category at the toll plaza. Table 3.9 below presents the sample rates for goods and passenger category at the toll plaza. We believe that the sample rates of the OD data are reasonable for the analysis required.

Table 3.9: sample rates for OD data

Vehicle type	TP1 Parsoni Khem
Passenger (CJV+Bus)	45%
Goods (LCV+2A+3A+MAV)	62%

Source: Steer analysis of OD data

Zone Categories

3.41 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones, and influenced by various towns, cities, states and regions in the vicinity of the Asset, we have aggregated zonal data as described in Table 3.10 below. The methodology behind this aggregation of zones may vary as per the characteristics displayed by the different Asset being studied.

Table 3.10: Zone aggregations for zonal influence analysis

Aggregate Zone	Description
Local	Local zones are those that fall on or very close to the Asset.

Aggregate Zone	Description
IAOI (Immediate Area of Influence)	IAOI zones are the locations which generate traffic and lie within approximately 75-150 km distance from the Asset.
Rest of State	Rest of the cities/Districts in the state that Asset lies in (other than Local/IAOI)
Delhi	Delhi NCR
North India	Uttarakhand, Haryana, Punjab, Jammu and Kashmir
Central India	Madhya Pradesh, Chhattisgarh
West India	Gujarat and Maharashtra
South India	Tamil Nadu, Karnataka, Kerala, Andhra Pradesh
East & Northeast India	West Bengal, Orissa, Jharkhand and Northeast Indian states
Outside India	Nepal, Bhutan, and Bangladesh

Source: Steer analysis

Zonal influence

TP1 Parsoni Khem

3.42 The zonal influence is the contribution of the zone or the zonal aggregation to trips by a vehicle type. This section presents the zonal influence at each toll plaza of each Asset, based on zonal aggregation listed in the previous sub-section.[14] It should be noted that zonal influence is analysed on trips ends and not overall trips. E.g., 14% local share in Cars as shown in Figure 3.5 below means 14% of the Cars using the Asset have either originated or destined locally i.e within 20kms of the Asset radius.

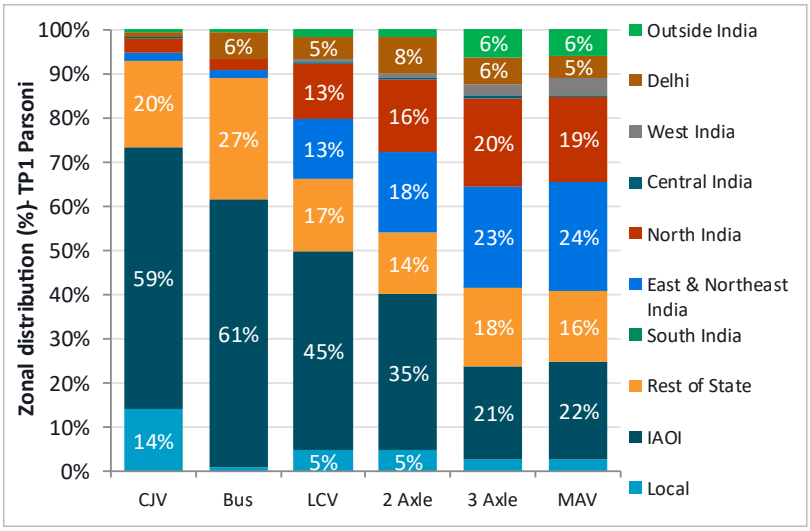
3.43 As can be seen from the figure below, local and IAOI make more than 25% trip share across all vehicle categories wherein zones such as Motiput, Madhuban, Kotwa etc. have the greatest influence across all vehicle categories. The influence of local and IAOI is 50% in LCVs as compared to ~40% for 2 Axles and ~25% for 3 Axles, signifying that LCVs generally cater to local demand and travel shorter trip lengths as compared to 2 Axles and 3 Axles. Local, IAOI and Rest of the State trips are observed in the highest percentage in the Bus and CJV category – accounting for more than 60% of all trips. This analysis is further supported by the result of the top 10 OD pairs as given in the appendices which shows that the majority of the trips originate and end in local and IAOI areas for passenger traffic whereas for the goods traffic, places such as Nepal, Assam, West Bengal and Uttar Pradesh feature at the top of the OD pair list.

3.44 Outside Bihar, it is seen that places in North India such as Delhi, Kanpur, Gorakhpur, and parts of Rajasthan, and those in East & Northeast India like Siliguri, Guwahati, Kolkata and Assam have a significant influence of around 40% on the heavy goods traffic thereby highlighting that the Asset plays an integral part in catering to the long-distance movement of traffic. There is also an influence of 6% each for 3A and MAVs respectively

[14] For example, if out of 100 trips at a toll plaza on an Asset, 10 trips are between Hyderabad and Delhi and 90 trips are between Hyderabad and Chennai, then zonal influence of Hyderabad would be 50% since one end of all trips are at Hyderabad. Likewise, zonal influence of Delhi and Chennai would be 5% and 45%, respectively.

from areas outside the country such as Nepal signifying the importance of the Asset in international trade as well.

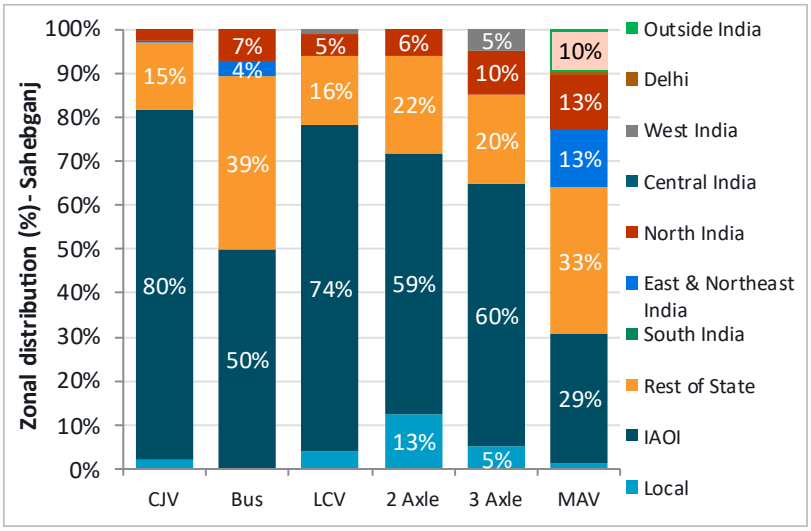
Figure 3.5: Zonal influence at TP1 Parsoni Khem



Source: Steer analysis of OD data from Feb'26

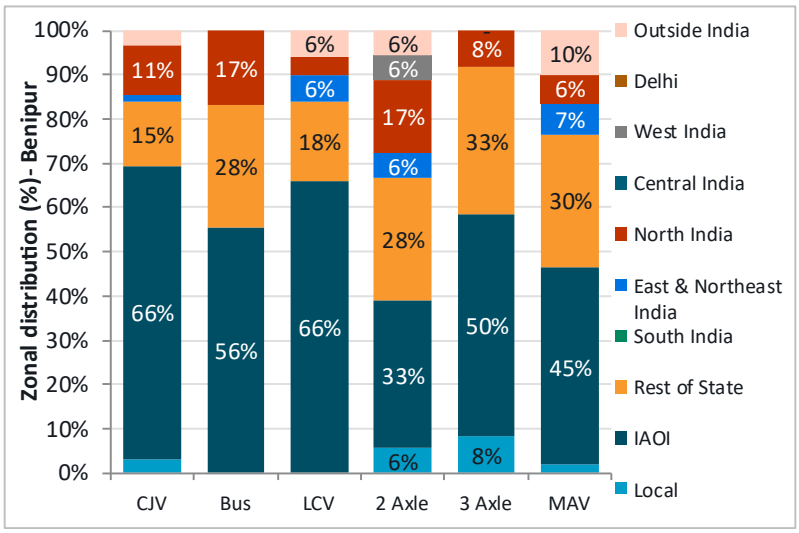
SH74 (Alternate Route)

Figure 3.6: Zonal influence at Sahebganj (Open OD)



Source: Steer analysis of OD data

Figure 3.7: Zonal influence at Benipur (Open OD)



Source: Steer analysis of OD data

3.45 As can be observed in Figure 3.6 and Figure 3.7 the zonal distribution analysis reveals that both Sahebganj and Benipur are dominated by IAOI zones, especially in commercial vehicle categories like LCVs, 3-Axles and MAVs. However, Sahebganj shows a stronger concentration of IAOI traffic, while Benipur sees a more diverse mix, including higher shares from North India and Delhi. Local traffic is minimal at both locations. Both plazas register notable movement from the "Rest of State" and around 10% of MAV traffic from Outside India, indicating cross-border trade with Nepal for POL goods.

3.46 Further analysis of the open OD data reveals that for 3-axle vehicles and MAVs, top origins and destinations on Sahebganj include Patna, parts of East Champaran, West Bengal, Nepal, as well as cities in Uttar Pradesh and Jharkhand. Meanwhile, Benipur sees traffic primarily between East Champaran, Patna, Jharkhand, and Nepal. This travel pattern suggests that State Highway 74 (SH74) draws a significant portion of traffic from our Asset due to the absence of toll plazas and the superior road quality.

Internal External analysis

TP1 Parsoni Khem

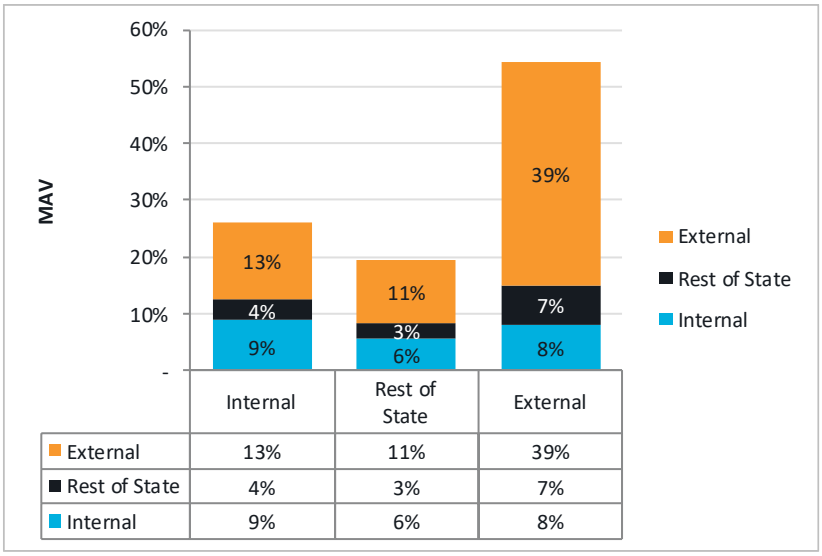
3.47 Internal-External analysis helps in identifying the trips which have both the origin and destination on or near the Asset i.e local/IAOI zones (Internal-Internal or I-I), any one end on the Asset (Internal-External or I-E), or neither end on the Asset i.e., through trips (External-External or E-E). Rest of State here represents areas within the state which are neither local nor IAOI. 'Internal' zones are those that were analysed as 'local' and 'IAOI' in the zonal influence analysis, i.e. lying on the Asset, while 'External' zones are areas lying outside the state.

3.48 Figure 3.8 shows the distribution of trips based for MAV. Understandably, these reflect the observations seen in the zonal influence presented earlier, at a higher level of aggregation.

3.49 The long-distance nature of the MAV traffic is reflected in this analysis as around 39% of the trips for MAV are originating and ending in areas lying outside the state. These are the

trips predominately travelling between north India and east India. Overall, 54% of MAVs plying on the Asset have at least one of the trips ends outside state.

Figure 3.8: Internal-external distribution at TP1 Parsoni Khem

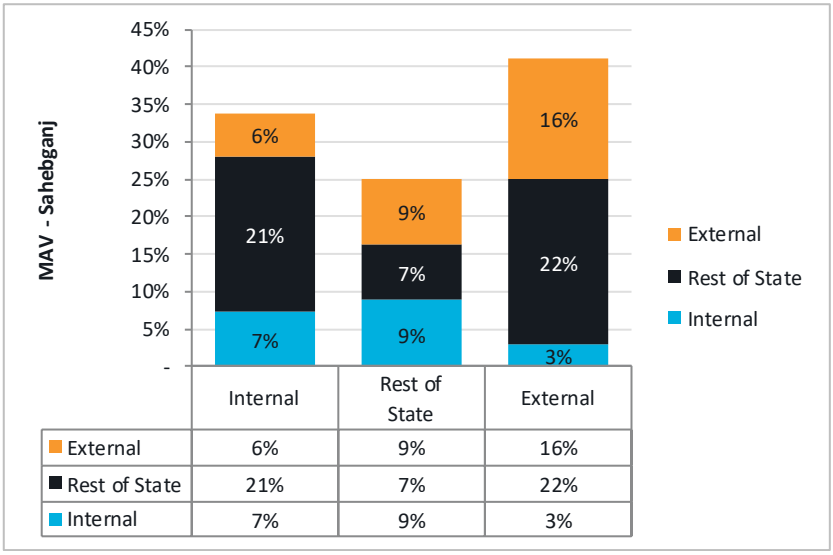


	Internal	Rest of State	External
External	13%	11%	39%
Rest of State	4%	3%	7%
Internal	9%	6%	8%

Source: Steer analysis of OD data

SH74 (Alternate Route)

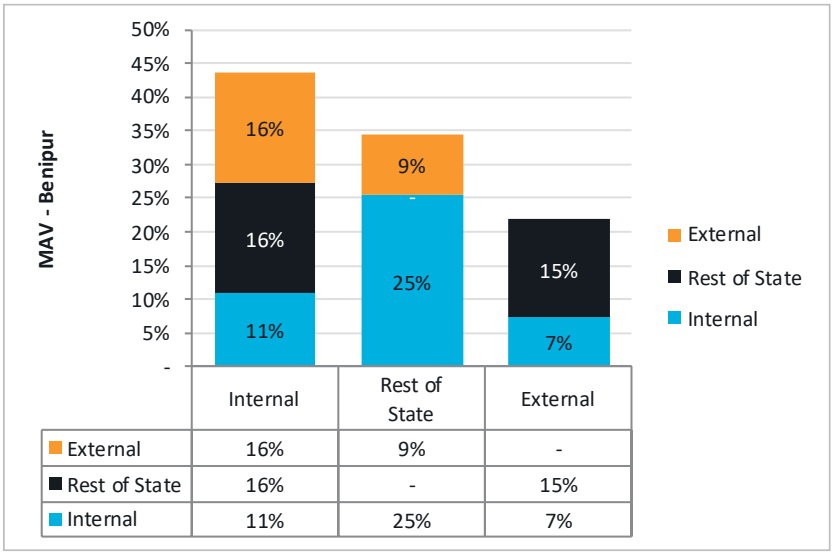
Figure 3.9: Internal-external distribution at Sahebganj



	Internal	Rest of State	External
External	6%	9%	16%
Rest of State	21%	7%	22%
Internal	7%	9%	3%

Source: Steer analysis of OD data

Figure 3.10: Internal-external distribution at Benipur



Source: Steer analysis of OD data

3.50 Figure 3.9 and Figure 3.10 illustrate the distribution of MAV trips from alternate OD sites. This analysis highlights the long-distance nature of MAV traffic, with approximately 41% of trips originating or ending externally at Sahebganj. Conversely, Benipur plaza experiences more internal and intra-state trips, suggesting shorter trip lengths.

Commodity distribution

3.51 We have grouped various commodities into aggregate categories for ease of interpretation, as shown in the table below. The charts in the following sub-section present information in terms of aggregate commodity categories.

Table 3.11: Commodity categories

Commodity Description	Code	Combined codes used for charts
Agriculture Products / Cash crops (Wheat, Rice, Sugar cane, Maize etc.)	AGR	AGR
Cattle Food / Live Stock (sheep, ghoat, cow, cattle food etc)	LIV	
Perishable Items (Fruits, vegetables)	PER	GRO
Animal Products/Dairy/Eggs/Fish/Meat/Animals	DFM	
Groceries / Food items (Soap, Salt, Sugar, Pulses, Spices, Biscuits, bread, cool drinks, beer etc.)	GRO	
Building Material / Construction (Cement, Lime, Brick, fly ash, etc)	CNS	CNS
Sand/Clay	SND	
Stone (kota stone, marble, Granite, Aggregate stone etc.)	STN	
Ceramic	CRM	
Petroleum Products (Oil, LPG, CNG, etc.)	PET	PET
Chemicals / Fertilizers (Acids, Fertilizers etc.)	CHM	
Electrical/Manufacturing items (Electronic items, Medicine, Leather, Wine, Rubber/ Tyre, Plastics, Cloth, Paper etc.)	MAN	MAN

Commodity Description	Code	Combined codes used for charts	
Raw Wood, Cork & Wood Products, Furniture		WUD	
Machinery / Spare parts		MAC	
Automobiles (Finished products, auto parts, Car/bike manufacturing, New Chassis)		AUT	AUT
Basic / Fabricated Metals (Iron, Steel / Metal)		MET	MET
Mining Minerals (Coal, Gypsum, Cobalt etc.)		MIN	
Empty		EMT	EMT
Container		CTR	MSC
Miscellaneous (Parcel, Courier, Household items etc.)		MSC	
Passengers		PAS	
Scrap		SCR	

Source: Steer Analysis

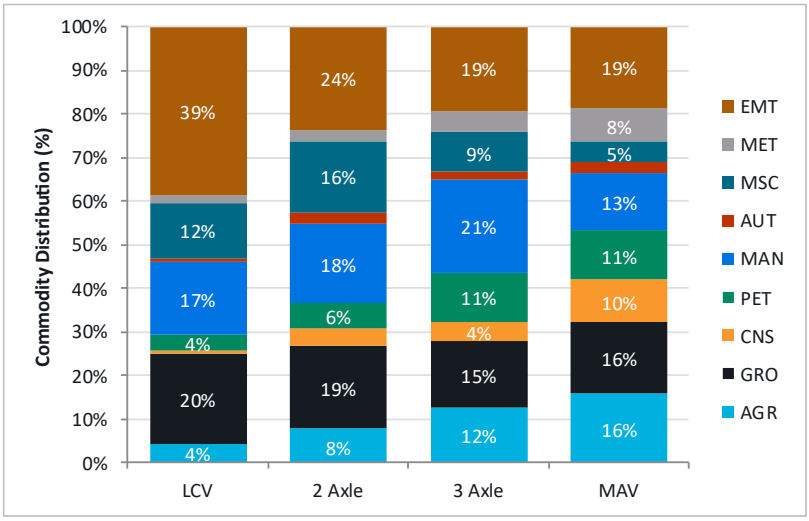
TP1 Parsoni Khem

3.52 Figure 3.11 presents the commodity distribution for goods vehicles at the toll plaza, at a total level.

3.53 Agricultural and grocery items such as rice, wheat, maize, and sugarcane are the top commodity category carried by both 3A and MAV traffic with combined share of 27% and 32% respectively. Both the ends of the Asset being heavy agri -based with the dominance of commodities such as rice and sugar. This was followed by 11% each, of the 3As and MAVs transporting petroleum products like oil, gas, and petrol. This is due to the presence of the Barauni refinery near the Asset. Manufacturing items (such as clothes, paper and rubber) too are observed in notable quantity in both 3A's and MAVs, account for approx. 21% and 13% vehicle split respectively.

3.54 The light goods vehicle shows a similar mix of commodities with agricultural and grocery items having ~24% share, followed by manufacturing and miscellaneous goods. Many industries are in Muzaffarpur contribute to the high share of manufacturing and finished commodities carried on the Asset.

Figure 3.11: Commodity distribution at TP1 Parsoni Khem (Total)



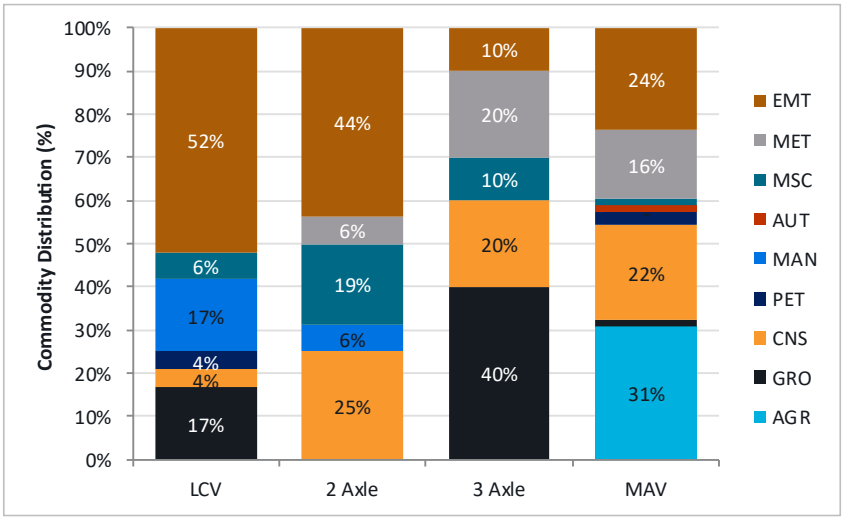
Source: Steer analysis of OD data from Feb'26

SH74 (Alternate Route)

3.55 The distribution of commodities transported by 3-Axle and MAV vehicles at the alternate route points—Sahebganj and Benipur—reveals distinct trends. At Sahebganj, 3-Axle trucks predominantly carry Grocery items (40%), followed by Construction materials (20%), Metals (20%) and Miscellaneous goods (10%). In contrast, MAVs at the same location exhibit a more diverse cargo mix, with Agricultural products (31%), Construction materials (22%) and Metals (16%) making up the bulk of their loads.

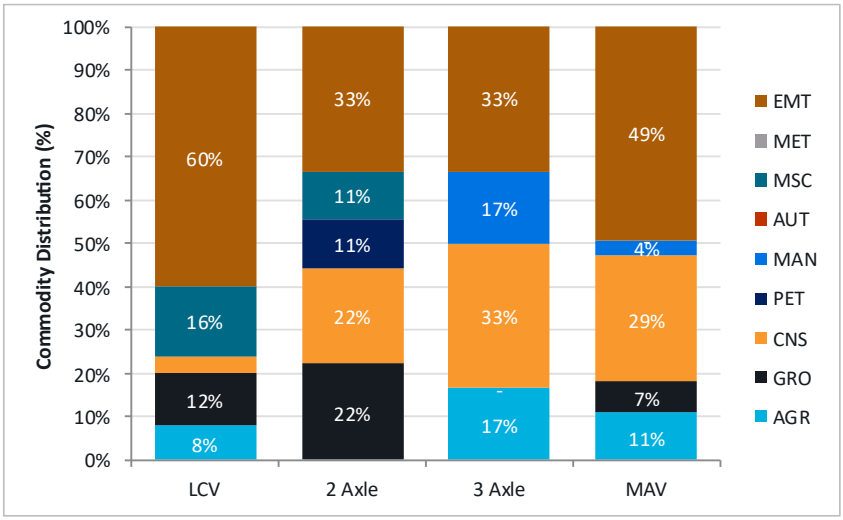
3.56 Benipur, on the other hand, shows a stronger emphasis on Construction materials, which account for the largest share for both 3-Axles (33%) and MAVs (29%). 3-Axles also carry significant proportions of Manufactured goods (17%) and Agricultural products (17%).

Figure 3.12: Commodity distribution at Sahebganj (Total)



Source: Steer analysis of OD data

Figure 3.13: Commodity distribution at Benipur (Total)



Source: Steer analysis of OD data

Trip length analysis

3.57 Trip-length distribution provides the distance-based profile of various vehicle types. This aids in validating the assumptions around the share of macro-economic drivers, inputs from zonal influence and toll segmentation. For the ease of interpretation, we have categorised distances into 5 groups:

- Local (0-100km)
- Short distance (100-300 km)
- Medium-distance (300-500 km)
- Long-distance (500-1000 km) and
- Very-long-distance (+1,000 km)

3.58 The trip distances were derived as driving distances from Google Distance Matrix Tool based on zonal coordinates for OD pairs[15].

TP1 Parsoni Khem

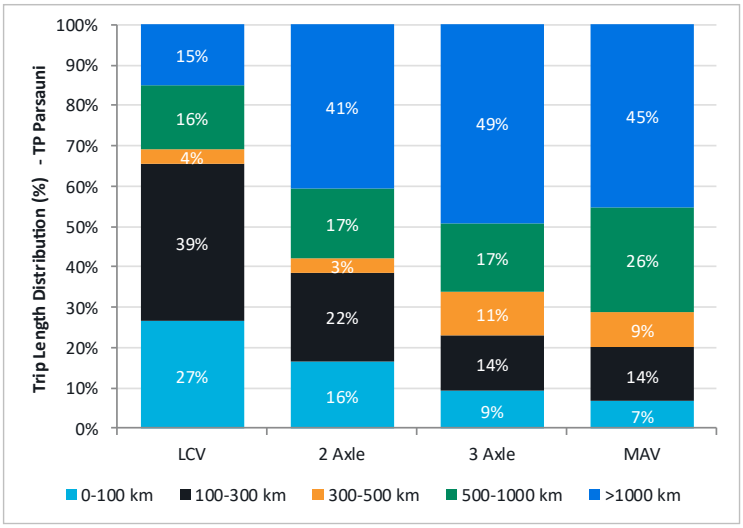
3.59 Supporting the observations made in zonal & internal-external analysis in the previous sections, Figure 3.14 below highlights that about 66% of LCVs travel shorter distances up to 300 kms, contributing to within state movements on the Asset. In case of LCVs around 39% of category travel less than 300 but more than 100 kms catering to the local demand carrying agricultural and groceries. It can be seen that as the number of axles increase, the distances travelled also increase.

3.60 As established by the internal-external analysis and the zonal distribution analysis above, the Asset caters to the long-distance movement for a significant proportion of commercial traffic evidenced by 66% of 3A trips and 71% of MAV trips travelling more

[15] Google Distance API is a tool that is available on a chargeable basis from Google Maps Platform. Link: **https://developers.google.com/maps/documentation/distance-matrix/start**. Travel distance and time information for driving/transit under various congestion scenarios can be extracted through this tool by using macro-enabled Excel, R, etc

than 500kms. These trips primarily move from North India (Delhi NCR, Punjab, Haryana, Rajasthan and UP) towards Bihar, West Bengal and north-eastern states.

Figure 3.14: Trip length distribution TP1 Parsoni Khem



Source: Steer analysis of OD data from Feb'26

Table 3.12: Average trip length (in km) at TP1 Parsoni Khem

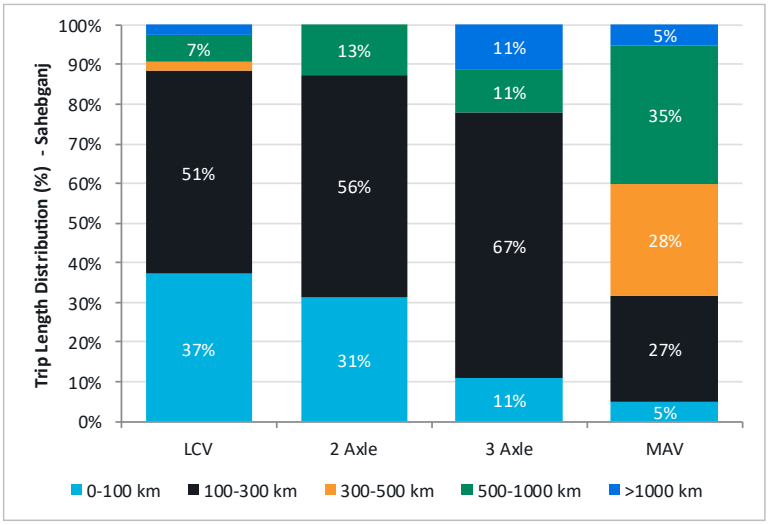
	LCV	2 Axle	3 Axle	MAV
Average trip length Km	640	902	1,086	1,073

Source: Steer Analysis of OD data from Feb'26

SH74 (Alternate Route)

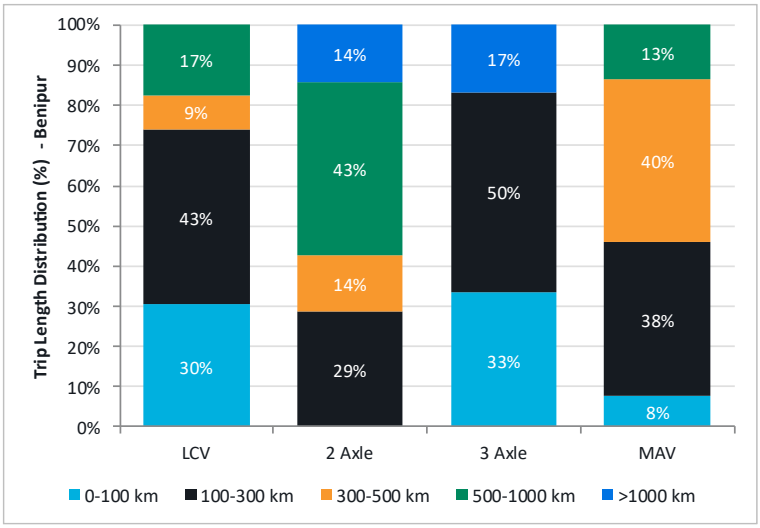
3.61 The trip length distribution shows that Sahebganj mainly serves short to medium hauls for 3-Axles (67% in 100–300 km) and a balanced mix for MAVs, with 35% in 500–1000 km and 28% in 300–500 km ranges. In contrast, Benipur supports longer-distance travel, with MAVs at Benipur have a strong long-haul profile, with 40% in 300–500 km and 8% above 1000 km, indicating more through and extended regional movement. These validate the alternate routes usage for long distance traffic movement for commercial vehicles.

Figure 3.15: Trip length distribution at Sahebganj



Source: Steer analysis of OD data

Figure 3.16: Trip length distribution at Benipur



Source: Steer analysis of OD data

Table 3.13: Average trip length (in km) at Sahebganj

	LCV	2 Axle	3 Axle	MAV
Average trip length Km	210	198	397	447

Source: Steer Analysis of OD data

Table 3.14: Average trip length (in km) at Benipur

	LCV	2 Axle	3 Axle	MAV
Average trip length Km	208	522	285	265

Source: Steer Analysis of OD data

Conclusions

3.62 In summary, as per the traffic volume data in FY26, CJVs contribute to the highest share in traffic around 46% followed by 2A, 3A, and MAVs which combined form approx. 45%. Even though CJVs make up for the highest share in traffic, MAVs are the biggest revenue contributor.

3.63 The TVC-TMS analysis highlights minor variation between the two datasets wherein at the total level, TVC is approximately 1% higher than the TMS data wherein the differences in LCV, CJV/MLCVs and 2A's contribute to the delta, which could be due to mis-categorisation of Mini LCV and LCV with Mini LCV's getting counted into CJV's. However, the difference is minor for the larger revenue generating categories (3A, MAV, and OSV combined) at (0.5%).

3.64 The zonal influence analysis examines the contribution of different zones to vehicle trips. Local and IAOI zones account for over 25% of trips across all vehicle categories, with Motiput, Madhuban, and Kotwa having the highest influence. Among commercial vehicles, LCVs show the strongest local influence at 61%, compared to ~40% for 2 Axles and 25% for 3 Axles. CJV traffic has the highest local and IAOI share at 73%.

3.65 For heavy goods vehicles (3As and MAVs), zones within Bihar account for about 40% of all trips on the Asset. Apart from these trips, it is observed that zones in Northern India (including Delhi NCR, parts of Rajasthan etc) and Northeast India (Assam, Guwahati and Siliguri) have significant influence, establishing the Asset as a key corridor facilitating movements between north and northeast parts of the country.

3.66 Internal external analysis reflects the long-distance nature of traffic on the Asset with approximately 54% of all trips either originating and ending in zones outside Bihar.

3.67 Commodity distribution reveals that agricultural and grocery items (rice, wheat, maize, sugarcane) dominate 3A and MAV traffic, with a 27% and 32% share, respectively, due to strong agricultural activity at both ends of the Asset. Petroleum products (oil, gas, petrol) account for 11% of MAV and 11% of 3A traffic, influenced by the nearby Barauni refinery. Manufacturing goods (clothes, paper, rubber) also have a notable presence, making up 21% of 3A and 13% of MAV traffic. Light goods vehicles (LGVs) follow a similar pattern, with agricultural and grocery items (~24%) leading, followed by manufacturing and miscellaneous goods, supported by Muzaffarpur's industrial base.

3.68 Our analysis indicates that the alternate route SH74 carries commercial traffic moving between Uttar Pradesh, Patna, Nepal, Jharkhand, and other parts of eastern India. The route competes directly with the Asset due to the absence of toll plazas and the superior road quality of the alternate.

3.69 Analysing the vehicle share on the Asset and understanding the OD analysis, CJVs make up for the highest share of traffic and significantly contributed to the local traffic share, however the largest contribution to the revenue share is made by MAV and 3A traffic,

wherein agriculture and groceries are the top commodity category transported on the Asset by both the heavy and light goods vehicles.

4 Socio economic context and traffic growth

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the roads are in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions in the region where the Asset is located and the country. These include:

- Changes in factors such as population, economic growth (regional and national) and industrial production; and
- Other local factors such as strategic port growth, and growth in local industries near the Asset.

4.2 In turn, the change in the relative competitive position of the Asset (and thus of the traffic capture they can achieve) derives from how the relative offer for the roads changes, i.e. the service offered, and the tolls charged on the project roads, in comparison to that on competing roads; and whether any competing road facilities are planned.

4.3 In this chapter, we have assessed the trends of the above growth drivers, as indicators of the socio-economic conditions in the regions surrounding the Asset.

Population growth

4.4 We have analysed the key socioeconomic drivers of the background traffic demand in the Bihar state, where the Asset is located.

National level

4.5 The total population in India has grown at a Compound Annual Growth Rate (CAGR) of 1.5% since 2000, decreasing over the years, as shown in Table 4.1below. The World Bank forecasts this growth to decrease to 0.6% CAGR by the 2030-45 period.

Table 4.1: CAGR of population in India

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
1970 - 1985	2.3%	1.9%	3.8%
1985 - 2000	2.0%	1.7%	2.9%
2000 - 2015	1.5%	1.0%	2.6%

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
2015 – 2030*	1.0%	0.3%	2.3%
2030 – 2045*	0.6%	-0.3%	1.9%

Source: World Bank Data on Health Nutrition and Population Statistics, *forecast population growth.

State level

4.6 The Table 4.2 shows the evolution of population in Bihar state compared to that of the country. Overall, as can be seen, the trend observed at the country level is also noticeable at the state level, namely, a move towards urban agglomeration with the growth in rural population being slower than that of urban population. Further, the population of Bihar has grown at a higher rate than the country average between 2012-2024.

Table 4.2: Population Growth in India (2012 – 2024)

State	2012 Population (m)	2024 Population (m)	CAGR (2012 – 2024)
Bihar	105.1	127.9	1.7%
India	1,210	1,395	1.2%

Source: Ministry of Statistics and Program Implementation estimates

4.7 Due to the complexities of the patterns in which urbanisation takes place, and the very dynamic nature of local population migration (which are very difficult to forecast with accuracy), we do not use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide a socio-economic context of the trend in the region in which the Asset is located.

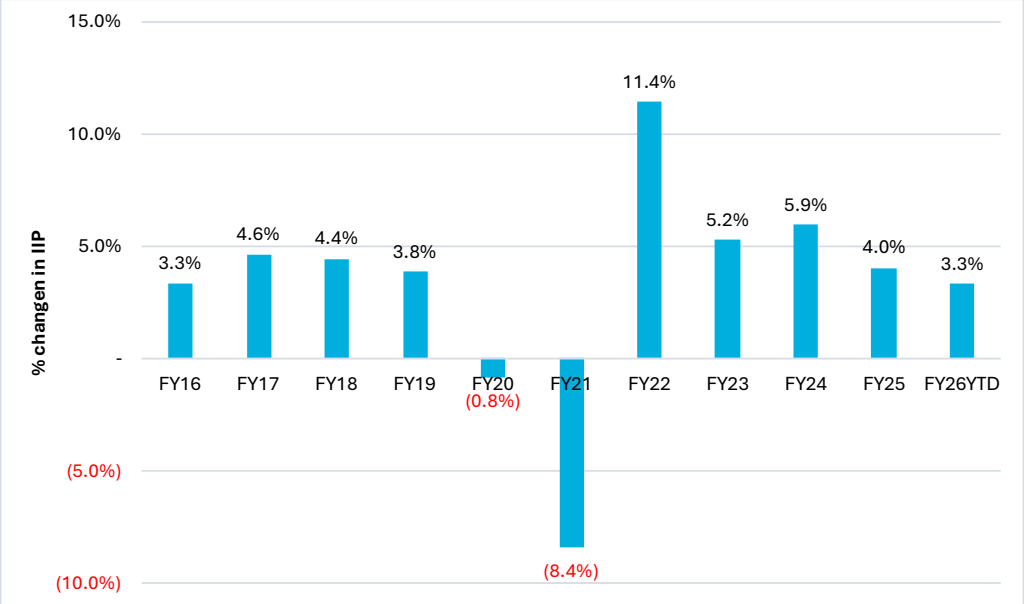
Economic Indicators

Industrial Production

4.8 The Index of Industrial Production (IIP) is a composite indicator that measures the short-term changes in the volume of production for a basket of industrial products. The IIP data tracks the manufacturing activity in different sectors of an economy, with mining, manufacturing, and electricity being the three broad sectors in which IIP constituents fall.

4.9 The figure below shows that at an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20. In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. Post the immediate recovery in FY22, IIP growth has since stabilised, with FY25 recording 4%, and FY26YTD (till February 2026) recording 3.3% growth over FY25

Figure 4.1: Annual growth – Index of Industrial Production (FY16-FY26YTD)



Source: Ministry of Statistics and Program Implementation (MoSPI). FY26YTD represents data till Feb'26

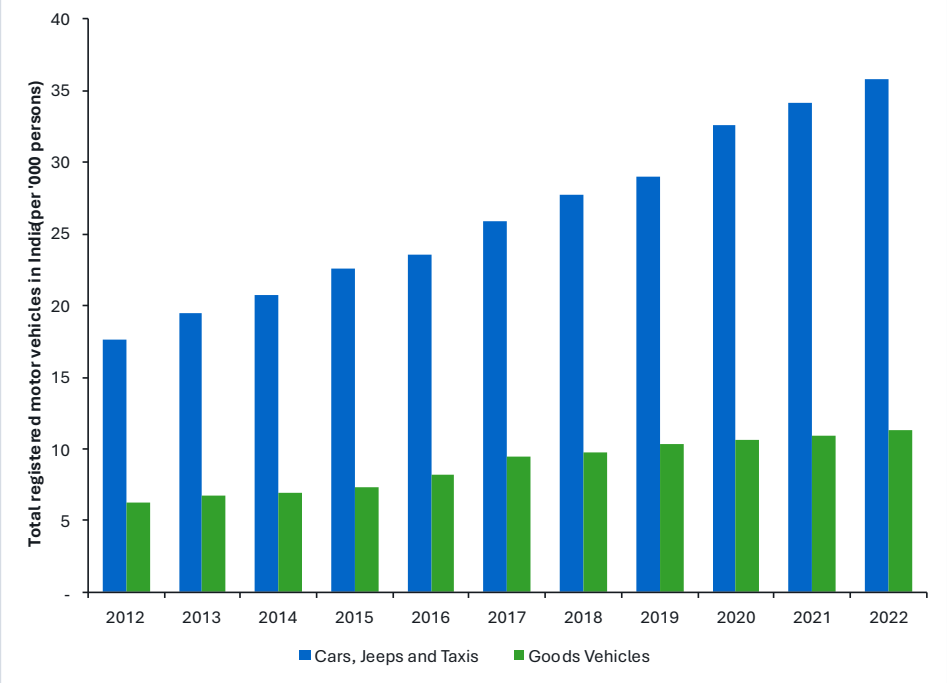
4.10 Since state-level IIP data is not as readily available as national-level IIP, we have presented national IIP here to indicate nationwide activity in key industrial sectors like power, manufacturing, and mining, all of which influence long-distance commercial movements across the nation, and not unique to this asset. We however, do not use it to forecast future travel demand growth since long-term forecast for IIP is not available through official sources such as MoSPI, RBI or through multilateral organisations like WB, or the IMF.

Vehicle ownership

4.1 The gap in car ownership between India and developed nations remains substantial – with 36 cars/jeeps/taxis and 11 commercial vehicles per thousand people, as of FY22 (the latest year for which official data is available). However, with increasing per capita income levels, a booming economy and the subsequent increase in demand for mobility, the number of registered vehicles has been on a gradual upward trend

4.2 Overall, India still stands at a very nascent stage in the vehicle saturation curve, offering huge potential for growth going forward. Between FY12 and FY22, the CAGR for CJV and goods' vehicles registered in India was 8.6% and 7.3% respectively

Figure 4.2: Total number of registered motor vehicles in India (per 1000 population

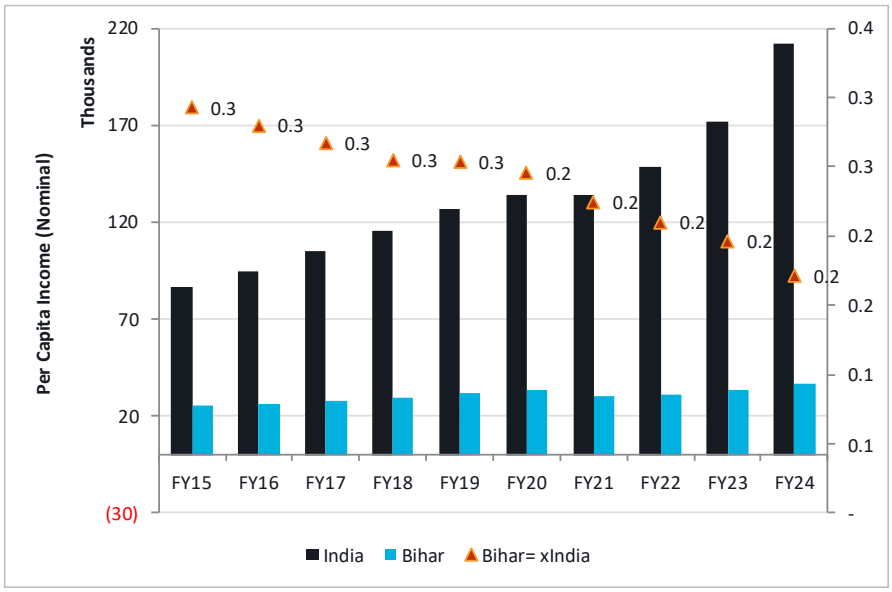


Source: Ministry of Road Transport and Highways (MoRTH)

Per Capita Income (PCI)

4.3 The per capita income of the state where the Asset lies, i.e., Bihar is lower compared to the national average. Thus, the state is at a very early stage of consumption curve. Going forward, we therefore expect local consumption to be strong which would drive the growth in both passenger and commercial traffic.

Figure 4.3: Per Capita Income



Source: Ministry of Statistics and Program Implementation (MoSPI)

4.4 Given the difficulty in obtaining granular district level PCI data, it is not advisable to use this as a growth driver in our forecasts. Additionally, long-term forecasts for PCI are not available from official sources and we therefore refrain from using it to forecast traffic growth.

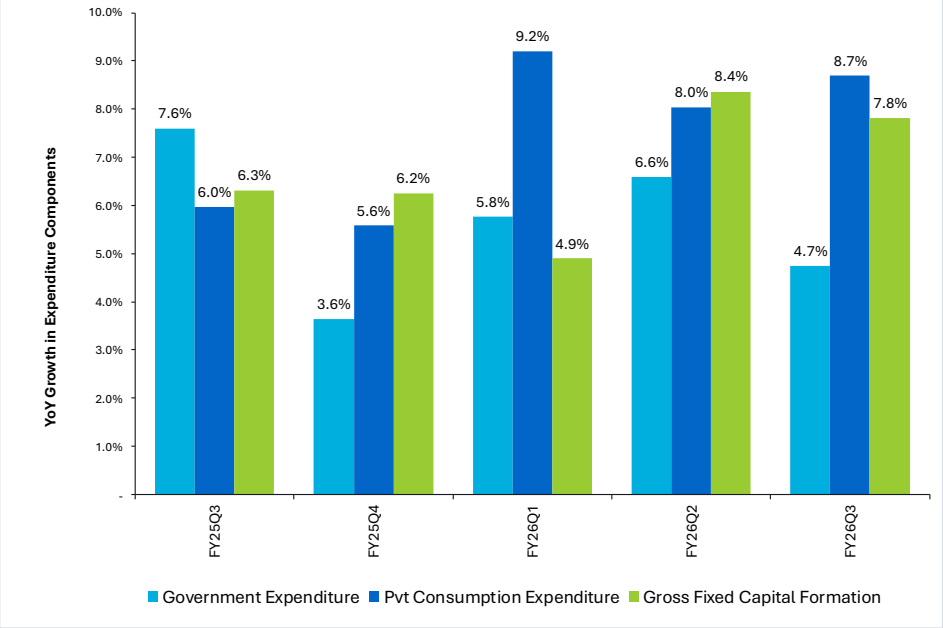
Economic growth

India's Performance

4.5 Despite a slowdown in the economy during H1FY25, the Indian economy has observed strong growth each quarter since FY25Q2, with the latest published estimates for FY26Q3 GDP at 7.8% over FY25Q3. This performance has been driven by strong growth in investment and consumption expenditures and higher consumer optimism for the year ahead[16].

4.6 The figure below, we present quarterly Y-o-Y growth in three major components of GDP – government expenditures, consumption expenditures, and business investment (gross fixed capital expenditure) over the past year (FY25Q3-FY26Q3).

Figure 4.4: YoY growth in expenditure components of GDP



Source: Steer Analysis of MOSPI Data

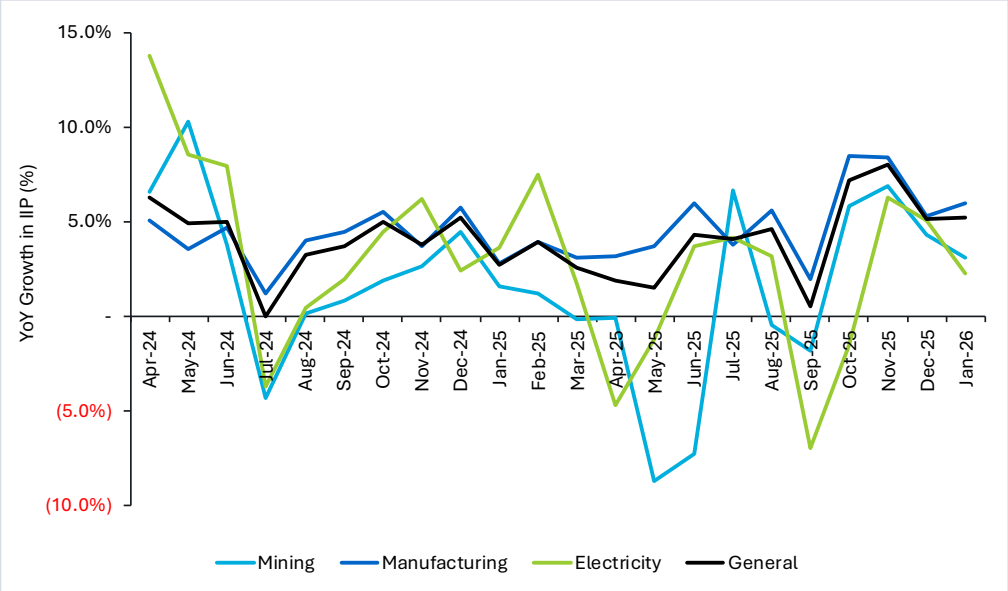
4.7 While consumption and investment expenditures have continued to show consistent growth over the past two quarters, government expenditures observed a marginal decline in FY25Q4. In FY26Q1, government expenditures rebounded, recording 5.8% growth over FY25Q1 levels.

4.8 Performance across different types of industrial activities (such as Mining, Manufacturing, and Power Generation) directly impact freight movement and commercial traffic volume growth across the country, including on the Asset. In the figure below, we present growth

[16] Gov**ernment of India PIB Release (27th February 2026)**

trends in IIP – a measure that tracks the performance of the economy across these activities. As of FY26YTD (Apr'25-Feb '26), the Manufacturing sector continues to perform strongly, recording positive y-o-y growth since FY25Q3. While industrial activity across the two other sectors (i.e., Power Generation and Mining) dropped between May and Jun/Jul '25, they have since rebounded and show signs of continued growth going forward.

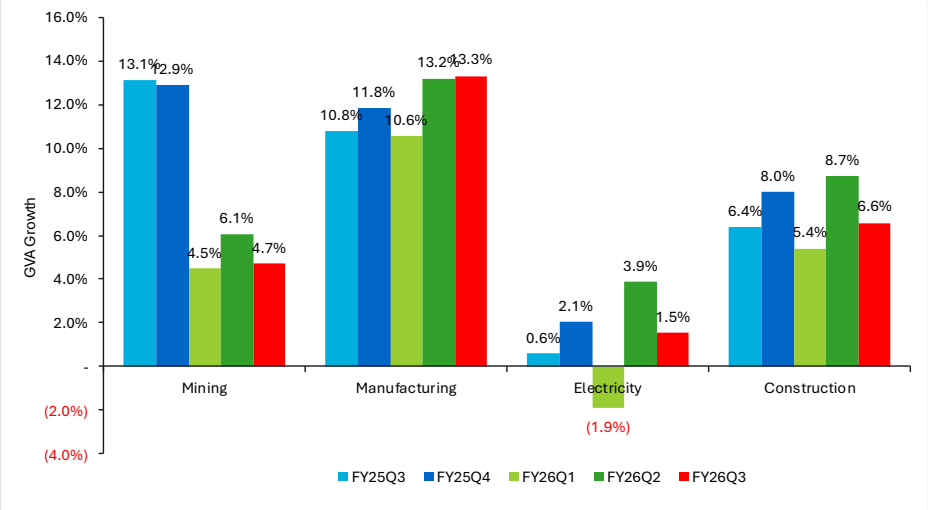
Figure 4.5: Month on Month IIP performance



Source: Steer Analysis of MOSPI Data

4.9 In addition to monthly trends in IIP, the figure below presents y-o-y growth of quarterly GVA in four industrial sectors - Mining (& Quarrying), Manufacturing, Electricity (and other Utilities), and Construction. While the Mining and Power sectors observed decline and muted growth in FY26Q1, the Manufacturing and Construction sectors experienced strong growth. While overall economic growth has remained resilient as of FY26YTD, performance across industries have varied, impacting economic growth across different regions and on the Asset as well.

Figure 4.6: Industrial components of GVA



Source: Steer Analysis of MOSPI Data

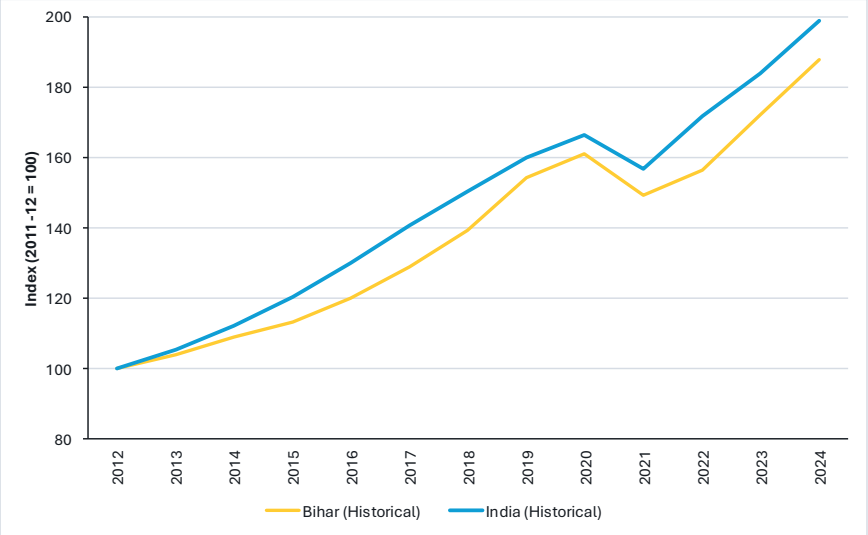
GDP and GSDP Growth

4.10 Over the period FY12-FY24, the Indian economic has grown at a CAGR of approx. 6% aided by growth in the tertiary sector which grew at a CAGR of approx. 6.9% over the same period. The economic performance of Bihar has been weaker than the country during the same period. Bihar's GSDP CAGR was 5.4% between FY12-24. Bihar approximately contributes 2.7% to the India's GDP. Between 2012 and 2024, Bihar's GSDP grew steadily, nearly doubling in real terms. The state saw consistent growth until 2018–19, peaking at approx. 10.9%, before slowing due to the pandemic, with a contraction of 7.4% in FY21. A strong recovery followed, with growth rebounding to over 9% in FY23 and FY24.

4.11 Bihar is largely an agrarian state, with around 77% of population dependent upon agriculture as a livelihood[1]. The state is one of the largest producers of vegetables and fruits in the country, especially, sugarcane, banana, mango, and eggplant.

4.12 Figure 4.7 below illustrates the evolution of Bihar's GSDP during FY12-FY24.

Figure 4.7: Evolution of Bihar's state GDP and National GDP



Source: Ministry of Statistics and Program Implementation (MoSPI)

4.13 The official historical GDP and GSDP data for India are released by the Ministry of Statistics and Program Implementation (MoSPI). The GDP forecasts for India are available from various reliable sources such as Oxford Economics and Consensus Economics[17], but state-specific GSDP forecasts are not published by any such sources. To derive state GSDP forecasts, we rely on past trends of the relationship between GDP and GSDP and develop GSDP forecasts as a function of our assumed GDP forecasts[18].

4.14 For any indicator to be used as a growth driver to forecast traffic, a reliable source of historical and forecast data availability for that indicator is the key requirement. Of the key socioeconomic indicators discussed above, GDP was assessed to be the only growth

[17] Consensus Economics - Economic Forecasts and Indicators

[18] Assuming that the historical long-term relationship between GSDP and GDP sustains over the short-term, we project future growth in GSDP as a function of our GDP growth forecast. We taper the relationship of GSDP growth to converge to GDP growth gradually over the long-term.

driver for which reliable data is available both in terms of historical and forecast data. Therefore, to forecast traffic, we use GDP/GSDP as our key growth drivers.

Forecasts for growth drivers

4.15 Following the discussion in Chapter 4 on the nature of economic activity in the state of Bihar, in this section, we describe the assumptions in relation to forecasts of the key macro-economic drivers of traffic growth on the Asset.

4.16 We have based our forecasts of Bihar GSDP using forecasts of GDP as provided by the Client.

National GDP

4.17 After the last period of economic slowdown in FY11-12, the country experienced an economic downturn again in late FY19 with FY20 having reported a GDP growth of 4% (relative to an average growth rate of 7% per year between FY13 and FY19). India's GDP growth declined as domestic investment and consumption demand were already under stress because of the liquidity crunch before Covid-19. Other factors that contributed to the economic slowdown included reduced growth rates in automobile sales and production, liquidity crunch in credit markets and rising number of Non-Performing Assets (NPAs) within the banking sector, as well as lower manufacturing production and lower rural consumption.[19]

4.18 The Covid19 outbreak had a significant impact on the Indian economy during the first two quarters of FY21 as government mandated lockdowns across the country effectively stalled economic activity and growth. The growth momentum eventually picked up in Q3 of FY21, with a sharp rebound in the economy in FY22 (GDP recorded 9.7% growth over FY21) and has since observed a consistent growth of 7.6% in FY23, 9.2% in FY24 (as per the SAE) before slowing down to 6.5% in FY25 due to several domestic and external factors.

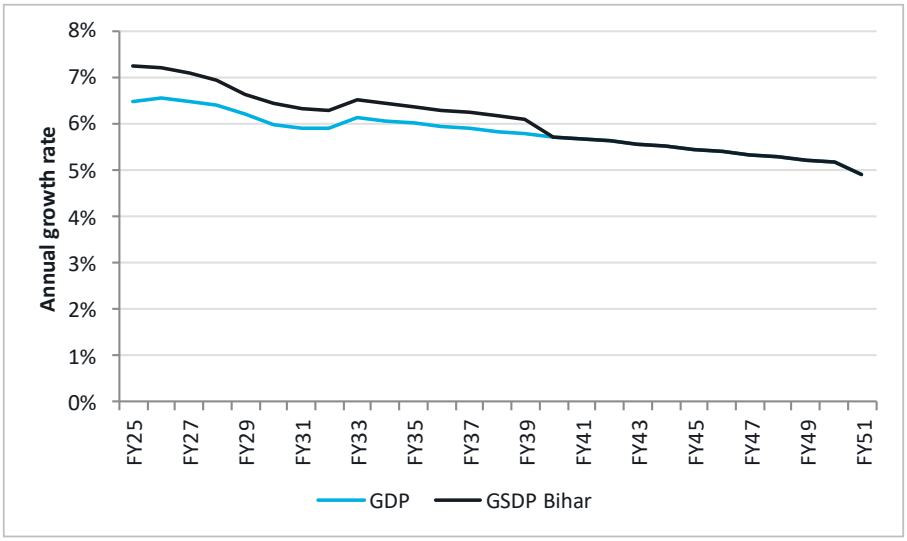
4.19 Figure 4.8 below shows client provided GDP projections for India. The forecast projects the Indian GDP to grow at 6.3% between FY27-FY30 which is gradually tapered down to 5.2% by FY50. The India GDP growth forecast is broadly in line with other independent forecasts available from reliable sources such as IMF, World Bank and RBI[20] in the short term.

4.20 We expect Bihar's GSDP to grow faster than India's overall GDP, driven by its low base, rising infrastructure investments, and growth in construction and services sectors. Government focus on rural development and improving connectivity is also expected to boost economic activity in the state.

[19] **Data | India's GDP was on a downward slope even before COVID-19 wreaked havoc - The Hindu** (September 2020)

[20] **Survey of Professional Forecasters on Macroeconomic Indicators – Results of the 93rd Round (April 2025)**

Figure 4.8: GDP-GSDP forecast



Source: GDP forecast provided by the Client

4.21 By comparing historical trends of regional GSDP growth with the national GDP growth we have established GSDP projections for each state. We assumed that as the Indian economy grows, the states which have historically grown at a faster pace will, over 10 years, see a slowdown in GSDP growth, tending to the national average, whereas the states that have grown slower than the national GDP will begin to pick-up. The GDP-GSDP gap would converge by 2040.

5 FY26 base year AADT and Traffic Growth Analysis

Introduction

5.1 In this section, we present our approach, assumptions, and estimates for base year AADT and background traffic growth for each vehicle category on the Asset.

5.2 Traffic growth is commonly related to a variety of macro-economic and industry- or commodity-specific factors (hereafter referred to as 'traffic growth drivers'). These growth drivers are typically identified from the results of the OD data analysis and the site visits that help us appreciate the nature of traffic movement – 'what' travels 'where' and 'why'.

5.3 While comprehensive historical data on the asset is not available, we have access to six years of records. Despite some inconsistencies, this dataset provides a reasonable foundation for analysis. As a result, statistical methods to estimate background growth relationships could not be applied. Instead, we conducted a benchmarking exercise, supported by trip length and origin-destination (OD) analysis, to derive elasticity estimates. These are discussed in detail below.

FY26 base year AADT estimates

5.4 The base year is the year on which long-term background forecast growth rates are applied to derive year-wise average annual daily traffic (AADT) estimates for forecast years. This is therefore an important aspect of our forecasting approach as traffic and ultimately revenue forecasts for future years are built on top of the base year traffic estimate. We have used FY26 as the base year for AADT estimates for the forecast years.

5.5 As described previously in Chapter 3, to establish the base year (FY26) traffic position, we utilized information from various sources – including from the Client and our context knowledge, to assess a reasonable demand on the corridor.

Methodology

5.6 The base traffic for FY26 has been estimated using 11 months of actual traffic data (April to February). Each toll plaza's seasonality correction factors were applied on the actual MADTs of Apr-25 to Feb-26 to obtain seasonally corrected estimates for FY26 traffic. An average of these estimates was considered to be the FY26 base traffic.

Seasonal Correction Factors

5.7 Traffic on any Asset varies on a month-on-month level. Such variations maybe due to monsoons (typically Jul to Sept) or due to festivals in the region. For e.g. It is observed that typically the truck traffic during the first half of the financial year (April-September) is

generally lower than the annual average, mainly because of peak summer season followed by monsoons affecting the freight movement patterns in large parts of the country in the July-September period. In addition to these there may be other seasonal variations specific to the Asset.

5.8 To normalize for these variations across the year to provide an AADT estimate, Seasonality Correction Factors (SCF) are used. SCFs are estimated to convert the monthly traffic numbers to an AADT level while accounting for seasonal variation due to local/national festivals, weather changes and/or temporary external impacts. These are typically estimated using historical data for each plaza and vehicle category over multiple years. SCF >1 means that the traffic for the month is lower than the annual average and vice-versa.

5.9 Table 5.1 below presents the average of FY23 and FY24 SCF used to estimate the AADT for the Asset.

Table 5.1: Adopted SCF for the Asset, FY23 and FY24 average

Vehicle Category	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.05	0.89	0.93	1.08	1.12	1.19	1.11	0.89	0.91	1.11	0.91	0.94
LCV	0.97	0.93	0.95	1.05	1.09	1.04	1.05	0.97	0.95	1.12	1.12	0.87
Bus	0.98	0.90	0.86	0.93	1.10	1.06	1.09	0.96	1.02	1.21	1.03	0.98
2A	1.00	0.99	1.00	0.98	1.08	1.05	1.01	1.00	1.00	1.12	0.90	0.92
3A	0.96	1.00	1.06	1.14	1.07	0.96	0.99	0.97	0.95	1.06	0.92	0.96
MAV	0.98	0.95	1.08	1.15	1.09	1.06	0.97	0.90	0.86	1.04	0.99	1.02

Source: Steer analysis of Client shared data

Adopted base estimates

5.10 Based on the above methodology and inputs, the adopted base for the toll plaza has been shown below:

Table 5.2: Adopted base estimates AADT: TP1: Parsoni Khem

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	4,489	4,928	4,977	10.9%
LCV	386	387	394	2.2%
Bus	489	530	534	9.1%
2A	1,190	1,276	1,289	8.3%
3A	1,005	980	986	(2.0%)
MAV	2,468	2,573	2,569	4.1%
OSV	1	1	1	
Total	**10,029**	**10,674**	**10,750**	**7.2%**
PCU	**22,109**	**23,234**	**23,349**	**5.6%**

Source: Steer analysis; Note: FY25 actual full year; FY26YTD includes 11 months (Apr-Feb) of FY26; FY26A is adopted base for FY26 which is based on actual data for 11 months (April-February) and 1 month of estimated traffic (March)

5.11 Table 5.2 indicates a total PCU growth of 5.6% in FY26, primarily driven by an increase in CJV traffic and an 8.3% rise in 2A vehicle volumes. The growth in traffic in 2A is linked to increased LPG and petroleum activity in the region, as discussed in Chapter 2 of this report.

5.12 The MAV traffic regained traction in FY26 compared to FY25 which exhibited flat growth largely due to the economic slowdown in Bihar, particularly in the manufacturing and construction sectors. Additionally, recent announcements of road and oil-related infrastructure investments in the state are likely to drive future demand for construction materials and petroleum transport, fostering healthy long-term growth on the asset.

Estimation of background elasticities

Overview

5.13 For brownfield Asset, where sufficient historical traffic evolution is available, it is common practice to use regression model analysis to determine the relationship, expressed as elasticity, between traffic growth and key socioeconomic drivers. This relationship is then applied to assumptions of future socio-economic evolution to estimate future traffic growth.

5.14 As for the Asset under consideration, a historical trend was not available since the Asset started tolling by the client in Oct-2020 and both FY21 and FY22 have been affected by Covid19 related disruptions. Therefore, we undertook a benchmarking exercise in order to estimate our forecast elasticities, Sources used included historical vehicle wise traffic growth on the Asset, outputs from the analysis of the OD data (refer chapter 3 for Commodity and trip length analysis) collected on the toll plaza. We have also undertaken a regional benchmarking against Asset having similar traffic profiles, which gives us reasonable confidence in the relationships proposed.

5.15 In terms of selection of growth drivers for vehicle types, in general we have assumed GSDP as the key driving factor for the CJVs and Buses given this traffic is generally driven by the local economies of the cities and state containing the Asset. The heavier commercial vehicles such as generally travel long-distance, and the underlying growth is governed by the general economies of several states or nation as whole.

5.16 Given the nascent stage of India's logistics sector, characterized by a highly fragmented trucking industry (95% of operators owning fewer than five trucks) and low car ownership rates (30-35 per 1000 people), the forecast elasticities are projected to remain constant throughout the concession period. This assumption is grounded in historical trends and a long-term perspective on regional and national growth, suggesting market maturity is still several years away.

5.17 Table 5.3 below presents the growth drivers identified to model the forecast background traffic growth rates.

Table 5.3: Identified growth drivers to model traffic growth

Vehicle type	GDP India	GSDP Bihar
Car		100%
LCV		100%
Bus		100%

2A	100%	
3A	100%	
MAV	100%	

Source: Steer Analysis

5.18 Further to developing estimates for FY26 AADT, the Asset has operational history between FY22 and FY25, proving us four years of traffic growth on the Asset. Table 5.4 below summarises the volume growth across each of the vehicle categories. For this comparison we have normalised the FY22 AADT for COVID19 by adopting seasonally corrected H2FY22 as the FY22 normalised (FY22N).

Table 5.4: Passenger and Commercial growth with normalised FY22

	FY22N	FY23	FY24	FY25	FY26A	FY22N-26 CAGR
CJV	4,118	3,978	4,229	4,489	4,977	4.9%
LCV	483	491	468	386	394	(4.9%)
Bus	439	397	361	489	534	5.0%
2A	1,042	1,105	1,121	1,190	1,289	5.5%
3A	1,083	1,081	1,072	1,005	986	(2.3%)
MAV	2,349	2,346	2,394	2,468	2,569	2.3%
Total	**9,516**	**9,401**	**9,633**	**10,029**	**10,749**	**3.1%**
PCUs	**21,093**	**21,012**	**21,303**	**22,109**	**23,344**	**2.6%**
Passenger	**4,557**	**4,375**	**4,575**	**4,978**	**5,510**	**4.9%**
Commercial	**4,474**	**4,532**	**4,587**	**4,663**	**4,844**	**2.0%**

Source: Steer Analysis; Note; Passenger includes CJV and Bus traffic whereas Commercial includes 2A/3A/MAV traffic

5.19 The Asset is growing at 2.6% from FY22N to FY26 at the PCU level. Passenger traffic, which includes CJV and buses, is projected based on the state's GSDP, as the growth is driven by the regional local economy.

5.20 Meanwhile, commercial traffic (2A/3A/MAV) is growing in relation to GDP, as the asset lies on the NH52 corridor, which primarily facilitates north-east movement between UP and north India and East India and Bihar. Any growth observed on the asset is influenced by regions along this north-east route. 2A have registered a healthy CAGR of 5.5% whereas MAV traffic has registered a rebound in FY26 after a flatline performance in FY25.

5.21 The sections below detail out the reasoning for selection of respective growth driver(s) for each vehicle category.

5.22 In recent historical traffic performance across national highway corridors, a notable trend has emerged: there is a noticeable shift in axle preference towards 2As and MAVs, resulting in a dampening effect on the growth of 3As. This trend is mirrored in FY26 performance as well. Because of these evolving axle preferences, it has been assumed that the relationship between 3As and GDP will be relatively muted, whereas 2As and MAVs are expected to grow more closely in line with the country's GDP.

Table 5.5: Elasticity recommendations for the Asset (Kotwa- Muzaffarpur)

Vehicle Category	Growth Driver	Elasticity	Comments
CJV	GSDP Bihar	1.0	CJV cater to local movement between Motihari, Muzaffarpur, Kotwa, and Patna. Around 92% of the trips have one end of their trip in Bihar. Strong traffic growth is benchmarked to reference Asset
Mini-LCV	GSDP Bihar	0.6	MLCV on this Asset has witnessed a growth with increasing demand for Local and IAOI

Vehicle Category	Growth Driver	Elasticity	Comments
			movements withing 300km. Therefore, elasticity of 0.6 is assumed.
Buses	GSDP Bihar	0.5	Buses tend to grow as the intercity connections improve. With Bihar being a state, which is growing, buses tend to play an important role linking key cities in the state. However, the volume of bus remains similar in last few years. Over half of the trips are within 100-300 km. Therefore, 0.5 elasticity is assumed.
LCV	GSDP Bihar	0.4	2A in this region and country have started doing long- medium distance movement. 2A growth is closer to that MAV growth as the goods being transported on this corridor are travelling long distance and carrying manufacturing, petrol, LPG, kerosene or agriculture, which are more efficient to move using heavy trucks.
2A	GDP	0.8	
3A	GDP	0.1	3A/MAV: Agri products and petroleum/gas are the prime commodities carried from northern parts of the country to northeast and eastern states and to bordering countries. A significant portion of heavy truck movement dependent upon Muzaffarpur/Motihari industries as well. The Asset also caters to movements in regions outside India, such as Nepal, Bangladesh and Bhutan which represent 10% of 3A/MAV shares. With same toll rates applicable and benefit of carrying additional tonnage in the region and countrywide a shift from 3A to higher category MAV is observed.
MAV	GDP	0.9	

Source: Steer Assumptions

6 Forecast: Network overlays and forecasts

Introduction

6.1 Following the discussion on our forecast of background growth rates in the previous chapter, this chapter first covers the potential network impacts on traffic growth on the Asset. Thereafter, we present our assumptions around toll segmentation, trip factors and evolution of toll rates for the forecast period which are used to forecast revenues as derived from forecast traffic. In the final section, this chapter summarises traffic growth rates for the forecast years.

Analysis of potential network/developmental impacts

6.2 This section details the impacts, which we believe would affect traffic on the Asset during the concession period. As discussed in previous Chapters, to assess the impacts on the Asset, whether positive or negative, we have studied developments (alternate roads, feeder roads and regulatory) in the surrounding road network.

Proposed Gorakhpur Siliguri Expressway

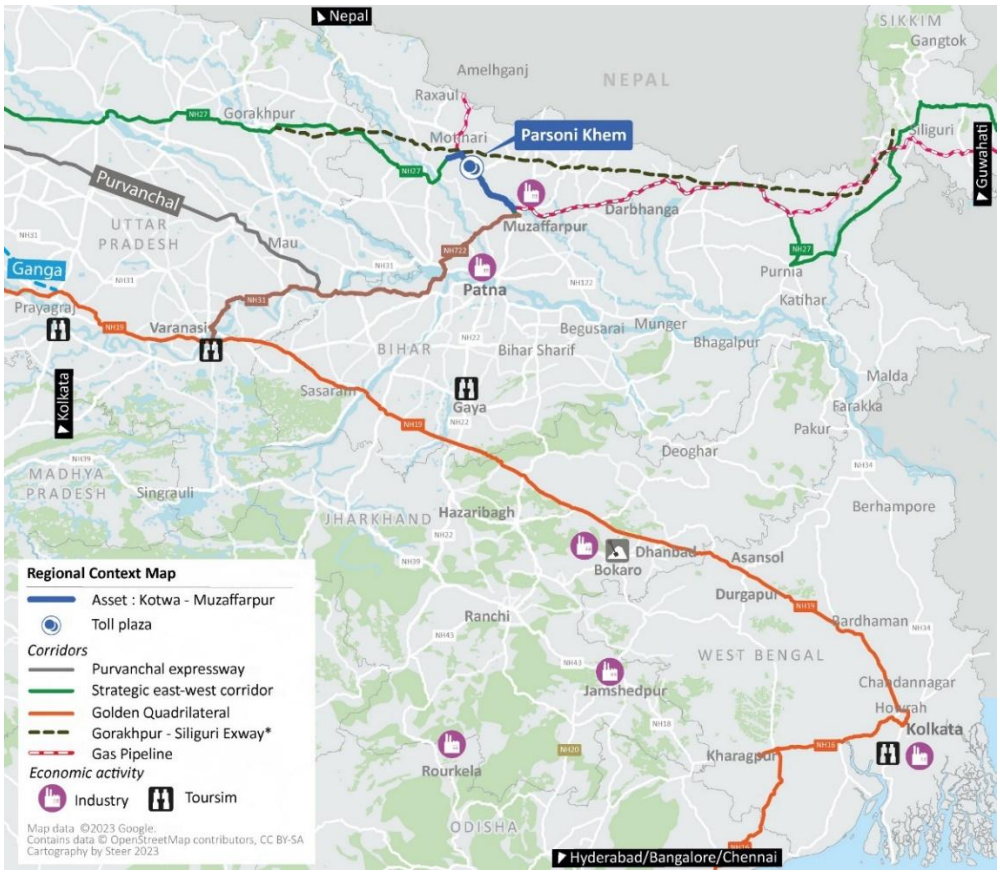
6.3 The central government has approved the Gorakhpur-Siliguri six-lane greenfield expressway project, a 568-km high-speed route. This expressway will traverse through 313 villages across 39 blocks in eight districts of Bihar, covering a total of 417km within the state. The project includes the construction of several bridges over major rivers like Gandak, Bagmati, and Kosi. The estimated cost of the project is ₹38,645 crore, with Bihar contributing ₹27,552 crore[21]. The project is currently in the Detailed Project Report (DPR) and land acquisition stage[22], with no officially announced timeline for completion. Given the early stage of project development, the scale of the proposed 560+ km alignment, and the inherent challenges associated with large-scale greenfield infrastructure—including inter-state coordination, environmental clearances, and land acquisition complexities—Steer has adopted a conservative completion estimate of 2035. This assumption reflects our qualitative understanding of typical timelines for similar expressway projects.

[21] **Centre approves Gorakhpur-Siliguri 6-lane expressway | Patna News - The Times of India**

[22] **Construction of Gorakhpur-Siliguri Expressway will start soon |** गोरखपुर-सिलीगुड़ी एक्सप्रेस-वे का जल्द शुरू होगा निर्माण: **3** जिलों के **115** गांवों की जमीन का होगा अधिग्रहण**, 32** हजार करोड़ आएगी लागत - **Gorakhpur News | Dainik Bhaskar**

6.4 The proposed alignment of the expressway runs parallel to the Asset, and will affect trips moving from UP, Bihar towards West Bengal/Northeast will have an option to travel via Asset or the expressway. This greenfield expressway will lead to attractiveness of the traffic traversing between these three states and North-east as it is going to cut down the travel time significantly, therefore the same have been considered as in scopes.

Figure 6.1: Proposed Alignment of Gorakhpur Siliguri Expressway



Source: Steer cartography using OpenStreetMap data

6.5 Table 6.1 below shows the comparison the key input toll and time comparison between route via Asset and the alternate:

Table 6.1: Toll & Time Comparison between Asset and Alternate

Vehicle category	Toll (INR)	
	Via Asset	*Via Expressway*
CJV	1,025	1,261
LCV	1,635	2,029
2A	3,445	4,266
3A	3,760	4,650
MAV	5,400	6,695

Source: Steer analysis

Table 6.2 Impact of Gorakhpur Siliguri Expressway

Vehicle category	FY35	FY36 onwards
Staging	*80%*	*100%*
2A	(11.4%)	(14.3%)
3A	(14.1%)	(17.7%)
MAV	(10.0%)	(12.6%)

Source: Steer analysis, Full impact will be applicable from FY36, while impact will be applicable in a phased manner from FY35.

6 laning LOS improvement

6.6 As per the concession agreement as soon as the Asset hits 40,000 PCU's the Asset is eligible for capacity augmentation. The PCU level need to be maintained above the 40,000 levels for three consecutive years and two years will be earmarked for DPR preparation. After that a three-year period is factored in for construction, during which 75% toll rates will be applicable in all 3 years of construction period. After the construction is over the toll rates will be calculated as normal, as they should have been in that year.

6.7 On the Asset, it is expected based on our forecasts that traffic volumes will go beyond the 40,000 PCUs mark in FY40, thus breaching the capacity requirements set out in the concession agreement, thus leading to capacity augmentation on the Asset. We expect the level of service on the Asset to improve post capacity augmentation. To calculate this impact, we have employed a GJC based approach.

6.8 A comparison of generalised journey costs (GJC) estimates how different elements of cost and time affect traffic. This comparison was done for both light and heavy vehicles. Lower GJCs correspond to higher induced traffic. Based on Steer's studies and research in India, we have found that for every 1% reduction in the GJCs, the traffic increases by a factor of 0.3. We then applied the difference of GJCs to the elasticity of 0.3 to get net influence on the traffic.

6.9 The improvement in travel costs or GJC is translated into the impact on that share of local + IAOI OD movements using a linear inverse relationship. Therefore, the GJC influence is applied on the corresponding shares of traffic, which were extracted from OD data.

6.10 Table 6.3 below shows the extent of the LOS impact.

Table 6.3: Impact of 6 laning LOS improvement

Vehicle category	FY48 onwards
Staging	*100%*
CJV	1.9%
LCV	1.2%
2A	1.1%
3A	0.6%
MAV	0.5%

Source: Steer analysis

Revenue forecasting assumptions

6.11 To forecast the revenues for a particular financial year, the traffic forecast for each vehicle type is converted into tickets sold, which is then multiplied with the corresponding toll rate, which grows over the years as defined in the Concession Agreement. While "trip factors" provide the conversion factor to the former, i.e., traffic (trips) to tickets sold, "toll segmentation" provides the latter i.e., the breakup of trips paying each ticket type. This section discusses assumptions related to trip factors, toll segmentation and toll rates for the forecast period.

Trip factors

6.12 Trip factors are used to calculate the revenue for the trips made on passes such as return, local personal, monthly passes. The trip factors assumed are based on the latest FY25 data available and listed in Table 6.4 below:

Table 6.4: Trip factors at TP1 Parsoni Khem

Forecast	CJV/MLCV	LCV	Bus	2A	3A	MAV
Single	1	1	1	1	1	1
Return	2	2	2	2	2	2
Monthly	45	45	50	45	74	45
Local commercial	1	1	1	1	1	1
Local Personal	15	20	20	20	20	20

Source: Steer analysis of Client TMS data

Toll segmentation

6.13 The Ministry of Road Transport & Highways has finalized a compensation formula for existing toll concessionaires to offset revenue loss from the Annual Pass scheme for non-commercial vehicles[23].

6.14 Across multiple assets, the share of annual pass trips has been rising on a monthly basis since August 5. A corresponding decline in other ticket categories including Single and Return journeys has been observed.

6.15 CJV Segmentation for FY26 has been developed using the pre annual pass segmentation till 14th August 2025, and post-annual pass segmentation from 15th August 2025 till 28th February 2026. The share of annual pass trips in March 2026 has been assumed to be the same as the share of annual pass trips in the last 10 days of February 2026.

6.16 The segmentation for CJVs in FY27 has been assumed to be the same as the estimated March 2026 segmentation as trends suggest that the share of annual pass trips have stabilised.For other vehicle categories we have analysed the historical TMS data split by ticket categories, to understand trends, as shown in Chapter 3. For the traffic and revenue forecast, FY26YTD (Apr- Feb) as discussed in the earlier sections, can be considered a normal period.

[23] Finalization-Concessionaire-Annual-Pass-Facility-on-NHs-01092025.pdf

Table 6.5: Toll segmentation FY26 onwards, TP1 Parsoni Khem

Ticket type	CJV FY26	CJV FY27	MLCV	Bus	LCV	2A	3A	MAV
Single	31%	26%	36%	31%	54%	73%	88%	93%
Return	43%	39%	47%	63%	41%	23%	9%	6%
Monthly	-	-	-	-	-	-	-	-
Local commercial	1%	1%	1%	3%	1%	3%	3%	1%
Local personal	4%	4%	4%	-	-	-	-	-
Exemptions	11%	10%	11%	2%	4%	1%	1%	0%
Annual Pass	**10%**	**20%**	**-**	**-**	**-**	**-**	**-**	**-**

Source: Steer analysis of Client TMS data; ticket segmentation for all vehicle categories other than CJVs are from FY26 onwards

6.17 The Annual pass compensation is separately calculated using the formula prescribed by NHAI in the same circular. Following Table 6.6 presents the Annual pass compensation computed for the toll plaza.

Table 6.6: Annual pass compensation for CJVs (in Crore)

Toll Plaza	FY26	FY28	FY33	FY38	FY43	FY51
Parsoni Khem	1.6	4.0	6.8	11.6	19.2	42.3

Source: Steer Analysis

Toll evolution

6.18 Based on the concession agreement and the gazetted toll notification, we understand that base toll rates increase every year (revision month is April) based on WPI-linked inflation. These are rounded up to the nearest five decimals to estimate the final toll rate charged to users.

6.19 We have used actual toll rates from the FY25 toll notifications and FY26 WPI to validate the modelling of future toll evolution. Increase in WPI was calculated based on the Client's WPI forecasts, as shown in the table below. These forecasts provided by the Client expect the Indian WPI to grow at an average of 4.2% between FY25-FY51. The WPI forecasts available from other independent forecasting agencies may vary from this assumption and could be lower or higher than that provided by the client.

Table 6.7: WPI growth forecast assumptions

Financial year	WPI growth (%)
FY26	2.57%
FY27	0.96%
FY28	5.0%
FY29	5.1%

Financial year	WPI growth (%)
FY30	4.9%
FY31	4.4%
FY32 onwards	4.1%

Source: FY28 onwards WPI as per client inputs

Revenue reconciliation

6.20 As part of validating the data provided by the Client, as well as our assumptions around toll calculations, we have reconciled the actual reported revenue on a monthly level for the Asset. To reconcile we have used the FY26YTD segmentation, FY26YTD AADT and compared it with the reported revenue for the year. The exercise was undertaken at an annual level. The comparison, as shown in the table below, depicts the modelled revenue vs the reported revenue difference, and the difference lies within 1%, this gives us the confidence in the assumptions around segmentation and trip factors for future forecast purposes.

Table 6.8: FY26 Revenue reconciliation summary (INR Lakhs)

Asset	Modelled	Actual	Difference (%)
	FY26YTD	FY26YTD	
TP1-Parsoni Khem	33.62	33.62	(0.02%)

Source: Steer comparison between modelled and reported revenue, FY26

Traffic and Revenue forecasts

6.21 Based on the traffic and revenue-related forecast assumptions discussed above, we have modelled the traffic and revenue forecasts for the concession length of the Asset. The table below presents the AADT/PCU and revenue forecast growth rates and CAGRs on this Asset. Further, Appendix B presents the AADT and revenues for the concession period.

Table 6.9: Traffic forecast (with impacts) for TP1 Parsoni Khem

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	4,037	4,544	6,203	8,416	11,118	17,087
Mini LCV	940	1,021	1,233	1,484	1,757	2,255
Bus	534	571	669	781	900	1,108
LCV	394	417	473	536	600	717
2A	1,289	1,425	1,802	1,948	2,432	3,428
3A	986	998	1,029	872	897	943
MAV	2,569	2,876	3,743	4,248	5,447	7,941
OSV	1	1	2	2	3	4
AADT	**10,750**	**11,853**	**15,153**	**18,288**	**23,154**	**33,483**
PCU's	**23,349**	**25,646**	**32,274**	**36,981**	**46,300**	**65,774**

Source: Steer analysis

Table 6.10: Traffic CAGR (%) for TP1 Parsoni Khem

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	6.1%	6.4%	6.3%	5.7%	5.9%
Mini LCV	4.2%	3.9%	3.8%	3.4%	3.6%
Bus	3.5%	3.2%	3.1%	2.9%	3.0%
LCV	2.8%	2.6%	2.5%	2.3%	2.4%
2A	5.2%	4.8%	1.6%	4.5%	4.0%
3A	0.6%	0.6%	(3.2%)	0.6%	(0.2%)
MAV	5.8%	5.4%	2.6%	5.1%	4.6%
OSV	5.8%	5.4%	5.4%	5.1%	5.2%
AADT	**5.0%**	**5.0%**	**3.8%**	**4.8%**	**4.6%**
PCU's	**4.8%**	**4.7%**	**2.8%**	**4.6%**	**4.2%**

Source: Steer analysis

Table 6.11: Revenue forecast (with impacts) for TP1 Parsoni Khem (INR crores) including Annual Pass Compensation revenue for CJVs

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	14.0	17.1	29.2	49.7	82.2	181.4
Mini LCV	3.3	3.8	5.8	8.7	12.9	23.7
Bus	6.9	8.0	11.8	17.1	24.6	43.5
LCV	2.6	2.9	4.2	5.9	8.3	14.3
2A	19.1	22.8	36.3	48.8	76.1	153.9
3A	16.5	18.0	23.4	24.8	31.8	48.0
MAV	63.3	76.7	125.6	177.5	284.1	594.3
OSV	0.0	0.0	0.1	0.1	0.2	0.4
Total revenue	**125.6**	**149.4**	**236.3**	**332.7**	**520.2**	**1,059.5**

Source: Steer analysis

Table 6.12: Revenue growth CAGR (%) for TP1 Parsoni Khem

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	10.7%	11.3%	11.2%	10.6%	10.8%
Mini LCV	8.3%	8.6%	8.5%	8.2%	8.3%
Bus	7.6%	8.1%	7.8%	7.5%	7.6%
LCV	6.7%	7.5%	7.1%	6.9%	7.1%
2A	9.4%	9.8%	6.1%	9.3%	8.7%
3A	4.4%	5.3%	1.2%	5.1%	4.4%

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
MAV	10.1%	10.4%	7.2%	9.9%	9.4%
OSV	10.0%	10.3%	10.2%	9.9%	9.9%
Total revenue	**9.1%**	**9.6%**	**7.1%**	**9.4%**	**8.9%**

Source: Steer analysis

6.22 As presented in the tables above, traffic CAGRs (PCUs) for the traffic forecast (with impacts) on the Asset over the concession period is around 4.2% and corresponding revenue CAGR is around 8.9%. This growth is majorly driven by:

6.23 CJVs, as discussed in the historical section, this Asset has an even mix of CJVs and MAVs. The CJVs on the Asset are expected to grow with increasing per capita income levels of the region and are expected to grow at a healthy rate for a longer period, given the low car ownership levels in the state.

6.24 While MAV carrying heavy Agri commodities rice, maize and wheat as expect with the increased production in Agri industries as explained in Chapter 2, MAVs will witness a healthy growth on this Asset in long term as well.

Target revenues and modification of concession period

6.25 As per the concession agreement, the target revenue for TP1 should be 14.2 Cr for the month of March 2030 first calculation of target revenue and 23.12Cr for the month of March 2040 for the second calculation of target revenue. The traffic sampling will be undertaken for a continuous period of seven days during anytime within 15 days prior to the date on the specified year, previous year and following year. The average thereof will be deemed as 'actual revenue.'

6.26 If the target revenue falls short or exceeds by 20% and 30% for extensions 1 and 2 respectively, the concession period shall be deemed to be modified using the laid-out conditions in the concession agreement. The table below presents the summary of the analysis.

Table 6.13: Target Revenues for Extension 1

Asset	Target Month	Target Revenue	Estimated Revenue			Average Revenue	Variation (%)
		Cr	2029	2030	2031		
KM	Mar-30	14.22	14.62	16.08	17.62	16.11	13.3%

Source: Steer analysis

Table 6.14: Target Revenues for Extension 2

Asset	Target Month	Target Revenue	Estimated Revenue			Average Revenue	Variation (%)
		Cr	2039	2040	2041		
KM	Mar-40	23.12	32.61	35.65	38.94	35.73	54.6%

Source: Steer analysis

6.27 We have used the average AADT forecast for target year, previous year and following year as a proxy for 'actual traffic.' We have applied seasonality of March month to adjust for seasonal trends and arrive at March traffic from AADT traffic, which is then segmented according to the forecast toll segmentation and trip factors and multiplied with respective estimated toll rates to get to a monthly revenue collection.

6.28 As seen from the table above, the target revenue forecast for the Asset is higher than the Concession Agreement target revenue by a rounded 13% for target date 1 and 55% for target date 2. As the difference lies below the permitted threshold 30% for target date 1 and above 30% for target level 2 respectively, a change in the length of the concession is expected. As per the Concession Agreement, for every 1% excess target revenue, the concession period shall be decreased by 1.5%, with a capping at 20%. Therefore, for the excess traffic on these toll plazas, the concession period, originally 30 years, is expected to reduce by five years from FY51, potentially changing the concession period to end by FY46 instead of FY51.

Upside and Downside cases

Upside and Downside scenario assumptions

6.29 We have developed our base case scenario considering a balanced view on the risks associated with input assumptions around GDP growth and traffic growth elasticities. There is always a risk that the outturn values of these inputs will vary as compared to the assumptions taken due to exogenous impacts, e.g. GDP growth could be influenced both positively and negatively by the impact of monsoons, export-import balances, political changes etc.

6.30 Similarly, traffic growth elasticities could be influenced by increased efficiencies achieved by technology, large shifts in commodity prices globally, changes in local manufacturing practices. However, at this stage we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

6.31 To account for the possible variations in the growth drivers, we are also presenting an Upside (optimistic) and a Downside (pessimistic) scenario. These scenarios are defined by the following variations from the base assumptions:

Table 6.15: Summary of Macro-economic Assumptions for upside and downside cases

Input	Upside	Downside
Macro Assumptions		
GDP/GSDP	+1% every year	-1% every year
WPI	+1% every year	-1% every year
Elasticities	+ 10%	- 10%

Source: Steer analysis

6.32 Further, network developments are highly dependent on governmental directions, policies, legal and financial measure which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside

(pessimistic) case. However, at this stage, we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

Impacts-Upside Case

6.33 The upside case impacts included in forecasts are summarised in below.

Table 6.16: Summary of impacts on the Assets (upside)

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact
6 laning LOS improvement	FY45	+25% of base case	CJV: 2.4% LCV: 1.5% 2A: 1.4% 3A: 0.7% MAV: 0.6%
Gorakhpur Siliguri Expressway	FY36 (80%) FY37 (100%)		2A: (10.7%) 3A: (13.3%) MAV: (9.4%)

Source: Steer analysis of OD data

Impacts-Downside Case

6.34 The downside case impacts included in forecasts are summarised in below.

Table 6.17: Summary of impacts on the Assets (downside)

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact
6 laning LOS improvement	-	-25% of base case	*No Impact*
Gorakhpur Siliguri Expressway	FY33 (80%) FY34 (100%)		2A: (17.9%) 3A: (22.1%) MAV: (15.7%)

Source: Steer analysis of OD data

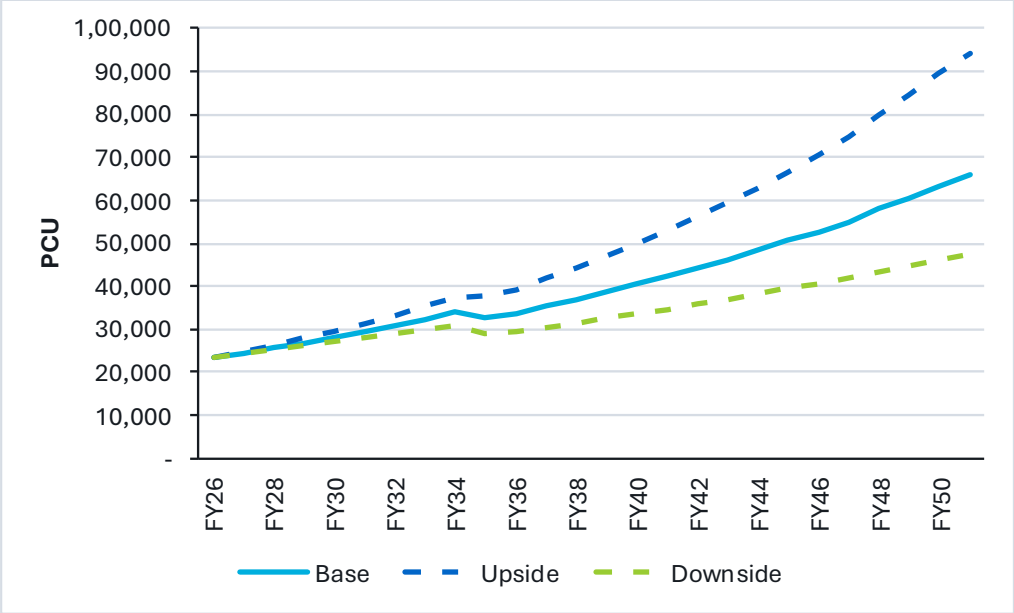
6.35 Based on the above assumptions for upside and downside scenarios, the following table summarizes the upside potential and downside risks associated with the PCU and the revenue for Parsoni Khem toll plaza at the end of the concession i.e. FY51.

Table 6.18: Upside potential and Downside PCU scenario – FY51

Toll Plaza	Upside Potential	Downside Risk
Parsoni Khem	43.4%	(28.0%)

Source: Steer Analysis

Figure 6.2: Long-term PCU forecasts for Parsoni Khem TP including upside and downside scenarios



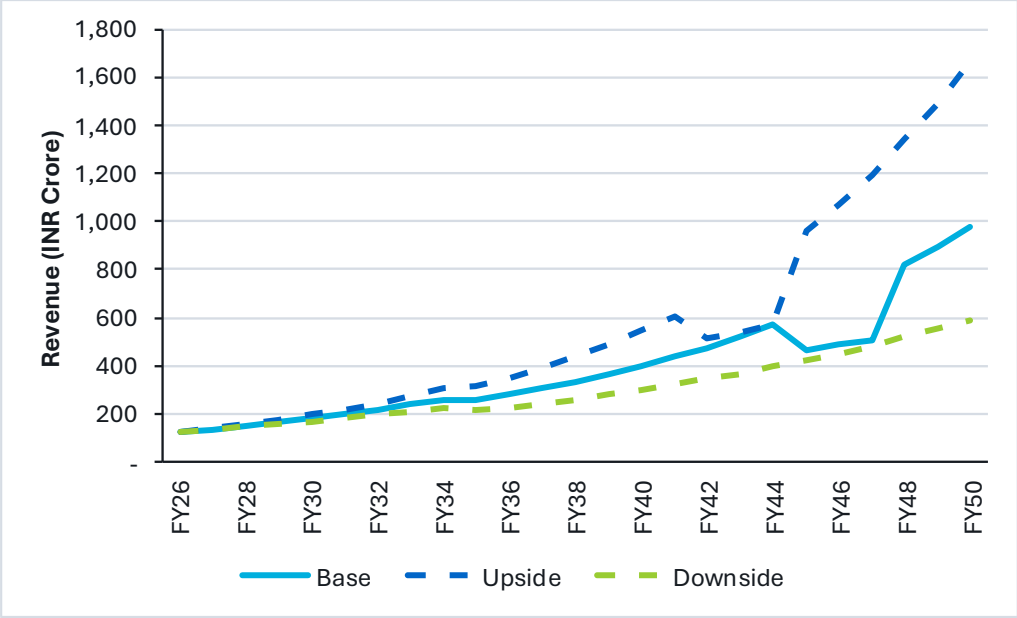
Source: Steer Analysis

Table 6.19: Upside potential and Downside Revenue scenario – FY51

Toll Plaza	Upside Potential	Downside Risk
Parsoni Khem	75.3%	(55.4%)

Source: Steer Analysis

Figure 6.3: Long-term revenue forecasts for Parsoni Khem TP including upside and downside scenarios



Source: Steer Analysis

6.36 Revenue projections exhibit variability in both the upside and downside cases, driven by fluctuations in macro-economic factors such as WPI, GDP/GSDP, elasticities and the network impacts.

Summary Outlook

6.37 Passenger movement on the Asset is largely local in nature, connecting the cities of Motihari, Patna, Muzaffarpur to West and East Champaran, Chakia and other nearby towns. Cars are expected to see a healthy growth on the Asset following the overall behavioural shift of users away from public transport.

6.38 The Asset benefits from its strategic location, facilitating the east-west movement of goods from Uttar Pradesh and the Delhi NCR region towards Bihar, West Bengal, and the northeastern states. Additionally, the proximity of the Nepal border near Raxaul serves as a key destination for a substantial share of traffic using the Asset. The 3A/MAV traffic on the Asset predominantly caters to long-haul routes, with approximately 70% of users covering distances exceeding 500 km.

6.39 This segment of traffic is expected to exhibit a relatively muted growth trend in the near term, particularly given the prevailing economic slowdown in Bihar projected to continue until FY27. Beyond FY27, it is anticipated that the regional economic conditions will improve, leading to a gradual normalization of economic activity and corresponding traffic growth on the Asset.

6.40 Our findings and estimates in this report are based on our understanding from the site visit, analysis of primary data available both from surveys and the toll management system (both historical and current), macroeconomic assumptions prescribed by Client, feedback from Client meetings and secondary publicly available data. There can be both positive and negative risks associated with assumptions and the forecasts using them as summarised below.

6.41 Overall, we see a positive outlook for the region and the Asset in the longer term, given that it serves major urban centres of Delhi NCR, Lucknow, Patna all the way to East and North-East India along with bordering countries for major commodities. The underlying growth drivers of the corridor are strong and are expected to deliver long term sustained growth.

Appendices

A Top 10 OD Pairs

A.1 Further to the OD analysis presented in Chapter 3 this appendix presents the top 10 OD pairs at each toll plaza. Please see this data for both CJVs and MAVs and OSVs combined below.

TP1 Parsoni Khem

Table A.1: CJV, Bus and Mini Bus top 10 OD pair shares at TP1 Parsoni Khem

	OD Pair	Share
1.	Patna-Motihari	19.3%
2.	Muzaffarpur-Motihari	19.2%
3.	Muzaffarpur-Bettiah	7.4%
4.	Patna-Bettiah	6.5%
5.	Patna-Raxaul	2.9%
6.	Muzaffarpur-Pipra Kothi	2.7%
7.	Muzaffarpur-Raxaul	2.2%
8.	Motipur-Motihari	1.9%
9.	Muzaffarpur-Uttar Pradesh	1.6%
10.	Vaishali-Motihari	1.4%

Source: Steer analysis of OD data

Table A.2: 3A and MAV top 10 OD pair shares at TP1 Parsoni Khem

	OD Pair	Share
1.	Assam-Uttar Pradesh	6.1%
2.	Assam-NCT of Delhi	5.6%
3.	Barauni-Nepal	4.8%
4.	Muzaffarpur-Uttar Pradesh	4.4%
5.	West Bengal-Nepal	3.9%
6.	Muzaffarpur-Motihari	3.8%
7.	Assam-Haryana	3.4%
8.	Assam-Rajasthan	2.6%
9.	Patna-Motihari	2.4%
10.	Assam-Punjab	2.3%

Source: Steer analysis of OD data

Sahebganj (SH74)

Table A.3: CJV, Bus and Mini Bus top 10 OD pair shares at Sahebganj (SH74)

	OD Pair	Share
1.	Muzaffarpur-East Champaran	33.63%
2.	East Champaran-Patna	13.27%
3.	Patna-Bettiah	6.19%
4.	Muzaffarpur-Gopalganj	6.19%
5.	Muzaffarpur-Motihari	5.31%
6.	East Champaran-Vaishali	4.42%
7.	Lala Chhapra-Bettiah	2.65%
8.	East Champaran-Motipur	2.65%
9.	Patna-Uttar Pradesh	2.65%
10.	Vaishali-Bettiah	2.65%

Source: Steer analysis of OD data

Table A.4: 3A and MAV top 10 OD pair shares at Sahebganj (SH74)

	OD Pair	Share
1.	East Champaran-Patna	7.69%
2.	West Bengal-Nepal	6.41%
3.	Patna-Uttar Pradesh	5.13%
4.	Jharkhand-Nepal	3.85%
5.	Vaishali-Uttar Pradesh	3.85%
6.	Muzaffarpur-East Champaran	3.85%
7.	Lakhisarai-Uttar Pradesh	3.85%
8.	Patna-Nepal	2.56%
9.	Vaishali-Bettiah	2.56%
10.	Bettiah-Jharkhand	2.56%

Source: Steer analysis of OD data

Benipur (SH74)

Table A.5: CJV, Bus and Mini Bus top 10 OD pair shares at Benipur (SH74)

	OD Pair	Share
1.	East Champaran-Patna	17.50%
2.	East Champaran-Uttar Pradesh	12.50%
3.	Muzaffarpur-Motihari	10.00%
4.	East Champaran-Motihari	7.50%

5.	Muzaffarpur-East Champaran	7.50%
6.	Muzaffarpur-Gopalganj	5.00%
7.	East Champaran-Bettiah	5.00%
8.	Jharkhand-Nepal	2.50%
9.	East Champaran-Khagaria	2.50%
10.	Vaishali-Motihari	2.50%

Source: Steer analysis of OD data

Table A.6: 3A and MAV top 10 OD pair shares at Benipur (SH74)

	OD Pair	Share
1.	East Champaran-Patna	13.11%
2.	East Champaran-Jharkhand	8.20%
3.	Patna-Nepal	4.92%
4.	Aurangabad-Bettiah	3.28%
5.	Gopalganj-Patna	3.28%
6.	Vaishali-Nepal	3.28%
7.	Jehanabad-Nepal	3.28%
8.	Patna-Motihari	3.28%
9.	Patna-Bettiah	1.64%
10.	East Champaran-Nepal	1.64%

Source: Steer analysis of OD data

B Detailed Forecasts

B.1 Further to the summary of forecasts presented in Chapter 6, this appendix presents detailed forecasts.

Traffic forecasts

B.2 This section presents the detailed traffic forecasts for the forecast period until FY51, year of expected close of the concession. The following two tables show the traffic growth rates and AADT, respectively.

Table B.1: Traffic Forecast (with impacts) over horizon years at TP1 Parsoni Khem

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY27	4,250	980	552	405	1,356	992	2,719	11,256	24,441
FY28	4,544	1,021	571	417	1,425	998	2,876	11,853	25,646
FY29	4,844	1,061	590	428	1,495	1,004	3,036	12,460	26,872
FY30	5,153	1,102	609	439	1,567	1,010	3,199	13,081	28,123
FY31	5,478	1,143	628	450	1,641	1,016	3,369	13,727	29,420
FY32	5,823	1,187	648	461	1,718	1,022	3,547	14,408	30,784
FY33	6,203	1,233	669	473	1,802	1,029	3,743	15,153	32,274
FY34	6,603	1,281	691	485	1,889	1,035	3,947	15,932	33,829
FY35	7,023	1,330	713	498	1,754	894	3,742	15,954	32,808
FY36	7,465	1,380	735	510	1,778	862	3,833	16,564	33,693
FY37	7,929	1,431	758	523	1,862	867	4,036	17,408	35,303
FY38	8,416	1,484	781	536	1,948	872	4,248	18,288	36,981
FY39	8,928	1,538	805	549	2,039	877	4,469	19,206	38,727
FY40	9,438	1,591	828	561	2,132	882	4,699	20,134	40,512
FY41	9,973	1,645	852	574	2,228	887	4,939	21,101	42,368
FY42	10,533	1,701	875	587	2,329	892	5,188	22,107	44,296
FY43	11,118	1,757	900	600	2,432	897	5,447	23,154	46,300
FY44	11,729	1,815	925	613	2,539	902	5,717	24,242	48,380
FY45	12,367	1,874	950	626	2,649	907	5,997	25,373	50,538
FY46	13,032	1,935	975	640	2,763	912	6,287	26,548	52,776

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY47	13,727	1,997	1,001	653	2,881	917	6,589	27,768	55,097
FY48	14,722	2,060	1,028	675	3,041	928	6,942	29,399	58,067
FY49	15,489	2,124	1,054	689	3,168	933	7,268	30,730	60,582
FY50	16,288	2,190	1,082	704	3,299	938	7,605	32,109	63,185
FY51	17,087	2,255	1,108	717	3,428	943	7,941	33,483	65,774

Source: Steer Analysis

Table B.2: Forecasts (with impacts) for AADT growth rates (%) at TP1 Parsoni Khem

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY27	5.3%	4.2%	3.5%	2.8%	5.2%	0.6%	5.8%	4.7%	5.3%
FY28	6.9%	4.1%	3.5%	2.8%	5.1%	0.6%	5.8%	4.9%	6.9%
FY29	6.6%	4.0%	3.3%	2.6%	4.9%	0.6%	5.6%	4.8%	6.6%
FY30	6.4%	3.8%	3.2%	2.6%	4.8%	0.6%	5.4%	4.7%	6.4%
FY31	6.3%	3.8%	3.2%	2.5%	4.7%	0.6%	5.3%	4.6%	6.3%
FY32	6.3%	3.8%	3.1%	2.5%	4.7%	0.6%	5.3%	4.6%	6.3%
FY33	6.5%	3.9%	3.3%	2.6%	4.9%	0.6%	5.5%	4.8%	6.5%
FY34	6.4%	3.9%	3.2%	2.6%	4.8%	0.6%	5.5%	4.8%	6.4%
FY35	6.4%	3.8%	3.2%	2.5%	(7.2%)	(13.6%)	(5.2%)	(3.0%)	6.4%
FY36	6.3%	3.8%	3.1%	2.5%	1.4%	(3.5%)	2.4%	2.7%	6.3%
FY37	6.2%	3.7%	3.1%	2.5%	4.7%	0.6%	5.3%	4.8%	6.2%
FY38	6.1%	3.7%	3.1%	2.5%	4.7%	0.6%	5.3%	4.8%	6.1%
FY39	6.1%	3.6%	3.0%	2.4%	4.6%	0.6%	5.2%	4.7%	6.1%
FY40	5.7%	3.4%	2.9%	2.3%	4.6%	0.6%	5.2%	4.6%	5.7%
FY41	5.7%	3.4%	2.8%	2.3%	4.5%	0.6%	5.1%	4.6%	5.7%
FY42	5.6%	3.4%	2.8%	2.2%	4.5%	0.6%	5.0%	4.6%	5.6%
FY43	5.6%	3.3%	2.8%	2.2%	4.4%	0.6%	5.0%	4.5%	5.6%
FY44	5.5%	3.3%	2.7%	2.2%	4.4%	0.5%	4.9%	4.5%	5.5%
FY45	5.4%	3.3%	2.7%	2.2%	4.4%	0.5%	4.9%	4.5%	5.4%
FY46	5.4%	3.2%	2.7%	2.2%	4.3%	0.5%	4.8%	4.4%	5.4%
FY47	5.3%	3.2%	2.7%	2.1%	4.3%	0.5%	4.8%	4.4%	5.3%
FY48	7.2%	3.2%	2.6%	3.3%	5.6%	1.2%	5.4%	5.4%	7.2%
FY49	5.2%	3.1%	2.6%	2.1%	4.2%	0.5%	4.7%	4.3%	5.2%

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY50	5.2%	3.1%	2.6%	2.1%	4.1%	0.5%	4.6%	4.3%	5.2%
FY51	4.9%	2.9%	2.5%	2.0%	3.9%	0.5%	4.4%	4.1%	4.9%

Source: Steer Analysis

Revenue forecasts

Table B.3: Revenue forecast (INR Crores), for TP1 Parsoni Khem including the annual pass compensation

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	Total
FY27	15.3	3.5	7.3	2.7	20.5	17.1	69.0	135.5
FY28	17.1	3.8	8.0	2.9	22.8	18.0	76.7	149.4
FY29	18.9	4.1	8.7	3.2	25.1	19.1	84.6	163.8
FY30	21.3	4.5	9.4	3.4	27.6	20.1	93.7	180.1
FY31	23.7	4.9	10.1	3.6	30.3	21.1	103.5	197.4
FY32	26.6	5.4	10.9	3.9	33.1	22.4	113.7	216.1
FY33	29.2	5.8	11.8	4.2	36.3	23.4	125.6	236.3
FY34	32.6	6.3	12.7	4.5	39.7	24.6	138.2	258.6
FY35	36.6	6.9	13.7	4.8	38.6	22.2	137.0	259.8
FY36	40.2	7.4	14.8	5.2	41.0	22.5	146.9	278.0
FY37	44.7	8.0	15.9	5.5	44.7	23.6	161.5	304.0
FY38	49.7	8.7	17.1	5.9	48.8	24.8	177.5	332.7
FY39	55.1	9.4	18.4	6.3	53.5	26.0	195.5	364.4
FY40	60.9	10.2	19.8	6.8	58.5	27.5	215.4	399.4
FY41	67.3	11.0	21.3	7.2	63.7	28.8	235.5	435.0
FY42	74.7	11.9	22.9	7.8	69.7	30.2	258.6	475.9
FY43	82.2	12.9	24.6	8.3	76.1	31.8	284.1	520.2
FY44	91.1	14.0	26.5	8.9	83.4	33.6	313.3	571.0
FY45	74.9	11.3	21.4	7.1	68.2	26.4	257.1	466.5
FY46	78.9	11.6	21.9	7.3	71.1	26.6	269.5	487.1
FY47	83.1	12.0	22.5	7.4	74.1	26.7	282.4	508.6
FY48	136.4	18.9	35.3	11.7	119.5	41.4	455.1	818.5
FY49	149.6	20.3	37.8	12.5	129.9	43.3	497.2	891.0
FY50	165.5	22.0	40.6	13.3	141.9	45.7	544.7	974.0
FY51	181.4	23.7	43.5	14.3	153.9	48.0	594.3	1,059.5

Source: Steer Analysis

C Data Collection Exercise

C.1 To validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

3 days TVC count

Table C.1: 3-day TVC counts at TP1 Parsoni Khem

Date	Source	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
21-02-2026	TVC	5,320	1,128	1,019	625	1,097	1,081	2,793	3	**13,066**
22-02-2026	TVC	4,475	1,066	1,031	568	1,041	1,108	2,726	1	**12,016**
23-02-2026	TVC	4,494	998	888	614	1,052	1,056	2,699	5	**11,806**

Source: Steer Analysis

Table C.2: WADT TVC vs TMS

Toll plaza	Source	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
TP1	TVC	4,763	1,064	979	602	1,063	1,082	2,739	3	12,296
	TMS	5,489	-	436	570	1,439	1,080	2,755	3	11,773

Source: Steer Analysis

Table C.3: 3-day TVC counts at SH74

Date	Source	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
23-01-2025	TVC	1,218	520	274	123	116	90	752	-	3,093
24-01-2025	TVC	1,211	533	255	134	132	93	697	-	3,055
25-01-2025	TVC	1,198	494	236	135	136	76	664	1	2,940

Source: Steer Analysis

Zone List

Table C.3: Zone list used for OD analysis

Zone No	Zone name	State of zone
1	Sitamarhi	Bihar
2	Sheohar	Bihar
3	Samastipur	Bihar
4	Muzaffarpur	Bihar
5	Gopalganj	Bihar
6	East Champaran	Bihar
7	darbhanga	Bihar
8	west champaran	Bihar
9	Araria	Bihar
10	Aurangabad	Bihar
11	Banka	Bihar
12	Begusarai	Bihar
13	Bhagalpur	Bihar
14	Bhojpur	Bihar
15	Buxar	Bihar
16	Gaya	Bihar
17	Jamui	Bihar
18	Kaimur (bhabua)	Bihar
19	Katihar	Bihar
20	Khagaria	Bihar
21	Kishanganj	Bihar
22	Lakhisarai	Bihar
23	Madhepura	Bihar
24	Madhubani	Bihar
25	Munger	Bihar
26	Nalanda	Bihar
27	Nawada	Bihar
28	Patna	Bihar
29	Purnia	Bihar
30	Rohtas	Bihar
31	Saharsa	Bihar
32	Saran (chhapra)	Bihar
33	Sheikhpura	Bihar
34	Siwan	Bihar
35	Supaul	Bihar

Zone No	Zone name	State of zone
36	Vaishali	Bihar
37	Arwal	Bihar
38	Jehanabad	Bihar
39	Barauli	Bihar
40	Raxaul	Bihar
41	Lalganj	Bihar
43	Hussaini	Bihar
44	Barauni	Bihar
45	Lala Chhapra	Bihar
46	Turki	Bihar
47	Tikuliya	Bihar
48	Sahebganj	Bihar
49	Raniganj Mohalla	Bihar
50	Pipra Kothi	Bihar
51	Pipra	Bihar
52	phenhara	Bihar
53	Pasrampur	Bihar
54	Pakridayal	Bihar
55	Nauzamin	Bihar
56	Nankar Parsauni Khem	Bihar
57	Motipur	Bihar
58	Motihari	Bihar
59	Mirzapur	Bihar
60	Mehsi	Bihar
61	Matkan	Bihar
62	Math Parmeshwar	Bihar
63	Mahuawa	Bihar
64	Madhuban Bediban	Bihar
65	Madhuban	Bihar
66	Kundia	Bihar
67	Kunarpur	Bihar
68	Kuahi	Bihar
69	Kotwa	Bihar
70	Koir Gawan	Bihar
71	Khalilpur	Bihar
72	Kesariya	Bihar
73	Katha	Bihar

Zone No	Zone name	State of zone
74	Kanti	Bihar
75	Jiwdhara	Bihar
76	jasauli Patti	Bihar
77	Jahingara	Bihar
78	Harsher	Bihar
79	Hardiyabad	Bihar
80	Halimpur	Bihar
81	Gariba	Bihar
82	Dipau	Bihar
83	Dhobauliya	Bihar
84	Darmaha	Bihar
85	Damodarpur	Bihar
86	Chintamanpur	Bihar
87	Chand Saraia	Bihar
88	Chakia	Bihar
90	Chak Bara	Bihar
91	Chaita	Bihar
92	Bir Chhapra	Bihar
93	Bettiah	Bihar
94	Belwadih	Bihar
95	Bathna	Bihar
96	Baruraj	Bihar
97	Bardaha	Bihar
98	Baisaha	Bihar
99	Alaula	Bihar
100	Alakhbani	Bihar
101	Ahiraulia	Bihar
103	Ababkarpur	Bihar
107	Bodh gaya, Gaya	Bihar
108	Andaman & Nicobar Island	Andaman & Nicobar Island
109	Andhra Pradesh	Andhra Pradesh
110	Arunanchal Pradesh	Arunanchal Pradesh
111	Assam	Assam
112	Chandigarh	Chandigarh
113	Chhattisgarh	Chhattisgarh
114	Dadara & Nagar Havelli	Dadara & Nagar Havelli
115	Daman & Diu	Daman & Diu

Zone No	Zone name	State of zone
116	Goa	Goa
117	Gujarat	Gujarat
118	Haryana	Haryana
119	Himachal Pradesh	Himachal Pradesh
120	Jammu & Kashmir	Jammu & Kashmir
121	Jharkhand	Jharkhand
122	Karnataka	Karnataka
123	Kerala	Kerala
124	Lakshadweep	Lakshadweep
125	Madhya Pradesh	Madhya Pradesh
126	Maharashtra	Maharashtra
127	Manipur	Manipur
128	Meghalaya	Meghalaya
129	Mizoram	Mizoram
130	Nagaland	Nagaland
131	NCT of Delhi	NCT of Delhi
132	Puducherry	Puducherry
133	Punjab	Punjab
134	Rajasthan	Rajasthan
135	Sikkim	Sikkim
136	Tamil Nadu	Tamil Nadu
137	Telangana	Telangana
138	Tripura	Tripura
139	Uttar Pradesh	Uttar Pradesh
140	Uttarakhand	Uttarakhand
141	West Bengal	West Bengal
142	Malda	West Bengal
143	Behrampur	West Bengal
144	Sahibganj	West Bengal
145	Pakur	West Bengal
146	Odisha	Odisha
147	Nepal	Nepal
148	Bangladesh	Bangladesh
149	BHUTAN	BHUTAN

`Source: Steer analysis

Control Information

Prepared by

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002,
India
+91 124 441 8650
www.steergroup.com

Prepared for

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1,
Sector 16, Noida- 201301 (UP, India)

Steer project/proposal number

23741311

Client contract/project number

Transit 11

Author/originator

Vineet Karlapalem

Reviewer/approver

Vaibhav Gupta

Other contributors

Shipra Bhatia, Ayushman Rai, Harshit Garg, Samridha Kalaiyan

Distribution

Client: Cube Highways Steer:

Version control/issue number

Date

April 2026

steergroup.com

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence of Walayar Vadakkencherry Expressways Private Limited

Cube Highways Fund Advisors Private Limited
Our ref: 23741311
Client ref: Transit 11

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence of Walayar Vadakkencherry Expressways Private Limited

Prepared by:

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002,
India

+91 124 441 8650
www.steergroup.com

Prepared for:

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower,
Plot No. C - 1, Sector 16, Noida- 201301 (UP, India)

Client ref: Transit 11
Our ref: 23741311

Steer has prepared this material for Cube Highways Fund Advisors Private Limited. This material may only be used within the context and scope for which Steer has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer shall be deemed to confirm their agreement to indemnify Steer for all loss or damage resulting therefrom. Steer has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

steer

Table of Contents

Disclaimer		**iv**
Glossary Items		**vi**
1	**Introduction**	**1**
	The assignment	1
	Our approach	2
	Contents of this report	3
2	**The Asset**	**4**
	Introduction	4
	Strategic network	4
	Concession and tolling details	6
	Key economic activities	7
3	**Traffic description**	**11**
	Introduction	11
	Historical trends	12
	Key findings of the TVC data analysis	18
	Key findings of the origin-destination analysis	19
	Conclusions	25
4	**Socioeconomic context and traffic growth**	**27**
	Introduction	27
	Population growth	27
	Economic Indicators	28
	Economic Growth	31
	Forecasts for growth drivers	35
5	**FY26 Base year AADT and Traffic growth Analysis**	**37**
	Introduction	37
	FY26 Base year AADT estimates	37
	Estimation of background elasticities	39
	Forecasts for background elasticities	43
6	**Forecasts: Network overlays and forecasts**	**45**
	Introduction	45
	Analysis of potential network/developmental impacts	45
	Revenue forecasting assumptions	46
	Revenue reconciliation	48
	Upside and Downside cases	50
	Summary outlook	53

Figures

Figure 2-1: Asset location in the regional network context 4

Figure 2-2: Asset context 5
Figure 2-3: Typical cross-sections and toll plazas on the Asset 6
Figure 3-1: Ticket-segmentation for CJV at TP Pampampallam 16
Figure 3-2: Ticket-segmentation for MAV at TP Pampampallam 16
Figure 3-3: Comparison between TVC and TMS daily traffic data on TP Pampampallam 18
Figure 3-4: Comparison between vehicle shares from TVC and TMS WADTs 19
Figure 3-5: Zonal influence at TP Pampampallam 21
Figure 3-6: Internal-external distribution at TP Pampampallam 22
Figure 3-7: Commodity distribution at TP Pampampallam (Total) 24
Figure 3-8: Trip length distribution TP Pampampallam 25
Figure 4-1: Annual growth – Index of Industrial Production 29
Figure 4-2: Total number of registered motor vehicles in India (per 1000 population 30
Figure 4-3: Per Capita Income in Kerala and India (FY15 – FY24) 30
Figure 4-4: YoY growth in expenditure components of GDP 31
Figure 4-5: Month on Month IIP performance 32
Figure 4-6: Industrial components of GVA 32
Figure 4-7: Evolution of Kerala's state GDP and national GDP, FY12-24 33
Figure 4-8: Sectoral contribution to Kerala's GSDP in FY24 34
Figure 4-9: GDP-GSDP forecast 36
Figure 5-1: Relationship between CJV traffic and GSDP of Kerala & Tamil Nadu 41
Figure 5-2: Relationship between Bus traffic with GSDP of Kerala & Tamil Nadu 42
Figure 5-3: Relationship between LCV and 2A with GSDP of Kerala 42
Figure 5-4: Relationship between 3A + MAV and GDP India 43
Figure 6-1: Traffic and growth rates for forecast PCUs - Background and final, TP1 Pampampallam 50

Tables

Table 1.1: Scope of work and sources of data 1
Table 2.1: Summary of concession 6
Table 2.2: Single toll rates on the Asset (INR), applicable April 2025 to March 2026 7
Table 2.3: Category-wise cargo handled at Kochi Port (in '000 Tonnes) 9
Table 3.1: PCU factors 11
Table 3.2: Historical evolution in AADT by vehicle class at TP Pampampallam 12
Table 3.3: Historical evolution in tollable traffic levels at TP Pampampallam 12
Table 3.4: Total revenue (INR Cr) and AADC (in INR Lakhs) at TP1 Pampampallam 14
Table 3.5: Typical ticket types sold at TP Pampampallam 14
Table 3.6: Ticket-segmentation for LV, Bus, 2A and 3A/MAV Categories at TP Pampampallam 17
Table 3.7: Data collection schedule 17
Table 3.8: ADT at TP Pampampallam 18
Table 3.9: Sample rates for OD data 20
Table 3.10: Zone aggregations for zonal influence analysis 20

Table 3.11: Aggregate commodity categories	22
Table 3.12: Average Trip Length	25
Table 4.1: CAGR of population in India	27
Table 4.2: Population Growth in Kerala and India (FY12 – FY24)	28
Table 5.1: Seasonality correction factors for TP1 Pampampallam	38
Table 5.2: Adopted base AADT for FY26	38
Table 5.3: Identified growth drivers to model traffic growth	39
Table 5.4: Adopted forecast elasticities for background growth	44
Table 6.1: Impact of Recovery in Construction for TP1	45
Table 6.2: WPI growth forecast assumptions	46
Table 6.3: Forecast toll segmentation from FY26 onwards	47
Table 6.4: Annual pass compensation for CJVs (in Crore)	48
Table 6.5: Trip factors for the forecast years	48
Table 6.6: FY26YTD AADC (April –February) Revenue reconciliation summary (INR lakhs)	48
Table 6.7: Forecast (background plus impacts) AADT for TP1 Pampampallam	49
Table 6.8: Forecast (background plus impacts) AADT CAGR (%) TP1 Pampampallam	49
Table 6.9: Forecast (background plus impacts) revenue (INR crores) forecast for TP1 Pampampallam	49
Table 6.10: Forecast (background plus impacts) revenue CAGR (%) for TP1 Pampampallam	50
Table 6.11: Summary of Macro-economic Assumptions for upside and downside cases	51
Table 6.12: Summary of impacts on the Assets	51
Table 6.13: Summary of impacts on the Assets	52

Appendices

A	**Top 10 OD Pairs**
B	**Data collection exercise**
C	**Detailed forecasts**

Disclaimer

This report has been produced for the sole benefit of Cube Highways Pte. Ltd. This Report (the "Report") is confidential and disclosed only for information purposes, and it may not be relied upon by any party other than the Client or a Party to a Reliance Letter, and Steer: a) makes no warranty, expressed or implied, with respect to the use of any information or methods disclosed in this Report; and b) assumes no liability with respect to the use of any information or methods disclosed in this document. Any such party by its acceptance or use of this Report releases Steer from any liability for direct, indirect, consequential, or special loss or damage whether arising in contract, warranty, express or implied, tort or otherwise.

The Report is based on standard professional efforts, and information available to us at the time the review took place and is subject to time and budget constraints of the Report's scope of work. This Report, information and statements contained herein, are all based on third party data provided to us, or sourced by us, and Steer has not sought to establish the reliability of the data, except as specifically stated in the Report. Steer bears no responsibility for the results of any actions taken on the basis of third-party data.

Certain forward-looking statements in the Report are estimates based on interpretations or assessments of information available at the time of writing. The Report is thus to be viewed as an assessment that is time-relevant, specifically referring to conditions at the time of the review. Steer undertakes no obligation to update the Report for any reason.

While the estimates contained in the Report are not precise forecasts, they do represent, in our view a reasonable expectation of the future, based on information we have been provided with or sourced. However, the estimates necessarily rely on numerous assumptions and judgements, and circumstances may occur over the timeframe of the project that go counter to these assumptions and judgements and that affect the project's realized revenues. Actual events may differ from those assumed, and events are subject to change. Therefore, Steer makes or provides no warranty, whether implied or otherwise, as to the accuracy of forward-looking information presented. Further, it is important to note that forecasts presented represent long term growth profiles; the results for individual time periods may vary from forecasted values.

Traffic Consultant developed the relationships in the models used to produce the forecasts for the projects based on data available through February 2026. This report does not consider variations in traffic performance due to changing macro and force majeure events such (but not limited to) as global wars, economic uncertainty (high inflation, global recession), and changes in the regulatory environment. The situation remains dynamic and is subject to significant change in the short and medium term. In this challenging context, Traffic Consultant has produced base forecasts with a view on a possible scenario for the traffic forecasts. However, it is important to note that this is only one view, and there continues to remain uncertainty as to the short-term, intermediate or prolonged effects of and responses to such macro-economic/force majeure events. As a result, no assurance can be provided by Traffic Consultant that the scenarios and assumptions Traffic Consultant has identified will prove to be accurate. Given the uncertainty inherent in this scenario, Traffic Consultant advises that all readers of the Report consider the Report in the context of their own assessment of the impact of such events.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE ISSUE OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES.

Glossary Items

Acronym	Meaning
2A/ Truck	2 Axle/ Truck
3A	3 Axle
AADT	Annual Average Daily Traffic
BOT	Build Operate Transfer
CAGR	Compound Annual Growth Rate
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DPR	Detailed Project Report
ETC	Electronic Toll Collection, also referred to as FASTag
FY	Financial Year
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HAM	Hybrid Annuity Model
HCM/ EME	Heavy Commercial Vehicles/ Earth Moving Machinery
IE reports	Independent Engineers' reports
IHMCL	Indian Highway Management Company Limited
INR	Indian Rupees
InvIT	Infrastructure Investment Trust
Km	Kilometer
LCV/ LGV	Light Commercial Vehicles/ Light Goods Vehicle
LMV	Light motor vehicles
MADT	Monthly average daily traffic
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NSDP	National State Domestic Production
OD	Origin Destination
OSV	Oversized vehicles
PCU	Passenger Car Unit; it is a measure of standard vehicle unit to convert all vehicle classes to a single unit by using PCU factors to compute total traffic on an Asset.
Q1	Quarter 1 of financial year, from April to June
Q2	Quarter 2 of financial year, from July to September
Q3	Quarter 3 of financial year, from October to December
Q4	Quarter 4 of financial year, from January to March
RNP	Registered Number Plate
SCF	Seasonality Correction Factor

Acronym	Meaning
SH	State Highway
T&R	Traffic and Revenue
TMS	Traffic Management System
TVC	Traffic Volume Count
WADT	Weekly average daily traffic
YTD	Year to Date

1 Introduction

The assignment

1.1 The Cube Highways Fund Advisors Private Limited (the "Client") has commissioned Steer Davies Gleave India Private Limited ("Steer") for a traffic due diligence to be carried out on the Walayar-Vadakkencherry Expressway Private Limited (hereafter called the "Asset"). This report forms part of the annual fair market valuation (FMV) undertaken as part of the "Transit 11 project". This report presents an update of the traffic and revenue forecasts based on primary surveys undertaken in 2026, and actual traffic data available up to February 2026 and latest macro-economic assumptions.

1.2 The Asset consists of a 53.5 km single toll road section of the NH544 between Walayar and Vadakkencherry in Kerala, with a single toll plaza (hereafter, referred to as "TP1" or "Pampampallam") located west of Palakkad and east of the Kerala-TN state border.

1.3 Our scope of work for the traffic and revenue forecasting process includes:

Table 1.1: Scope of work and sources of data

Scope of work	Data source
Review of historical Traffic Management System (TMS) data, Vendor reports and documents	Provided by client for the period between Oct'20 and Mar '26, with FY26 base AADT and forecasts considering data up to Feb'26.
Historical analysis and forecasts for baseline growth, including; — Background growth, and — Seasonality trends	Historical data provided by the Client and benchmarking using plazas in the vicinity or of similar nature of the Asset has been done wherever sufficient data was unavailable.
Validation of revenue reported in FY25YTD	TMS data provided by Client Revenue reconciliation using toll plaza traffic and ticket type data to calculate revenue and reconciling it with toll plaza reported revenue
Origin Destination (OD) analysis to understand growth drivers: — Zonal influence and Top OD pairs — Commodity distribution — Trip length distribution	Origin Destination (OD) surveys undertaken by Steer in 2026 and additionally in previous studies the survey was conducted in 2024
Analysis of upcoming network improvements and other developments, that may have future impacts on traffic	Secondary research and our in-house experience of working in the vicinity of the Asset. Impact analysis to be conducted by Steer based on Generalised Journey Cost spreadsheet-based analysis
Historical revenue analysis and forecasts for revenue estimation, including — Toll segmentation and trip factors,	Calculated from historical data provided by Client

Scope of work	Data source
— Overloading shares	
Final traffic growth forecasts including baseline growth rates and potential future impacts	Elasticity based base growth and potential impacts from secondary research, Asset historical traffic performance and Steer's in-house experience of working on toll roads on the corridor Gross Domestic Product (GDP) forecast assumptions provided by Client
Toll revenue estimation for the entire concession, including toll evolution	Toll evolution based on latest toll notification published by National Highway Authority of India (NHAI) and latest actual Wholesale Price Index (WPI) trends as shared by the Client. Assumptions of WPI forecasts and future tolling length changes provided by Client Revenues estimated as a product of traffic forecasts and toll evolution

Our approach

1.4 Our approach follows well-established practices for forecasting ongoing traffic growth on an existing/brownfield Asset. The analysis is focused on two sets of issues, namely:

Understanding the traffic that is currently using the Asset; and
Identifying how and why that traffic is likely to change in the future.

1.5 To understand the current traffic on the Asset, we have analysed traffic data from multiple independent sources:

- Client-provided secondary data, including:
- TMS data starting October 2020 to February 2026. The historical traffic and revenue presented in Chapter 3 considers information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.
- Concession agreement and toll notifications for FY25 and FY26
- Previous studies related to traffic and revenue
- Steer-commissioned OD survey on 10th February 2026 at Pampampallam toll plaza to validate any change in growth drivers and travel patterns. Additionally, a survey was conducted on 6th February 2024 at the toll plaza for the earlier studies.
- Steer-commissioned TVC survey from 10th -12th March 2026 at Pampampallam plaza.
- We undertook revenue reconciliation for FY26YTD (April 2025 to February 2026) by building up revenue from the traffic reported by the toll plaza and subsequently matching it to the reported revenue for FY26YTD using the prevailing toll rates and reported segmentation/toll-frequencies for FY26YTD. This is a key part of our analysis to validate our future segmentation/toll-frequency assumptions and the Annual Average Daily Traffic (AADT) reported for the toll plaza.

1.6 The estimation of future traffic demand on the Asset was undertaken through:

- Estimating FY26 base year position. The FY25 AADT was calculated using the monthly traffic data for FY25. The annual FY25 AADT was then grown with elasticity linked GDP/GSDP growth to arrive at the FY26 expected traffic. To determine the adopted FY26, the expected FY26 traffic was validated against 11 months of actual traffic (April-February 2026) and necessary adjustments were made where required.
- Secondary research to understand plans for new developments and progress of ongoing developments on the Asset.
- Steer independent primary surveys and site visits to validate our network and contextual understanding.
- Developing a bespoke growth model to forecast year-on-year traffic growth from FY26 to the end of concession period.
- Investigating the elasticity of historical traffic growth compared to state (GSDP) and national (GDP) growth. Where historical data is limited, we have benchmarked the Asset against our Steer knowledge base (e.g., similar Asset types in the same state or on the same corridor), to derive appropriate elasticities.
- Applying our elasticities to independent GDP forecasts as provided by Client.
- Identifying and analysing the potential impacts of any relevant changes to the competitive position of each Asset – these include impacts of changes to road network including expressways and opening of competitive modes of travel.
- Identifying and analysing any other potential impacts to traffic and revenue on each Asset – these include axle load norms, axle shift for heavy goods, FASTag implementation.
- Considering changes in trends of segmentation over time and making suggestions for changes in exemptions in the future.
- Preparing traffic and revenue forecasts for the Asset for the complete length of concession. The analysis here includes the specific impacts of network or other exogenous factors specific to the Asset. We have developed a set of forecasting assumptions for three scenarios: a base case and upside and downside scenarios.

Contents of this report

1.7 The report has been divided into the following chapters:

1. Chapter 1 introduces the methodology and approach to undertake the traffic and revenue due diligence;
2. Chapter 2 describes the key characteristics of the Asset and its surrounding road network, primarily based on site visits;
3. Chapter 3 summarises the current and historical traffic trends on the Asset, including results from the TMS, TVC and OD analysis;
4. Chapter 4 presents the socio-economic context of India, the corridor and region/state containing the Asset, along with our approach and results on estimating background along with our key forecasting assumptions,
5. Chapter 5 presents our baseline year forecast and summarises our results on estimating background traffic demand growth
6. Chapter 6 summarises our assessment of network impacts and presents concession traffic and revenue forecasts for the Asset along with the assumptions for upside and downside cases.

2 The Asset

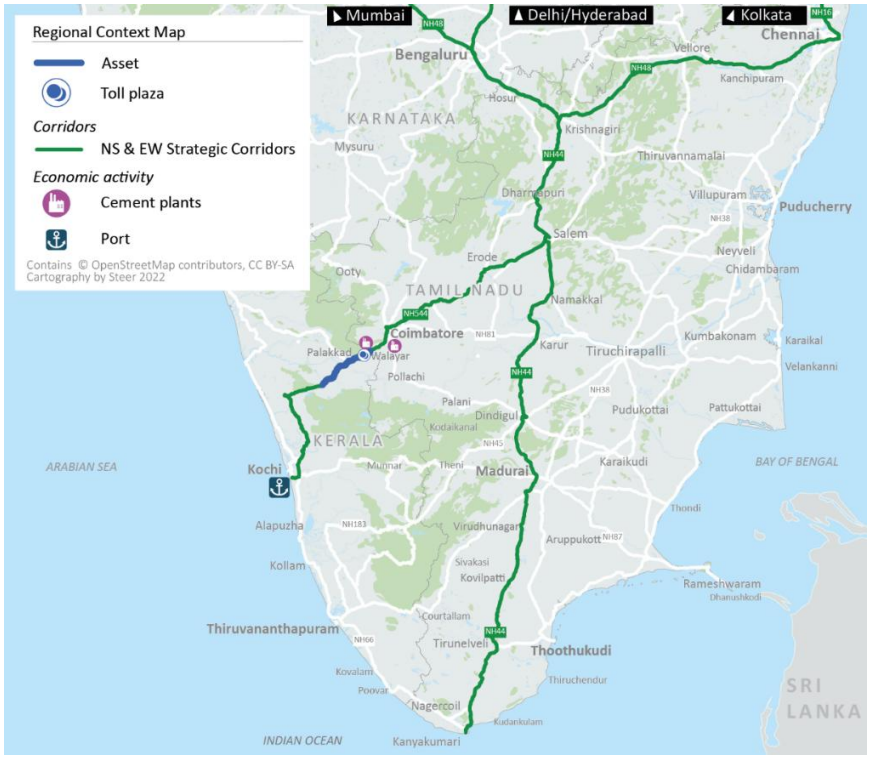
Introduction

2.1 This chapter provides a description of the Asset, based on both primary data (from site visits), and our understanding of the region and network surrounding the Asset. We cover the Asset's strategic network context, followed by key economic activities and network developments around the Asset.

Strategic network

2.2 The Asset is situated in the state of Kerala, connecting Walayar, a town located on the Tamil Nadu-Kerala border and Vadakkancherry, a town in the Palakkad district of Kerala. The Asset is a section of the strategic NH544 which itself is a spur of the NH44 running that runs north-south across the country (Srinagar-Kanyakumari). The section where the Asset is located serves as a key entry point for Kerala from its eastern end, through Palakkad, which is a stretch of low-lying passes between the mountain ranges of the Nilgiris and the Western Ghats. Figure 2-1 below shows the regional road network in which the Asset is located.

Figure 2-1: Asset location in the regional network context



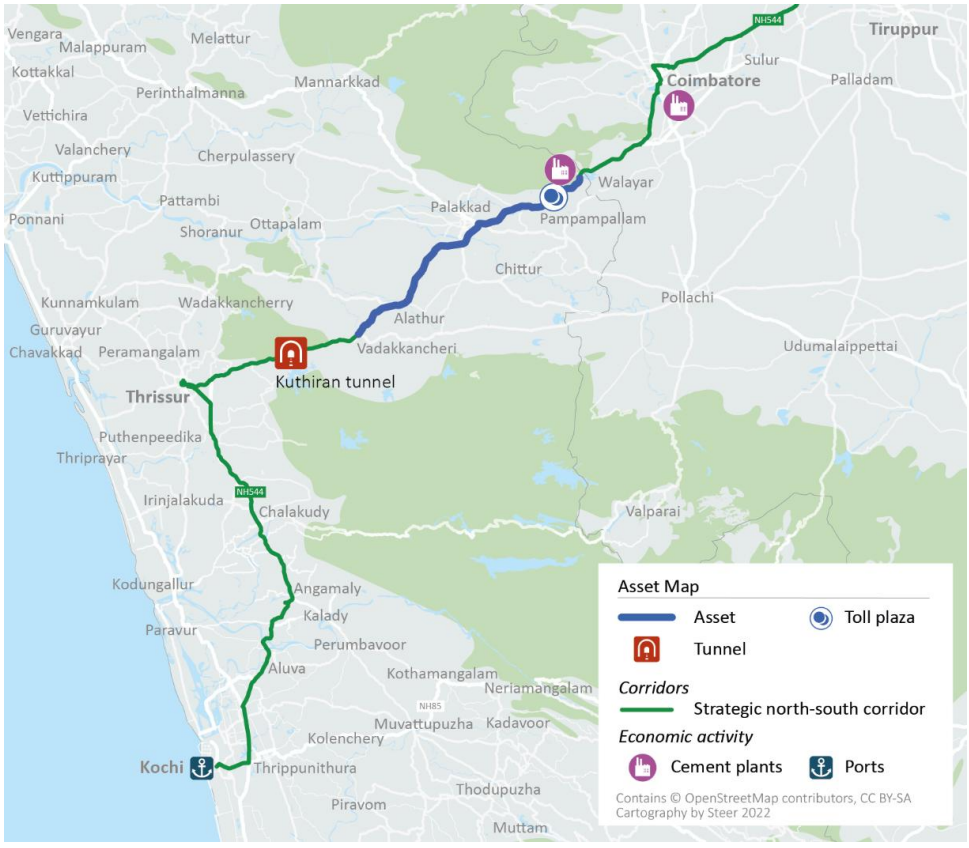
Source: Steer cartography using OpenStreetMap data

2.3 This Asset primarily caters to three different types of strategic movements:

- **Short-distance trips** undertaken largely by passenger vehicles for work/business trips wherein the movement is predominantly local in nature, between Walayar and other areas in the Palakkad district.
- **Medium-distance trips** made by both passenger and goods vehicles covering places such as Ernakulam/Kochi in Kerala, to Erode and Salem in Tamil Nadu.
- **Long-distance trips** predominantly by MAVs catering to Kerala's demand for consumption goods and cement, from areas lying outside the state such as Chennai, Bangalore, Vijayawada, and the rest of the country.

2.4 The Asset is a 53.5 km toll road which forms a part of the NH544, a key highway connecting Salem in Tamil Nadu to Kochi in Kerala. It is a four-lane road with one toll plaza, namely, Pampampallam Hamlet (Pampampallam) at km 189.4 (closer to Walayar). Figure 2-2 below provides a closer view of the Asset in the context of its immediate surroundings.

Figure 2-2: Asset context



Source: Steer cartography using OpenStreetMap data

Concession and tolling details

2.5 The toll plaza on the Asset has been operational since May 2015, and the Client took over its operations on 29th September 2020. There are 12 years remaining in the concession period which ends in FY38. Table 2.1 below presents a summary of the concession.

Table 2.1: Summary of concession

	Particulars
State	Kerala
Highway and lane configuration	NH544; 4-laned
Toll plazas	TP1: Pampampallam
Length (km) as per concession agreement, applicable	TP1: 53.5 km
Commencement of operations	May 2015
Operated by Client since	29th September 2020
Concession period	22 years
Last year of concession	FY38

Source: Client data

2.6 Figure 2-3 below shows a typical cross-section of the Asset and its toll plazas.

Figure 2-3: Typical cross-sections and toll plazas on the Asset

Source: Steer site visit

2.7 Tolls on the Asset are collected as shown in Table 2.2 below. The toll plazas have dedicated ETC/FASTag lanes for electronic tolling. Toll rates applicable for FY26 are provided in the following table.

Table 2.2: Single toll rates on the Asset (INR), applicable April 2025 to March 2026

Type of Vehicle	Single Journey Fee
CJV	80
LCV	130
Bus/2A	275
3A/MAV	430
OSV	525

Source: NHAI Revision of User fee Rate w.e.f 01.04.2025

2.8 Apart from single tickets, the typical NHAI ticket categories like return, monthly, local personal and local commercial passes are also available on the Asset.

Key economic activities

Tourism

2.9 Kerala, one of the two south Indian states forming the southern tip of the Indian peninsula (the other state being Tamil Nadu), and commonly called as "God's Own Country", is known for its largely consumption-based and tourism-centred economy. It is known as the 'Land of Spices' and is a leading producer of pepper, cardamom, and rubber. Other items such as coffee, rice, coconut, tea, cashew, and spices also make up for a share in the state's agricultural output which is distributed to various parts of the country.

2.10 Its rich culture and natural landscape have put the state on the world map as a major tourist destination wherein this sector contributes to 10% to the state GSDP[1]. The city of Thrissur which lies along the strategic north-south corridor (see Figure 2-2: Asset context) is a key tourist destination in the state and is a seat of culture hosting significant festivals.[2]

2.11 Kerala's image as a prime tourist destination is evident by the fact that it attracted 22.3 million tourists in CY 2024, marking a substantial increase of 21% from the pre-pandemic period[3]. The state government has announced the K-Homes project in the 2025-26 budget to increase accommodation for tourists – this is expected to take the state's tourism sector to new heights.[4]

2.12 Given Kerala has very limited entry points from the rest of the country, the Asset forms an integral part of the NH544 east-west corridor and is the only four laned national highway that provides connectivity and a point of entry into the state from Tamil Nadu. Some of the major settlements along the Asset include Walayar, Kanjikode, Palakkad, Alathur and

[1] ECONOMIC REVIEW 2017 | State Planning Board, Thiruvananthapuram, Kerala, India

[2] Major festivals include Attukal Pongala (February), Eid al-Fitr (March), Eid al-Adha (June) and Onam (August-September)

[3] As per the Ministry for Tourism and Public Works, Government of Kerala

[4] Kerala attracts over 2.22 crore tourists in 2024 - tourismindiaonline.com

Vadakkancherry whereas long-distance traffic on the road serves cities in other states such as Coimbatore, Salem, Bangalore, and Chennai.

Cement and Construction

2.13 The construction industry contributes a significant share of Kerala's overall state GSVA, at approximately 14% of the state GSDP as of FY24.The industry has also grown consistently over the last ten years, at roughly 3.5% per year between FY14 and FY24 [5]. This consistent growth has been driven by the continued push towards construction projects in Kerela, such as - the widening of NH66[6], other infrastructure such as construction of the Lulu Mall in Kottayam [7]and the construction of Government Medical College, Idukki [8].

2.14 The Kerela Infrastructure Investment Fund Board (KIIFB) has been established by the Government of Kerala to mobilize funds for infrastructure development. Major projects that have been taken up by the KIIFB include a Petrochemical and Pharma Park in Kochi & a Coastal and Hill Highway, connecting different cities within Kerala [9]

2.15 The state of Kerala is also rich with mineral deposits; there were around 643 active quarries and 1,433 active mineral depots within the state as of September 2023[10]. A majority of these units deal with the extraction and processing of granite deposits to cater to construction demand. A considerable number of crushers are present south of the Asset. In additional to stone quarries within the state, construction material is also sourced from the state of Tamil Nadu via Coimbatore. Currently, most of the construction material in Kerala is sourced from mines in Tamil Nadu, particularly in Coimbatore.

2.16 Walayar, part of the Palakkad district in Kerala and situated on one end of the Asset is a small industrial town at the state border between Kerala and Coimbatore, Tamil Nadu. It is home to the state-owned Malabar Cements Limited (MCL) which is the one of the state's largest public sector undertakings (PSU) in cement production, with a production capacity of 6.6 lakh MT per annum.[11]

2.17 The cement produced by MCL caters to 6-8% of the requirement for the whole of Kerala. Future plans include raising the market share to 25% and augmenting the capacity from 0.66 to 0.8 MMTA (million metric tonne per annum) along with an addition of 1 MTA grinding facility and modernisation of the mill at the Walayar plant.[11]

2.18 Kanjikode, situated in the middle of the Asset, is one of the largest industrial areas in Kerala. It is home to the manufacturing base for companies such as Bharat Earth Movers, Pepsico, PPS Steel Pvt. Ltd, Marico, United Breweries and Empee Distilleries.

---

[5] **Gross State Value Added by Economic Activity - Kerala**

[6] **Completion of NH 66 Six-Laning Project Expected by End of 2025 | Thiruvananthapuram News - The Times of India**

[7] **Kottayam Lulu Mall inaugurated, opens to public** (December 2024)

[8] **Collector asks company to finish Idukki medical college works immediately (May 2024)**

[9] **KERALA INFRASTRUCTURE INVESTMENT FUND BOARD**

[10] **DMG Dashboard (kerala.gov.in)**

[11] **Malabar Cements**

2.19 While construction of Lulu Mall in Kottayam has been completed in December 2024, the widening of NH66 and construction of GMC, Idukki has been largely completed, thereby causing a drop in construction traffic on the Asset.

2.20 Due to a combination of demand and supply-side disruptions, the movement of construction material from Tamil Nadu into Kerala has significantly reduced. This decline is largely attributed to regulatory and logistical challenges, including the imposition of a mineral-bearing land tax of ₹90/tonne on crushed stone by Tamil Nadu's mining department in April 2025, which triggered strikes by quarry and lorry associations in Coimbatore. Although the strikes were short-lived, the tax remains in force, discouraging outbound quarry traffic. On the Kerala side, material shortages have been exacerbated by border permit issues, as noted in March 2025 reports. In response, Kerala has granted preliminary consent for 885 new quarries—a 160% increase—indicating a strategic push towards self-sufficiency.

Refinery

2.21 Kochi Refinery operated by the Bharat Petroleum Corporation Limited (BPCL), the country's second-biggest fuel retailer, lies within the region of influence of the Asset and produces all fuel-based refinery products - benzene, sulphur, white spirit for the domestic market, and fuel oil for exports.

2.22 BPCL plans to expand the capacity of the Kochi refinery from 15.5 million tons per year (tpy) to 18 million tpy by 2028, as a part of wider expansion plans.[12] This expansion includes upgrading to produce higher-value products and integrating petrochemical facilities, including producing more niche petrochemicals[13]

Ports

2.23 Kerala has a coastline of approximately 590km. The state also has 20 ports (2 major and 18 minor ports), with Kochi port being the largest freight handling port.[14]

2.24 The Asset is located ~110 km from the Kochi port and caters to port-bound traffic. The key commodities handled at the port include petroleum products, crude oil, chemicals, foodgrains, and containers. As per FY24 figures, Kochi which is the largest commercial port in Kerela handled around 36 million metric tonnes of cargo. The port handled all major categories of cargo including liquid bulk, dry bulk, break and containers.

2.25 The historical cargo handling performance of the port till FY25 is presented in Table 2.3 below. The traffic handled at the port has grown at a healthy 6.1% CAGR between FY16 – FY25.

Table 2.3: Category-wise cargo handled at Kochi Port (in '000 Tonnes)

	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	CAGR (FY16-FY25)
Liquid Bulk	14,707	16,665	19,963	22,430	23,810	20,163	22,609	22,870	24,830	25,097	6.1%

[12] India's BPCL plans to expand refining capacity by 2028 | Reuters

[13] BPCL in talks with lenders to raise about Rs 32,000 crore for refinery expansion, petchem projects:

[14] The major ports are Cochin and Vizinjham. The minor ports in Kerala are: Quilon, Calicut, Valiyathura, Neendakara, Kayamkulam, Aleppey, Manakkodam, Kottayam, Kodungallur, Ponnani, Beypore, Koyilandy, Thalassery, Kannur, Azhikkal, Nileshwaram, Kasargod and Manjeswaram.

	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	CAGR (FY16-FY25)
Dry Bulk	1,544	1,467	1,420	1,417	1,480	1,633	1,553	2,363	1,167	1,232	-2.5%
Break Bulk	62	35	63	59	120	157	110	136	139	149	10.2%
Containers	5,785	6,840	7,692	8,116	8,628	9,550	10,278	9,986	10,179	11,267	7.7%
Total	22,098	25,007	29,138	32,022	34,038	31,503	34,550	35,256	36,315	37,745	6.1%
YoY Growth	2.3%	13.2%	16.5%	9.9%	6.3%	(7.4%)	9.7%	2.0%	3.0%	4%	

Source: Steer analysis of **Cochin Port Authority** data

3 Traffic description

Introduction

3.1 This chapter presents historical and current traffic and revenue trends on the Asset, as well as our analysis of origin-destination (OD) survey data and traffic count data. This covers data which was collected as a part of this study and in previous studies, as well as data provided by the Client.

3.2 Traffic demand data is generally collected and analysed to understand the volume and vehicle composition of traffic currently using an Asset, while OD data is used to obtain a better understanding of travel patterns, trip lengths, trip purposes, and areas of influence in the vicinity of the Asset, as well as the commodities being moved by the goods vehicles via the Asset. This analysis, combined with our understanding of the Asset (based on our site visits), enables us to identify the key drivers of demand on the Asset.

3.3 Actual toll plaza data is used as the basis from which the current/base year annual average daily traffic (AADT) is established. This data is provided by the Client and independently analysed and validated by us using traffic volume count (TVC) information.

3.4 The below sections present historical traffic and revenue information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.

PCU Factor assumption

3.5 The PCU values considered in Table 3.1 below are as per IRC64 1990[15]. Based on discussions with the Client, for reporting purposes, we have referred to the Rigid and Trailer truck splits in the TVC counts for calculating the effective PCU for MAV trucks. For Rigid trailer trucks we have assumed a PCU factor of 3, whereas for Trailer trucks we have assumed a PCU factor of 4.5 as defined in IRC64 1990[16]

Table 3.1: PCU factors

Vehicle Category	PCU Factor
CJV	1.0
LCV	1.5
Bus/2A/3A	3.0

[15] IRC 064: Guidelines for Capacity of Roads in Rural Areas

[16] On this Asset, we have 3A/MAV combined volumes. However, for PCU calculations, to maintain consistency, we have used the shares derived from the latest TVC on the Asset (conducted in Jun 2023)

Vehicle Category	PCU Factor
MAV	3.4
OSV	4.5

Source: Steer analysis and IRC64,1990

Historical trends

3.6 Table 3.2 and Table 3.3 below present historical total traffic, and historical tollable traffic volumes (by each vehicle category) observed at TP Pampampallam between FY18 and FY26 (respectively). FY26 volumes were calculated using actual traffic data available for the period April 2025 through March 2026.

Table 3.2: Historical evolution in AADT by vehicle class at TP Pampampallam

	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY18 - FY26 (CAGR %)
Car	9,188	9,743	10,672	6,658	7,971	12,985	14,190	14,974	16,501	7.6%
LCV	1,696	2,325	2,375	1,542	1,544	1,805	1,810	1,954	2,233	3.5%
Bus	960	928	974	329	366	972	1,076	1,127	1,111	1.8%
2A	681	920	964	974	1,231	1,362	1,445	1,536	1,570	11.0%
3A/MAV	2,132	2,537	2,631	2,732	2,939	3,536	3,710	3,312	3,266	5.5%
OSV	2	2	3	2	3	3	2	3	2	
Total AADT	**14,658**	**16,455**	**17,619**	**12,237**	**14,054**	**20,662**	**22,232**	**22,905**	**24,682**	**6.7%**
Total PCU	**23,892**	**27,397**	**28,904**	**21,723**	**25,044**	**34,677**	**37,037**	**37,117**	**38,957**	**6.3%**

Source: Steer analysis of the Client data; FY26 AADT represents the full year actual (April to March).

Table 3.3: Historical evolution in tollable traffic levels at TP Pampampallam

	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY18 - FY26 (CAGR %)
Car	8,924	9,187	10,240	6,361	7,734	12,711	13,885	14,700	16,229	7.8%
LCV	1,649	2,248	2,343	1,519	1,534	1,800	1,806	1,949	2,227	3.8%
Bus	330	315	376	177	317	969	1,068	1,107	1,106	16.3%
2A	673	890	948	968	1,229	1,360	1,441	1,532	1,567	11.1%
3A/MAV	2,116	2,483	2,564	2,715	2,929	3,532	3,708	3,310	3,264	5.6%
OSV	2	1	3	2	3	3	2	3	2	
Tollable AADT	**13,693**	**15,124**	**16,473**	**11,741**	**13,745**	**20,372**	**21,911**	**22,601**	**24,394**	**7.5%**
Tollable PCU	**21,579**	**24,585**	**26,421**	**21,275**	**24,603**	**34,370**	**36,686**	**36,759**	**38,646**	**7.6%**

Source: Steer analysis of the Client data; FY26 AADT represents the full year actual (April to March); Tollable traffic excludes exemptions and violations

3.7 Historically, CJVs have accounted for the highest share of total traffic observed on the Asset; as of FY26, they accounted for 67% of total traffic on the Asset. This is consistent with expectations, given the Asset's proximity to the major urban centres of Walayar and Palakkad, where there exists high demand for passenger transportation to school or work, and for tourism-related, and medical services. Overall, CJV traffic has observed a CAGR of 7.6% between FY18 and FY26, relative to Kerala's GSDP growth of 4.1% per year over the same period. This trend has continued in FY26 as well, with a 10% increase in FY26 over FY25.

3.8 Trucks on the Asset largely cater to construction demand within the state of Kerala as well as consumption demand arising from local and regional activity centres within the state. Key commodities on the Asset comprise stone and cement which are carried by heavy goods vehicles (3A/MAV). The stone movement happens round the year, with lower movement observed in June and July due to heavy rains. Between FY18 and FY26, MAV traffic grew at an average 5.5% per year, while construction GVA in the state grew at 4.2% per year over the same period.

3.9 As of FY26, 3A and MAV volumes on the Asset observed a decline of 1.4% over FY25 levels. A 10.7% decline in MAV was observed during FY25 over FY24 levels. This is mainly due to reduced movement of construction material into Kerala from Tamil Nadu post border-cess introduction in Tamil Nadu in October 2022[17] as well as a crackdown on illegal stone and sand mining in Tamil Nadu in recent years[18], effectively reducing the supply of construction materials available to transport to Kerala. In April 2025, the mining department of Tamil Nadu had also introduced a mineral-bearing land tax of INR 90/tonne on crushed stone[19]. This corresponded with the mining and geology department of Kerala granting permission for 885 quarries in Kerala[20].

3.10 As a result, the demand for aggregate and construction material from Tamil Nadu's quarries has reduced along with an increase in supply of the same from Kerala. This is expected to impact stone-carrying traffic on the Asset. Given the historical demand of construction material in Kerala; it is expected that the ongoing issue of reduced supply from Tamil Nadu is expected to improve over the next 12-18 months.

3.11 Bus traffic at Pampampallam toll plaza has grown at a 1.8% CAGR, between FY18 and FY26. Buses have experienced a rebound post the pandemic-impacted years of FY21 and FY22, due to the region's resurgence in tourism post-pandemic. As per data from Kerala's Department of Tourism, approximately 70% of the tourists frequenting popular destinations were from the state itself, as of CY 2024.[21] with additional influence from people in the nearby states of Tamil Nadu, Karnataka, Andhra Pradesh and Telangana.

3.12 Bus traffic plying on the Asset grew by 16% in FY23 and a further 11% in FY24, highlighting the post-COVID recovery. Between FY18 and FY26, buses have grown at a CAGR of 1.8%, with recovery continuing at a steady pace.

---

[17] **Vehicles coming to TN can now pay permit fees, road tax online**

[18] **ED in letter to TN DGP says sand mining happening in massive scale, demands action**

[19] **Owners of quarries, crusher units and trucks begin indefinite strike in TN**

[20] **Mining and Geology dept grants permission for 885 quarries in Kerala**

[21] **Keralites account for 69% of domestic tourist footfall in State - The Hindu**

3.13 Tollable traffic on the Asset has shown marginally faster growth than observed for total traffic. The observed CAGR of tollable PCU for FY18-26 is 7.6 % which is higher than the growth observed for PCU at total (tollable + non-tollable) level of 6.3%.

3.14 Table 3.4 below present total revenue (in INR Lakhs) by each vehicle category at TP1 Pampampallam plaza over the period FY21 through FY26. It can be noticed that the AADC has grown year on year with the FY26 AADC being 7% higher than that in FY25. FY25 revenue growth remained flat, largely due to a 10.7% decline in MAV during the year.

Table 3.4: Total revenue (INR Cr) and AADC (in INR Lakhs) at TP1 Pampampallam

Year	Total revenue (INR Cr)	*AADC (INR lakhs)	AADC Growth (%)
FY21	41.2	11.3	
FY22	65.6	18.0	**59.3%**
FY23	96.6	26.5	**47.1%**
FY24	106.8	29.2	**10.4%**
FY25	109.3	29.9	**2.4%**
FY26	115.3	31.6	**5.6%**

Source: Client data *AADC represents Average Annual Daily Collection FY26 AADT represents the full year actual (April to March);

Toll Frequencies

3.15 Toll frequency or segmentation is typically the share of each ticket category recorded for a particular vehicle type. This is based on the toll policy that is part of the Asset concession agreement. As a part of our historical data analysis, we calculate the toll frequency for each vehicle category from the monthly data shared by the Client. The most common ticket categories observed on a typical National Highway concession are: Single, Return, Monthly, Local and Exempt. Given the local nature of traffic, some toll plazas offer custom made local passes to attract the local commuters to opt for these category passes instead of evading toll.

3.16 Understanding the toll frequency gives insights into the nature of traffic plying on the Asset. CJVs generally have higher shares of return passes or local monthly passes because they travel for short to medium distances, while heavy trucks mostly have single tickets since they travel longer distances. Toll roads catering to short distance local traffic generally observe high shares of return tickets or other local monthly passes, while the other roads that cater to strategic long-distance traffic generally observe higher shares of single ticket traffic.

3.17 Table 3.5 below summarize the types of tickets being sold at TP Pampampallam.

Table 3.5: Typical ticket types sold at TP Pampampallam

Category	Description
Single	Allows the vehicle to cross the toll plaza once
Return	Allows the vehicle to cross the plaza twice in a day at discounted rates.
Monthly Pass	Discounted single ticket pass users issued at toll plaza for users who intend to undertake multiple single trips within a month. 50 trips are given at a discounted rate

Category	Description
Local Personal	Discounted single entry pass only for private cars of residents within 20km radius of toll plaza
Local Commercial	50% discount on single trips for commercial vehicles registered in the local district. This pass allows single entry only
Exemptions	Officially exempted vehicles like ambulance, police cars, key political personnel etc.

3.18 In addition to the above ticket categories, toll plazas generally also record violations, which are non-paying users, and who are not officially allowed under the exemptions category but are forced exemptions. For the Asset, the segmentation discussed below reports Exemptions and violations together.

Introduction of Annual pass for CJVs

3.19 The National Highway Authority of India launched the "The FASTag Annual Pass" on August 15, 2025, a prepaid facility that allows private CJVs to travel across designated National Highway and National Expressway toll plazas. The annual pass is worth INR 3,000. The pass is valid for one year or 200 trips, whichever occurs first and is applicable only to private, non-commercial vehicles (Car/Jeep/Vans).

Since this pass has been introduced by NHAI, it is not valid on

- state governed toll plazas on highways
- state governed toll plazas expressways
- Parking areas or other non-NHAI tolling locations

3.20 The pass can be activated via the RajmargYatra app or the NHAI website, and links directly to an existing FASTag. The Annual Pass aims to:

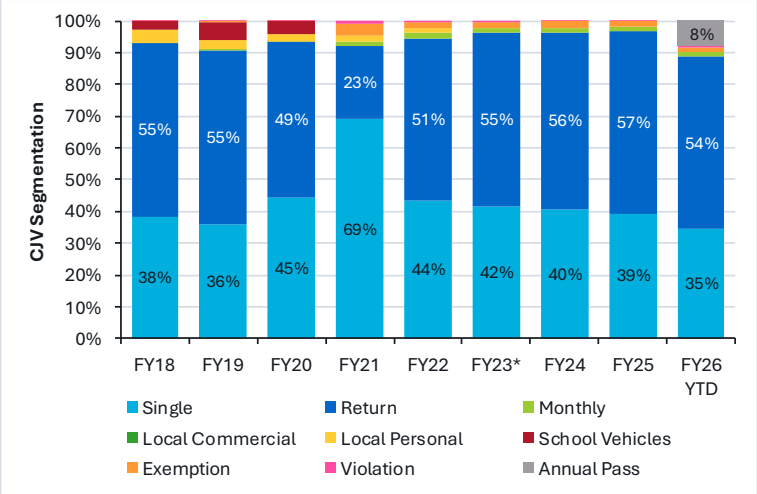
- Promote cashless and seamless travel on national highways.
- Reduce congestion and improve traffic flow at tolls

Share of traffic by payment type

3.21 In FY21, there was a change in ticket patterns across most toll roads in the country (including the Asset) due to the mandatory implementation of FASTag as a mode of payment for road users, as well as changes in travel behaviours induced by lockdowns due to the Covid-19 pandemic. As trip patterns stabilised from the mandatory implementation of FASTag, FY22 was further impacted by the 2nd wave of Covid-19 in Q1 and Q2, resulting in an extended period of travel disruption, where the share of shorter distance trips increased as several states implemented state entry barriers.

3.22 Figure 3-1 and Figure 3-2 below show ticket segmentation for CJV and MAV categories from FY18 to FY26YTD.

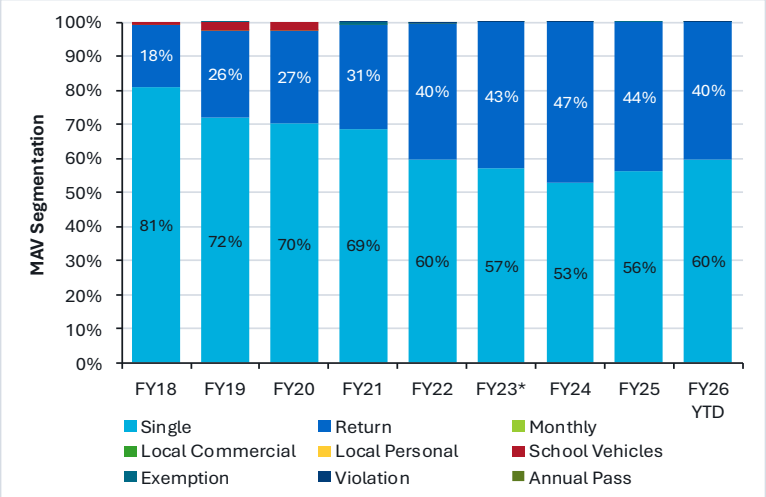
Figure 3-1: Ticket-segmentation for CJV at TP Pampampallam



Source: Steer analysis of the Client data; FY26YTD contains data from Apr- Feb'26; issuance of annual passes commenced from 15 August 2025

3.23 Over the historical period (except FY20-22 when Covid-19 and FASTag implementation resulted in changes to travel behavior), "Return" tickets formed the majority of CJV trips on the Asset, accounting for roughly 55-57% of the total every year. This is due to proximity of the Asset to densely populated centres such as Palakkad, Walayar, and Coimbatore.

Figure 3-2: Ticket-segmentation for MAV at TP Pampampallam



Source: Steer analysis of the Client data; FY26YTD is from Apr'25 to Feb'26

3.24 For MAVs, single journey tickets decreased from 69% to 53% between FY21 and FY24 and has risen to 60% as of FY26YTD. Over the same period, return journey tickets increased from 31% to 40%. This trend is due to various events in the state of Kerala:

- The closure of quarries after the expiration of permits in January 2024 [22]and illegal quarries being shut down by the Ministry of Environment and Forests (MoEF) in

[22] 300 quarries in state to be shut; Challenges for construction sector in Kerala

November 2024 has led to the setting-up of various dumping yards near Palakkad.[23] These dumping yards observe a high share of movement from areas like Coimbatore, which has also influenced the return share increasing year-on-year for MAVs on the Asset. Similar movement from Coimbatore is also observed for construction purposes, which caters to demand on alternate routes from our Asset.

- With the increasing ETC penetration, the share of return traffic has increased as the traffic which returns within 24-hour is eligible for return ticket automatically.

3.25 Table 3.6 below presents the FY26YTD (April to February) segmentation for LCV, Bus and 2A category.

Table 3.6: Ticket-segmentation for LV, Bus, 2A and 3A/MAV Categories at TP Pampampallam

Ticket Category	LCV	Bus	2A	3A/MAV
Single	36%	45%	56%	60%
Return	55%	28%	44%	40%
Monthly	-	-	-	-
Local Personal	9%	26%	-	0%
Violations	-	0%	-	-
Exemptions	0%	0%	0%	0%

Source: Steer analysis of the Client data

Data Collection exercise

3.26 To validate and inform various inputs used in our forecasting, we undertook primary data collection on the Assets, comprising the surveys listed in Table 3.7 below. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas, which Steer also commissioned with a third party. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

Table 3.7: Data collection schedule

3-day videography-based TVC			1-day OD survey			
Start date	End date	Time (hrs)	Start date	Start Time	End Date	End Time
10th Mar 2026	12th Mar 2026	0000-2359	10th Mar 2026	0900 hours	11th Mar 2026	0900 hours

Source: Steer analysis

3.27 It should be noted that, in our experience, traffic on national highways shows variation across the week due to the economic activities surrounding each road. To derive a representative TVC count considering daily variation, three-day to seven-day traffic

[23] MoEF Cracks Down on Illegal Quarries in Kerala with New EC Guidelines | Kochi News - Times of India

counts are generally recommended, and hence, to fully understand the impact of this weekly fluctuation on the Asset, we collected three-day counts at the toll plaza.

Key findings of the TVC data analysis

WADT estimates

3.28 Taking an average of the 3-day TVC counts (10th Mar – 12th Mar 2026, 0000-2359), we obtained the following average daily traffic (ADT). This ADT excludes non-tollable vehicles such as tractors, two-wheelers, bullock-carts, etc., but includes officially exempt vehicles such as police cars, ambulances, emergency response vehicles, government vehicles and other vehicle types officially allowed as 'exempted' under the concession agreement.

Table 3.8: ADT at TP Pampampallam

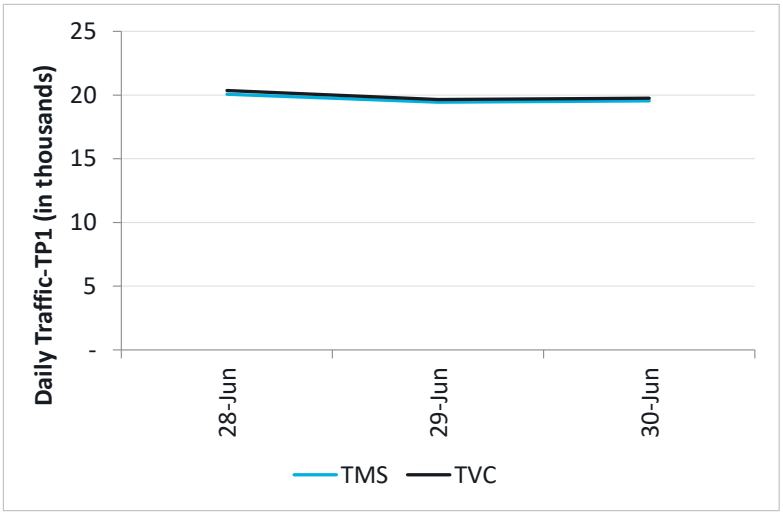
Toll Plaza	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
TP1 Pampampallam	9,819	2,582	3,256	1,169	1,620	655	3,177	1	**22,278**

Source: Steer analysis of TVC data

TVC v/s TMS analysis

3.29 As we use the TMS data to estimate the base year AADT, we have used our TVC data to validate the TMS data on those particular days, as provided by the Client. The following figures show the comparison between the daily traffic observed by TVC and TMS for the toll plaza.

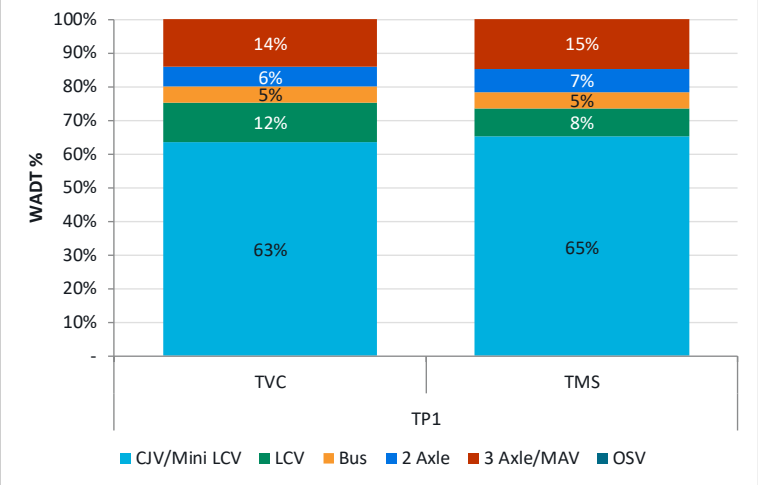
Figure 3-3: Comparison between TVC and TMS daily traffic data on TP Pampampallam



Source: Steer analysis of TVC and Client TMS data

3.30 As can be seen from Figure 3-3 above, the difference between daily traffic from both sources is minimal. Figure 3-4 below compares the shares of vehicle types at both toll plazas observed by the TVC and TMS data. In terms of individual vehicle categories as well, the difference is minimal (1-3%) which could be attributed to common misclassification of vehicle categories between CJV, Mini LCV, LCV and 2A.

Figure 3-4: Comparison between vehicle shares from TVC and TMS WADTs



Source: Steer analysis of TVC and Client TMS data

3.31 Considering the smaller variation between the TVC and TMS data for the largest revenue generators-CJV and 3A+MAVs, and an overall good fit in the traffic volumes, TVC-TMS analysis gives us the confidence that the base year traffic calculated using the Client data forms a reliable base year traffic estimate.

Key findings of the origin-destination analysis

Overview

3.32 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Asset. We have analysed the regional drivers of demand based on the following analysis:

- Zonal influence
- Commodity distribution
- Top OD pairs
- Trip length distribution

3.33 While zonal analysis and the list of top OD pairs help to understand 'where' people and goods travel, commodity distribution sheds light on 'what' goods get transported on this Asset. Trip length distribution shows 'how far' vehicles and people travel, and goods get transported. This set of analyses is used to estimate key drivers of traffic and aid in making informed forecasting assumptions related to traffic demand elasticities, growth drivers and exogenous impacts.

Sample rates

3.34 Sample rates help understand the reliability of OD data. They are calculated by dividing OD samples by the TVC count observed on the same date for each vehicle category at the toll plaza. Table 3.9 below presents the sample rates for key vehicle type aggregations at the toll plaza. We believe that the sample rates of the OD data are reasonable for the analysis required.

Table 3.9: Sample rates for OD data

Vehicle type	TP Pampampallam
Passenger (CJV+Bus)	28%
Goods (LCV+2A+3A+MAV+OSV)	53%

Source: Steer analysis of OD data

3.35 Low sample rates for passenger vehicles are due to short stop times at the toll plaza post implementation of FASTag where the queuing at plazas have decreased and time to record survey responses, especially for private vehicles (CJVs) have also reduced.

Zone Categories

3.36 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones, and influenced by various towns, cities, states, and regions in the vicinity of the Asset, we have aggregated zonal data as described Table 3.10 below. The methodology behind this aggregation of zones may vary as per the characteristics displayed by the different Assets being studied.

Table 3.10: Zone aggregations for zonal influence analysis

Aggregate Zone	Description
Local	Local zones are those that fall on or very close to the Asset.
IAOI (Immediate Area of Influence)	IAOI zones are the locations which generate traffic and lie within approximately 75-150 km distance from the Asset.
Rest of State (RoS)	Rest of the cities/Districts in the state that Asset lies in (other than Local/IAOI)
Tamil Nadu	Parts of Tamil Nadu not belonging to local or IAOI aggregations
Karnataka	Karnataka
North India	Uttarakhand, Uttar Pradesh, Rajasthan, Delhi, Haryana, Punjab, Jammu and Kashmir
Central India	Madhya Pradesh, Chhattisgarh
West India	Gujarat, Maharashtra, Goa
Rest of South India	South Indian states other than Kerala, Karnataka, and Tamil Nadu
East & Northeast India	West Bengal, Bihar, Orissa, Jharkhand, and Northeast Indian states

Source: Steer analysis

Zonal influence

3.37 The zonal influence is the contribution of the zone or the zonal aggregation to trips on the Asset for a given vehicle type. This section presents the zonal influence of these zones/zone aggregates on the Asset as retrieved from the OD survey data, and as based on zonal aggregation list presented in Table 3.10 above. [24] It should be noted that zonal

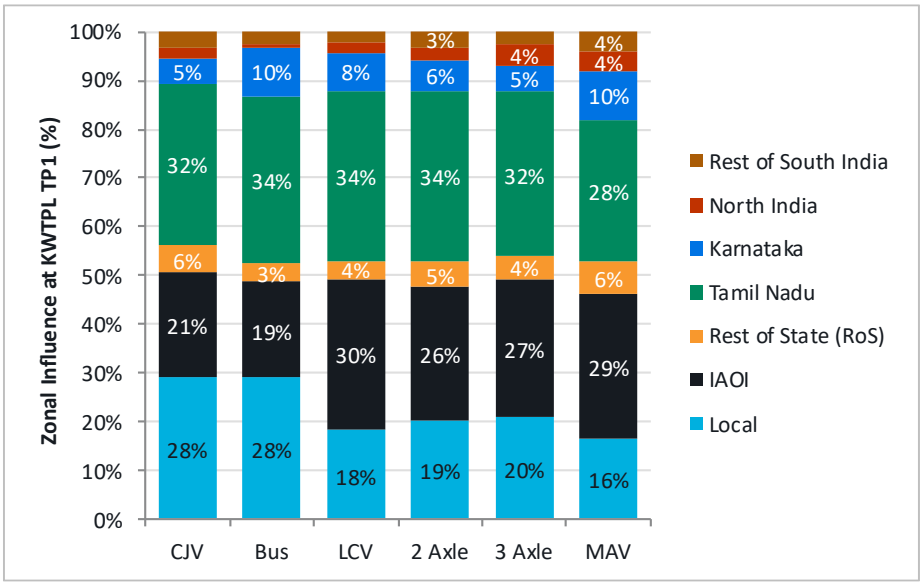
[24] For example, if out of 100 trips at a toll plaza on an Asset, 10 trips are between Hyderabad and Delhi and 90 trips are between Hyderabad and Chennai, then zonal influence of Hyderabad would be 50% since one end of all trips are at Hyderabad. Likewise, zonal influence of Delhi and Chennai would be 5% and 45%, respectively.

influence is analysed on trip ends and not trips. The zonal Influence analysis outputs are presented in Figure 3-5 below.

3.38 As the Asset is located on the border of Kerala and Tamil Nadu and serves as the gateway to the former, we see a large proportion of trips across all vehicle categories influenced by locations in Kerala. There is a higher share of local trips for the passenger vehicles wherein more than 49% of the influence for CJVs is from local and IAOI zones such as Walayar, Coimbatore, Thrissur and other areas in Palakkad district. This analysis is in line with our understanding during the site visit wherein heavy influence of the surrounding local areas was observed on passenger traffic volumes. Light goods traffic is significantly influenced by local and IAOI areas such as Coimbatore, Thrissur and Annur whereas the heavy goods traffic had a relatively greater influence of medium distant locations like Rest of South India and Karnataka. As the number of axles increase the influence of local areas on traffic volumes on the Asset decrease.

3.39 Outside Kerala, areas in Tamil Nadu such as Salem, Chennai, Thanjavur and Erode contribute to both light and heavy goods traffic on the Asset, followed by Bangalore in Karnataka. Supporting this analysis, the top OD pairs analysis (see Top 10 OD Pairs) shows that the majority of passenger trips originate and end in local and IAOI areas whereas for goods traffic, the rest of the state and areas outside the state such as Ernakulam, Bangalore and Salem feature in the top OD pairs list.

Figure 3-5: Zonal influence at TP Pampampallam



Source: Steer analysis of OD data

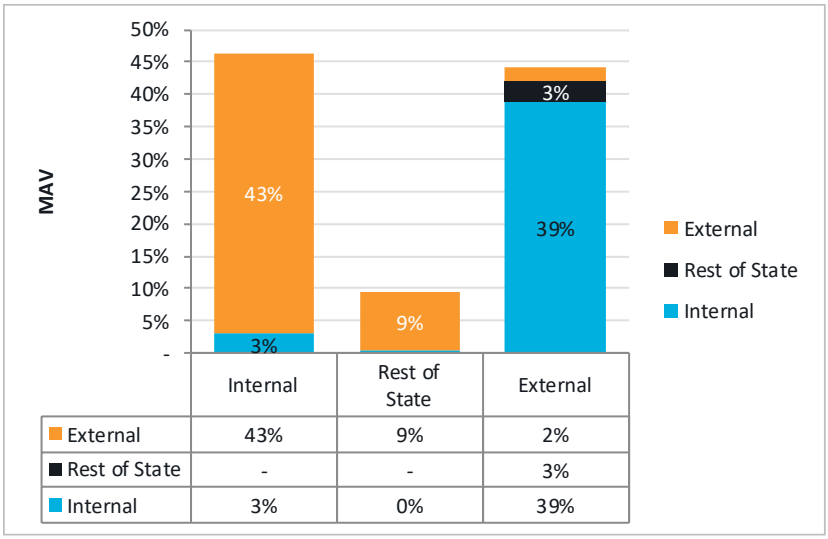
Internal External analysis

3.40 Internal-External analysis helps in identifying the trips which have both an origin and destination on or near the Asset i.e., local/IAOI zones (Internal-Internal or I-I), any one end on the Asset (Internal-External or I-E), or neither end on the Asset i.e., through trips (External-External or E-E). RoS here represents areas within the state which are neither local nor IAOI. 'Internal' zones are those that were analysed as 'local' and 'IAOI' in the zonal influence analysis, i.e., lying on the Asset, while 'External' zones are areas lying outside the state.

3.41 Figure 3-6 below shows the distribution of trips based on the categories described above. The results from the I-E analysis support our observations from the zonal influence analysis presented above, but at a higher level of aggregation. The following observations can be made from the I-E analysis:

1. Overall, a significant share (52%) of the MAVs originates from external areas and end their trips in Kerala which could be attributed to Kerala's dependency on other states for meeting its consumption demand. Similarly, 39% of the MAV traffic has its origin within the Local areas and are destined for places in external areas such as Tamil Nadu and Karnataka.
2. External to external movement accounts for a small share of overall MAV traffic on the Asset, highlighting that the Asset is primarily used by the vehicles which have one end in the state, with minimal through movement.

Figure 3-6: Internal-external distribution at TP Pampampallam



Source: Steer analysis of OD data

Commodity distribution

3.42 We have grouped various commodities into aggregate categories for ease of interpretation, as shown in Table 3.11 below. Figure 3-7 below presents the outputs of the commodity distribution analysis at the aggregated commodity categories.

Table 3.11: Aggregate commodity categories

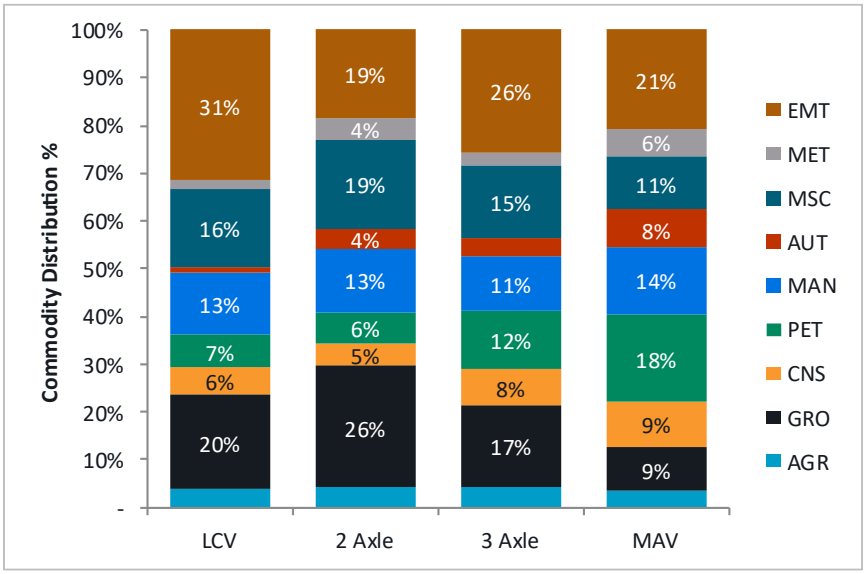
Commodity Description	Code	Combined codes used for charts
Agriculture Products / Cash crops (Wheat, Rice, Sugar cane, Maize etc.)	AGR	AGR
Cattle Food / Live Stock (sheep, goat, cow, cattle food etc)	LIV	
Perishable Items (Fruits, vegetables)	PER	GRO
Animal Products/Dairy/Eggs/Fish/Meat/Animals	DFM	
Groceries / Food items (Soap, Salt, Sugar, Pulses, Spices, Biscuits, bread, cold drinks, beer etc.)	GRO	

Commodity Description	Code	Combined codes used for charts
Building Material / Construction (Cement, Lime, Brick, fly ash, etc)	CNS	CNS
Sand/Clay	SND	
Stone (kota stone, marble, Granite, Aggregate stone etc.)	STN	
Ceramic	CRM	
Petroleum Products (Oil, LPG, CNG, etc.)	PET	PET
Chemicals / Fertilizers (Acids, Fertilizers etc.)	CHM	
Electrical/Manufacturing items (Electronic items, Medicine, Leather, Wine, Rubber/ Tyre, Plastics, Cloth, Paper etc.)	MAN	MAN
Raw Wood, Cork & Wood Products, Furn	WUD	
Machinery / Spare parts	MAC	
Automobiles (Finished products, auto parts, Car/bike manufacturing, New Chassis)	AUT	AUT
Basic / Fabricated Metals (Iron, Steel / Metal)	MET	MET
Mining Minerals (Coal, Gypsum, Cobalt etc.)	MIN	
Empty	EMT	EMT
Container	CTR	MSC
Miscellaneous (Parcel, Courier, Household items etc.)	MSC	
Passengers	PAS	
Scrap	SCR	

Source: Steer Analysis

3.43 The dominant commodities moved by 3As and MAVs include groceries (17% and 9% respectively) and manufactured items like plastic, paper & medicines. Around 18% of MAVs use the Asset to transport petroleum products. A considerable proportion (9%) of MAVs that carried cement and other construction materials on the Asset can be attributed to the presence of the state-owned Malabar Cement plant at Walayar and various other units such as ACC cements along the Asset alignment. Agricultural and grocery items, largely consisting of household products were the key commodities moved by LCVs on the Asset and accounted for roughly 24% of the total.

Figure 3-7: Commodity distribution at TP Pampampallam (Total)



Source: Steer analysis of OD data

3.44 Looking by direction, it is seen that around 30-40% of the goods traffic is empty while travelling towards Coimbatore whereas those going in the direction of Palakkad carry a mixture of commodities with the largest proportion of the light goods vehicles transporting groceries and agricultural products. The heavy goods vehicles, on the other hand, are observed to have carried construction material, manufacturing items and cement.

3.45 The difference in the characteristics of direction-wise commodity distribution can be attributed to Kerala's dependency on other states for meeting its demand for agricultural products and construction material. The commodity distribution shows that 15% of the MAV's carry construction related goods in the direction of Palakkad (**Error! Reference s ource not found.**)compared to 2% of the MAV's moving towards Coimbatore (**Error! Reference source not found.**). This directionality in construction related traffic is due to the presence of the Malabar Cement plant in Walayar and ACC cement plant in Madukkarai near the plaza.

3.46 The proportion of trucks carrying petroleum products on the asset (18%). This high proportion of petroleum is travelling from the refineries in Kanjikode Industrial Area which is situated near the asset to the industrial centres of Coimbatore.

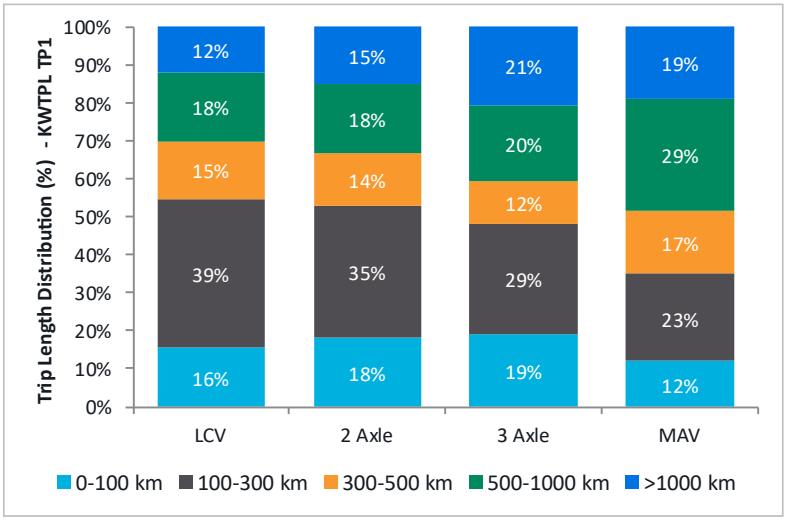
Trip length analysis

3.47 Trip-length distribution provides the distance-based trip profiles of various vehicle categories. This aids in validating assumptions around the share of macro-economic drivers, inputs from our zonal influence analysis and toll segmentation. For ease of interpretation, we have categorised distances into 5 groups – local (0-100km), short-distance (100-300 km), medium-distance (300-500 km), long-distance (500-1000 km) and

very-long-distance (+1,000 km). The trip distances were derived as driving distances from Google Distance Matrix Tool based on zonal coordinates for OD pairs.[25]

3.48 Supporting the observations made in the zonal and internal-external analysis in the previous sections, Figure 3-6 below highlights that the Asset primarily caters to short and medium distance trips. More than 35%-50% of heavy goods vehicles (3 axles & MAVs) travel shorter distances (<300 kms), contributing to the local movement observed on the Asset. This rises to ~55% for the LCVs. This local and short distance nature of traffic on the Asset is also observed from the average trip lengths shown in Table 3.12 below.

Figure 3-8: Trip length distribution TP Pampampallam



Source: Steer analysis of OD data

Table 3.12: Average Trip Length

	LCV	2 Axle	3 Axle	MAV
Average trip length Km	388	468	570	596

Source: Steer Analysis of OD data

Conclusions

3.49 In summary, the Asset's AADT in FY25 at Pampampallam toll plaza was 22,905 in terms of absolute traffic volumes and 37,117 in terms of PCUs. The Asset has witnessed significant growth in recent years (AADT PCU CAGRs of 6.5% between FY18-25 and 13.8% between FY22-25). This growth has been bolstered by positive impacts of the underlying economic activities driving traffic on the Asset – tourism, port-related movement and the influence of construction material.

3.50 The 3A/MAV category has observed a degrowth of 5.7% in FY26YTD. This is due to the continued slowdown in movement of construction material from Tamil Nadu after the introduction of the border tax in FY23, and a recent crackdown on illegal sand mining in

[25] Google Distance API is a tool that is available on a chargeable basis from Google Maps Platform. Link: **https://developers.google.com/maps/documentation/distance-matrix/start**. Travel distance and time information for driving/transit under various congestion scenarios can be extracted through this tool by using macro-enabled Excel, R, etc.

Tamil Nadu, which has reduced the availability of transportable construction material to Kerala. However, we expect these trends to stabilise over the near term and construction material related traffic to recover as demand for construction material will remain strong in Kerala going forward

3.51 The TVC data shows minor variation on the TMS data, where at a total level, the TVC data is approximately 1.2% higher than the TMS data. Higher difference at vehicle category is due to mis classification between CJV, Mini LCV, 2A and Bus.

3.52 The OD analysis found that in terms of the zonal influence, local and IAOI areas such as Walayar and Coimbatore highly influence the movement of passenger traffic on the Asset whereas the heavy goods vehicle traffic is significantly influenced by areas in the Rest of the State such as Kochi, Thiruvananthapuram, and Ernakulam. Outside Kerala, states such as Tamil Nadu and Karnataka have a high influence on the movement of both light and heavy goods traffic on the Asset. The internal and external distribution highlights that majority of the passenger traffic originates from and is destined to places within the internal areas i.e., local and IAOI zones thereby contributing to the local movement on the Asset whereas a high proportion of heavy goods vehicle originate from external areas and end their trips in Kerala.

3.53 The key commodities transported on the Asset includes manufacturing items such as rubber, container, petroleum, groceries, plastic as well as construction goods like cement for the heavy goods traffic and grocery/agricultural items by light goods vehicle. It is also observed that a higher share of vehicles across all categories are empty travelling towards Coimbatore whereas given Kerala's high consumption demand, which is met by other states, there is a higher share of traffic carrying a mix of commodities including cement towards Palakkad, due to the presence of the Malabar Cement plant in Walayar. This is consistent with the underlying economic trends where Kerala is predominantly a destination for various consumption linked commodities as it has relatively few industries located there.

4 Socioeconomic context and traffic growth

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the Asset is in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions of the region where the Asset is located and conditions on a national scale. These include:

- Changes in factors such as population, economic growth (regional and national) and industrial production; and
- Other local factors such as strategic port growth, and growth in local industries near the Asset.

4.2 In turn, the change in the competitive position of the Asset (and thus of the traffic capture it will achieve) derives from how the service offered and the prices charged on the Asset change in comparison to competing roads; and whether any new competing road facilities are available. In this chapter, we assess the socio-economic indicators relevant to traffic growth on the Asset.

Population growth

4.3 We have analysed the key socioeconomic drivers of the background traffic demand in the state of Kerala where the Asset is located.

National Level

4.4 Table 4.1 below shows that the total population in India has grown at a Compound Annual Growth Rate (CAGR) of 1.5% since 2000, decreasing over the years, as shown in the table below. The World Bank forecasts this growth to decrease to 0.6% CAGR by the 2030-45 period.

Table 4.1: CAGR of population in India

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
1970 – 1985	2.3%	1.9%	3.8%
1985 – 2000	2.0%	1.7%	2.9%
2000 – 2015	1.5%	1.0%	2.6%
2015 – 2030*	1.0%	0.3%	2.3%

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
2030 – 2045*	0.6%	-0.3%	1.9%

Source: World Bank Data on Health Nutrition and Population Statistics, *forecast population growth

State Level

4.5 Table 4.2 shows the evolution of population in Kerela state, compared to that of the country. The CAGR of population in Kerela has been considerably slower vis-à-vis that of India.

Table 4.2: Population Growth in Kerala and India (FY12 – FY24)

State	FY12 Population (m)	FY24 Population (m)	CAGR (FY12 – FY24)
Kerala	33.5	36.1	**0.6%**
India	1,210	1,395	**1.2%**

Source: MoSPI estimates

4.6 Due to the complexities of patterns of urbanisation, and the very dynamic nature of local population migration (which are very difficult to forecast with accuracy), we do not use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide the underlying socio-economic context of the state/trends in the regions in which the Asset is located.

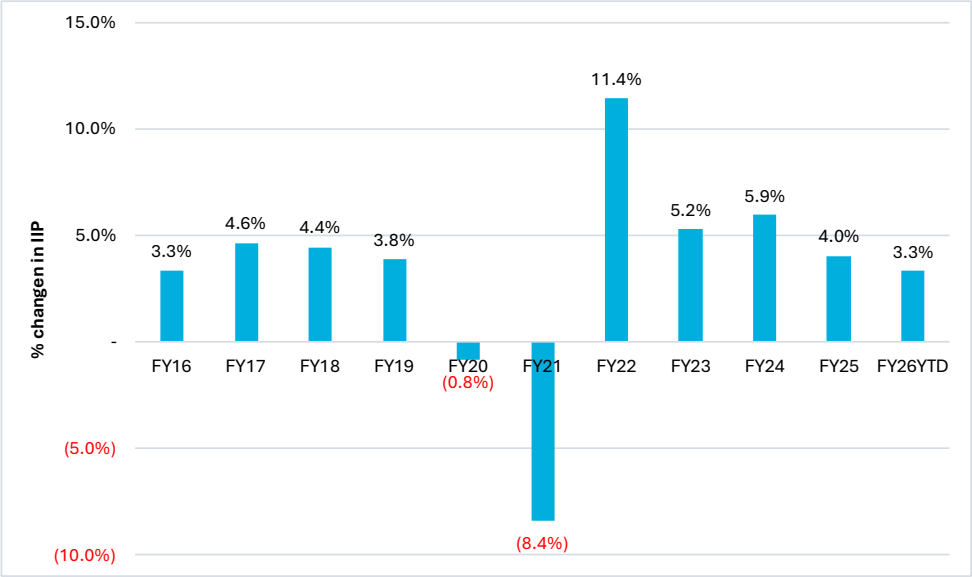
Economic Indicators

Industrial Production

4.7 The Index of Industrial Production (IIP) is a composite indicator that measures the short-term changes in the volume of production for a basket of industrial products. The IIP data tracks the manufacturing activity in different sectors of an economy, with mining, manufacturing, and electricity being the three broad sectors constituting the IIP.

4.8 Figure 4-1 below that at an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20. In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. Post the immediate recovery in FY22, IIP growth has since stabilised, with FY25 recording 4%, and FY26YTD (till February 2026) recording 3.3% growth over FY25.

Figure 4-1: Annual growth – Index of Industrial Production



Source: Steer Analysis of MoSPI data

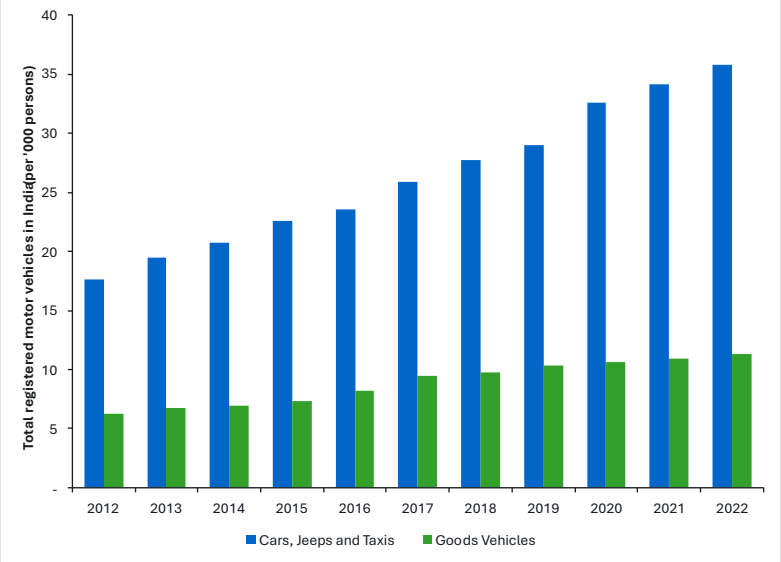
4.9 Since state-level IIP data is not as readily available as national level IIP, we have presented national IIP here to indicate nationwide activity in key industrial sectors like power, manufacturing, and mining, all of which influence long-distance commercial movements across the nation, and not unique to this asset. We, however, do not use it to forecast future travel demand growth since long-term forecast for IIP is not available through official sources such as MOSPI, RBI or through multilateral organisations like WB, IMF.

Vehicle Ownership

4.10 The gap in car ownership between India and developed nations remains substantial – with 36 cars/jeeps/taxis and 11 commercial vehicles per thousand people, as of FY22 (the latest year for which official data is available). However, with increasing per capita income levels, a booming economy and the subsequent increase in demand for mobility, the number of registered vehicles has been on a gradual upward trend

4.11 Overall, India still stands at a very nascent stage in the vehicle saturation curve, offering huge potential for growth going forward. Between FY12 and FY22, the CAGR for CJV and goods' vehicles registered in India was 8.6% and 7.3% respectively.

Figure 4-2: Total number of registered motor vehicles in India (per 1000 population

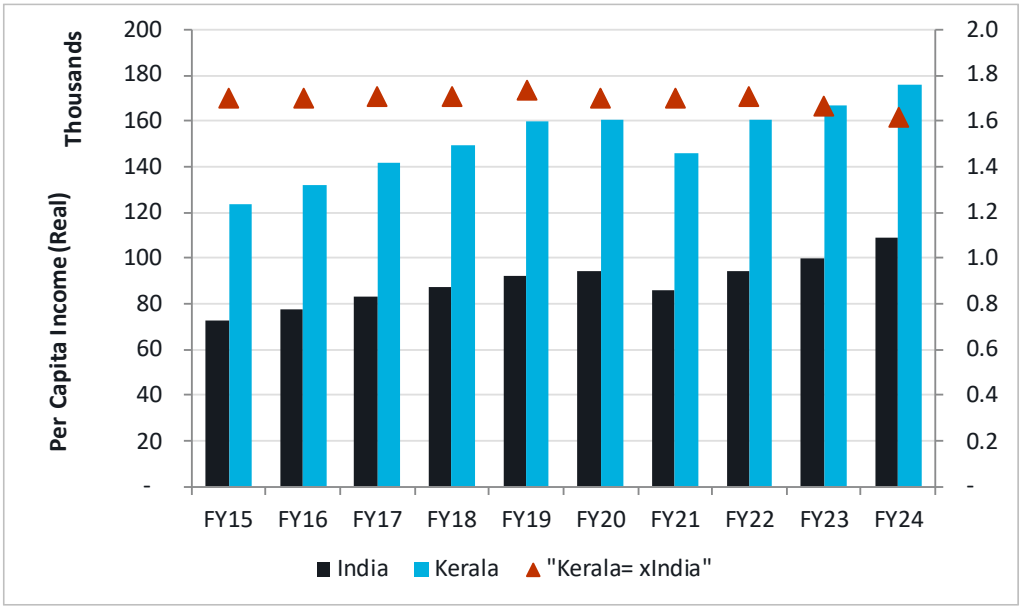


Source: International Energy Agency (IEA))

Per Capita Income (PCI)

4.12 Kerala is one of the richer states of India whose per capita income has been consistently higher than the national average as seen in the Figure 4-3 below. As of FY24, the per capita income of the state was approximately 1.6 times that of the national average.

Figure 4-3: Per Capita Income in Kerala and India (FY15 – FY24)



Source: Steer Analysis of MoSPI data

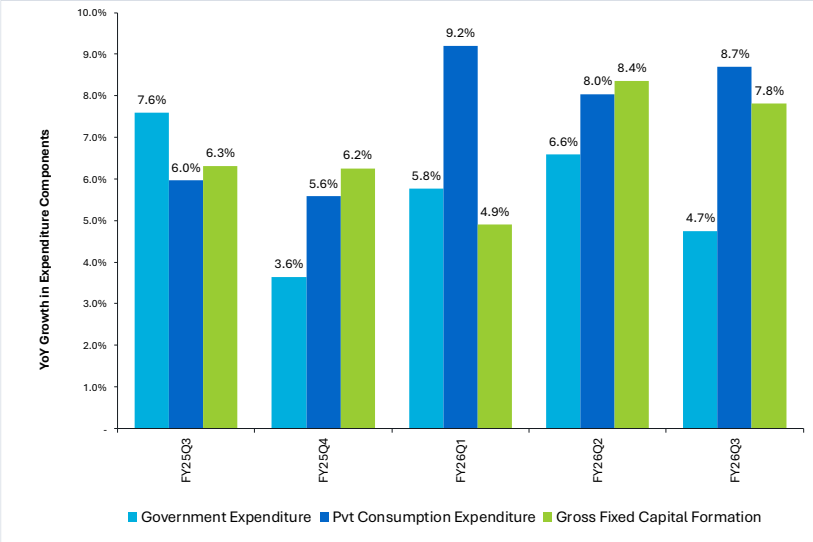
Economic Growth

India's Performance

4.13 Despite a slowdown in the economy during H1FY25, the Indian economy has observed strong growth each quarter since FY25Q2, with the latest published estimates for FY26Q3 GDP at 7.8% over FY25Q3. This performance has been driven by strong growth in investment and consumption expenditures and higher consumer optimism for the year ahead[26].

The figure below, we present quarterly Y-o-Y growth in three major components of GDP – government expenditures, consumption expenditures, and business investment (gross fixed capital expenditure) over the past year (FY25Q3-FY26Q3).

Figure 4-4: YoY growth in expenditure components of GDP



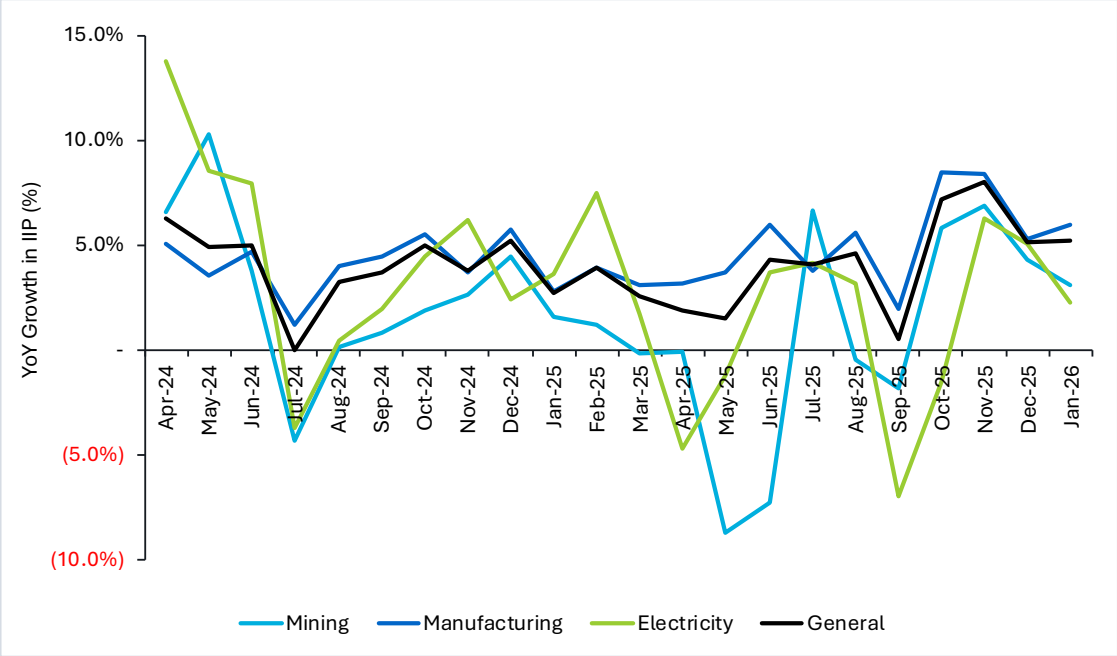
Source: Steer Analysis of MOSPI Data

4.14 While consumption and investment expenditures have continued to show consistent growth over the past two quarters, government expenditures observed a marginal decline in FY25Q4. In FY26Q1, government expenditures rebounded, recording 5.8% growth over FY25Q1 levels.

4.15 Performance across different types of industrial activities (such as Mining, Manufacturing, and Power Generation) directly impact freight movement and commercial traffic volume growth across the country, including on the Asset. In the figure below, we present growth trends in IIP – a measure that tracks the performance of the economy across these activities. As of FY26YTD (Apr'25-Feb '26), the Manufacturing sector continues to perform strongly, recording positive y-o-y growth since FY25Q3. While industrial activity across the two other sectors (i.e., Power Generation and Mining) dropped between May and Jun/Jul '25, they have since rebounded and show signs of continued growth going forward.

[26] Gov**ernment of India PIB Release (27th February 2026)**

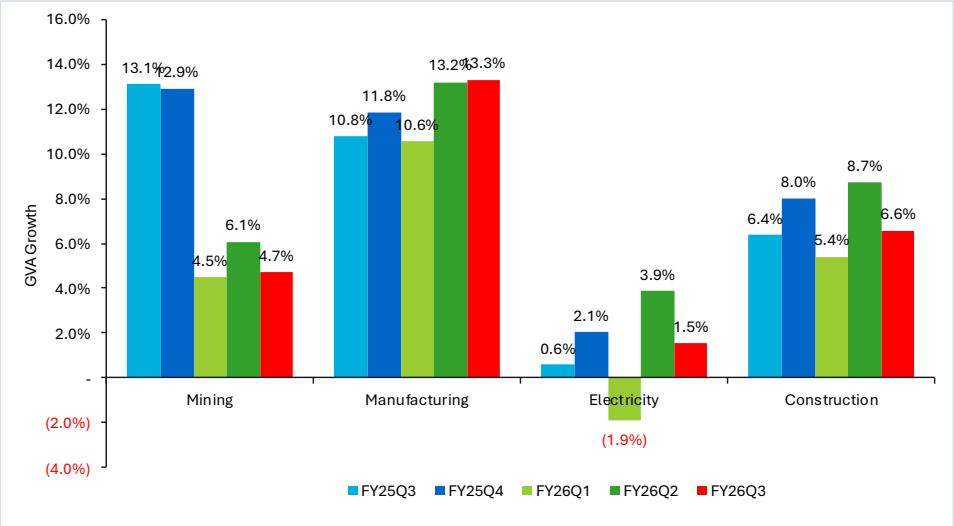
Figure 4-5: Month on Month IIP performance



Source: Steer Analysis of MOSPI Data

4.16 In addition to monthly trends in IIP, the figure below presents y-o-y growth of quarterly GVA in four industrial sectors - Mining (& Quarrying), Manufacturing, Electricity (and other Utilities), and Construction. While the Mining and Power sectors observed decline and muted growth in FY26Q1, the Manufacturing and Construction sectors experienced strong growth. While overall economic growth has remained resilient as of FY26YTD, performance across industries have varied, impacting economic growth across different regions and on the Asset as well.

Figure 4-6: Industrial components of GVA



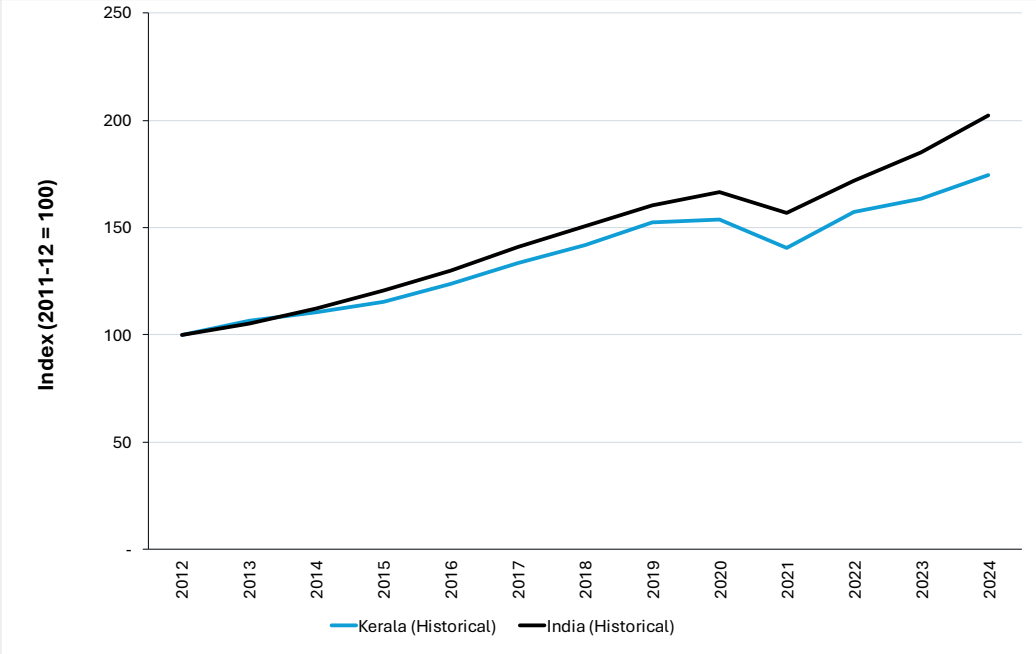
Source: Steer Analysis of MOSPI Data

GDP and GSDP Growth

4.17 Figure 4-7 below illustrates the evolution of Kerala GSDP, with respect to the GDP of India. Between the period of FY12 and FY24, the Indian economy has grown at a CAGR of 6.0%- aided by a strong growth in the services/tertiary sector, which grew at a CAGR of 6.9% over the same period. Kerala grew at 4.7% between FY12 and FY24, with the state growing at a slower rate than the national average.

4.18 As shown in Table 4.2 above, Kerala accounted for 2.6% of national population in FY24. In terms of national economic contribution, Kerala contributed approximately 3.6% to India's GDP in FY24. Therefore, Kerala's per capita GDP contribution highlights the importance of the region in driving consumption demand and regional traffic growth near the Asset.

Figure 4-7: Evolution of Kerala's state GDP and national GDP, FY12-24



Source: Ministry of Statistics and Program Implementation

Economic activity in the state

4.19 Kerala is a relatively small state situated in Southern India with an area of 38,863 sq.km and a population of 3.61 crore people. The share of primary sector in the state's economy has declined over the years – from 15.2% in FY12 to 8.5% in FY24, but it is a leading producer of cash crops such as coconut, rubber, coffee, pepper, cashew, and tea. Other key agricultural products include spices such as cardamom, vanilla, nutmeg, and cinnamon.[27]

4.20 Kerela is a relatively high-income state with per capita GSDP 62% higher than the national average as per 2024 estimates[5]. Services is a dominant contributor to the State's incomes, with over 60% contribution to GSDP. Leading contributors to this sector include

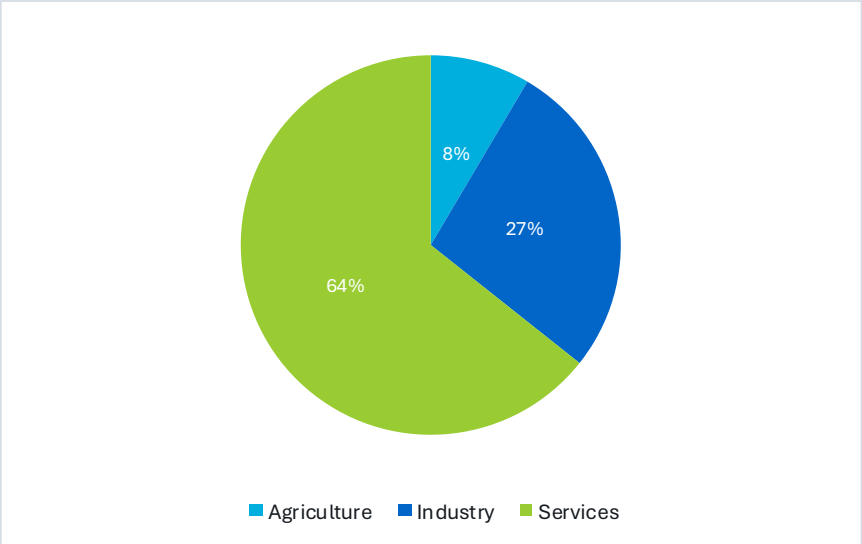
[27] Economic Review 2024 - Government of Kerala

tourism, Ayurveda and medicinal services, pilgrimage, IT services, financial services, and education.

4.21 Major containerised traffic is routed through Cochin port and dispatched to final destinations via road. Cochin port handled total traffic of 36 million tonnes in FY24 (Table 2.3) Tea, coffee, cashew kernels, seafood, coir products and spices are major commodities exported via the port. The port also handles major import items for the State such as fertilisers, raw materials, iron and steel products, machinery and petroleum, oil and lubricants (POL).

4.22 In terms of sectoral contribution, the services sector is the biggest contributor (64%), followed by secondary (27%) and primary sector (8%), as of FY24[5]

Figure 4-8: Sectoral contribution to Kerala's GSDP in FY24



Source: Steer Analysis of MoSPI data

4.23 The official historical GDP and GSDP data for India are released by the Steer Analysis of MoSPI data. The GDP forecasts for India are available from various reliable sources such as Oxford Economics and Consensus Economics[28], but state-specific GSDP forecasts are not published by any such sources. To derive state GSDP forecasts, we rely on past trends of the relationship between GDP and GSDP and develop GSDP forecasts as a function of our assumed GDP forecasts[29].

4.24 For any indicator to be used as a growth driver to forecast traffic, a reliable source of historical and forecast data availability for that indicator is the key requirement. Of the key socioeconomic indicators discussed above, GDP was assessed to be the only growth driver for which reliable data is available both in terms of historical and forecast data. Therefore, to forecast traffic, we use GDP/GSDP as our key growth drivers.

---

[28] **Consensus Economics - Economic Forecasts and Indicators**

[29] Assuming that the historical long-term relationship between GSDP and GDP sustains over the short-term, we project future growth in GSDP as a function of our GDP growth forecast. We taper the relationship of GSDP growth to converge to GDP growth gradually over the long-term.

Forecasts for growth drivers

4.25 Following the discussion in Chapter 4 on the nature of economic activity in the state of Kerala, in this section, we describe the assumptions in relation to forecasts of the key macro-economic drivers of traffic growth.

4.26 We have based our forecast of the GSDP for Kerala based on the forecasts of the GDP of India as provided by the Client.

National GDP

4.27 After the last period of economic slowdown in FY11-12, the country experienced an economic downturn again in late FY19 with FY20 having reported a GDP growth of 4% (relative to an average growth rate of 7% per year between FY13 and FY19). India's GDP growth declined as domestic investment and consumption demand were already under stress because of the liquidity crunch before Covid-19. Other factors that contributed to the economic slowdown included reduced growth rates in automobile sales and production, liquidity crunch in credit markets and rising number of Non-Performing Assets (NPAs) within the banking sector, as well as lower manufacturing production and lower rural consumption.[30]

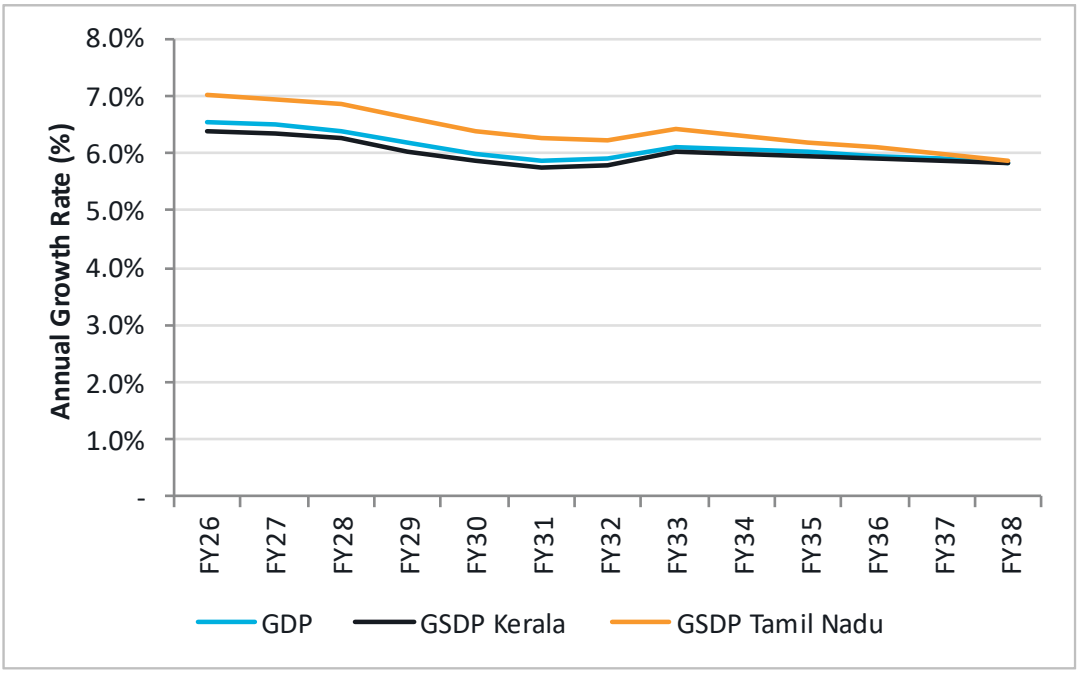
4.28 The Covid-19 outbreak had a significant impact on the Indian economy during the first two quarters of FY21 as government mandated lockdowns across the country effectively stalled economic activity and growth. The growth momentum eventually picked up in Q3 of FY21, with a sharp rebound in the economy in FY22 (GDP recorded 9.7% growth over FY21) and has since observed a consistent growth of 7.6% in FY23 and 9.2% in FY24.

4.29 Figure 4-8 below shows Client-provided GDP projections for India. The forecast provided projects the Indian GDP to grow at 6.5% between FY27-FY28 and gradually tapering down to 5.2% by FY38. The GDP growth forecast is broadly in line with other independent forecasts available from reliable sources such as IMF, World Bank and RBI in the medium term.

4.30 We have assumed the GSDP growth of Kerala to continue to stay below the national GDP throughout the concession period. There has been increasing government expenditure and push towards infrastructure development in southern India. This is expected to push the economy of the region and lead Tamil Nadu to grow faster than the national growth in the next 15 years.

[30] **Data | India's GDP was on a downward slope even before COVID-19 wreaked havoc - The Hindu** (September 2020)

Figure 4-9: GDP-GSDP forecast



Source: GDP and GSDP forecast provided by Client

5 FY26 Base year AADT and Traffic growth Analysis

Introduction

5.1 In this section, we present our approach, assumptions, and results for base (or background) traffic growth for each vehicle category on the Asset.

5.2 Traffic growth is commonly related to a variety of macro-economic and industry- or commodity-specific factors (hereafter referred to as 'traffic growth drivers'). These growth drivers are typically identified from the results of the OD data analysis and the site visits that help us appreciate the nature of traffic movement – 'what' travels 'where' and 'why'.

5.3 To understand the historical traffic trends in relation to these growth drivers, we carry out regression analyses to determine the historical relationship between each traffic belonging to each major vehicle category and its macroeconomic growth driver at each toll plaza. The dynamics of traffic demand is the dependent variable while the dynamics of one or more identified growth drivers are the independent or explanatory variables. Typically, passenger and light commercial vehicles like Cars, Buses, LCVs and 2-axle trucks grow in line with the GSDP of the state where the toll road is located. Heavy vehicle traffic like 3-axle trucks and MAVs grow in line with the national GDP. This is because most light vehicles tend to travel shorter distances within the state, whereas a significant proportion of heavy vehicles carry commodities for long-distances across the country. These commodities also tend to be part of industry ecosystems whose demand-supply relationships are scattered across the country and therefore relate more with GDP growth.

FY26 Base year AADT estimates

5.4 The base year is the year on which long-term background forecast growth rates are applied to derive year-wise average annual daily traffic (AADT) estimates for forecast years. This is therefore an important aspect of our forecasting approach as traffic and ultimately revenue forecasts for future years are built on top of the base year traffic estimate. We have used FY26 as the base year for AADT estimates for the forecast years.

5.5 As described previously in Chapter 3; to establish the base year (FY26) traffic position, we utilized information from various sources – including from the Client and our context knowledge, to assess a reasonable demand on the corridor.

Methodology

5.6 The base traffic for FY26 has been estimated using 11 months of actual traffic data (April to February). The toll plaza's seasonality correction factors was applied on the actual

MADTs of Apr-25 to Feb-26 to obtain seasonally corrected estimates for FY26 traffic. An average of these estimates was considered to be the FY26 base traffic.

Seasonality Correction factors

5.7 Traffic on any Asset varies on a month-on-month level. Such variations maybe due to monsoons (typically Jul to Sept) or due to festivals in the region. For e.g. It is observed that typically the truck traffic during the first half of the financial year (April-September) is generally lower than the annual average, mainly because of peak summer season followed by monsoons affecting the freight movement patterns in large parts of the country in the July-September period. In addition to these there may be other seasonal variations specific to the Asset.

5.8 In order to normalise for these variations across the year to provide an AADT estimate, Seasonality Correction Factors (SCF) are used. SCFs are estimated to convert the monthly traffic numbers to an AADT level while accounting for seasonal variation due to local/national festivals, weather changes and/or temporary external impacts. These are typically estimated using historical data for each plaza and vehicle category over multiple years. An SCF >1 means that the traffic for the month is lower than the annual average and vice-versa.

5.9 To achieve this, we studied the seasonality between monthly average daily traffic (MADT) – We have analysed the seasonality trends between monthly average daily traffic (MADT) and AADT for data during the historical years of tolling excluding the years that were impacted by specific events. This averaged seasonality trend is then applied to the monthly traffic to obtain AADT as mentioned in the previous sections.

5.10 Table 5.1 below presents the average of the FY23 and FY25 SCFs, used to arrive at the FY26 base estimates (only FY23 SCFs were used for LCV and Bus categories).

Table 5.1: Seasonality correction factors for TP1 Pampampallam

Vehicle	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.03	0.94	1.04	1.08	1.05	0.97	1.00	1.02	0.87	0.92	1.04	1.11
LCV	0.98	1.05	1.04	1.07	0.99	1.02	1.07	0.99	0.97	0.98	0.94	0.92
Bus	1.06	0.93	1.07	1.10	1.10	1.03	1.01	0.95	0.90	0.94	0.96	0.99
2A	1.04	1.05	0.99	0.99	0.94	1.00	1.05	1.03	1.01	1.01	0.97	0.95
3A	0.97	0.88	0.96	1.13	1.00	1.07	1.09	1.05	0.98	0.98	0.98	0.99
MAV	1.03	1.06	0.99	1.06	0.95	1.06	1.09	0.98	0.95	1.01	0.93	0.93

Source: Steer analysis of Client historical TMS data

Adopted FY26 base estimates

5.11 Based on the above methodology and inputs, the adopted base for toll plaza is shown in Table 5.2 below:

Table 5.2: Adopted base AADT for FY26

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	14,974	16,632	16,487	10.1%

	FY25	FY26YTD	FY26A	FY26A vs FY25
LCV	1,954	2,226	2,242	14.7%
Bus	1,127	1,110	1,111	(1.4%)
2A	1,536	1,565	1,568	2.1%
3A/MAV	3,312	3,248	3,272	(1.2%)
OSV	3	2	-	
Total	**22,905**	**24,784**	**24,680**	**7.7%**
PCUs	**36,899**	**38,789**	**38,748**	**5.0%**

Source: Steer analysis: FY26YTD includes Apr-25 to Feb-26; FY26A is the adopted base traffic

5.12 From Table 5.2 above we see that FY26A is estimated to observe a 5.0% growth from the actual FY25 traffic on PCU terms. This growth is driven by a strong turnout of CJVs and LCVs on account of growing tourism and local activity near the Asset.

5.13 Several factors likely contributed to the lower-than-expected performance of 3A+MAVs on the Asset, including restricted construction material supply from Tamil Nadu following new regulations on illegal mining[31]; the development of new mining sites in Palakkad catering to Kerala's demand; and a decline in petroleum product shipments from Kerala to Tamil Nadu and other regions.

Estimation of background elasticities

5.14 Elasticities, in the case of traffic growth are the relationships between traffic and growth drivers. Multiplied with forecasts of growth drivers like GDP or GSDP, they provide the forecasts of background traffic growth rates.

5.15 As the TMS data did not provide a breakup between the individual vehicle categories for the toll categories 3A/MAV, we have used recent TVC 2023 split. Typically, we rely on national GDP as a growth driver for 3A/MAV trucks, given their characteristics of travelling across multiple states and carrying varied types of commodities which contribute to national GDP.

5.16 Table 5.3 below presents the growth drivers identified to model the background traffic growth rates.

Table 5.3: Identified growth drivers to model traffic growth

Vehicle type	GSDP Kerala	GSDP Tamil Nadu
Car	50%	50%
LCV	100%	
Bus	50%	50%
2A	100%	
3A	100%	

[31] ED in letter to TN DGP says sand mining happening in massive scale, demands action

[31] Keralites account for 69% of domestic tourist footfall in State - The Hindu

Vehicle type	GSDP Kerala	GSDP Tamil Nadu
MAV	100%	

Source: Steer analysis of Client data

5.17 To understand the traffic growth on the Asset, we undertook regression analysis from FY16-24 for all vehicles categories of the plazas.

5.18 This Asset has shown variable growth trends every year (for the reasons described in Chapter 3), due to which econometric regression analysis did not provide robust enough results of elasticities to growth drivers. We have therefore, analysed trends of each vehicle category and compared with the growth of key drivers, as described below.

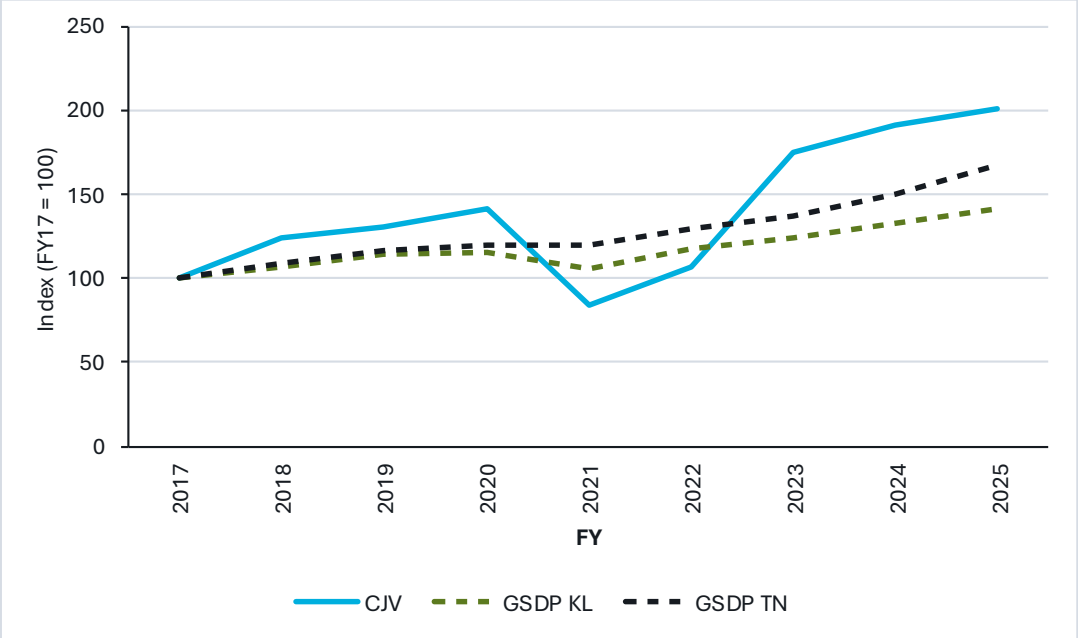
CJV

5.19 As can be seen from Figure 5-1 below, cars have shown strong growth on this Asset except in FY21 and FY22 with 9% car increase in FY24 from FY23 levels 10% increase in FY26YTD. As seen from the OD survey results from the analysis conducted in 2024, car traffic on the Asset is driven by local trips between the urban centres of Walayar, Coimbatore, Thrissur, and other areas in Palakkad district, as well as high contribution of tourism, work and educational trips.

5.20 Generally, we would expect that in fast-growing economies with relatively low car ownership levels, car traffic growth rates are often in line with or slightly higher than growth in GSDP/GDP (i.e., suggesting elasticities at or just above 1.0). Further, there is an expected increase in car ownership proportion of overall population as the economy grows. In this case with proximity from Tamil Nadu state and high share of Tamil Nadu trips, the Asset Car growth is dependent on both Kerela and Tamil Nadu.

5.21 Historically, the CJV traffic on the Asset had shown strong growth of ~14% in the FY16-FY20 period; the growth in this category slightly moderated in the recent years and saw a degrowth of 13% between FY20 and FY22. However, it has bounced back to achieve a 33% CAGR from FY22 to FY24, mainly driven by a significant post-pandemic ramp up in traffic in FY23.

Figure 5-1: Relationship between CJV traffic and GSDP of Kerala & Tamil Nadu



Source: Steer analysis of Client TMS data and publicly available GSDP data

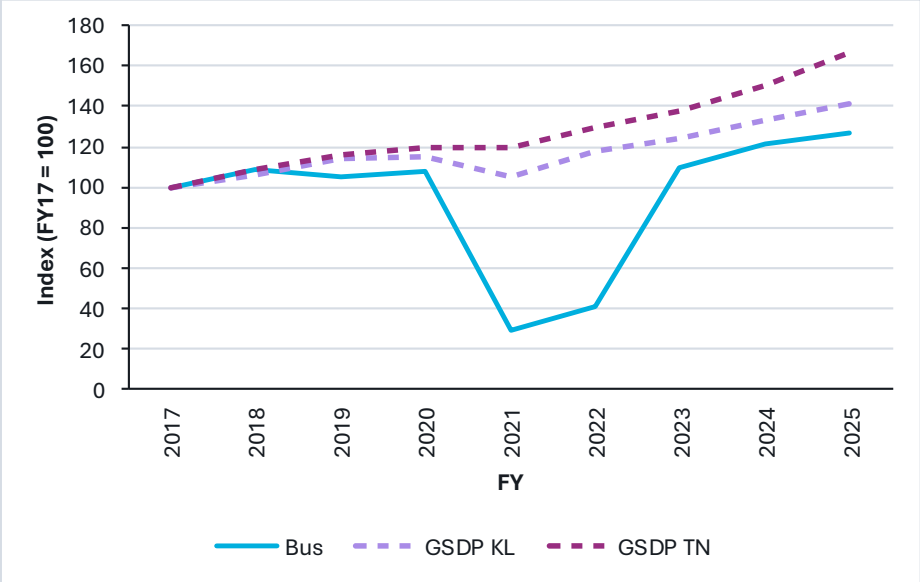
5.22 Nevertheless, the relationship to GSDP suggests that during more stable years post pandemic, CJVs have grown with a background traffic growth elasticity of 1.1. Considering the tourism-oriented nature of passenger traffic on the Asset, we have assumed a forecast background elasticity of 1.2 with the GSDPs of Kerala and Tamil Nadu.

Bus

5.23 Bus growth tends to be largely supply-driven in many parts of the country, with new buses being bought and deployed by the government at intervals of time. Based on our experience across the country, buses on inter-urban and tourism corridors show elasticities of 0.20 to 0.50 with respect to the GSDP.

5.24 The bus traffic trend on this Asset showed a modest growth rate of 3.8% from FY16-20. However, during Covid bus traffic was significantly impacted given prolonged lockdown in the state impacting tourism and leisure-bound bus traffic which recovered back to pre-covid levels in FY23. We expect the buses on this Asset to have an overall stable low growth in the forecast, with a relationship lower than benchmark states, to reflect this slower growth observed in recent years, and have used an elasticity of 0.4 to GSDP

Figure 5-2: Relationship between Bus traffic with GSDP of Kerala & Tamil Nadu



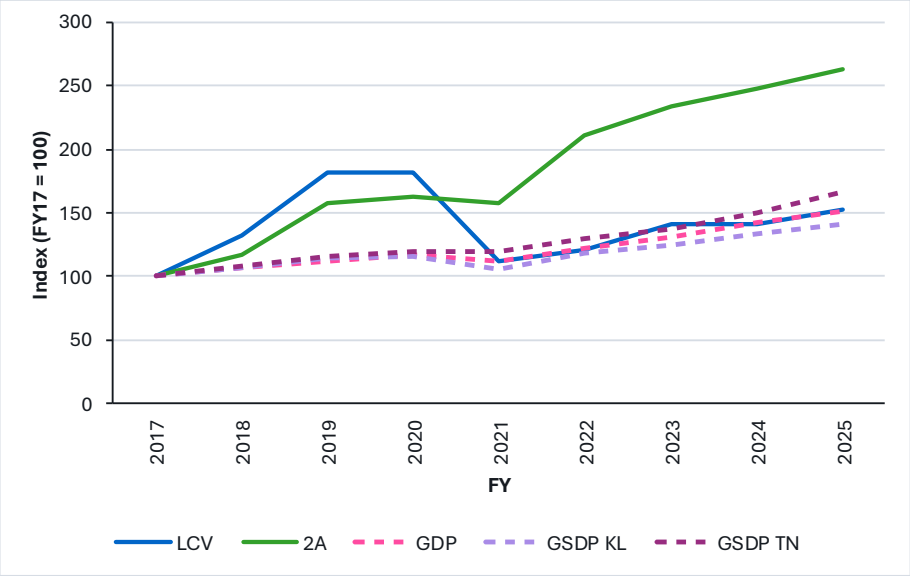
Source: Steer analysis of Client TMS data and publicly available GDP and GSDP data

LCV, 2A

5.25 Despite similar traffic characteristics regarding commodities and distance (as detailed above, in the Key findings of the origin-destination analysis), 2A and LCV vehicle segments showed divergent growth between FY18 and FY24. Notably, 2A trucks experienced a substantial 13.4% increase, while LCVs grew by a comparatively lower 1.1%. In addition to the typical influence of GDP and consumption demand-led growth, 2As have benefitted from the shifting preference of truckers from 3As - as a result of better unit economics – which has been observed on Assets across the country.

5.26 Therefore, looking forward, we have assumed lower elasticity of 0.40 for LCV and a higher elasticity of 0.80 for 2A with respect to GDP India, which is within the range of benchmarks observed in other parts of the country.

Figure 5-3: Relationship between LCV and 2A with GSDP of Kerala



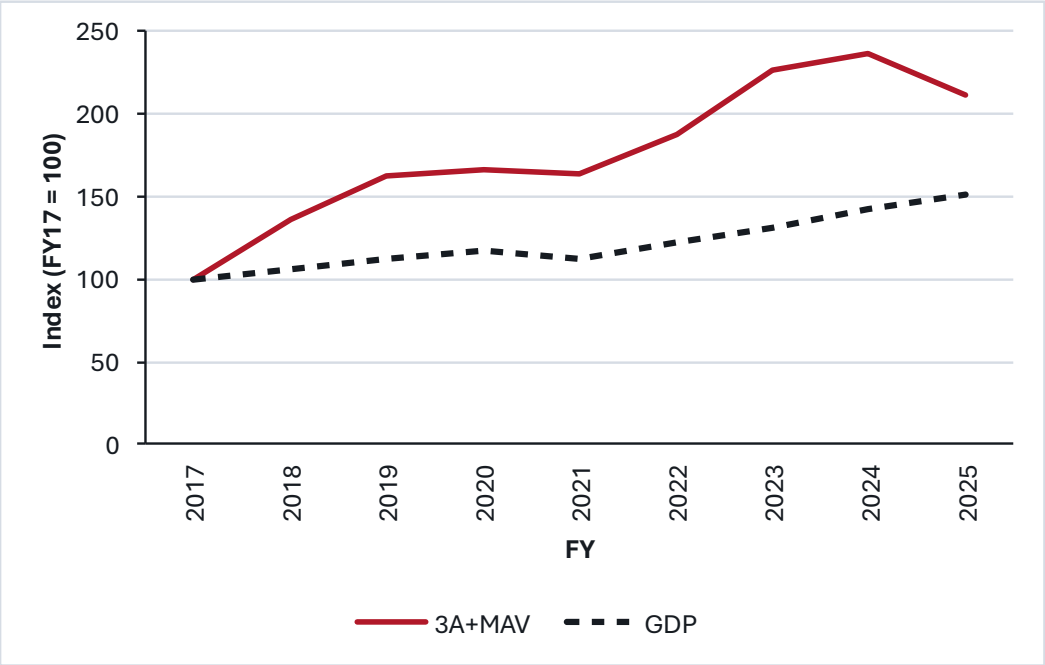
Source: Steer analysis of Client TMS data and publicly available GDP and GSDP data

3A/MAV Trucks

5.27 In general, across the country, we have observed that 3As grow slower than MAVs due to a shift between these categories, as there is an increasing preference observed for MAVs among truck operators (instead of 3As). This is because MAVs have higher load capacity which generate economies of scale and therefore lower transportation costs for high volume goods relative to 3A trucks. It is however unlikely that 3A trucks will disappear from the market completely due to this observed trend as certain commodities or movements are still (and will continue to remain) best served by 3As.

5.28 Based on these trends, we have assumed elasticities of 0.20 and 0.90 for 3A and MAV trucks respectively, with respect to GDP India, which are in line with benchmarks observed across the country.

Figure 5-4: Relationship between 3A + MAV and GDP India



Source: Steer analysis of Client TMS data and publicly available GSDP data

Forecasts for background elasticities

5.29 Table 5.4 below presents a summary of the results of the regression analysis carried out on historical toll plaza data and the macroeconomic drivers (GDP/GDSP), along with the assumed forecast elasticities for forecasting our background traffic growth.

5.30 3A category has largely remained flat in the FY22-26 YTD period. The reduction in 3A volume is partly a result of the declining demand for 3A vehicles itself, which are being replaced by 2A and MAV trucks. MAVs offer higher tonnage capacity making them more cost-effective for transporters. While the increase in 2A volume reflects the growing preference for these vehicles due to favourable changes in the legal permissible loads for 2As and their suitability for e-commerce-related freight, particularly high-value, low-volume goods over medium to long distances. This is consistent with our discussion with

various transporters and OEMs across the country who are favouring 2A and 5A vehicles for commodity movement due to better unit economics.

5.31 As a consequence of these evolving axle preferences, it has been assumed that the relationship between 3As and GDP will be relatively muted, whereas 2As and MAVs are expected to grow more closely in line with the country's GDP.

Table 5.4: Adopted forecast elasticities for background growth

Vehicle type	Growth driver	Historical Derived Elasticity	Period Considered	Forecast	
				Adopted Elasticity	Evolution of elasticity
Car	GSDP Kerala	0.74	FY17-24	1.20	Reduced to 1.1 from FY30 onwards
	GSDP Tamil Nadu		FY17-24		
LCV	GSDP Kerala	3.46	FY17-24	0.6	No change
Bus	GSDP Kerala	2.16	FY17-24	0.5	No change
	GSDP Tamil Nadu		FY17-24		
2A	GSDP Kerala	N/A*	FY17-24	0.8	No change
3A+MAV	GSDP Kerala	3.06	FY17-24	0.1 for 3A & 0.9 for MAV	No change

Source: Steer analysis of Client data; *regression analysis yielded invalid results, hence not reported; #regression was run on 3A-MAV combinedly

6 Forecasts: Network overlays and forecasts

Introduction

6.1 Following the discussion on our forecast of base growth rates in the previous chapter, this chapter first covers the forecasting assumptions around base year AADT and potential network impacts on traffic growth on the Asset. Thereafter, we present our assumptions around toll segmentations, trip factors and evolution of toll rates for the concession period which are used to forecast revenues as derived from forecast traffic. In the final section, this chapter summarises traffic growth rates for the forecast years.

Analysis of potential network/developmental impacts

6.2 The section below details the impacts which we believe would affect traffic on the Asset during the concession period. As discussed earlier in Chapter 2, to assess the impacts on the Asset, whether positive or negative, we have studied developments (alternate roads, feeder roads and regulatory) in the surrounding road network.

Construction Recovery

6.3 Throughout FY24 and FY25, the construction activities on the expansion of road network in the southern parts of Kerala have been negatively impacted due to unavailability of materials like aggregate and sand, since these regions source their construction material from Tamil Nadu. Changes in the quarrying landscape of the region in Tamil Nadu in Q2 and Q3 of FY24, which continued in FY25 and FY26, also affected the movement of construction materials on the project road. No further change in impact is envisaged at this stage. However, there is potential for a recovery in construction activity in Kerala, supported by key contributing factors such as inflows of remittances and commencement of major infrastructure projects including the Trivandrum Ring Road and the Vizhinjam Port expansion, are expected to provide a positive impact to overall construction and economic activity in the region.

6.4 We have therefore assumed a recovery profile in construction related traffic as presented in Table 6.1 below. This recovery in construction activity is expected to largely affect the 3A and MAV categories which have historically carried construction related goods:

Table 6.1: Impact of Recovery in Construction for TP1

Vehicle category	FY28	FY29 Onwards
Staging	*50%*	*100%*

Vehicle category	FY28	FY29 Onwards
3A	0.5%	0.9%
MAV	1.3%	2.5%

Source: Steer analysis

Construction Recovery

6.5 Construction of the Palakkad–Kozhikode Greenfield Expressway, designated as NH-966 (Greenfield), is being progressed by the National Highways Authority of India under the Bharatmala Pariyojana as a new access-controlled corridor to decongest the existing NH-966. The project involves developing a 121 km four- to six-lane highway linking NH-544 at Marutharode in Palakkad with NH-66 near Kozhikode, with construction preceded by detailed project report preparation and phased land acquisition.

6.6 It is understood that land acquisition for the project is underway. We have assumed a 2.5% positive impact for MAVs from H2 of FY30 up to H1 of FY34 (four years) on MAVs as construction traffic is likely to increase on the Asset as a result of the construction of the greenfield expressway.

Revenue forecasting assumptions

6.7 To forecast the revenues for a forecast year, the traffic forecast for each vehicle type is converted into tickets sold, which is then multiplied with the corresponding toll rate. While toll segmentation provides the breakup of trips paying each ticket type, trip factors provide the conversion factor to convert from traffic (trips) to tickets sold. This section discusses assumptions related to toll segmentation, trip factors and toll rates for the forecast period.

Toll evolution

6.8 Based on the concession agreement and the gazetted toll notification, we understand that base toll rates increase every year (revision month is April) based on WPI-linked inflation. These are rounded up to the nearest five to estimate the final toll rate charged to users.

6.9 We have used actual toll rates from the FY25 and FY26 toll notifications and FY27 WPI to validate the modelling of future toll evolution. Increase in WPI was calculated based on the Client's WPI forecasts, as shown Table 6.2 below. The upward trend in inflation is expected to continue in the medium term, before gradually tapering to 4.1% in the long term.

Table 6.2: WPI growth forecast assumptions

Financial year	WPI growth (%)
FY26	2.57%
FY27	0.96%
FY28	5.0%
FY29	5.1%
FY30	4.9%

Financial year	WPI growth (%)
FY31	4.4%
FY32 onwards	4.1%

Source: Client inputs used for WPI FY27 onwards

Toll segmentation

6.10 The Ministry of Road Transport & Highways has finalized a compensation formula for existing toll concessionaires to offset revenue loss from the Annual Pass scheme for non-commercial vehicles. To access the document, refer to the following **link**.

6.11 Across multiple assets, the share of annual pass trips has been rising on a monthly basis since August 5. A corresponding decline in other ticket categories including Single and Return journeys has been observed.

6.12 CJV Segmentation for FY26 has been developed using the pre annual pass segmentation till 14th August 2025, and post-annual pass segmentation from 15th August 2025 till 28th February 2026. The share of annual pass trips in March 2026 has been assumed to be the same as the share of annual pass trips in the last 10 days of February 2026.

6.13 The segmentation for CJVs in FY27 has been assumed to be the same as the estimated March 2026 segmentation as trends suggest that the share of annual pass trips have stabilised. For other vehicle categories we have analysed the historical TMS data split by ticket categories, to understand trends, as shown in Chapter 3. For the traffic and revenue forecast, FY26YTD (Apr- Feb) as discussed in the earlier sections, can be considered a normal period.

6.14 Table below shows the toll segmentation assumed for the period of forecast.

Table 6.3: Forecast toll segmentation from FY26 onwards

Ticket type	CJV (FY26)	CJV (from FY27)	Mini LCV	Bus	LCV	2A	3A/MAV	OSV
Single	32.9%	28.4%	37.9%	45.1%	35.6%	55.8%	59.8%	52.9%
Return	50.1%	51.1%	58.8%	28.3%	55.3%	44.0%	40.1%	46.9%
Monthly	1.3%	1.4%	1.6%	25.8%	8.9%	-	-	-
Annual Pass	14.2%	17.5%	-	-	-	-	-	-
Local personal	-	-	-	0.3%	-	-	-	-
Violations	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	-
Exemptions	1.5%	1.6%	1.7%	0.5%	0.2%	0.2%	0.1%	0.2%

Source: Steer analysis of Client TMS data; ticket segmentation for all vehicle categories other than CJVs are from FY26 onwards

6.15 The Annual pass compensation is separately calculated using the formula prescribed by NHAI in the same circular. Following Table 6.6 presents the Annual pass compensation computed for the toll plaza.

Table 6.4: Annual pass compensation for CJVs (in Crore)

Toll Plaza	FY26	FY27	FY30	FY35	FY38
Pampampallam	4.6	6.5	8.9	15.5	21.8

Source: Steer Analysis

Trip factors

6.16 Trip factors are used to calculate the revenue for the trips made on passes such as return, local personal, monthly passes. The trip factors assumed are based on the latest FY25 data available and listed in Table 6.5 below:

Table 6.5: Trip factors for the forecast years

Ticket Category	CJV/Mini LCV	LCV	Bus	2A	3A/MAV	OSV
Single	1	1	1	1	1	1
Return	2	2	2	2	2	2
Monthly	4,357	567	53	227	34	45
Local Commercial	1	1	1	1	1	1
Local Personal	18	1	103	1	1	1
Exemptions	1	1	1	1	1	1

Source: Steer analysis of Client TMS data

Revenue reconciliation

6.17 As part of validating the data provided by the Client, as well as our assumptions around toll calculations, we have reconciled the actual reported revenue on a daily level for the Asset against our modelled revenue.

6.18 To reconcile our modelled revenue with reported revenue, we used the FY26YTD (April to February) toll segmentation and MADT of the month, comparing it with the reported revenue for that month. The Steer revenue calculations have been built up from monthly raw traffic data files, containing monthly data and ticket type information; and the toll notifications – all shared by the client.

6.19 As shown in Table 6.6 below, depicts the difference between modelled revenue and the reported revenue is within 1%, which gives us confidence in the historical traffic and revenue data provided by the Client as well as our forecasting assumptions around the toll escalation mechanism. This analysis also validates our segmentation and trip factor assumptions used for forecasting.

Table 6.6: FY26YTD AADC (April –February) Revenue reconciliation summary (INR lakhs)

Vehicle Category	Modelled	Actual	Difference (%) Modelled vs Actual
	FY26YTD	FY26YTD	
Total	31.30	31.37	**(0.2%)**

Source: Steer comparison between modelled and reported revenue for FY26YTD (April to February)

Traffic and Revenue forecasts

6.20 Based on the traffic and revenue-related forecast assumptions discussed above, we have modelled traffic and revenue forecasts for the Asset over its full concession period. Table 6.7 below presents the AADT/PCU and revenue forecast growth rates and CAGRs on this Asset. Further, Appendix C (Detailed forecasts) presents the AADT and revenues for the forecast period.

Table 6.7: Forecast (background plus impacts) AADT for TP1 Pampampallam

Vehicle Type	FY26	FY27	FY30	FY35	FY45
CJV	13,055	14,059	17,265	23,873	43,875
Mini LCV	3,433	3,592	4,090	5,039	7,454
LCV	2,242	2,327	2,590	3,081	4,309
Bus	1,111	1,148	1,260	1,464	1,940
2A	1,568	1,627	1,875	2,361	3,683
3A	559	563	578	595	630
MAV	2,712	2,828	3,440	4,401	7,248
OSV	-	-			
AADT	**24,680**	**26,145**	**31,098**	**40,815**	**69,139**
PCU's	**38,748**	**40,731**	**48,026**	**61,694**	**1,01,089**

Source: Steer analysis

Table 6.8: Forecast (background plus impacts) AADT CAGR (%) TP1 Pampampallam

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY45	FY26-FY45
CJV	7.7%	7.1%	6.7%	6.3%	6.6%
Mini LCV	4.6%	4.4%	4.3%	4.0%	4.2%
LCV	3.8%	3.6%	3.5%	3.4%	3.5%
Bus	3.3%	3.2%	3.0%	2.9%	3.0%
2A	3.8%	4.8%	4.7%	4.5%	4.6%
3A	0.6%	0.9%	0.6%	0.6%	0.6%
MAV	4.3%	6.7%	5.1%	5.1%	5.3%
AADT	**5.9%**	**6.0%**	**5.6%**	**5.4%**	**5.6%**
PCUs	**5.1%**	**5.6%**	**5.1%**	**5.1%**	**5.2%**

Source: Steer analysis

Table 6.9: Forecast (background plus impacts) revenue (INR crores) forecast for TP1 Pampampallam

Vehicle Type	FY26	FY27	FY30	FY35	FY45
CJV	26.9	28.8	40.3	69.8	200.9
Mini LCV	8.2	9.0	11.7	18.1	42.0
LCV	8.2	8.8	11.4	16.9	37.1
Bus	9.2	9.7	12.4	18.1	37.2
2A	13.9	14.8	19.8	31.3	75.9
3A	7.9	8.1	9.7	12.5	20.7
MAV	38.3	40.9	57.7	92.4	237.6
OSV	-	-	-	-	-

Vehicle Type	FY26	FY27	FY30	FY35	FY45
Total Revenue	**112.7**	**120.3**	**163.1**	**259.1**	**651.4**

Source: Steer analysis; CJV revenue is inclusive of annual pass compensation

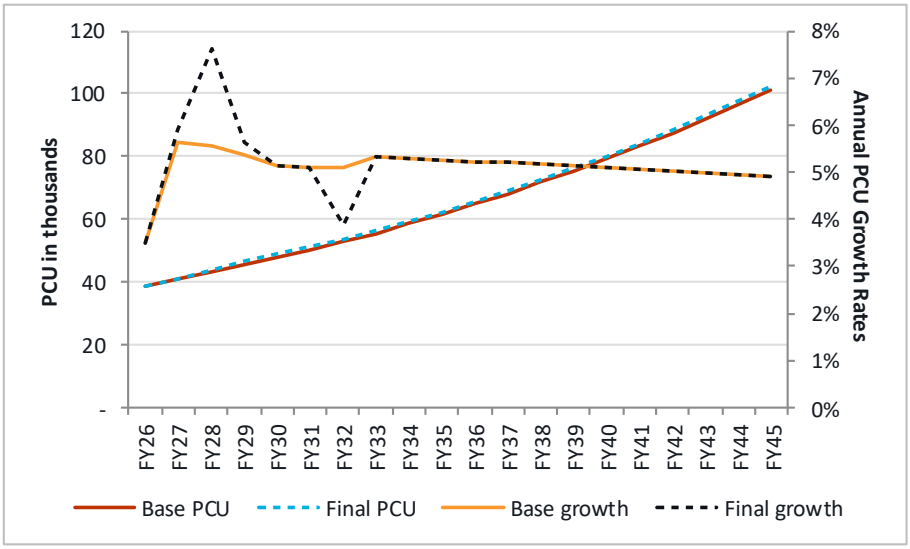
Table 6.10: Forecast (background plus impacts) revenue CAGR (%) for TP1 Pampampallam

Vehicle Type	FY26-FY27	FY27-FY30	FY30-FY35	FY35-FY45	FY26-FY45
CJV	7.1%	11.9%	11.6%	11.2%	11.2%
Mini LCV	10.0%	9.1%	9.0%	8.8%	9.0%
LCV	7.1%	9.0%	8.2%	8.2%	8.2%
Bus	5.8%	8.3%	7.8%	7.5%	7.6%
2A	6.4%	10.1%	9.6%	9.3%	9.3%
3A	3.2%	6.0%	5.2%	5.1%	5.2%
MAV	7.0%	12.1%	9.9%	9.9%	10.1%
Total revenue	**6.8%**	**10.7%**	**9.7%**	**9.7%**	**9.7%**

Source: Steer analysis

6.21 As presented in Table 6.8 above, CAGRs (FY26-FY38) in terms of PCUs for the final (background plus impacts) growth rates is 6.8% for the period of the concession.

Figure 6-1: Traffic and growth rates for forecast PCUs - Background and final, TP1 Pampampallam



Source: Steer analysis

Upside and Downside cases

Upside and Downside scenario assumptions

6.22 We have developed our base case scenario considering a balanced view on the risks associated with input assumptions around GDP growth and traffic growth elasticities. There is always a risk that the outturn values of these inputs will vary as compared to the assumptions taken due to exogenous impacts, e.g. GDP growth could be influenced both positively and negatively by the impact of monsoons, export-import balances, political changes etc.

6.23 Similarly, traffic growth elasticities could be influenced by increased efficiencies achieved by technology, large shifts in commodity prices globally, changes in local manufacturing practices. However, at this stage we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

6.24 Further, network developments are highly dependent on governmental directions, policies, legal and financial measure which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside (pessimistic) case. However, at this stage, we consider that the base case represents a central case scenario given the risks of variation of input assumptions

6.25 To account for the possible variations in the growth drivers, we are also presenting an Upside (optimistic) and a Downside (pessimistic) scenario. These scenarios are defined by the following variations from the base assumptions:

Table 6.11: Summary of Macro-economic Assumptions for upside and downside cases

Input	Upside	Downside
Macro Assumptions		
GDP/GSDP	+1% every year	-1% every year
WPI	+1% every year	-1% every year
Elasticities	+ 10%	- 10%

Source: Steer analysis

6.26 Further, network developments are highly dependent on governmental directions, policies, legal and financial measure which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside (pessimistic) case. However, at this stage, we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

Impacts-Upside Case

6.27 The upside case impacts included in forecasts are summarised in below.

Table 6.12: Summary of impacts on the Assets

Development	Year of Impact	Change in impact w.r.t base case	Magnitude of impact TP1 Pampampallam
Plakkad – Kozhikode greenfield expressway construction	FY30 - 50% FY31 – 100%	+25% of base case	MAV: 3%
Construction Recovery	FY28 – 50% FY29 – 100%		3A: 2.3% MAV: 6.3%

Source: Steer analysis of OD data;

Impacts-Downside Case

6.28 The downside case impacts included in forecasts are summarised in below.

Table 6.13: Summary of impacts on the Assets

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact TP1 Pampampallam
Plakkad – Kozhikode greenfield expressway construction	FY30 - 50% FY31 – 100%	-25% of base case	MAV: 2%
Construction Recovery	FY28 – 50% FY29 – 100%		3A: 1.4% MAV: 3.8%

Source: Steer analysis of OD data;

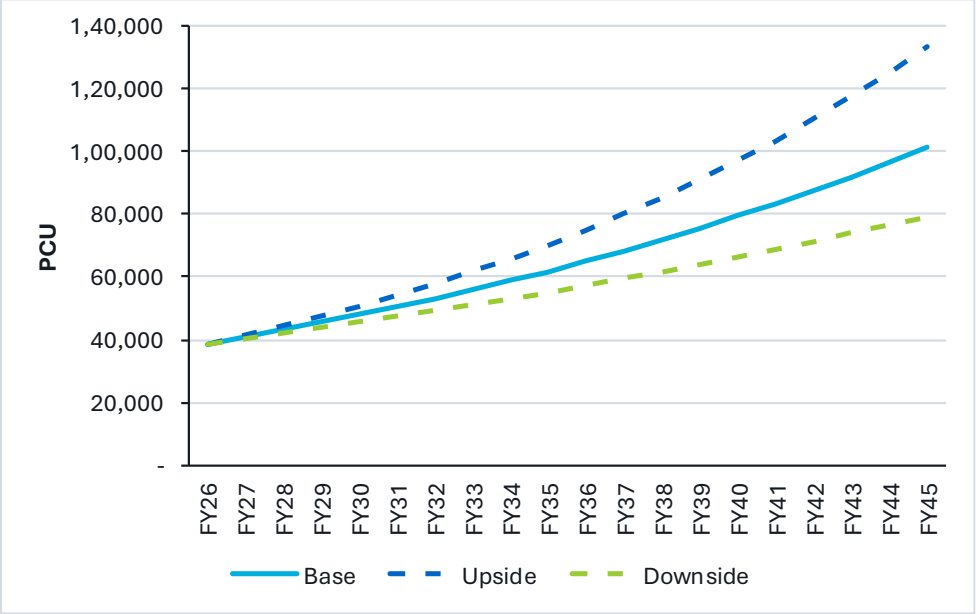
6.29 Based on the above assumptions for upside and downside scenarios, the following table summarizes the upside potential and downside risks associated with the PCU and the revenue for Pampampallam toll plaza at the end of the concession i.e. FY45.

Table 6.14: Upside potential and Downside PCU scenario – FY45

Toll Plaza	Upside Potential	Downside Risk
Pampampallam	31.8%	(21.6%)

Source: Steer Analysis of client data

Figure 6.2: Long-term PCU forecasts for TP Pamapampallam including upside and downside scenarios



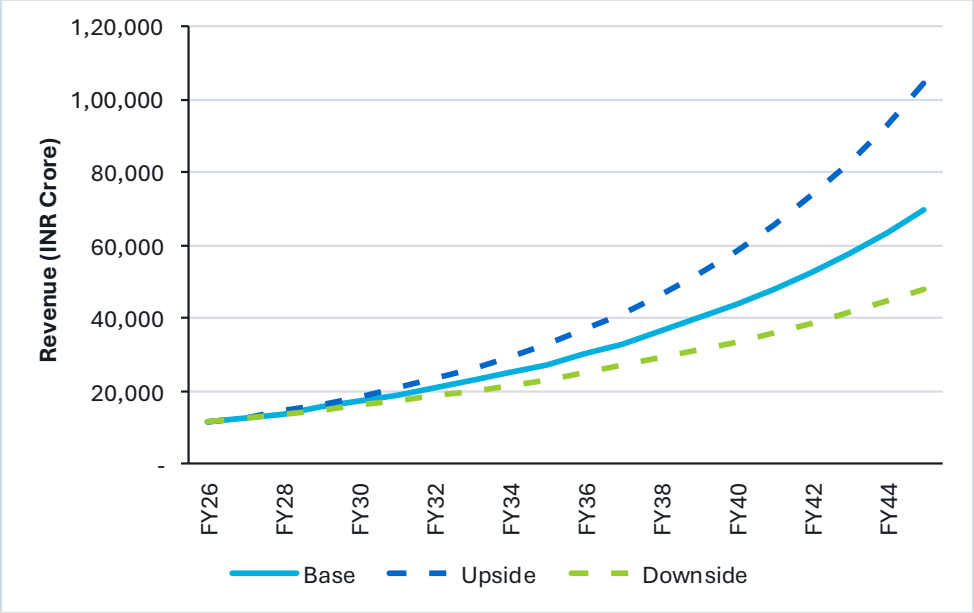
Source: Steer Analysis

Table 6.15: Upside potential and Downside Revenue scenario – FY45

Toll Plaza	Upside Potential	Downside Risk
Pampampallam	50.3%	(30.8%)

Source: Steer Analysis

Figure: 6.3: Long-term revenue forecasts for TP1 including upside and downside scenarios



Source: Steer Analysis

6.30 Revenue projections exhibit variability in both the upside and downside cases, driven by fluctuations in macro-economic factors such as WPI, GDP/GSDP, elasticities and the network impacts.

Summary outlook

6.31 Kerala is largely a consumption driven economy, and the state has significant cement and other construction material demand carried in commercial vehicles due to large scale construction activities undertaken in the State. Given the presence of Cochin international port, and the BPCL refinery at Kochi, POL items move between Coimbatore (Tamil Nadu) and Kochi (Kerala) as well.

6.32 The state's per capita income has historically remained higher than national per capita income levels. As of FY24, this ratio stood at 1.6 times the national benchmark[1], highlighting Kerala's growth story as largely driven by the services sector, (that contributed to 64% of state GSVA in FY24). The tertiary sector's high contribution consists primarily of tourism- and pilgrimage-related traffic, as well as the rapidly growing financial services sector. While the sub-sector of hotels and restaurants has grown at a CAGR of 6.5% between FY12 and FY24, the corresponding growth in the financial services sector has been 6.8%.

6.33 Overall, passenger traffic on the Asset is primarily driven by tourism and leisure travel from nearby states such as Tamil Nadu and Karnataka. After being significantly impacted during FY20 and FY21 due Covid-19 lockdowns across the state and country, passenger traffic rebounded strongly post reopening of the state after easing of Covid-19 restrictions, with tourist arrivals registered at over 2.2 crores in 2024.[4] Bus traffic also returned along with cars during that time, further adding to overall traffic recovery on the Asset post easing of the pandemic-related restrictions.

6.34 Commercial traffic observed on the Asset is driven by demand for construction material in various parts of Kerala where materials are sourced from neighbouring Tamil Nadu. This

movement is also related to POL products moving out of Kochi and into Tamil Nadu and other parts of the country further north and east of the Asset.

6.35 The demand for construction materials has remained strong due to several infrastructure projects that have been taken up in the vicinity of the Asset – the widening of NH66[6], construction of the Lulu Mall in Kottayam[7] and the construction of Government Medical College, Idukki[8]

6.36 Overall, we retain a positive outlook for the Asset as it serves as the primary route for tourism-related travel in Kerela and Tamil Nadu. The positive outlook for the underlying growth drivers on the corridor also include construction activity within the state, which we expect to remain strong over the medium term as major construction activities and infrastructure projects in the state will continue to keep demand buoyant. Finally, the continued focus of the state government on harnessing Kerala's tourism potential also bode well for the Asset and will both directly and indirectly allow for sustained growth on the Asset – both for passenger vehicles, as well as construction related truck volumes

Our findings and estimates in this report are based on our understanding from the site visit, analysis of primary data available both from surveys and the toll management system (both historical and current), macroeconomic assumptions prescribed by Client, feedback from Client meetings and secondary publicly available data. There can be both positive and negative risks associated with assumptions and the forecasts using them as summarised below

Appendices

A Top 10 OD Pairs

A.1 Further to the OD analysis presented in Chapter 3 this appendix presents the top 10 OD pairs at each toll plaza. Please see this data for both CJVs and Bus and, 3 Axles and MAVs combined below.

Table A.1: Top 10 OD pair shares at TP1 Pampampallam: CJVs and Buses

	OD Pair	Share
1.	Palakkad-Coimbatore	26%
2.	Thrissur-Coimbatore	4%
3.	Coimbatore-Cochin	4%
4.	Palakkad-walayar	3%
5.	Palakkad-Tiruchirapalli	3%
6.	Palakkad-Chennai	3%
7.	Kozhikode-Coimbatore	2%
8.	Palakkad-Salem	2%
9.	Kollam-Coimbatore	2%
10.	Palakkad-Bengaluru	1%

Source: Steer analysis

Table A.2: Top 10 OD pair shares at TP1 Pampampallam: MAVs

	OD Pair	Share
1.	Palakkad-Coimbatore	11%
2.	Coimbatore-Cochin	7%
3.	Thrissur-Coimbatore	4%
4.	Bengaluru-Cochin	4%
5.	Kozhikode-Coimbatore	3%
6.	Chennai-Cochin	2%
7.	Kollam-Coimbatore	2%
8.	Palakkad-Tiruchirapalli	2%
9.	Palakkad-Chennai	2%
10.	Karnataka-Cochin	1%

B Data collection exercise

B.1 To validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

3 days TVC count

Table B.1: 3-day TVC counts at TP1 Pampampallam

Date	Source	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
10-03-2026	TVC	9,904	2,513	3,227	1,186	1,631	626	3,003	1	22,091
11-03-2026	TVC	9,580	2,630	3,272	1,156	1,619	650	3,195	1	22,103
12-03-2026	TVC	9,972	2,602	3,270	1,165	1,611	689	3,332	-	22,641

Source: Steer analysis

Table B.2: WADT TVC vs TMS

	Source	CJV +Mini LCV	LCV	Bus	2A	3A+ MAV	OSV	Total
TP1	TVC	12,400	3,256	1,169	1,620	3,832	1	22,278
	TMS	12,727	2,474	1,102	1,811	3,848	4	21,965

Source: Steer analysis

Zone list

Table B.3: Zone list used for OD analysis

Zone No	Zone name	Description/State
1	Alathur	Palakkad
2	Erimayur	Palakkad
3	Kunissery	Palakkad
4	Vadakacherry	Palakkad
5	Puthucode	Palakkad

Zone No	Zone name	Description/State
6	Chittlamcherry	Palakkad
7	kavaserri	Palakkad
8	Tarur	Palakkad
9	Kuzhalmannam	Palakkad
10	Vilayannur	Palakkad
11	Kottai	Palakkad
12	Nenmara	Palakkad
13	Parali	Palakkad
14	Pirayiri	Palakkad
15	Palakkad	Palakkad
16	Thenkurissi	Palakkad
17	kannadi	Palakkad
18	mathur	Palakkad
19	mampad	Malappuram
20	Kannambara	Palakkad
21	Kuthiran	Thrissur
22	Pallatheri	Palakkad
23	Kanjikode	Palakkad
24	Kava	Palakkad
25	Elapully	Palakkad
26	pampampallam	Palakkad
27	attapalam	Palakkad
28	pampubara	Idukki
29	kozhiparra	Palakkad
30	elippara	Palakkad
31	walayar	Palakkad
32	pichanur	Coimbatore
33	solakarai	Coimbatore
34	ettimadal	Coimbatore
35	boluvampatti	Coimbatore
36	mundur	Palakkad
37	chittur	Palakkad
38	kollengode	Palakkad
39	pazhayannur	Thrissur
40	chelakkara	Thrissur
41	pattikad	Thrissur
42	pallasana	Palakkad

Zone No	Zone name	Description/State
43	Krishnagiri	Krishnagiri
44	Mysuru	Mysuru
45	Bengaluru	Bangalore Urban
46	Erode	Erode
47	Salem	Salem
48	Chennai	Chennai
49	Karnataka	Karnataka
50	Alappuzha	Kerala
51	Ernakulam	Kerala
52	Idukki	Kerala
53	Kannur	Kerala
54	Kasaragod	Kerala
55	Kollam	Kerala
56	Kottayam	Kerala
57	Kozhikode	Kerala
58	Malappuram	Kerala
59	Pathanamthitta	Kerala
60	Thiruvananthapuram	Kerala
61	Thrissur	Kerala
62	Wayanad	Kerala
63	Meghalaya	Meghalaya
64	Manipur	Manipur
65	West Bengal	West Bengal
66	Tripura	Tripura
67	Madhya Pradesh	Madhya Pradesh
68	Mizoram	Mizoram
69	Uttar Pradesh	Uttar Pradesh
70	Haryana	Haryana
71	Odisha	Odisha
72	Bihar	Bihar
73	Telangana	Telangana
74	Maharashtra	Maharashtra
75	Punjab	Punjab
76	Sikkim	Sikkim
77	Uttarakhand	Uttarakhand
78	Kerala	Kerala
79	Andhra Pradesh	Andhra Pradesh

Zone No	Zone name	Description/State
80	Nagaland	Nagaland
81	Jharkhand	Jharkhand
82	Rajasthan	Rajasthan
83	Gujarat	Gujarat
84	Delhi	Delhi
85	Chhattisgarh	Chhattisgarh
86	Himachal Pradesh	Himachal Pradesh
87	Goa	Goa
88	Assam	Assam
89	Jammu and Kashmir	Jammu and Kashmir
90	Arunachal Pradesh	Arunachal Pradesh
91	Ladakh	Ladakh
92	Puducherry	Puducherry
93	Daman and Diu	Daman and Diu
94	Mangaluru	Karnataka
95	Coimbatore	Tamil Nadu
96	Lakshadweep	Lakshadweep
97	Mumbai	Maharashtra
98	Thanjavur	Tamil Nadu
99	Dindigul	Tamil Nadu
100	Tiruchirapalli	Tamil Nadu
101	Dadra and Nagar Haveli	Dadara & Nagar Havelli
102	Nagercoil	Tamil Nadu
103	Andaman and Nicobar Islands	Andaman and Nicobar Islands
104	Cochin	Kerala

Source: OD data

Direction-wise commodity distribution

Table B.4: Commodity distribution towards Coimbatore at TP1 Pampampallam

Commodities	LCV	2 Axle	3 Axle	MAV
Agriculture	2%	2%	3%	1%
Groceries	14%	9%	14%	8%
Construction	2%	4%	4%	2%
Petroleum	1%	6%	6%	16%
Manufacturing	13%	9%	10%	14%
Automobiles	-	3%	2%	5%
Miscellaneous	17%	29%	21%	17%

Commodities	LCV	2 Axle	3 Axle	MAV
Metals	1%	5%	2%	3%
Empty	49%	33%	38%	32%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer analysis

Table B.5: Commodity distribution towards Palakkad at TP1 Pampampallam

Commodities	LCV	2 Axle	3 Axle	MAV
Agriculture	5%	5%	6%	5%
Groceries	26%	36%	20%	10%
Construction	10%	6%	11%	15%
Petroleum	13%	7%	19%	20%
Manufacturing	13%	16%	13%	14%
Automobiles	3%	5%	6%	10%
Miscellaneous	15%	12%	9%	6%
Metals	3%	4%	3%	8%
Empty	12%	9%	13%	12%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer analysis

Trip length distribution

Table B.6: Trip length frequency for TP1 Pampampallam

Distance range	LCV	2 Axle	3 Axle	MAV
0-100 km	16%	18%	19%	12%
100-300 km	39%	35%	29%	23%
300-500 km	15%	14%	12%	17%
500-1000 km	18%	18%	20%	29%
>1000 km	12%	15%	21%	19%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer analysis

C Detailed forecasts

C.1 Further to the summary of forecasts presented in Chapter 6, this appendix presents detailed forecasts.

Traffic forecasts

C.2 This section presents the detailed traffic forecasts for the forecast period until FY38, year of expected close of the concession. The following two tables show the traffic growth rates and AADT, respectively.

Table C.1: Forecasts for (background + impacts) AADT at TP1 Pampampallam

Vehicle Category	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total	PCU
FY27	14,059	3,592	1,148	2,327	1,627	563	2,828	26,145	40,731
FY28	15,108	3,756	1,186	2,414	1,708	569	3,024	27,766	43,114
FY29	16,178	3,923	1,223	2,502	1,791	575	3,228	29,420	45,550
FY30	17,265	4,090	1,260	2,590	1,875	578	3,440	31,098	48,026
FY31	18,406	4,262	1,298	2,679	1,961	582	3,661	32,850	50,606
FY32	19,620	4,441	1,337	2,772	2,052	585	3,852	34,660	53,182
FY33	20,962	4,635	1,379	2,872	2,151	588	4,061	36,647	56,006
FY34	22,379	4,834	1,421	2,975	2,254	592	4,228	38,683	58,790
FY35	23,873	5,039	1,464	3,081	2,361	595	4,401	40,815	61,694
FY36	25,449	5,251	1,508	3,190	2,472	599	4,634	43,103	64,913
FY37	27,107	5,469	1,553	3,302	2,588	603	4,879	45,501	68,277
FY38	28,853	5,693	1,598	3,418	2,708	606	5,134	48,010	71,793
FY39	30,687	5,923	1,645	3,536	2,834	610	5,401	50,635	75,464
FY40	32,619	6,160	1,692	3,658	2,963	613	5,680	53,384	79,298
FY41	34,652	6,405	1,739	3,782	3,098	616	5,969	56,261	83,299
FY42	36,790	6,656	1,788	3,909	3,237	620	6,271	59,271	87,474
FY43	39,037	6,915	1,838	4,040	3,381	623	6,584	62,417	91,827
FY44	41,397	7,181	1,888	4,173	3,529	627	6,910	65,705	96,364
FY45	43,875	7,454	1,940	4,309	3,683	630	7,248	69,139	1,01,089

Source: Steer analysis

Table C.2: Forecasts for (background +impacts) AADT growth rates (%) at TP1 Pampampallam

Vehicle Category	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total	PCU
FY27	7.7%	4.6%	3.3%	3.8%	3.8%	0.6%	4.3%	5.9%	5.1%
FY28	7.5%	4.6%	3.3%	3.7%	5.0%	1.1%	6.9%	6.2%	5.9%
FY29	7.1%	4.4%	3.2%	3.6%	4.8%	1.1%	6.7%	6.0%	5.6%
FY30	6.7%	4.3%	3.1%	3.5%	4.7%	0.6%	6.5%	5.7%	5.4%

Vehicle Category	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total	PCU
FY31	6.6%	4.2%	3.0%	3.5%	4.6%	0.6%	6.4%	5.6%	5.4%
FY32	6.6%	4.2%	3.0%	3.5%	4.6%	0.6%	5.2%	5.5%	5.1%
FY33	6.8%	4.4%	3.1%	3.6%	4.8%	0.6%	5.4%	5.7%	5.3%
FY34	6.8%	4.3%	3.1%	3.6%	4.8%	0.6%	4.1%	5.6%	5.0%
FY35	6.7%	4.2%	3.0%	3.6%	4.8%	0.6%	4.1%	5.5%	4.9%
FY36	6.6%	4.2%	3.0%	3.5%	4.7%	0.6%	5.3%	5.6%	5.2%
FY37	6.5%	4.1%	3.0%	3.5%	4.7%	0.6%	5.3%	5.6%	5.2%
FY38	6.4%	4.1%	2.9%	3.5%	4.7%	0.6%	5.2%	5.5%	5.1%
FY39	6.4%	4.0%	2.9%	3.5%	4.6%	0.6%	5.2%	5.5%	5.1%
FY40	6.3%	4.0%	2.9%	3.4%	4.6%	0.6%	5.2%	5.4%	5.1%
FY41	6.2%	4.0%	2.8%	3.4%	4.5%	0.6%	5.1%	5.4%	5.0%
FY42	6.2%	3.9%	2.8%	3.4%	4.5%	0.6%	5.0%	5.3%	5.0%
FY43	6.1%	3.9%	2.8%	3.3%	4.4%	0.6%	5.0%	5.3%	5.0%
FY44	6.0%	3.8%	2.7%	3.3%	4.4%	0.5%	4.9%	5.3%	4.9%
FY45	6.0%	3.8%	2.7%	3.3%	4.4%	0.5%	4.9%	5.2%	4.9%

Source: Steer analysis

Revenue forecasts

C.3 The following table presents the year-wise annual revenue forecasts for the forecast period until FY38.

Table C.3: Forecasts for (background +impacts) revenue at TP1 Pampampallam (in INR Cr)

Vehicle Category	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	35.2	9.0	9.7	8.8	14.8	8.1	40.9	126.8
FY28	38.7	9.7	10.6	9.6	16.4	8.7	46.2	139.9
FY29	44.1	10.8	11.5	10.6	18.0	9.2	51.8	155.9
FY30	49.2	11.7	12.4	11.4	19.8	9.7	57.7	171.9
FY31	54.8	12.8	13.4	12.4	21.7	10.2	64.4	189.6
FY32	61.9	14.1	14.4	13.4	23.7	10.8	71.0	209.3
FY33	68.6	15.3	15.6	14.5	26.1	11.3	78.0	229.4
FY34	77.1	16.8	16.7	15.7	28.5	11.9	84.8	251.4
FY35	85.2	18.1	18.1	16.9	31.3	12.5	92.4	274.5
FY36	95.5	19.8	19.4	18.5	34.2	13.2	102.0	302.6
FY37	104.8	21.3	20.9	20.0	37.4	13.8	112.1	330.3
FY38	118.8	23.5	22.5	21.5	40.9	14.5	123.0	364.7
FY39	131.7	25.5	24.1	23.2	44.6	15.3	135.5	399.9
FY40	146.0	27.7	26.1	25.3	49.1	16.1	149.3	439.7
FY41	160.6	29.9	27.9	27.2	53.4	16.9	163.5	479.3
FY42	179.7	32.7	30.0	29.4	58.3	17.7	179.3	527.1
FY43	199.3	35.5	32.2	31.8	63.7	18.6	196.9	578.1
FY44	222.3	38.8	34.8	34.3	70.0	19.7	217.0	637.0
FY45	246.0	42.0	37.2	37.1	75.9	20.7	237.6	696.4

Source: Steer analysis

Control Information

Prepared by

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002, India
+91 124 441 8650
www.steergroup.com

Prepared for

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1,
Sector 16, Noida- 201301 (UP, India)

Steer project/proposal number

23741311

Client contract/project number

Transit 11

Author/originator

Vineet Karlapalem

Reviewer/approver

Vaibhav Gupta

Other contributors

Shipra Bhatia, Ayushman Rai, Samridha K, Harshit Garg

Distribution

Client: Steer:

Version control/issue number

Date

April 2026

steer

steergroup.com

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence of Lucknow-Raebareli Tollway Limited

Cube Highways Fund Advisors Private Limited
Our ref: 23741311

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence of Lucknow-Raebareli Tollway Limited

Prepared by:

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002,
India

+91 124 441 8650
www.steergroup.com

Prepared for:

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower,
Plot No. C - 1, Sector 16, Noida- 201301 (UP, India)

Client ref: Transit 11.0
Our ref: 23741311

Steer has prepared this material for Cube Highways Fund Advisors Private Limited. This material may only be used within the context and scope for which Steer has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer shall be deemed to confirm their agreement to indemnify Steer for all loss or damage resulting therefrom. Steer has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

steer

Table of Contents

	Disclaimer	iv
Glossary Items		**vi**
1	**Introduction**	**1**
	The assignment	1
	Our approach	2
	Contents of this report	3
2	**The Asset**	**4**
	Introduction	4
	Strategic network	4
	Concession and tolling details	6
	Alternate Routes	8
3	**Traffic description**	**10**
	Introduction	10
	Historical Trends	10
	Key findings of the TVC data analysis	17
	Key findings of origin-destination analysis	18
	Conclusions	24
4	**Socio economic context and traffic growth**	**26**
	Introduction	26
	Population growth	26
	Economic Indicators	27
	Economic growth	30
	Forecasts for growth drivers	33
5	**FY26 Base year AADT and Traffic growth Analysis**	**36**
	FY26 Base year AADT estimates	36
	Estimation of background elasticities	38
	Overview	38
6	**Forecast: Network overlays and forecasts**	**41**
	Introduction	41
	Analysis of potential network/developmental impacts	41
	Revenue forecasting assumptions	42
	Traffic and Revenue forecasts	45
	Target revenues and modification of concession period	47
	Upside and Downside cases	48
	Summary outlook	51

Figures

Figure 2-1: Asset location in the regional network context 4

Figure 2-2: Asset context 5
Figure 2-3: Typical cross-sections and toll plazas on the Asset 6
Figure 3-1:Ticket-segmentation for CJV at TP1 Dakhina Sekhpur 15
Figure 3-2: Ticket-segmentation for MAV at TP1 Dakhina Sekhpur 15
Figure 3-3 :Comparison between TVC and TMS daily traffic data on TP1 Dakhina Sekhpur 17
Figure 3-4: Comparison between vehicle shares from TVC and TMS WADTs 18
Figure 3-5: Zonal influence at TP1 Dakhina Sekhpur 20
Figure 3-6: Internal-external distribution at TP1 Dakhina Sekhpur 21
Figure 3-7: Commodity distribution at TP1 Dakhina Sekhpur 23
Figure 3-8: Trip length distribution TP1 Dakhina Sekhpur 24
Figure 4.1: Annual growth – Index of Industrial Production (FY16-FY26YTD) 28
Figure 4-2: Total number of registered motor vehicles in India (per 1000 population) 29
Figure 4-3: Per Capita Income 29
Figure 4-4: YoY Growth in expenditure components of GDP 30
Figure 4-5: Month on Month IIP performance 31
Figure 4-6: Industrial components of GVA 31
Figure 4-7: Evolution of Uttar Pradesh's state GDP and national GDP 32
Figure 4-8: Sectoral Distribution of GSDP of Uttar Pradesh for 2024 33
Figure 4-9: GDP-GSDP forecast 35
Figure 6-1: Alternate routes and Asset shown against the regional network context 41
Figure 6-2 Forecast PCUs and growth rates at TP1 Dakhina Sekhpur 47
Figure 6.3: Long term PCU forecasts for Dakhina Shekpur TP including upside and downside scenario 50
Figure 6.4: Long term Revenue forecasts for Dakhina Shekpur TP including upside and downside scenario 50

Tables

Table 1.1: Scope of work and sources of data 1
Table 2.1: Summary of concession 6
Table 2.2: Single toll rates on the Asset (INR), applicable FY26 7
Table 3.1: PCU factors 10
Table 3.2: Average Daily Traffic at TP1 Dakhina Sekhpur 11
Table 3.3: Revenue (in INR Cr) at TP1 Dakhina Sekhpur, and AADC (in INR Lakhs) 13
Table 3.4: Typical ticket types sold at NHAI plazas 13
Table 3.5: Ticket segmentation for LCV, Bus, 2A and 3A at TP1 Dakhina Sekhpur FY26 YTD 16
Table 3.6 Data collection schedule 16
Table 3.7 WADT from TVC counts 17
Table 3.8: Sample rates for OD data 19
Table 3.9: Zone aggregations for zonal influence analysis 19
Table 3.10: Average Trip Length (in km) 24
Table 4.1: CAGR of population in India 26

Table 4.2: Population Growth in Uttar Pradesh and India (2012-2024)	27
Table 5.1: SCF values for TP1 Dakhina Sekhpur	37
Table 5.2: Adopted base estimates AADT	37
Table 5.3: Identified growth drivers to model traffic growth	39
Table 5.4: Passenger and Commercial growth with normalised FY22 – TP Dakhina	39
Table 5.5: Elasticity recommendations for the Asset (Lucknow-Raebarelli)	40
Table 6.1: Impact of Ganga Expressway	42
Table 6.2: Increase in Car and Bus traffic due to Kumbh Mela	42
Table 6.3: Trip factors at TP1 Dakhina Sekhpur	43
Table 6.4: Segmentation for forecast years, TP1 Dakhina Sekhpur	43
Table 6.5: Annual pass compensation for CJVs (in Crore)	44
Table 6.6: WPI growth forecast assumptions	44
Table 6.7: FY26YTD Revenue reconciliation summary	45
Table 6.8: Forecast traffic forecast for TP1 Dakhina Sekhpur	45
Table 6.9: Forecast Traffic CAGR (%) for TP1 Dakhina Sekhpur	45
Table 6.10: Forecast Revenue for TP1 Dakhina Sekhpur (INR crores), including the Annual Pass Compensation revenue for CJV	46
Table 6.11: Forecast Revenue growth CAGR (%) for TP1 Dakhina Sekhpur	46
Table 6.12: Target Revenues for Extension 1	47
Table 6.13: Target Revenues for Extension 2	47
Table 6.14: Summary of Macro-economic Assumptions for upside and downside cases	48
Table 6.15: Summary of impacts on the Assets	49
Table 6.16: Summary of impacts on the Assets	49
Table 6.17: Upside potential and Downside PCU scenario – FY51	49
Table 6.18: Upside potential and Downside Revenue scenario – FY51	50

Appendices

A	**Top 10 OD Pairs**
B	**Data Collection Exercise**
C	**Detailed Forecasts**

Disclaimer

This report has been produced for the sole benefit of Cube Highways Pvt. Ltd ("the Client"). The report may only be relied upon by Approved Addressees in accordance with the terms of our engagement letter. This Report (the "Report") is confidential and disclosed only for information purposes, and it may not be relied upon by any party other than the Client or a Party to a Reliance Letter, and Steer: a) makes no warranty, expressed or implied, with respect to the use of any information or methods disclosed in this Report; and b) assumes no liability with respect to the use of any information or methods disclosed in this document. Any such party by its acceptance or use of this Report releases Steer from any liability for direct, indirect, consequential, or special loss or damage whether arising in contract, warranty, express or implied, tort or otherwise.

The Report is based on standard professional efforts, and information available to us at the time the review took place and is subject to time and budget constraints of the Report's scope of work. This Report, information and statements contained herein, are all based on third party data provided to us, or sourced by us, and Steer has not sought to establish the reliability of the data, except as specifically stated in the Report. Steer bears no responsibility for the results of any actions taken based on third-party data.

Certain forward-looking statements in the Report are estimates based on interpretations or assessments of information available at the time of writing. The Report is thus to be viewed as an assessment that is time-relevant, specifically referring to conditions at the time of the review. Steer undertakes no obligation to update the Report for any reason.

While the estimates contained in the Report are not precise forecasts, they do represent, in our view a reasonable expectation of the future, based on information we have been provided with or sourced. However, the estimates necessarily rely on numerous assumptions and judgements, and circumstances may occur over the timeframe of the project that go counter to these assumptions and judgements and that affect the project's realized revenues. Actual events may differ from those assumed, and events are subject to change. Therefore, Steer makes or provides no warranty, whether implied or otherwise, as to the accuracy of forward-looking information presented. Further, it is important to note that forecasts presented represent long term growth profiles; the results for individual time periods may vary from forecasted values.

Traffic Consultant developed the relationships in the models used to produce the forecasts for the projects based on data available through February 2026. This report does not consider variations in traffic performance due to changing macro and force majeure events such (but not limited to) as global wars, economic uncertainty (high inflation, global recession), and changes in the regulatory environment. The situation remains dynamic and is subject to significant change in the short and medium term. In this challenging context, Traffic Consultant has produced base forecasts with a view on a possible scenario for the traffic forecasts. However, it is important to note that this is only one view, and there continues to remain uncertainty as to the short-term, intermediate or prolonged effects of and responses to such macro-economic/force majeure events. As a result, no assurance can be provided by Traffic Consultant that the scenarios and assumptions Traffic Consultant has identified will prove to be accurate. Given the uncertainty inherent in this scenario, Traffic Consultant advises that all readers of the Report consider the Report in the context of their own assessment of the impact of such events.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE ISSUE OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES.

Glossary Items

Acronym	Meaning
2A/ Truck	2 Axle/ Truck
3A	3 Axle
AADT	Annual Average Daily Traffic
BOT	Build Operate Transfer
CAGR	Compound Annual Growth Rate
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DPR	Detailed Project Report
ETC	Electronic Toll Collection, also referred to as FASTag
FY	Financial Year
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HAM	Hybrid Annuity Model
HCM/ EME	Heavy Commercial Vehicles/ Earth Moving Machinery
IE reports	Independent Engineers' reports
IHMCL	Indian Highway Management Company Limited
INR	Indian Rupees
InvIT	Infrastructure Investment Trust
km	Kilometre
LCV/ LGV	Light Commercial Vehicles/ Light Goods Vehicle
LMV	Light motor vehicles
MADT	Monthly average daily traffic
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NSDP	National State Domestic Production
OD	Origin Destination
OSV	Oversized vehicles
PCU	Passenger Car Unit: it is a measure of standard vehicle unit to convert all vehicle classes to a single unit by using PCU factors to compute total traffic on an Asset.
Q1	Quarter 1 of financial year, from April to June
Q2	Quarter 2 of financial year, from July to September
Q3	Quarter 3 of financial year, from October to December
Q4	Quarter 4 of financial year, from January to March
RNP	Registered Number Plate
SCF	Seasonality Correction Factor

Acronym	Meaning
SH	State Highway
T&R	Traffic and Revenue
TMS	Traffic Management System
TVC	Traffic Volume Count
WADT	Weekly average daily traffic
YTD	Year to Date

1 Introduction

The assignment

1.1 The Cube Highways Fund Advisors Private Limited (the "Client") has commissioned Steer Davies Gleave India Private Limited ("Steer") for a traffic due diligence to be carried out on the Lucknow Raebareli Toll Road (hereafter called "Asset"). This report forms part of the annual fair market valuation (FMV) undertaken as part of the "Transit 11 project". This report presents an update of the traffic and revenue forecasts based on primary surveys undertaken in 2026, actual traffic data available up to February 2026 and latest macro-economic assumptions.

1.2 The Asset Lucknow Raebareli consists of the single toll road section with its own special purpose vehicle (SPV). For the purpose of this report, we hereafter call the toll plaza on the Asset as TP1.

- Lucknow Raebareli Tollway Limited: LRTL: TP1 – Dakhina Sekhpur

1.3 Our scope of work for the traffic and revenue forecasts process includes:

Table 1.1: Scope of work and sources of data

Scope of work	Data source
• Review of historical Traffic Management System (TMS) data, Vendor reports and documents	• Provided by client for the period between Oct'20 and Mar '26, with FY26 base AADT and forecasts considering data up to Feb'26
• Historical analysis and forecasts for baseline growth, including; – Background growth, and – Seasonality trends	• Historical toll plaza data provided by Client and benchmarks from Asset in the vicinity wherever long time series historical data was not available
• Validation of revenue reported FY26 YTD	• TMS data provided by the Client • Revenue reconciliation is done using toll plaza traffic and ticket type data to calculate revenue and to reconcile it with toll plaza reported revenue
• Origin Destination (OD) analysis to understand growth drivers: – Zonal influence and Top OD pairs – Commodity distribution – Trip length distribution	• Origin Destination (OD) surveys undertaken by a survey agency appointed by Steer. The surveys were undertaken on 23rd Feb 2026.
• Analysis of upcoming network improvements and other developments, that may have future impacts on traffic	• Secondary research and Steer's in-house experience of working in the vicinity of the Asset. Impact analysis conducted by Steer based on

Scope of work	Data source
	Generalised Journey Cost spreadsheet-based analysis
• Historical revenue analysis and forecasts for revenue estimation, including: – Toll segmentation and trip factors – Overloading shares	• Calculated from historical data provided by the Client
• Final traffic growth forecasts including baseline growth rates and potential future impacts	• Elasticity based base growth and potential impacts from secondary research, Asset historical traffic performance and Steer's in-house experience of working on toll roads on the corridor
• Toll revenue estimation for the entire concession, including toll evolution	• Toll evolution based latest on toll notification published by National Highway Authority of India (NHAI); and the latest Wholesale Price Index (WPI) trends as shared by the client.

Our approach

1.4 Our approach follows well-established practices for forecasting ongoing traffic growth on an existing/brownfield Asset. The analysis has focused on two sets of issues, namely:

- understanding the traffic that is currently using the Asset; and
- identifying how and why that traffic is likely to change in the future.

1.5 To understand the current traffic on the Asset, we have analysed traffic data from multiple independent sources:

- Client-provided secondary data, including:
  - TMS data starting October 2020 to February 2026. The historical traffic and revenue presented in Chapter 3 considers information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.
  - Concession agreement and toll notifications for FY25 and FY26.
  - Previous studies related to traffic and revenue
  - Steer-commissioned OD survey on 23rd Feb 2026 to validate any change in growth drivers and travel patterns as part of earlier commission.
  - Steer-commissioned a three-day TVC survey in 2026 as part of earlier commission
- We undertook revenue reconciliation for FY26 YTD, by building up revenue from the traffic reported by each of the toll plazas and subsequently matching them to the reported revenue for FY26YTD using the prevalent toll rates and reported segmentation/toll-frequencies for FY26YTD. This has been a key part of our analysis to validate the segmentation/toll-frequency assumptions, and the Annual Average Daily Traffic (AADT) reported for each of the toll plazas.

1.6 The estimation of future traffic demand on the Asset was undertaken using:

- Estimating FY26 base year position by applying seasonality correction factors (SCFs) on the 11 months of actual traffic data available (April to February).
- Secondary research to understand plans for new developments and the progress of ongoing developments on the Asset.
- Developing a bespoke growth model for each Asset/plaza/toll class to forecast year-on-year traffic growth from FY26 to the end of concession period.
- Investigating the elasticity of historical traffic growth compared to state (GSDP) and national (GDP) growth. Where historical data is limited, we have benchmarked the Asset against Steer's knowledge base (e.g., similar Asset types in the same state or on the same corridor), to derive appropriate elasticities.
- Applying our elasticities to independent GDP forecasts as provided by the client.
- Identifying and analysing the potential impacts of any relevant changes to the competitive position of each Asset – these include impacts of changes to road network such as expressways and opening of competitive modes of travel.
- Identifying and analysing any other potential impacts on traffic and revenue on each Asset – these include axle load norms, axle shift for heavy goods, FASTag implementation.
- Considering changes in the trends of segmentation over time and making suggestions for changes in exemptions in the future
- Preparing traffic and revenue forecast for the Asset for the complete length of concession. The analysis here includes the specific impacts of network, or other exogenous factors specific to the Asset. We have developed a set of forecasting assumptions for three scenarios: a base case and upside and downside scenarios.

Contents of this report

The report has been divided into the following chapters:

- Chapter 1 introduces the methodology and approach to undertake the traffic and revenue due diligence;
- Chapter 2 describes the key characteristics of the Asset and its surrounding road network, primarily based on site visits;
- Chapter 3 summarises the current and historical traffic on the Asset, including results from the TMS, TVC and OD analysis;
- Chapter 4 presents the socio-economic context of the corridor and the region/state containing the Asset, along with our approach and results on estimating background traffic demand growth; and
- Chapter 5 presents our baseline year forecast and summarises our results on estimating background traffic demand growth
- Chapter 6 summarises our assessment of network impacts and presents concession traffic and revenue forecasts for the Asset along with the assumptions for upside and downside case

2 The Asset

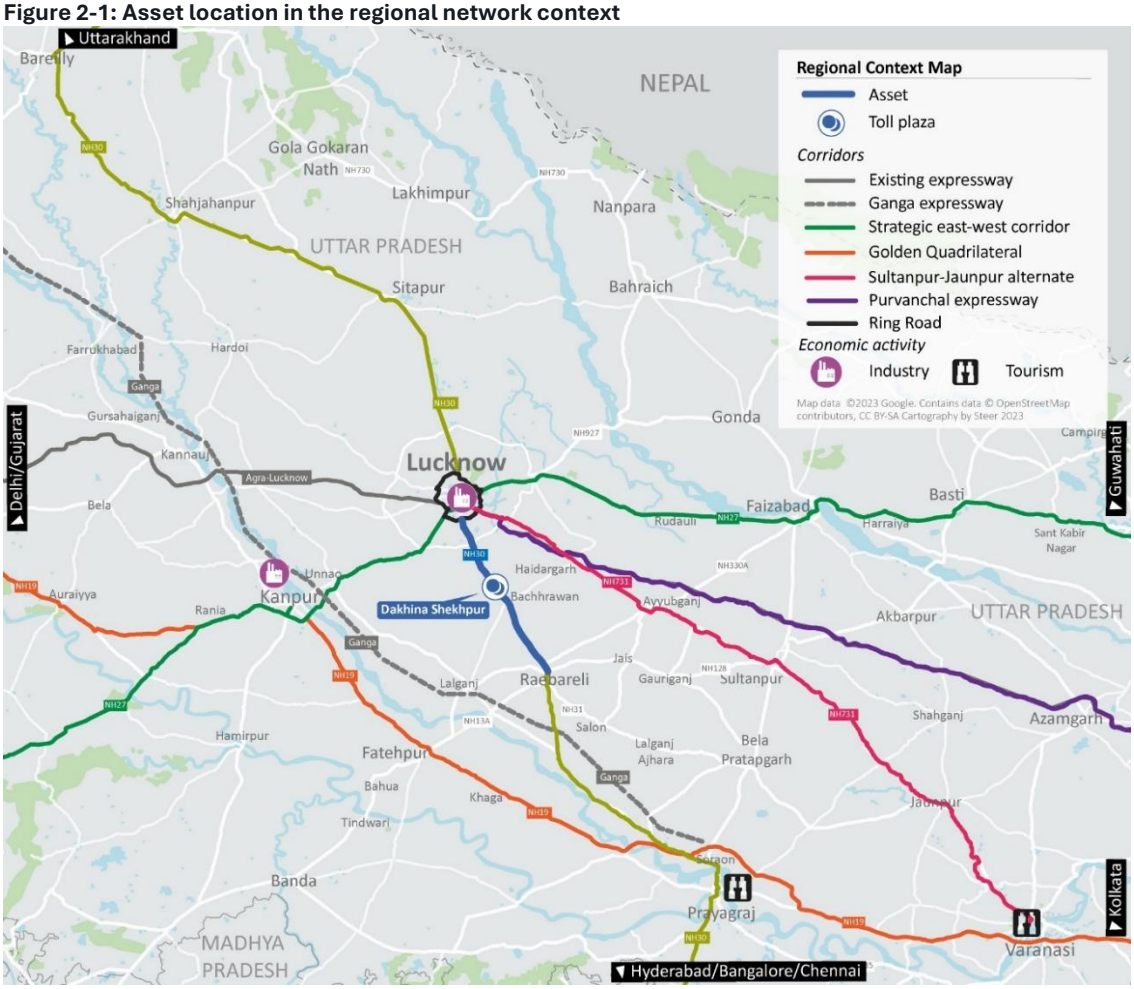
Introduction

2.1 This chapter provides a description of the Asset, based on both primary data (from site visits), and our understanding of the region and network surrounding the Asset. It covers the strategic network context, followed by key economic activities and network developments around the Asset.

Strategic network

2.2 The Asset is situated in the state of Uttar Pradesh, connecting the state capital Lucknow to Raebareli in the south-central part of the state. The following figure shows the regional road network in which the Asset is located.

Figure 2-1: Asset location in the regional network context



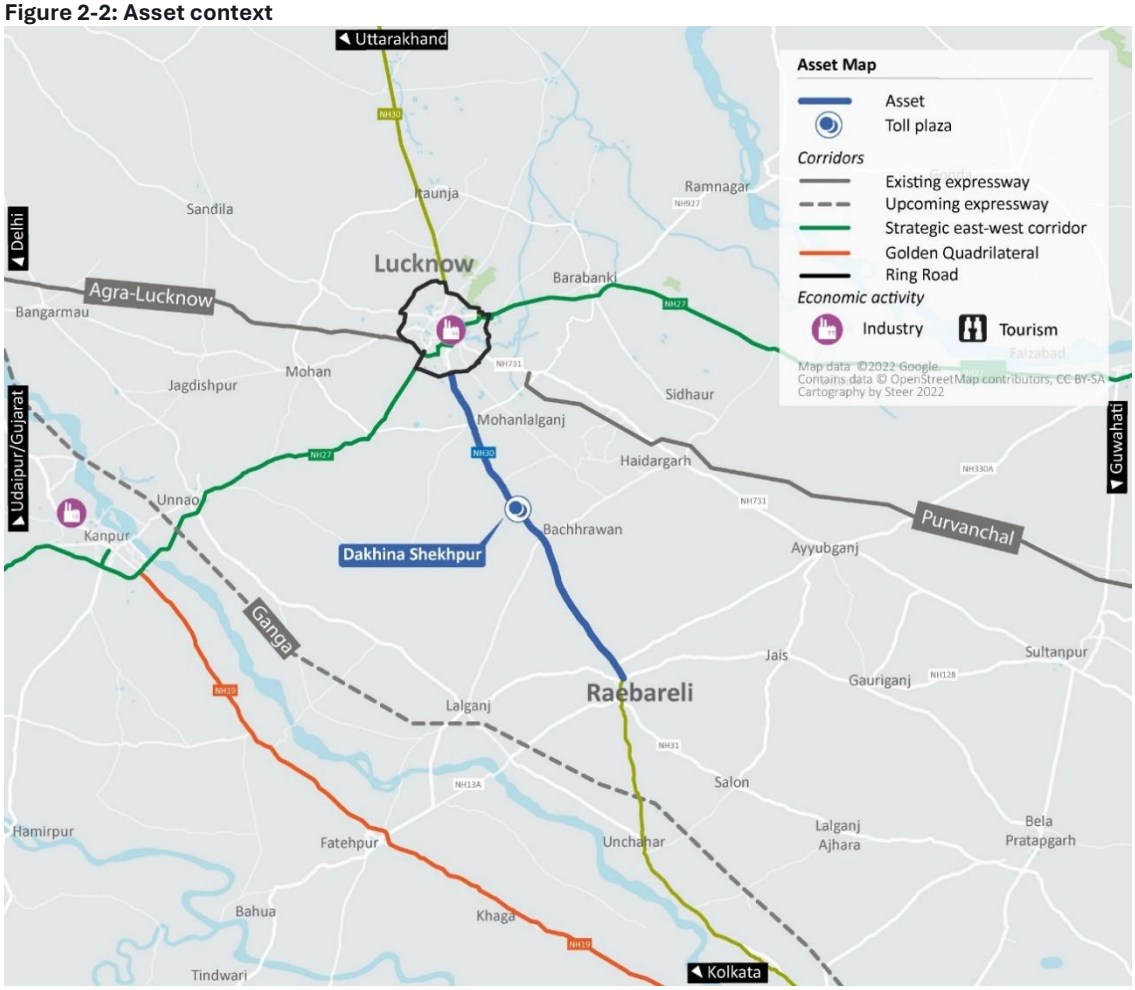
Source: Steer cartography using OpenStreetMap data

2.3 This Asset primarily caters to two different types of movements:

- **Short-distance trips** undertaken majorly by passenger vehicles such as cars for work/business and tourism/pilgrimage purposes wherein the movement is predominantly local between Lucknow, Raebareli, Prayagraj, Varanasi and Mirzapur. Further, LCVs cater to the local demand generated by two large consumption centres – Lucknow and Raebareli. Short-distance trips made by MAVs feeds into the local consumption demand and carries significant amount of Cement from the cement factories (Birla Cement, ACC Cement) in the vicinity.
- **Long-distance trips** undertaken by heavy trucks between Punjab, Haryana, Uttar Pradesh, West Bengal, and Jharkhand, traversing through this route, carrying a mix of commodities such as agriculture/grocery items, metal, cement, petroleum, and manufacturing items.

2.4 This Asset is a 70 km long toll road which forms part of the NH 30 in Uttar Pradesh. It is a four-lane road with one toll plaza, namely, **Dakhina Sekhpur (TP1)** at Km 42.5 (closer to Lucknow). The following figure provides a closer view of the Asset in the context of its immediate surroundings.

Figure 2-2: Asset context



Source: Steer cartography using OpenStreetMap data

Concession and tolling details

2.5 The toll plaza on the Asset has been operational since March 2015, and the client took over its operations in October 2020. There are still 25 years left in the concession period which ends in FY51. The following table presents a summary of the concession.

Table 2.1: Summary of concession

Particulars	Details
State	Uttar Pradesh
Highway and lane configuration	NH 30 four lane
Toll plazas	TP1: Dakhina Sekhpur
Length (km) as per concession agreement, applicable	TP1: 70 km
Commencement of operations	TP1: March 2015
Operated by Client since	October 2020
Concession period	30 years
Last year of concession	FY51

Source: Client data and Concession agreement

Figure 2-3: Typical cross-sections and toll plazas on the Asset

Source: Steer site visit

2.6 Tolls are collected across various vehicle categories as per toll notification and rates as shown in the following table. The toll plaza has dedicated ETC/FASTag lanes for electronic tolling. Like the other National Highway plazas, the Asset has Single, Return, Local Commercial, Local Personal, Monthly and Local Monthly tickets.

Table 2.2: Single toll rates on the Asset (INR), applicable FY26

Type of Vehicle	Single Journey Fee
CJV	120
LCV	190
Bus/Truck	400
3A	435
HCM/EME/MAV	625
OSV	765

Source: NHAI Revision of User Fee Rate w.e.f 01.04.2025

Key economic activities

2.7 Uttar Pradesh remains the most populous state in India, accounting for approximately 17% of the country's total population. This large consumer base continues to be a significant driver of economic activity and a key contributor to the national GDP. The state's real GSDP is estimated to be around INR 36 trillion for FY26 and for FY25 is pegged at INR 30.25 trillion, reflecting robust growth from previous years. Between FY12 and FY25, Uttar Pradesh's real GSDP has grown at a CAGR of 6.1%, indicating a steady upward trajectory. In FY26, the state contributed around 10% to India's national GDP, up from 8.9% in FY25[1]

2.8 Agriculture is the most important and the biggest sector in the state economy followed by the services sector comprising of travel, tourism, real estate, insurance and the finance industry.

2.9 The capital city of Lucknow, which is on one end of the Asset and a major traffic generator, is the main centre of administration, governance, commerce, technology, culture and tourism in the state with the presence of major IT companies, automotive industry, handicrafts sector (which accounts for 60% of the total exports from the state), education sector and research and development institutes. In recent times, it has emerged to become a growing IT hub, wherein the UP government has awarded the IT Special Economic Zone project to HCL Technologies in Lucknow.

2.10 With the vision of the current government to make UP a $1 trillion economy, the capital city Lucknow has received more than 2000 crore of investments to open 1000 acres integrated textile park under PM Mitra Park[2]. In the E-commerce sector, over 400 crore worth of investments from players like Amazon, Flipkart have been made in Lucknow in 2023 largely to create warehousing facilities.[3]

2.11 The fact that the city connects to five national highways and several districts, the Lucknow Outer Ring Road (ORR) recently constructed will ease congestion and improve connectivity.

---

[1] As per data from the Ministry of Statistics and Program Implementation (MoSPI)

[2] PM Mitra Park in Lucknow and Hardoi to provide employment opportunities to skilled manpower of UP : Shri Goyal - India Shipping News

[3] India warehousing: Warehouse leasing in Lucknow on the rise: CBRE - The Economic Times (indiatimes.com)

2.12 Raebareli, situated on the other end of the Asset, is a centrally located city in the state which is well connected to other parts of the state as well as the country, with four national highways traversing through the city. It is home to some of the major industries such as the Rail Coach Factory at Lalganj, National Thermal Power Corporation (NTPC) power plant at Unchahar, where the coal for the plant is supplied from Jharkhand and MP Birla Cement Plant at Raebareli and at Kundanganj.

2.13 The existing cement plants in the region, have the potential to propel growth of the cement industry in the surrounding areas of the Asset. For instance,- MP Birla group has a cement plant in Raebareli with a capacity of over 1.3 million tonnes per annum (MTPA) as per 2023 figures, it has also acquired a plant in Kundanganj to augment the capacity from 1.2 MTPA to 3.6 MTPA.[4,5] ACC limited has a plant in Tikaria at distance of 50 km from Raebareli with plans to further augment capacity. The Asset enables the transport of cement from Varanasi and Prayagraj to the western region of the state and caters to the movement of cement trucks from plants located in Mirzapur, Sonbhadra and Raebareli to their Lucknow regional offices or distributors in Lucknow.

2.14 The Asset plays an integral part in connecting the rest of the country and the state to two of the key cities of great religious importance-- Prayagraj known for the confluence of the rivers Ganga, Yamuna and Saraswati (Triveni Sangam), Magh Mela and Kumbh Mela, and Varanasi known for its temples and famous ghats along river Ganga. Varanasi is also known for commercial activities such as silk sarees and clothing. These two destinations also attract people from other parts of the world.

2.15 Evidently, the Asset is a key enabler of movement of both the passenger and commercial traffic within the state wherein the local car movement makes up for majority of the trips between places such as Lucknow, Raebareli, Bachhrawan, Fatehpur, Varanasi and Lalganj to name a few.

Alternate Routes

2.16 Several network developments have taken place in the recent past which have affected traffic volumes on the Asset. These include phase-wise (1 and 2) completion of Varanasi Ring Road, and six laning of Kanpur – Prayagraj- Varanasi highway (NH19). Further, state highway network in the region went through upgradation. For example, the SH-13 which intersects with the Asset at Bachhrawan was upgraded from a level crossing to a road over-bridge (ROB). This has enabled sand carrying trucks from Banda to easily access areas like Barabanki and Bahraich, which are located to the northeast of the Asset.

2.17 The Raebareli–Unchahar section of NH-30, located south of the project corridor, is has recently undergone upgradation to a 4-lane configuration. The project is part of the NHAI's broader initiative to enhance key stretches of the National Highway network, with the objective of improving regional connectivity, reducing travel time, and facilitating safer and more efficient movement of goods and passengers across UP. This is expected to improve the LOS for long-distance trips. With Rarbareli bypass still incomplete the full

[4] **List of MP Birla Cement Factories in India - best cement in india**

[5] **https://economictimes.indiatimes.com/industry/indl-goods/svs/cement/birla-corp-looks-to-scale-up-cement-capacity-by-over-60-per-cent/articleshow/70672908.cms?from=mdr,** accessed on 24 March 2021

benefit of completion of 4 laning upto Prayagraj has not resulted in immediate increase in traffic volumes.

2.18 Further, as a part of road infrastructure development in the state, India's longest six-lane access-controlled expressway, the Ganga Expressway is set to be open to users by Q1FY27. This expressway will significantly reduce travel time and improve LOS moving from Eastern to Western part of the state. With a section of expressway running parallel to the Asset, we assume share of Asset's traffic to shift once the expressway opens. Hence, an impact of this shift has been assumed in Chapter 6. For the sections including Varanasi- Sultanpur, Purvanchal expressway we assume that the expected shift has already happened. Hence no further impact has been assumed.

3 Traffic description

Introduction

3.1 This chapter outlines the current traffic and revenues on the Asset, as also Steer's analysis of origin-destination (OD) data and traffic count data. This covers data, which was collected as a part of this study, previous studies, as well as data provided by the Client.

3.2 Traffic demand data is generally collected and analysed to understand the vehicle distribution and volume of demand currently using the Asset, while OD data is used to obtain a better understanding of travel patterns, trip lengths, trip purposes and areas of influence in the vicinity of the Asset, as also the commodities being moved by goods vehicles. This analysis, combined with our understanding of the Asset (based on our site visits), enables us to identify the key drivers of demand on the Asset.

3.3 Actual toll plaza data is used as the basis from which the current/base year annual average daily traffic (AADT) is established. This data is typically provided by the Client and independently analysed and validated by Steer using traffic volume count (TVC) information.

3.4 The below sections present historical traffic and revenue information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.

PCU Factor assumption for reporting

3.5 The PCU values have been taken from 'IRC 64:1990- Guidelines for Capacity of Roads in Rural Areas'. For MAV, based on the discussion with the Client, we have referred to the rigid and trailer splits in the latest TVC counts conducted in 2023 for calculating the effective PCU for MAVs. For rigid trailer trucks we have assumed a PCU factor of 3, whereas for trailer trucks we have assumed a PCU factor of 4.5. These factors have been used to arrive at the PCU values presented in the following sections.

Table 3.1: PCU factors

Vehicle Category	PCU Factor
CJV/ Mini LCV	1.0
LCV	1.5
Bus/2A/3A	3.0
MAV*	3.36
OSV	4.5

Source: Steer analysis and IRC64,1990, * Rigid-Trailer PCU

Historical Trends

3.6 The following table explains the historical traffic recorded by vehicle class from October 2020 to February 2026 (as provided by the client). There is lack of long-term historical data

available on the Asset since tolling was started by the client only in October 2020 and both the available years of data, FY21 and FY22 were impacted by COVID-19 related restrictions. Therefore, starting FY23 traffic on the Asset has started to get normalised with similar travel patterns recorded in FY24-25. Q3 and Q4 of FY25 were impacted by MahaKumbh-2025, thereby leading to increase in the traffic on the Asset. FY26 YTD exhibits similar travel pattern as FY24.

3.7 As discussed in chapter 2, the Asset is located between two major cities, with Lucknow being a major traffic generator for the Asset. Thus, the Asset observes healthy proportion of passenger traffic.

Table 3.2: Average Daily Traffic at TP1 Dakhina Sekhpur

Vehicle category	FY21*	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
CJV	10,832	10,031	10,351	10,747	12,358	12,459	6.4%
LCV	715	587	452	402	404	380	(5.6%)
Bus	664	604	656	689	778	764	5.2%
2A	616	623	523	450	444	457	(4.4%)
3A	636	526	371	237	186	187	(20.4%)
MAV	1,460	1,146	794	691	694	668	(5.6%)
OSV	-	-	-	-	-	0	
Total	**14,924**	**13,518**	**13,147**	**13,218**	**14,864**	**14,915**	**4.3%**
PCU	**22,553**	**20,017**	**18,344**	**17,797**	**19,517**	**19,496**	**2.1%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21); FY26 AADT represents the full year actual (April to March)

Table 3-3: Tollable Traffic at TP1 Dakhina Sekhpur

Vehicle category	FY21*	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
CJV	9,531	9,193	9,499	9,810	11,230	11,379	6.2%
LCV	694	528	437	397	398	375	(4.9%)
Bus	662	601	654	687	776	762	5.2%
2A	610	615	516	443	438	451	(4.4%)
3A	634	517	370	235	182	185	(20.7%)
MAV	1,456	1,141	791	689	690	662	(5.8%)
OSV	-	-	-	-	-	0	
Tollable AADT	**13,587**	**12,596**	**12,267**	**12,263**	**13,716**	**13,814**	**4.0%**
Tollable PCU	**21,177**	**19,013**	**17,429**	**16,813**	**18,331**	**18,357**	**1.7%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21); FY26 AADT represents the full year actual (April to March)

3.8 As per the table above, it can be observed that 2A/3A/MAV traffic on the Asset showed a consistent decline/flatlining trend between FY21-26.

3.9 The increase in CJV and Bus volumes observed in FY25 can be attributed as a temporary increase, due to the Mahakumbh Mela held in January – February 2025. CJV volumes in FY26 continues to growth at a steady rate on month-on-month basis.

3.10 The trend of tollable traffic on the Asset has largely followed that of total traffic where Cars recorded 1.3% growth and Busses recorded 1.8% degrowth in FY26 compared to FY25.

3.11 3A category has declined in the FY21-26 period. The reduction in 3A volume is a result of the declining demand for 3A vehicles, which are being replaced by 2A and MAV's. MAVs offer higher tonnage capacity making them more cost-effective for transporters. While the increase in 2A volume reflects the growing preference for these vehicles due to favourable changes in the legal permissible loads for 2As and their suitability for e-commerce-related freight, particularly high-value, low-volume goods over medium to long distances. This is consistent with our discussion with various transporters and OEMs across the country who are favouring 2A and 5A vehicles for commodity movement due to better unit economics.

3.12 Based on the OD results it is observed that the share of North India/Western UP moving to Eastern UP using the Asset has reduced by ~20%, which has led to fall in traffic in FY23-24. The same is validated by the comparison of trip lengths where the share of 3A and MAV’s travelling over 500kms has reduced by ~20% and ~30% in the latest set of surveys which were carried out. Our observation is that this traffic has shifted to existing alternate routes by virtue of improved connectivity and quality upgradation, including:

- Lucknow – Kanpur - Prayagraj – Varanasi six lane corridor via NH19
- Lucknow – Sultanpur- Varanasi four lane corridor via NH731
- Lucknow – Purvanchal Expressway- Sultanpur- Varanasi via Expressway and NH731

3.13 These sections offer better level of service to truck users. Further the local traffic dependent on cement factories feeding into local construction in the region has also been impacted due to construction completion and covid related disruptions resulting in non-revival of such traffic on the Asset.

3.14 A combination of all the above-mentioned factors has resulted in lower volumes of traffic on the Asset. This has been explained further in Chapter 6 as well.

Historical Revenue

3.15 The CJVs are the biggest revenue contributors on the Asset, with a ~47% share in FY26 followed by MAVs (20% share). Lower per day collection in FY22 compared to FY21 can be attributed to COVID-19 with restricted traffic movements. FY23 and FY24 recorded a similar average per day collection of INR 17 lakhs. A recovery to an AADC of ~INR 19 lakhs daily can be seen in FY25 with AADC increasing in the months of November to March majorly driven by increase in the CJV traffic due to MahaKumbh. FY26 recorded a AADC of INR 19 lakhs.

3.16 The following table shows the reported revenue by vehicle type at each toll plaza for period FY21 to FY26:

Table 3.3: Revenue (in INR Cr) at TP1 Dakhina Sekhpur, and AADC (in INR Lakhs)

	CJV	LCV	Bus	2A	3A	MAV	OSV	Total	AADC	AADC Growth
FY21	13.8	1.6	2.8	2.9	3.4	11.3	-	35.8	21.3	-
FY22	25.9	2.6	5.6	6.7	6.2	19.9	0.0	66.8	18.3	(14.1%)
FY23	29.0	2.3	6.6	6.1	4.7	14.7	0.0	63.5	17.4	(4.9%)
FY24	30.9	2.2	7.2	5.4	3.0	13.2	0.0	62.0	16.9	(2.6%)
FY25	36.7	2.3	8.5	5.4	2.4	13.7	0.0	68.9	18.9	11.5%
FY26	37.4	2.2	8.5	5.8	2.5	13.7	0.0	70.1	19.2	1.8%

Source: Steer analysis of Client data, (FY21* From Oct-20 (last 12 days) to Mar-21; AADC represents Average Annual Daily Collection; FY26 represents full year actual (April to March).

Toll Frequencies

3.17 Toll frequency or segmentation is typically the share of each ticket category recorded for a particular vehicle type. This is based on the toll policy which forms a part of the concession agreement. Each vehicle category has different segmentation. As a part of historical analysis, we calculate the toll frequency for each vehicle category from the monthly data shared by the client. The most common ticket categories observed on a typical National Highway are: Single, Return, Monthly, Local and Exempt. Given the local nature of traffic, some toll plazas offer custom made local passes to attract the local commuters to opt for these passes instead of evading toll.

3.18 The following are the types of tickets being sold at the plazas of the Asset.

Table 3.4: Typical ticket types sold at NHAI plazas

Category	Description
Single	Allows the vehicle to cross the toll plaza once
Return	Allows for a return journey within a day with a 50% discount on the return trip.
Monthly Pass	Discounted single entry ticket for users who undertake multiple trips within a month can buy the monthly pass.
Local Personal	Discounted single entry pass only for private cars of residents within 20km radius of toll plaza
Local Commercial	50% discount on single trips for commercial vehicles registered in the local district. This pass allows single entry only
Exemptions	Officially exempted vehicles like ambulance, police cars, key political personnel etc.

3.19 Further, the toll plazas also record violations which are non-paying users, who are not officially allowed under exemptions category but are forced exemptions. For some Assets, the Exemption and violations are at time reported together.

3.20 Generally, over the period the shares of single/return/monthly tickets tend to stabilise within 2-3 years of Asset operations. Only in the cases where trip patterns are expected to change significantly due to urban expansion is where we expect these shares to change over the period or due to some external events impacting the trip patterns.

3.21 FY21 was impacted due to the mandatory implementation of FASTag as a mode of payment, where users were now paying via an online payment system instead of cash payments at the toll plaza. FY22 traffic and travel patterns were impacted by the second wave of COVID-19 in Q1 and Q2. With FY21 and FY22 being impacted these external events, the segmentation began to stabilise from FY23 onwards and reached steady state starting FY24.

Introduction of Annual pass for CJVs

3.22 The National Highway Authority of India launched the "The FASTag Annual Pass" on August 15, 2025, a prepaid facility that allows private CJVs to travel across designated National Highway and National Expressway toll plazas. The annual pass is worth INR 3,000. The pass is valid for one year or 200 trips, whichever occurs first and is applicable only to private, non-commercial vehicles (Car/Jeep/Vans).

Since this pass has been introduced by NHAI, it is not valid on

- state governed toll plazas on highways
- state governed toll plazas expressways
- Parking areas or other non-NHAI tolling locations

3.23 The pass can be activated via the RajmargYatra app or the NHAI website, and links directly to an existing FASTag.

The Annual Pass aims to:

- Promote cashless and seamless travel on national highways.
- Reduce congestion and improve traffic flow at toll plazas
- Provide cost-effective travel for frequent users of NH/NE toll roads.

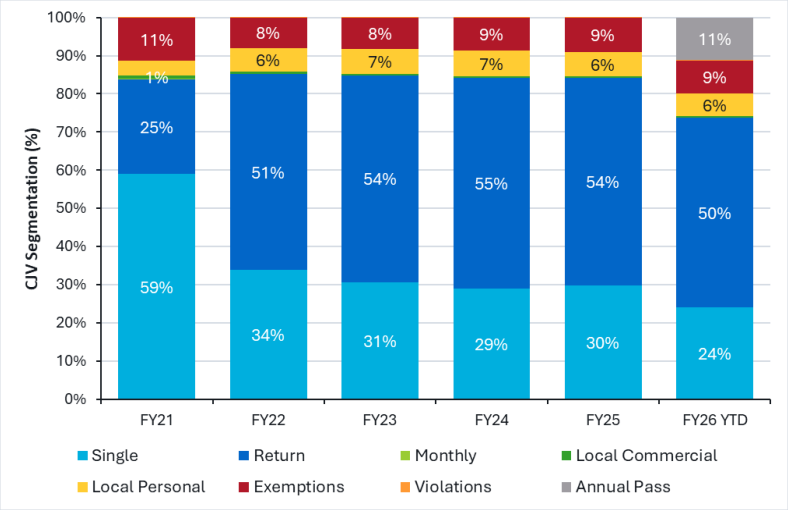
Share of traffic by payment type

3.24 The figures below show the ticket segmentation for CJV and MAV categories. It can be observed that both CJVs are dominated by return journeys whereas MAVs prefer single tickets.

3.25 FY23 onwards there have not been any pandemic related disruptions, or any one-time events which could affect traffic movement on the Asset. Hence, the segmentation as derived from the historical data of FY23 onwards has been considered as the normal segmentation on the Asset for all other vehicle categories except for the CJVs.

3.26 In case of the CJVs which dominate the traffic profile on the Asset the segmentation is computed considering the penetration of Annual Pass. CJV segmentation for FY26 and FY27 is detailed out in "Toll segmentation" section in Chapter 6.

Figure 3-1:Ticket-segmentation for CJV at TP1 Dakhina Sekhpur



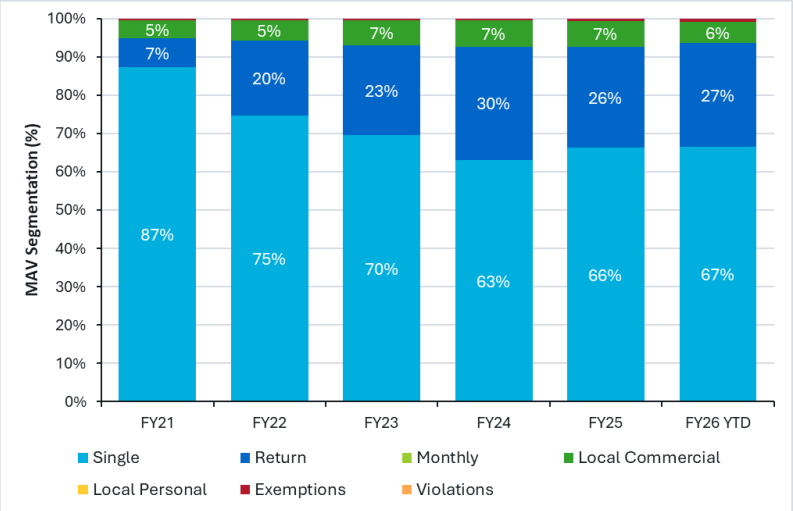
Source: Steer analysis of the Client data (FY21 has data for Oct-20 to Mar-21); FY26YTD includes data till Feb'26

3.27 The share of single journeys on the Asset has exhibited a consistent decline, reducing from 59% in FY21 to 30% in FY25. Correspondingly, the share of return tickets has increased significantly from 25% in FY21 to 54% in FY25. This notable shift in journey segmentation became particularly evident in FY22, primarily driven by the implementation of FASTag in FY21, which enabled 24-hour return ticket to be availed.

3.28 While CJV segmentation stabilised from FY23, the introduction of annual passes in August 2025 has led to a reduction in single and return trips. It may be noted that the share of exemptions and local personal trips have remained at the FY25 levels.

3.29 Given the Asset's proximity to major urban clusters, it caters to a significant volume of daily commuters. This localised movement often results in multiple trips through the toll plaza within the same day, contributing to the higher share of return tickets among CJV users.

Figure 3-2: Ticket-segmentation for MAV at TP1 Dakhina Sekhpur



Source: Steer analysis of the Client data (FY21 has data for Oct-20 to Mar-21); FY26YTD includes data till Feb'26

3.30 For MAVs, approximately 60-70% of all tickets sold on the Asset have been 'Single' tickets, since FY23. This can be attributed to the long-distance traffic observed on the Asset which can also be validated by higher average length of MAVs in the OD results. Around 30% of share of return and local commercial trips can be attributed to proximity of the Asset to the urban cluster of Lucknow.

3.31 FY26YTD segmentation shows that LCVs, 2As and 3As trucks primarily use single tickets (45%, 56% and 46%), while buses overwhelmingly prefer return tickets (92%), reflecting their structured round-trip operations. Return ticket usage is also high for LCVs (53%), 2As (40%) and 3As (51%), indicating frequent round-trip freight movement. Local commercial and exemption categories remain minimal, while monthly and local personal passes see no recorded usage, suggesting that most vehicle movements are intercity rather than local.

Table 3.5: Ticket segmentation for LCV, Bus, 2A and 3A at TP1 Dakhina Sekhpur FY26 YTD

Ticket Category	LCV	Bus	2A	3A
Single	44.9%	6.1%	56.3%	45.6%
Return	53.0%	93.4%	39.6%	51.4%
Local Commercial	0.9%	0.3%	2.8%	1.7%
Monthly	-	-	-	-
Local Personal	-	-	-	-
Violation	0.0%	-	-	-
Exemption	1.2%	0.2%	1.4%	1.3%

Source: Steer analysis of Client data

Data Collection exercise

3.32 As mentioned previously, to validate and inform various inputs used in Steer's forecasting model, we undertook primary data collection on the Asset, comprising the surveys listed in the table below. Both, the OD and TVC surveys were commissioned by Steer to a third party. While the OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas the TVC data collection involves video-graphic capture of traffic crossing the toll plazas, followed by manual counting.

Table 3.6 Data collection schedule

TP	3-day videography-based TVC			1-day OD survey			
	Start date	End date	Time (hrs)	Start date	Start time	End Date	End Time
TP1 Dakhina Sekhpur	23 Feb 2026	25 Feb 2026	00:00-23:59	23 Feb 2026	0800 hours	24 Feb 2026	0800 hours

Source: Steer analysis

3.33 It should be noted that, in our experience, traffic on national highways shows variation across the week due to the economic activities surrounding each road. To derive a representative TVC count considering daily variations, a three/seven -day traffic counts

are generally recommended. Therefore, to fully understand the impact of this weekly fluctuation on the Asset, we collected three-day counts at the toll plaza.

Key findings of the TVC data analysis

WADT estimates

3.34 Taking an average of the three-day TVC counts (23rd Feb – 25th Feb 2026, 00:00-23:59), we obtained the following weekly average daily traffic (WADT) for each toll plaza. This WADT excludes non-tollable vehicles such as tractors, two-wheelers, bullock-carts, etc., but includes officially exempt vehicles such as police cars, ambulances, emergency response vehicles, government vehicles and other vehicle types officially allowed as 'exempted' under the concession agreement.

Table 3.7 WADT from TVC counts

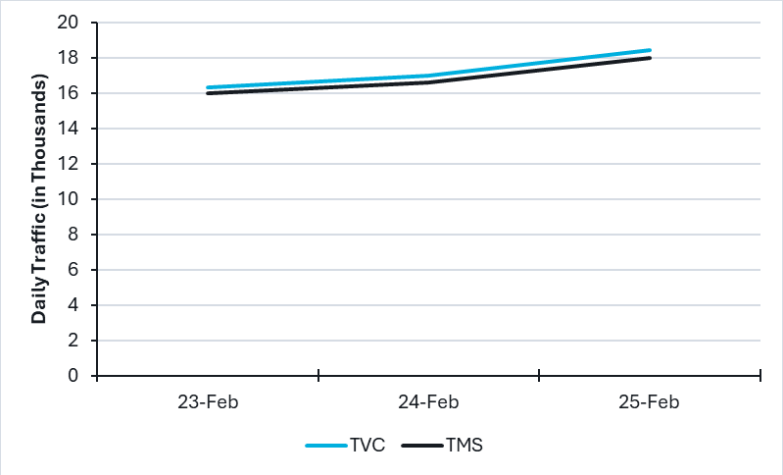
Toll Plaza	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	OSV	Total
Dakhina Sekhpur	12,664	1,617	770	840	383	223	750	-	**17,248**

Source: Steer analysis of TVC data

TVC v/s TMS analysis

3.35 Since we use the TMS data to estimate the base year MADT, we have used our TVC data to validate the TMS data on those days, as provided by the Client. The following figures show the comparison between the daily traffic observed by TVC and TMS for the toll plaza.

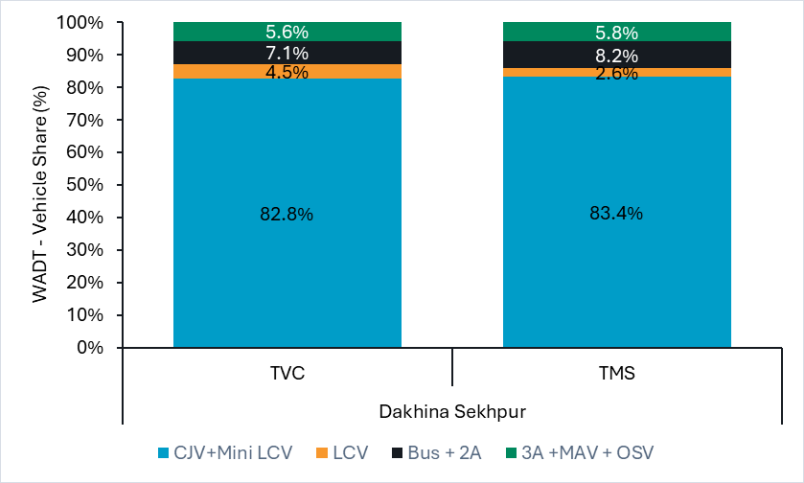
Figure 3-3 :Comparison between TVC and TMS daily traffic data on TP1 Dakhina Sekhpur



Source: Steer analysis of TVC and Client TMS data

3.36 Figure 3-4 below compares the shares of vehicle types at both toll plazas observed by the TVC and TMS data. As can be seen, whilst the share of CJVs and 3A+MAV+OSV is marginally higher for TMS compared to TVC, it is equal for bus/2A and lower for LCV category. This difference can be attributed to common misclassification of vehicle categories.

Figure 3-4: Comparison between vehicle shares from TVC and TMS WADTs



Source: Steer analysis of TVC and Client TMS data

3.37 Considering the variation between the TVC and TMS data is within ~2% Client data has been used to estimate base year traffic.

Key findings of origin-destination analysis

Overview

3.38 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Asset. As mentioned previously, the OD analysis presented here has been based on the data collected on 23rd-24th Feb 2026.

3.39 We have analysed the regional drivers of demand based on the following analyses:

- Zonal influence
- Commodity distribution
- Top OD pairs
- Trip length distribution

3.40 While zonal analysis and the list of top OD pairs help to understand 'where to and from' people and goods travel, commodity distribution sheds light on 'what' goods get transported. Trip length distribution show 'how far' vehicles and people travel, and goods get transported. This set of analyses is generally used to estimate the key drivers of traffic and aid the making of informed forecasting assumptions around traffic demand elasticities, growth drivers and exogenous impacts.

Sample rates

3.41 Sample rates help understand the reliability of OD data. They are calculated by dividing OD samples captured by the traffic counts (based on the TMS data) during the same time. The table below presents the sample rates for key vehicle type aggregations at the toll plaza. We believe that the sample rates of the OD data are reasonable for the analysis required.

Table 3.8: Sample rates for OD data

Vehicle type	TP1 Dakhina Sekhpur
Passenger (CJV+Bus)	41.8%
Goods (LCV+2A+3A+MAV+OSV)	92.9%

Source: Steer analysis of OD data

Zone Categories

3.42 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones, and influenced by various towns, cities, states and regions in the vicinity of the Asset, we have aggregated zonal data as described in the table below. The methodology behind this aggregation of zones may vary as per the characteristics displayed by the different Assets being studied.

Table 3.9: Zone aggregations for zonal influence analysis

Aggregate Zone	Description
Local	Local zones are those that fall on or very close to the Asset.
IAOI (Immediate Area of Influence)	IAOI zones are the locations which generate traffic and lie within approximately 75-150 km distance from the Asset.
Rest of State	Rest of the cities/Districts in the state that Asset lies in (other than Local/IAOI)
Delhi	Delhi NCR
North India	Uttarakhand, Haryana, Punjab, Jammu and Kashmir
Central India	Madhya Pradesh, Chhattisgarh
West India	Gujarat and Maharashtra
South India	Tamil Nadu, Karnataka, Kerala, Andhra Pradesh
East & Northeast India	West Bengal, Orissa, Jharkhand and Northeast Indian states

Source: Steer analysis

Zonal influence

3.43 The zonal influence is the contribution of the zone or the zonal aggregation to trips by a vehicle type. This section presents the zonal influence[6] at each toll plaza of each Asset, based on zonal aggregation listed in the previous sub-section. It should be noted that zonal influence is analysed on where the trip ends and not trip origination.

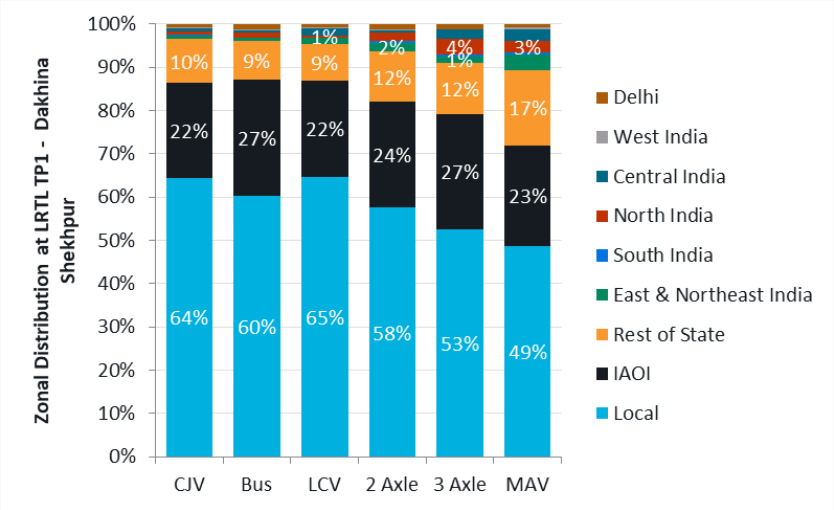
3.44 As can be seen from the figure below, there is a higher share of local trips for both the passenger and commercial vehicles wherein 64% of the influence for CJVs, 53% for 3A and 49% for MAV vehicles are from areas near the Asset. This analysis is in line with our understanding gained from the site visit, wherein a heavy influence on the traffic from the surrounding local areas and rest of the state was observed. Also, the results of the top OD

[6] For example, if out of 100 trips at a toll plaza on an Asset, 10 trips are between Hyderabad and Delhi and 90 trips are between Hyderabad and Chennai, then zonal influence of Hyderabad would be 50% since one end of all trips are at Hyderabad. Likewise, zonal influence of Delhi and Chennai would be 5% and 45%, respectively.

pair analysis, as given in the appendices, show that most of the trips originate and end in local and IAOI areas for Car, Bus and 2A trips, whereas for heavy goods traffic 3A and MAV, regions such as Kolkata, Punjab and Uttarakhand also make it to the Top OD pairs.

3.45 Outside the state of Uttar Pradesh, cities/towns in East & Northeast India such as Bihar, Jharkhand, Assam and West Bengal majorly influence the long-distance heavy goods traffic followed by those in the rest of north India such as Uttarakhand, Himanchal Pradesh, Punjab and Haryana. In short, North to East India is one of the key long-distance movements observed on the Asset, with trucks travelling from Punjab-Haryana-Moradabad-Lucknow to East India.

Figure 3-5: Zonal influence at TP1 Dakhina Sekhpur



Source: Steer analysis of OD data

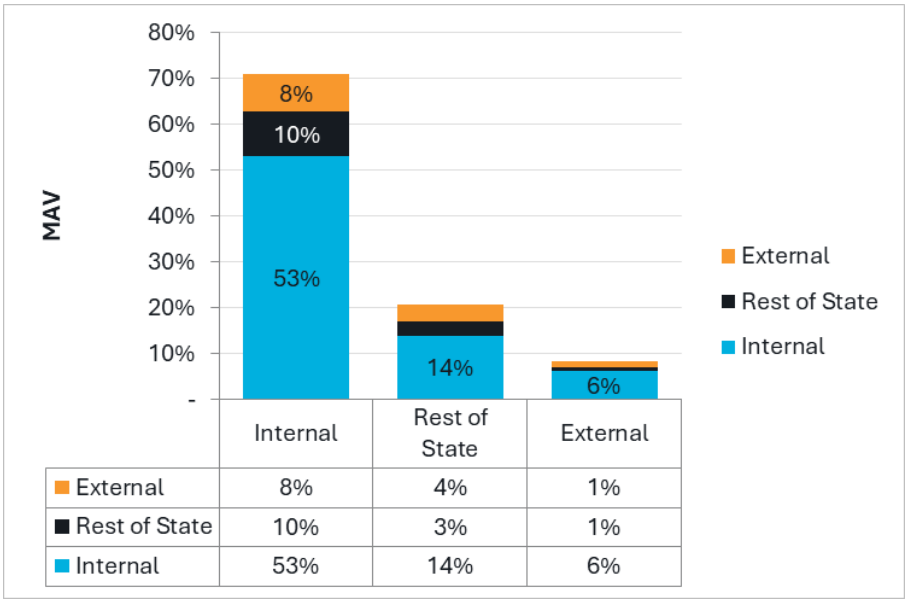
Internal External analysis

3.46 Internal-External analysis helps in identifying the trips which have both the origin and destination on the Asset (Internal-Internal or I-I), any one end on the Asset (Internal-External or I-E), or neither end on the Asset i.e., through trips (External-External or E-E). 'Internal' zones are those that were analysed as 'local' and 'IAOI' in the zonal influence analysis, i.e., lying on the Asset or in the "immediate area of influence", 'Rest of State' zones are those origins and destinations aggregated as "Rest of State" in the zonal analysis while 'External' zones are all other zones.

3.47 Figure 3.6 below show the distribution of trips based on these categories. Understandably, these reflect the observations seen in the zonal influence presented earlier, at a higher level of aggregation.

3.48 We observed that there is little external traffic of MAV (20%) on the Asset and that 53% of MAV are making I-I trips and 10%. This indicates the local nature of the traffic on the Asset.

Figure 3-6: Internal-external distribution at TP1 Dakhina Sekhpur



	Internal	Rest of State	External
External	8%	4%	1%
Rest of State	10%	3%	1%
Internal	53%	14%	6%

Source: Steer analysis of OD data

Commodity distribution

3.49 We have grouped various commodities into aggregate categories for ease of interpretation, as shown in the table below. The charts in the following sub-section present information in terms of aggregate commodity categories.

Commodity Description	Code	Combined codes used for charts
Agriculture Products / Cash crops (Wheat, Rice, Sugar cane, Maize etc.)	AGR	AGR
Cattle Food / Live Stock (sheep, goat, cow, cattle food etc)	LIV	
Perishable Items (Fruits, vegetables)	PER	GRO
Animal Products/Dairy/Eggs/Fish/Meat/Animals	DFM	
Groceries / Food items (Soap, Salt, Sugar, Pulses, Spices, Biscuits, bread, cool drinks, beer etc.)	GRO	
Building Material / Construction (Cement, Lime, Brick, fly ash, etc)	CNS	CNS
Sand/Clay	SND	
Stone (kota stone, marble, Granite, Aggregate stone etc.)	STN	
Ceramic	CRM	
Petroleum Products (Oil, LPG, CNG, etc.)	PET	PET
Chemicals / Fertilizers (Acids, Fertilizers etc.)	CHM	
Electrical/Manufacturing items (Electronic items, Medicine, Leather, Wine, Rubber/ Tyre, Plastics, Cloth, Paper etc.)	MAN	MAN
Raw Wood, Cork & Wood Products, Furn	WUD	
Machinery / Spare parts	MAC	

Commodity Description	Code	Combined codes used for charts
Automobiles (Finished products, auto parts, Car/bike manufacturing, New Chassis)	AUT	AUT
Basic / Fabricated Metals (Iron, Steel / Metal)	MET	MET
Mining Minerals (Coal, Gypsum, Cobalt etc.)	MIN	
Empty	EMT	EMT
Container	CTR	MSC
Miscellaneous (Parcel, Courier, Household items etc.)	MSC	
Passengers	PAS	
Scrap	SCR	

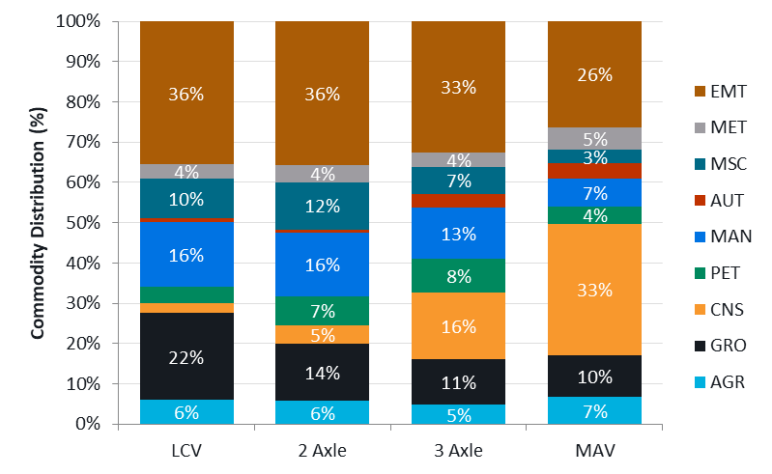
Source: Steer Analysis

3.50 The following figures present the commodity distribution for goods vehicles at the toll plaza, at the total level and also split by direction, towards Lucknow and towards Raebareli. Construction goods were the key commodity category moved by MAV vehicles accounting for 33% of the share followed by agriculture/groceries that formed 17% of the MAV traffic. Manufactured goods like household items was the key commodity being carried by light-goods vehicles accounting for 16% of the 2A and LCV traffic each.

3.51 A high percentage of vehicles moving grocery and miscellaneous items are observed as this Asset connects two major cities in Uttar Pradesh and these cities have a large inherent demand of fast-moving consumer goods. The agricultural and grocery items are carried over both short-distances from and to local places such as Lucknow, Raebareli and Kanpur, and over long-distances such as Uttarakhand, Punjab and Delhi. A similar mix of short and long distances trips are observed for vehicles carrying manufactured goods.

3.52 We observe all vehicle categories except MAV are higher travelling empty. This is because MAV vehicles carrying construction material make up for a 33% share moving towards Lucknow. This higher share of construction in this direction can be probably attributed to cement being transported from the plants near Raebareli to Lucknow. Overall, vehicles moving towards Lucknow seem to carry a more diverse mix of commodities than those travelling in the direction of Raebareli.

Figure 3-7: Commodity distribution at TP1 Dakhina Sekhpur



Source: Steer analysis of OD data

Trip length analysis

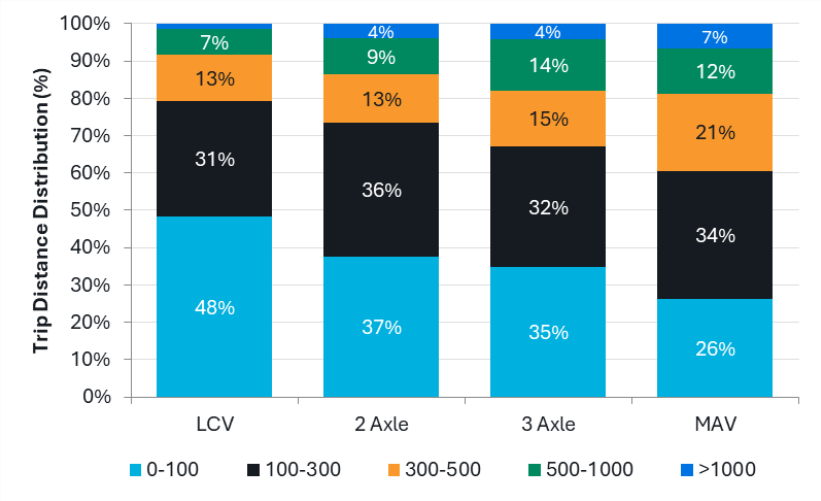
3.53 Trip-length distribution provides the distance-based profile of various vehicle types. This aids in validating assumptions around the share of macro-economic drivers, inputs from zonal influence and toll segmentation. For ease of interpretation, we have categorised distances into 5 groups – local (0-100 km), short-distance (100-300 km), medium-distance (300-500 km), long-distance (500-1000 km) and very-long-distance (+1,000 km). The trip distances were derived as driving distances from Google Distance Matrix Tool based on zonal coordinates for OD pairs.[7]

3.54 Supporting the observations made in zonal & internal-external analysis in the previous sections, Figure 3-8 below highlights that about 70% of light goods vehicles like LCVs and 2 Axles travel shorter distances up to 300 kms, largely contributing to the local movements on the Assets.

3.55 Even amongst heavier goods vehicles, 60-67% of the trips made by 3A and MAV are within 300km. It suggests that the Asset is largely local in nature. This is also observed in the internal-external analysis and is also brought out by the average trip lengths as shown in the Table 3.10.

[7] Google Distance API is a tool that is available on a chargeable basis from Google Maps Platform. Link: **https://developers.google.com/maps/documentation/distance-matrix/start**. Travel distance and time information for driving/transit under various congestion scenarios can be extracted through this tool by using macro-enabled Excel, R, etc.

Figure 3-8: Trip length distribution TP1 Dakhina Sekhpur



Source: Steer analysis of OD data

Table 3.10: Average Trip Length (in km)

	LCV	2 Axle	3 Axle	MAV
Average trip length (km)	207	277	298	341

Source: Steer analysis of OD data

Conclusions

3.56 In summary, CJVs, and 3A+MAV are the key contributors to the total revenue collected on the Asset. CJV's similarly hold the most significant share of the traffic volumes on the Asset.

3.57 The analysis on ticket-segmentation reflects that for CJVs, return is the most dominant category with 50%, while for MAVs, single is the most dominant category at 67%. Compared to FY22, FY26YTD observed 7-8% shift of MAVs from single to return category which can be attributed to shift of long-distance traffic on alternates.

3.58 The TVC-TMS analysis highlights minor variation between the two datasets wherein at the total level, TVC is approximately 2% higher than the TMS data with the difference being negligible for the larger revenue generating categories (3A, MAV, and OSV combined).

3.59 The OD analysis found that in terms of zonal influence, the passenger and commercial traffic is heavily influenced by local areas such as Lucknow, Raebareli, Prayagraj and Bachhrawan. Further, places in East & Northeast India such as Bihar, Jharkhand, Assam, and West Bengal majorly influence the long-distance heavy goods traffic followed by places in the rest of north India such as Uttarakhand, Himanchal Pradesh, Punjab and Haryana.

3.60 The key commodities transported on the Asset includes grocery products, construction items, minerals, and agricultural commodities by the heavy goods vehicle and grocery/agricultural items by light goods vehicle.

3.61 Overall, across all categories it is seen that majority of the traffic is internal in nature and therefore it can be inferred that the growth of traffic is directly proportional to the growth of state GDP. This is further supported by the top 10 OD pairs for this Asset as well as the trip length distribution which reflect that majority of all traffic covers distances up to 300km. It can also be seen that the average trip length for all goods categories is below 400km, with 99% of MAVs having one end of the trip in the state and only ~1% of trips are through which are external.

3.62 Therefore, analysing the vehicle share on the Asset and understanding the OD analysis, CJVs make up for the highest share of traffic and significantly contributed to the local traffic share. Heavy goods vehicles, although accounting for around only ~15% of the traffic on an average over the months, contributes the most to the total revenue share, wherein construction items, and groceries are the top commodity being transported on the Asset by these vehicles.

4 Socio economic context and traffic growth

Introduction

4.1 The growth of traffic on any existing (brownfield) road depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the roads are in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions in the region where the Asset is located and the country. These include:

- Changes in factors such as population, economic growth (regional and national) and industrial production; and
- Other local factors such as strategic port growth, and growth in local industries near the Asset.

4.2 In turn, the change in the relative competitive position of the Asset (and thus of the traffic capture they can achieve) derives from how the relative offer for the roads changes, i.e. the service offered, and the tolls charged on the project roads, in comparison to that on competing roads; and whether any competing road facilities are planned.

4.3 In this chapter, we have assessed the trends of the above growth drivers, as indicators of the socio-economic conditions in the regions surrounding the Asset.

Population growth

4.4 We have analysed the key socioeconomic drivers of the background traffic demand in Uttar Pradesh state, where the Asset is located.

National level

4.5 Table 4.1 below the total population in India has grown at a Compound Annual Growth Rate (CAGR) of 1.5% since 2000, decreasing over the years, as shown in the table below. The World Bank forecasts this growth to decrease to 0.6% CAGR by the 2030-45 period.

Table 4.1: CAGR of population in India

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
1970 - 1985	2.3%	1.9%	3.8%
1985 - 2000	2.0%	1.7%	2.9%
2000 - 2015	1.5%	1.0%	2.6%
2015 – 2030*	1.0%	0.3%	2.3%

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
2030 – 2045*	0.6%	-0.3%	1.9%

Source: World Bank Data on Health Nutrition and Population Statistics, *forecast population growth.

State level

4.6 Uttar Pradesh represents approximately 17% of the country's population, with the total state population of 237 million, as of FY24. Table 4.2 shows the evolution of population in the state of Uttar Pradesh (containing the Asset), compared to that of the country.

Table 4.2: Population Growth in Uttar Pradesh and India (2012-2024)

State	2012 Population (m)	2024 Population (m)	CAGR (2012 – 2024)
Uttar Pradesh	201	237	**1.4%**
India	1,210	1,395	**1.2%**

Source: MoSPI Estimates

4.7 Due to the complexities of the patterns of urbanisation and migration (which are very difficult to forecast with accuracy), we do not use population growth as a proxy for understanding future travel demand growth on the Asset. The same has been included in this section simply to provide a socio-economic context of the trend in the region in which the Asset is located.

Economic Indicators

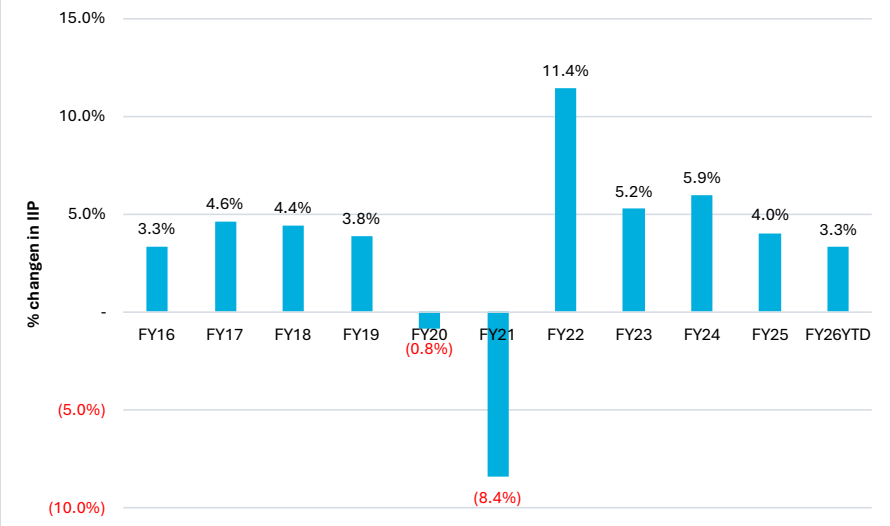
Industrial Production

4.8 The Index of Industrial Production (IIP) is a composite indicator that measures the short-term changes in the volume of production for a basket of industrial products. The IIP data tracks the manufacturing activity in different sectors of an economy, with mining, manufacturing, and electricity being the three broad sectors constituting the IIP.

4.9

4.10 Figure 4.1: below shows that at an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20. In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. Post the immediate recovery in FY22, IIP growth has since stabilised, with FY25 recording 4% and FY26YTD (till February 2026) recording 3.3% growth over FY25.

Figure 4.1: Annual growth – Index of Industrial Production (FY16-FY26YTD)



Source: Ministry of Statistics and Program Implementation (MoSPI). FY26YTD represents data till Feb'26

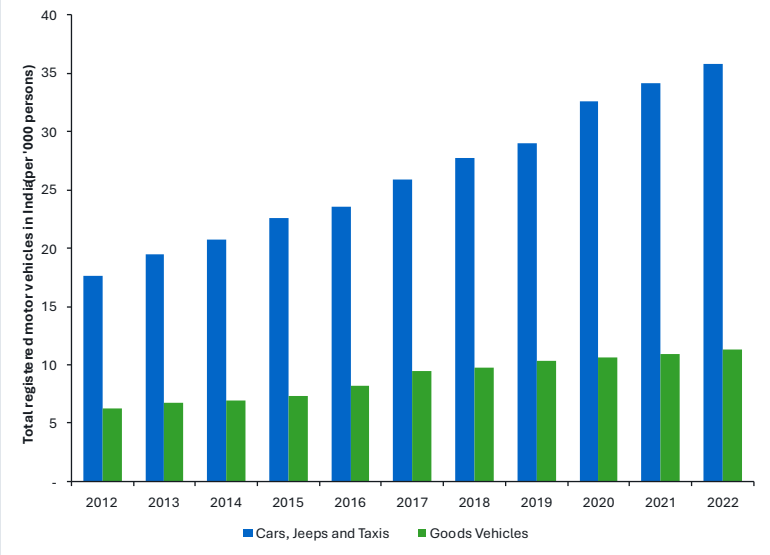
4.11 Since state-level IIP data is not as readily available as national level IIP, we have presented national IIP here to indicate nationwide activity in key industrial sectors like power, manufacturing, and mining, all of which influence long-distance commercial movements across the nation, and not unique to this asset. We however, do not use it to forecast future travel demand growth since long-term forecast for IIP is not available through official sources such as MOSPI, RBI or through multilateral organisations like WB, or the IMF.

Vehicle ownership

4.12 The gap in car ownership between India and developed nations remains substantial – with 36 cars/jeeps/taxis and 11 commercial vehicles per thousand people, as of FY22 (the latest year for which official data is available). However, with increasing per capita income levels, a booming economy and the subsequent increase in demand for mobility, the number of registered vehicles has been on a gradual upward trend.

4.13 Overall, India still stands at a very nascent stage in the vehicle saturation curve, offering huge potential for growth going forward. Between FY12 and FY22, the CAGR for CJV and goods' vehicles registered in India was 8.6% and 7.3% respectively.

Figure 4-2: Total number of registered motor vehicles in India (per 1000 population)

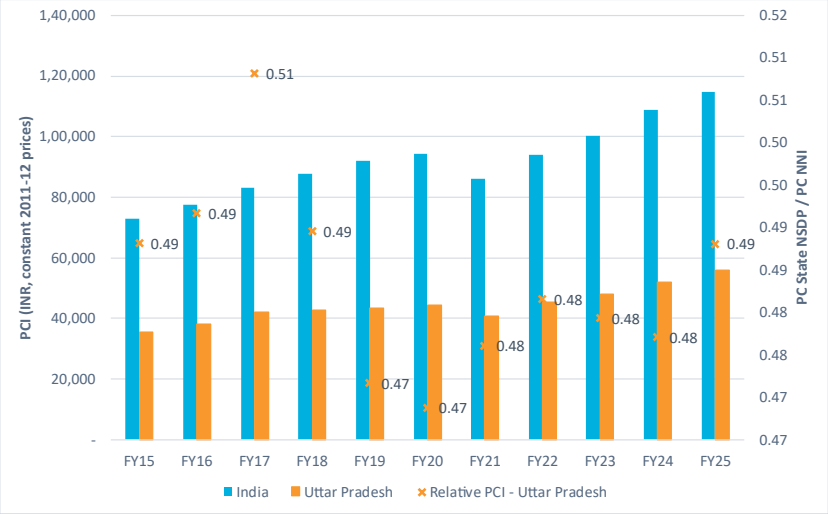


Source: Ministry of Road Transport and Highways (MoRTH)

Per Capita Income (PCI)

4.14 The per capita income of the state where the Assets lies i.e., Uttar Pradesh is lower as compared to the national average. In dollar terms, PCI of just $1,000 per head indicates that the state is at a very early stage of consumption curve. Going forward, we therefore expect local consumption to be strong which would drive the growth in both passenger and commercial traffic.

Figure 4-3: Per Capita Income



Source: Steer Analysis of MoSPI data

4.15 Given that there is dearth of district level PCI data as also non-availability of long-term forecast for PCI we have not used this indicator as a growth driver.

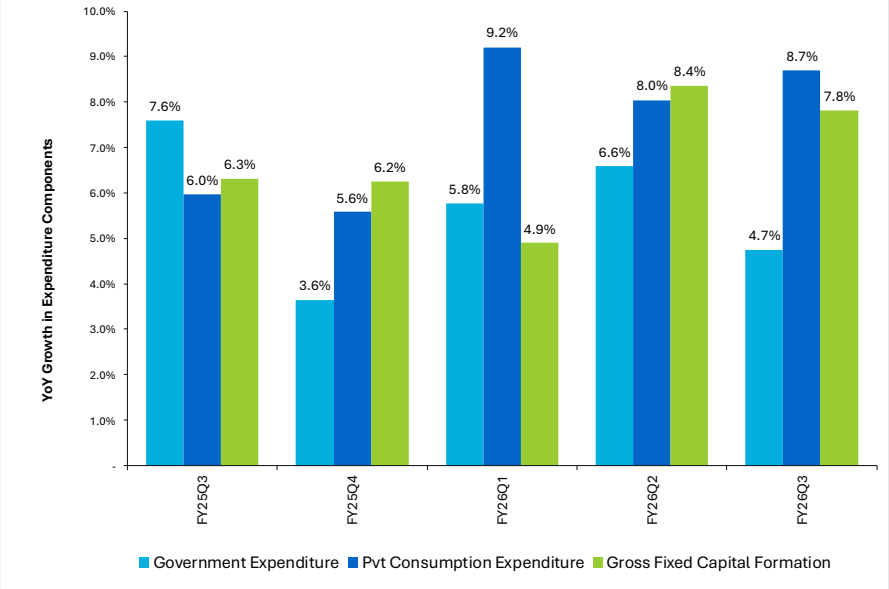
Economic growth

India's Performance

4.16 Despite a slowdown in the economy during H1FY25, the Indian economy has observed strong growth each quarter since FY25Q2, with the latest published estimates for FY26Q3 GDP at 7.8% over FY25Q3. This performance has been driven by strong growth in investment and consumption expenditures and higher consumer optimism for the year ahead[8].

4.17 In Figure 4-4 below, we present quarterly Y-o-Y growth in three major components of GDP – government expenditures, consumption expenditures, and business investment (gross fixed capital expenditure) over the past years (FY25Q3-FY26Q3).

Figure 4-4: YoY Growth in expenditure components of GDP



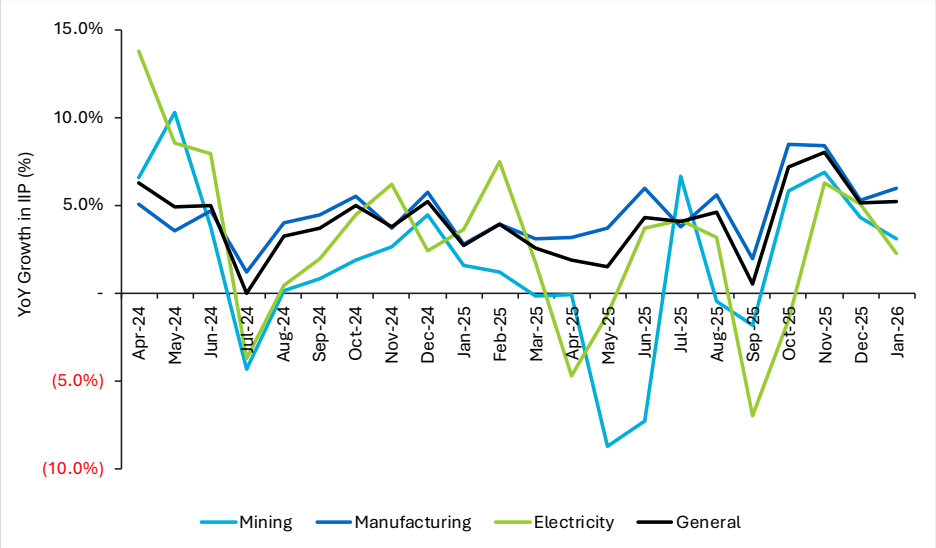
Source: Steer Analysis of MOSPI Data

4.18 While consumption and investment expenditures have continued to show consistent growth over the past two quarters, government expenditures observed a marginal decline in FY25Q4. In FY26Q1, government expenditures rebounded, recording 5.8% growth over FY25Q1 levels.

4.19 Performance across different types of industrial activities (such as Mining, Manufacturing, and Power Generation) directly impact freight movement and commercial traffic volume growth across the country, including on the Asset. In Figure 4-5 below, we present growth trends in IIP – a measure that tracks the performance of the economy across these activities. As of FY26YTD (Apr'25-Feb '26), the Manufacturing sector continues to perform strongly, recording positive y-o-y growth since FY25Q3. While industrial activity across the two other sectors (i.e., Power Generation and Mining) dropped between May and Jun/Jul '25, they have since rebounded and show signs of continued growth going forward.

[8] Gov**ernment of India PIB Release (27th February 2026)**

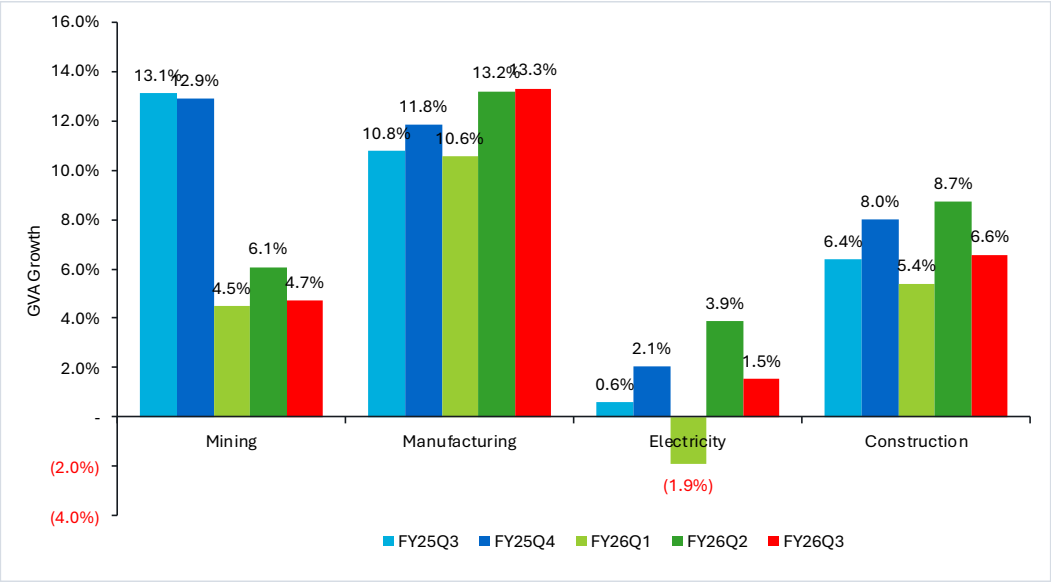
Figure 4-5: Month on Month IIP performance



Source: Steer Analysis of MOSPI Data

4.20 In addition to monthly trends in IIP, Figure 4-6 below presents y-o-y growth of quarterly GVA in four industrial sectors - Mining (& Quarrying), Manufacturing, Electricity (and other Utilities), and Construction. While the Mining and Power sectors observed decline and muted growth in FY26Q1, the Manufacturing and Construction sectors experienced strong growth. Generally, economic growth has remained resilient as of FY26YTD, but performance across industries have varied, impacting economic growth across different regions and on the Asset as well.

Figure 4-6: Industrial components of GVA



Source: Steer Analysis of MOSPI Data

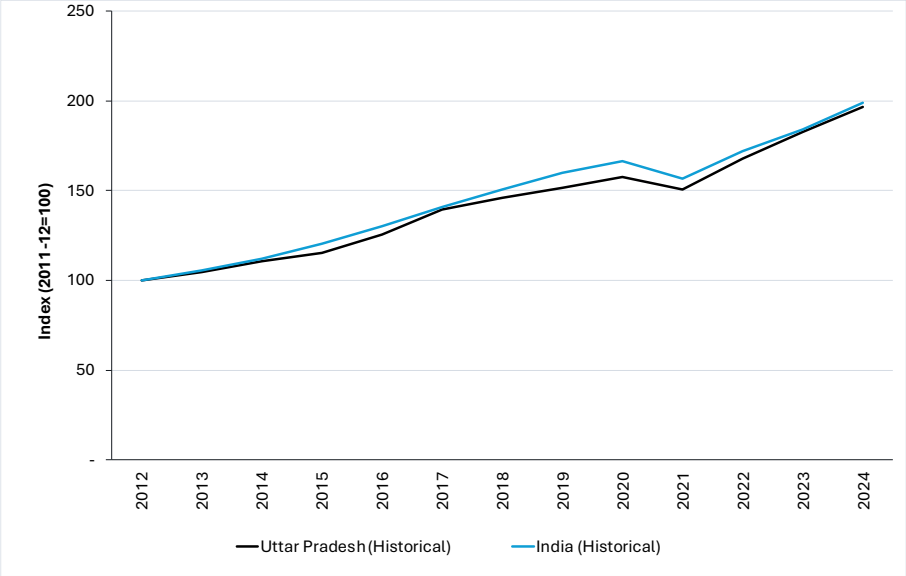
GDP and GSDP Growth

4.21 Over the period FY12-FY24, the Indian economic has grown at a CAGR of approx. 6% aided by growth in the tertiary sector which grew at a CAGR of approx. 6.9% over the same period.

4.22 The economic performance of Uttar Pradesh has been weaker than the country as a whole. The state contributes approximately 8% to India's GDP. In terms of sectoral contribution to the state GDP, tertiary sector has the highest share (47%) followed by secondary (28%) and primary (24%), with the sectoral shares remaining stable over the last few years.

4.23 The Figure 4-7 illustrates the evolution of Uttar Pradesh's GSDP.

Figure 4-7: Evolution of Uttar Pradesh's state GDP and national GDP



Source: Steer Analysis of MOSPI Data

4.24 Uttar Pradesh is the most populous state in India with a population of ~237 million people in FY24. The state has a large pool of skilled, semi-skilled and unskilled labour. Uttar Pradesh is also considered the largest consumer base in the country. The tertiary sector has the highest sectoral contribution to the state GDP followed by the secondary and primary sectors. These shares have remained stable for the past decade.

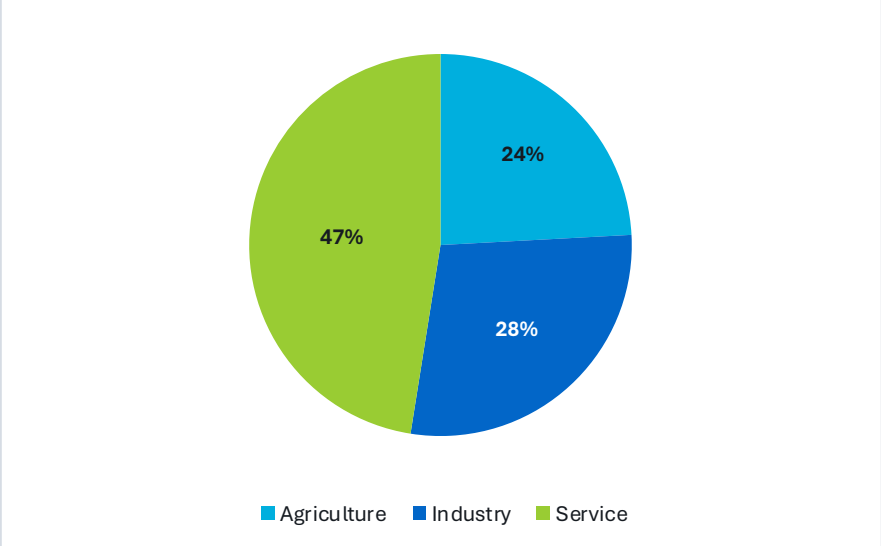
4.25 The tourism and transport sector constitute a majority of the state's tertiary sector. Uttar Pradesh is considered a favoured tourist destination in India, with key tourist attractions being Agra, Varanasi, Mathura and Prayagraj. In 2024, the state attracted the highest domestic tourist arrivals in the country with 649 million visits[9]. The state holds sixth position in the country in foreign tourist arrivals with over 2.3 million.

4.26 In terms of secondary sector, the state has key industrial areas in Khurja (Ceramic); Moradabad (Metals); Meerut, Bareilly, Mirzapur and Lucknow (Handloom & Handicrafts); and Kanpur and Noida (Leather and tannery). The state also has an oil refinery in Mathura, operated by Indian Oil Corporation.

[9] 'Tourist arrivals in U.P. surge by 17 cr in 2024 - Hindustan Times

4.27 Uttar Pradesh has very fertile Gangetic land with a large share of population dependent upon agriculture sector for the livelihood. The key primary industries in the state include food processing, crop production and horticulture. The state is mainly known for production of wheat, sugarcane, potato and mango.

Figure 4-8: Sectoral Distribution of GSDP of Uttar Pradesh for 2024



Source: Steer Analysis of MOSPI Data

4.28 The official historical GDP and GSDP data for India are released by the Ministry of Statistics and Program Implementation (MoSPI). The GDP forecasts for India are available from various reliable sources such as Oxford Economics and Consensus Economics[10], but state-specific GSDP forecasts are not published by any such sources. To derive state GSDP forecasts, we rely on past trends of the relationship between GDP and GSDP, and develop GSDP forecasts as a function of our assumed GDP forecasts[11].

4.29 For any indicator to be used as a growth driver to forecast traffic, a reliable source of historical and forecast data availability for that indicator is the key requirement. Of the key socioeconomic indicators discussed above, GDP was assessed to be the only growth driver for which reliable data is available both in terms of historical and forecast data. Therefore, to forecast traffic, we use GDP/GSDP as our key growth drivers.

Forecasts for growth drivers

4.30 Following the discussion in Chapter 4 on the nature of economic activity in the state of Uttar Pradesh, in this section, we describe the assumptions in relation to forecasts of the key macro-economic drivers of traffic growth. Particularly, we have based our forecast on GDP and GSDP using forecasts of GDP as provided by the Client.

[10] Consensus Economics - Economic Forecasts and Indicators

[11] Assuming that the historical long-term relationship between GSDP and GDP sustains over the short-term, we project future growth in GSDP as a function of our GDP growth forecast. We taper the relationship of GSDP growth to converge to GDP growth gradually over the long-term.

National GDP

4.31 After the last period of economic slowdown in FY11-12, the country experienced an economic downturn again in late FY19 with FY20 having reported a GDP growth of 4% (relative to an average growth rate of 7% per year between FY13 and FY19). India's GDP growth declined as domestic investment and consumption demand were already under stress because of the liquidity crunch before Covid-19. Other factors that contributed to the economic slowdown included reduced growth rates in automobile sales and production, liquidity crunch in credit markets and rising number of Non-Performing Assets (NPAs) within the banking sector, as well as lower manufacturing production and lower rural consumption.[12]

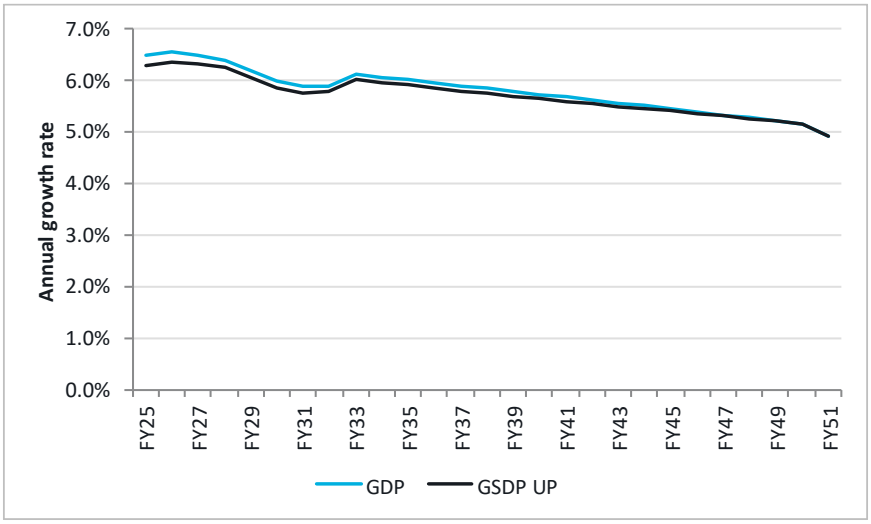
4.32 The Covid19 outbreak had a significant impact on the Indian economy during the first two quarters of FY21 as government mandated lockdowns across the country effectively stalled economic activity and growth. The growth momentum eventually picked up in Q3 of FY21, with a sharp rebound in the economy in FY22 (GDP recorded 9.7% growth over FY21), and has since observed a consistent growth of 7.6% in FY23, 9.2% in FY24. GDP growth remained strong through FY26, with quarterly growth of 7.8% in Q1, 8.4% in Q2 and 7.8% in Q3, while the RBI estimates full-year FY26 growth at 7.6% under the revised GDP series.

4.33 Figure 4-9 below shows client provided GDP projections. The forecast provided by the Client expects the Indian GDP to grow at 6.5% between FY27-FY28 and gradually tapering down to 5.2% by FY51, end of concession. The India GDP growth forecast provided by the Client is broadly in line with other independent forecasts available from reliable sources such as IMF, World Bank and RBI in the medium term.

4.34 By comparing historical trends of regional GSDP growth with the national GDP growth we have established GSDP projections for each state. We assumed that as the Indian economy grows, the states which have historically grown at a faster pace will, over 10 years, see a slowdown in GSDP growth, tending to the national average, whereas the states that have grown slower than the national GDP will begin to pick-up. The GDP-GSDP gap would partially converge by 2040 and fully converge by 2049.

[12] **Data | India's GDP was on a downward slope even before COVID-19 wreaked havoc - The Hindu** (September 2020)

Figure 4-9: GDP-GSDP forecast



Source: GDP and GSDP forecast provided by the Client

5 FY26 Base year AADT and Traffic growth Analysis

Introduction

5.1 In this section, we present our approach, assumptions, and estimates for base year AADT and background traffic growth for each vehicle category on the Asset.

5.2 Traffic growth is commonly related to a variety of macro-economic and industry- or commodity-specific factors (hereafter referred to as 'traffic growth drivers'). These growth drivers are typically identified from the results of the OD data analysis and the site visits that help us appreciate the nature of traffic movement – 'what' travels 'where' and 'why'.

5.3 While comprehensive historical data on the asset is not available, we have access to six years of records. Despite some inconsistencies, this dataset provides a reasonable foundation for analysis. As a result, statistical methods to estimate background growth relationships could not be applied. Instead, we conducted a benchmarking exercise, supported by trip length and origin-destination (OD) analysis, to derive elasticity estimates. These are discussed in detail below.

FY26 Base year AADT estimates

5.4 The base year is the year on which long-term background forecast growth rates are applied to derive year-wise average annual daily traffic (AADT) estimates for forecast years. This is therefore an important aspect of our forecasting approach as traffic and ultimately revenue forecasts for future years are built on top of the base year traffic estimate. We have used FY26 as the base year for AADT estimates for the forecast years.

5.5 As described previously in Chapter 3, to establish the base year (FY26) traffic position, we utilized information from various sources – including from the Client and our context knowledge, to assess a reasonable demand on the corridor.

Methodology

5.6 The base traffic for FY26 has been estimated using 11 months of actual traffic data (April to February). Each toll plaza's seasonality correction factors were applied on the actual MADTs of Apr-25 to Feb-26 to obtain seasonally corrected estimates for FY26 traffic. An average of these estimates was considered to be the FY26 base traffic.

Seasonal Correction Factors

5.7 Traffic on any Asset varies on a month-on-month level. Such variations maybe due to monsoons (typically Jul to Sept) or due to specific festivals in the region. For e.g. It is observed that typically the truck traffic during the first half of the financial year (April-

September) is lower than the annual average. This is mainly because of the peak summer season followed by monsoons affecting the freight movement patterns in larger parts of the country, largely in the July-September period. In addition, there may be other seasonal variations specific to a particular Asset.

5.8 To normalise for these variations across the year to provide an AADT estimate, Seasonality Correction Factors (SCF) are used. SCFs are estimated to convert the monthly traffic numbers to an AADT level while accounting for seasonal variation due to local/national festivals, weather changes and/or temporary external impacts. These are typically estimated using historical data for each plaza and vehicle category over multiple years. An SCF >1 means that the traffic for the month is lower than the annual average and vice-versa.

5.9 The below table present the average of FY23 and FY24 SCF used to estimate the AADT for all categories except 3A and MAV for the Asset.

5.10 In the case of 3A and MAV FY23 SCF are considered since it better represents the actual seasonality of the traffic. FY25 is not considered due to construction activities occurring between Raebareli and Prayagraj thereby affecting the long-distance traffic on the Asset.

Table 5.1: SCF values for TP1 Dakhina Sekhpur

Vehicle Category	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.06	0.97	0.96	1.07	1.11	1.11	1.05	0.94	0.92	1.02	0.87	0.98
LCV	0.90	0.89	0.87	1.03	1.15	1.09	1.01	0.97	1.01	1.13	1.02	1.03
Bus	1.04	1.01	0.99	1.01	1.02	1.01	1.00	0.96	0.99	1.07	0.93	0.98
2A	0.96	0.90	0.83	1.05	1.15	1.10	1.03	1.02	0.97	1.08	0.98	1.04
3A	0.77	0.89	0.84	1.14	1.25	1.11	1.15	0.93	0.97	1.01	1.04	1.11
MAV	0.86	0.96	0.90	1.15	1.20	1.22	1.13	0.85	0.86	0.98	1.02	1.06

Source: Steer analysis based on benchmarks

Adopted base estimates

6.1 Based on the above methodology and inputs, the adopted base for the toll plaza has been shown below:

Table 5.2: Adopted base estimates AADT

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	12,358	12,457	12,491	1.1%
LCV	404	379	379	(6.3%)
Bus	778	763	765	(1.6%)
2A	444	455	455	2.6%
3A	186	187	184	(1.1%)
MAV	694	671	669	(3.6%)
Total	**14,864**	**14,912**	**14,942**	**0.5%**
PCU	**19,518**	**19,493**	**19,516**	**(0.0%)**

Source: Steer analysis: Steer analysis: FY25 actual full year, FY26YTD includes 11 months (Apr-Feb) of FY26, FY26A is adopted base for FY26

5.11 A comparison between the FY26 adopted estimates and the FY25 actual traffic shows a marginal increase of 0.5% in AADT. In terms of PCU, FY26 estimated traffic is at the same level as FY25.

5.12 The Asset, which serves as a key feeder route to the pilgrimage site of Prayagraj, experienced a temporary spike in traffic across all vehicle categories driven by heightened tourist and pilgrim activity from regions such as Lucknow, Sitapur, and other parts of Uttar Pradesh. The FY26 estimates reflect a return to typical traffic patterns post-event.

5.13 In terms of goods traffic, the degrowth in 2A/3A/MAV traffic (a combined decrease of ~3%, in FY26) is mainly due to several local network improvement activities around the Asset including Purvanchal Expressway, Lucknow – Sultanpur, Varanasi, where some share of traffic has already shifted to these alternate routes from the Asset. Further the Raebareli bypass is still under construction resulting in restriction on commercial traffic movement in peak hours. Therefore, truckers generally avoid daytime movement via the city.

5.14 Given the Asset's enhanced connectivity to Prayagraj, the host city of the Kumbh Mela held every 12 years we anticipate short- to medium-term growth in CJV traffic. Furthermore, with continued government investments and road infrastructure development in Lucknow (as detailed in Chapter 3), both CJV and Goods traffic on the Asset are expected to maintain healthy growth from FY26 onwards.

Estimation of background elasticities

Overview

5.15 For the brownfield Assets, where sufficient historical traffic evolution is available, it is common practice to use regression model analysis to determine the relationship, expressed as elasticity, between traffic growth and key socioeconomic drivers. This relationship is then applied to assumptions of future socio-economic developments to estimate future traffic growth.

5.16 In terms of selection of growth drivers for vehicle types, in general we have assumed state GSDP as the key driving factor for the CJVs and Buses given this traffic is generally driven by the local economies of the cities and state containing the Asset. The heavier commercial vehicles such as generally ply long-distance, and the underlying growth is governed by the general economies of several states or nation as whole.

5.17 Given the nascent stage of India's logistics sector, characterized by a highly fragmented trucking industry (95% of operators owning fewer than five trucks) and low car ownership rates (30-35 per 1000 people), the forecast elasticities are projected to remain constant throughout the concession period. This assumption is grounded in historical trends and a long-term perspective on regional and national growth, suggesting market maturity is still several years away.

5.18 The below table presents the growth drivers identified to model the forecast background traffic growth rates.

Table 5.3: Identified growth drivers to model traffic growth

Vehicle type	GDP India	GSDP Uttar Pradesh
Car	-	100%
LCV	-	100%
Bus	-	100%
2A	100%	
3A	100%	-
MAV	100%	-

Source: Steer

5.19 Further to developing estimates for FY26 AADT, the Asset has operational history between FY22 and FY25, proving us three years of traffic growth on the Asset. The table below summarises the volume growth across each of the vehicle categories. For this comparison we have normalised the FY22 AADT for COVID19 by adopting seasonally corrected H2FY22 as the FY22 normalised (FY22N).

Table 5.4: Passenger and Commercial growth with normalised FY22 – TP Dakhina

	FY22N	FY24	FY25	FY26A	FY22N-26 CAGR
CJV	10,834	10,747	12,358	12,491	3.6%
LCV	585	402	404	379	(10.3%)
Bus	652	689	778	765	4.1%
2A	608	450	444	455	(7.0%)
3A	497	237	186	184	(22.0%)
MAV	1,022	691	694	669	(10.1%)
OSV	-			-	
Total	**14,198**	**13,218**	**14,864**	**14,942**	**1.3%**
PCUs	**20,413**	**17,797**	**19,517**	**19,516**	**(1.1%)**
Passenger	11,486	11,436	13,136	13,256	3.6%
Commercial	2,127	1,378	1,324	1,686	(5.6%)

Source: Steer Analysis; Note; Passenger includes CJV and Bus traffic whereas Commercial includes 2A/3A/MAV traffic

5.20 Asset observed a de-growth of ~1% from FY22N to FY26 at the PCU level. Passenger traffic, which includes CJV and buses, is projected based on the state's GSDP, as the growth is driven by the regional local economy. Meanwhile, commercial traffic (2A/3A/MAV) is growing in relation to GDP, as the Asset lies on the NH30 corridor, which primarily facilitates movement between Delhi, Uttar Pradesh and Jharkhand. Any growth observed on the Asset is influenced by regions along this route.

5.21 Decline in commercial traffic is predominantly a result of lower than anticipated regional development, diversion of long-distance traffic to alternates and delay in construction completion of the Raebareli bypass. As a result, the commercial traffic volumes have remained lower than anticipated.

5.22 With these bottlenecks slowly clearing, it is expected that the growth albeit muted will return to the Asset in commercial vehicles. CJV's on the other hand continue to grow

5.23 The sections below detail out the reasoning for selection of respective growth driver(s) for each vehicle category.

Table 5.5: Elasticity recommendations for the Asset (Lucknow-Raebarelli)

Vehicle Category	Proposed Growth Driver	Elasticity	Comments
CJV	Uttar Pradesh GSDP	1.0	CJV cater to local movement between Lucknow, Raebareli and Allahabad. Strong car growth expected as these populous and big towns grow.
Mini LCV	Uttar Pradesh GSDP	0.4	The Mini LCV contribute largely to the local consumption demand of Lucknow-Raebareli region. These trips are predominantly short distance. Considering this along with our experience across the toll roads in the region, we believe the assumption of 0.4 elasticity with the state GSDP to be appropriate.
Buses	Uttar Pradesh GSDP	0.5	It seems that buses currently are serving local intercity demand. As these cities grow, the buses are also expected to respond to the increasing demand however only at a 0.5 relationship to GSDP.
LCV	Uttar Pradesh GSDP	0.4	LCV/2A contribute to the local consumption demand of Lucknow-Raebareli. The trip lengths of LCV and 2A category (up to 80%) are predominantly short distance <300Km. Which confirms the understanding that the movements cater to local demand. Considering the above observations, and our experience across other toll roads in the region, we believe that elasticities of 0.4 with respect to state GSDP are considered reasonable.
2A	GDP India	0.4	2A/3A/MAVs are primarily long-distance traffic carrying a mix of commodities. Historically, the Asset saw a mix of medium and long-distance trips, with trip lengths for more than 80% of the MAV are more than 300km, signifying local nature of the movement. A small proportion of traffic on the Asset serves as a key connector for long-distance trucks travelling between Punjab, Haryana, Uttar Pradesh, West Bengal and Jharkhand. Therefore, a relation of 0.4 to GDP has been considered to MAVs. 3A's have been declining and we believe 3A to grow slower as compared to MAV as there is an increasing preference to use MAVs for long-distance movements, as discussed in Chapter 3 above.
3A	GDP India	0.1	
MAV	GDP India	0.4	

Source: Steer Analysis

6 Forecast: Network overlays and forecasts

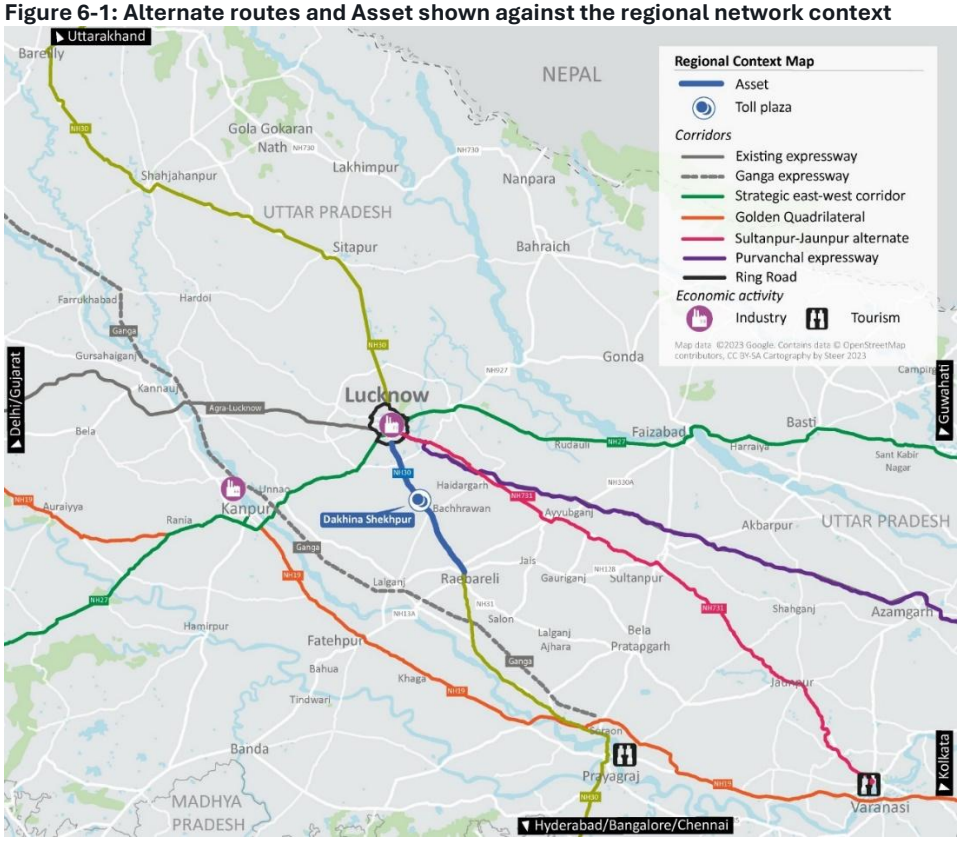
Introduction

6.2 Following the discussion on our forecast of background growth rates in the previous chapter, this chapter first covers the potential network impacts on traffic growth on the Asset. Thereafter, we present our assumptions around toll segmentation, trip factors and evolution of toll rates for the forecast period which are used to forecast revenues as derived from forecast traffic. In the final section, this chapter summarises traffic growth rates for the forecast years.

Analysis of potential network/developmental impacts

6.1 This section details the impacts which we believe would affect traffic on the Asset during the concession period. As discussed in previous Chapters, to assess the impacts on the Asset, whether positive or negative, we have studied developments (alternate roads, feeder roads and regulatory) in the surrounding road network.

Figure 6-1: Alternate routes and Asset shown against the regional network context



Source: Steer cartography using OpenStreetMap data

Ganga Expressway

6.2 A 594km greenfield six-lane expressway is being developed by the Uttar Pradesh Expressways Industrial Development Authority (UPEIDA) connecting Meerut and Prayagraj. The expressway will pass through 12 districts in Uttar Pradesh including Meerut, Shahjahanpur, Kannauj, Unnao, Rae Bareli, Prayagraj etc.

6.3 The benefits will be mostly valued by long and medium distance users which make end to end movements and movement between important districts compared to short distance users. This expressway is expected to be operational by Q1FY27.

6.4 The table below shows the comparison of the key input toll, and time comparison via Asset and alternate.

Table 6.1: Impact of Ganga Expressway

Vehicle category	FY27	FY28 Onwards
Car	(0.6%)	(0.8%)
LCV	(1.1%)	(1.5%)
2A	(0.7%)	(1.0%)
3A	(2.2%)	(3.0%)
MAV	(1.0%)	(1.3%)

Source: Steer analysis; Considering 75% of the full impact will be applicable from FY27, and 100% FY28 onwards

Increase in Passenger Traffic due to Ardha-Kumbh and Maha Kumbh Mela

6.5 The Lucknow-Raebareli Asset acts as a feeder to the important pilgrimage site of Prayagraj. This holy site plays host to the Kumbh Mela every 12 years, which attracts tens of millions of devotees. It also hosts the Ardha-Kumbh every six years after the Kumbh.

6.6 Due to this, the years when these festivals are held, witness increased tourist activities which is reflected in an increase in Car and Bus volumes travelling from Lucknow, Sitapur and other parts of the state and country to Prayagraj.

6.7 The table below shows the impact of the Kumbh Mela on traffic volumes. This impact will recur at six-year intervals for Kumbh and Ardha-Kumbh respectively:

Table 6.2: Increase in Car and Bus traffic due to Kumbh Mela

Vehicle category	FY31 onwards (every 12 years) – Artha Kumbh	FY37 onwards (every 12 years) – Maha Kumbh
CJV	2.1%	4.1%
Buses	2.2%	4.4%

Source: Steer analysis

Revenue forecasting assumptions

6.8 To forecast the revenues for a particular financial year, the traffic forecast for each vehicle type is converted into tickets sold, which is then multiplied with the corresponding toll rate, which grows over the years as defined in the Concession Agreement. While “trip

factors" provide the conversion factor to the former, i.e., traffic (trips) to tickets sold, "toll segmentation" provides the latter i.e., the breakup of trips paying each ticket type. This section discusses assumptions related to trip factors, toll segmentation and toll rates for the forecast period.

Trip factors

6.9 Trip factors are used to calculate the revenue for the trips made on passes such as return, local personal, monthly passes. The trip factors assumed are based on the latest FY25 data available and listed in the table below:

Table 6.3: Trip factors at TP1 Dakhina Sekhpur

Forecast	CJV/MLCV	LCV	Bus	2A	3A	MAV
Single	1	1	1	1	1	1
Return	2	2	2	2	2	2
Monthly	45	45	50	45	45	45
Local Commercial	1	1	1	1	1	1
Local Personal	59	20	20	20	20	20

Source: Steer analysis of Client TMS data

Toll segmentation

6.10 The Ministry of Road Transport & Highways has finalized a compensation formula for existing toll concessionaires to offset revenue loss from the Annual Pass scheme for non-commercial vehicles.[13]

6.11 Across multiple assets, the share of annual pass trips has been rising on a monthly basis since August 5. A corresponding decline in other ticket categories including Single and Return journeys has been observed.

6.12 CJV Segmentation for FY26 has been developed using the pre annual pass segmentation till 14th August 2025, and post-annual pass segmentation from 15th August 2025 till 28th February 2026. The share of annual pass trips in March 2026 has been assumed to be the same as the share of annual pass trips in the last 10 days of February 2026.

6.13 The segmentation for CJVs in FY27 has been assumed to be the same as the estimated March 2026 segmentation as trends suggest that the share of annual pass trips have stabilised. For other vehicle categories we have analysed the historical TMS data split by ticket categories, to understand trends, as shown in Chapter 3. For the traffic and revenue forecast, FY26YTD (Apr- Feb) as discussed in the earlier sections, can be considered a normal period.,In FY26, the share of CJVs using the Annual Pass is projected at 12%, while from FY27, this share is expected to stabilize at 24%.

Table 6.4: Segmentation for forecast years, TP1 Dakhina Sekhpur

Ticket type	CJV FY26	CJV FY27	MLCV	LCV	Bus	2A	3A	MAV
Single	24%	21%	27%	45%	6%	56%	46%	67%

[13] Annual Pass

Ticket type	CJV FY26	CJV FY27	MLCV	LCV	Bus	2A	3A	MAV
Return	49%	42%	57%	53%	93%	40%	51%	27%
Local Commercial	0.5%	0.4%	0.5%	1%	0.3%	3%	2%	6%
Local Personal	6%	5%	6%	-	-	-	-	-
Exemptions	9%	8%	9%	1%	0.2%	1%	1%	1%
Annual Pass	**12%**	**24%**		-	-	-	-	-

Source: Steer analysis of Client TMS data; ticket segmentation for all vehicle categories other than CJVs are from FY26 onwards

6.14 The Annual pass compensation is separately calculated using the formula prescribed by NHAI in the same circular. Following Table 6.5 presents the Annual pass compensation computed for the toll plaza.

Table 6.5: Annual pass compensation for CJVs (in Crore)

Toll Plaza	FY26	FY28	FY33	FY38	FY43	FY51
Dakina Shekpur	4.7	10.7	18.3	30.4	50.8	108.1

Source: Steer Analysis

Toll evolution

6.15 Based on the concession agreement and the gazetted toll notification, we understand that base toll rates increase every year (revision month is April) based on WPI-linked inflation. These are rounded up to the nearest five to estimate the final toll rate charged to users.

6.16 We have used actual toll rates from the FY25 toll notifications and FY26 WPI to validate the modelling of future toll evolution. Increase in WPI was calculated based on the Client's WPI forecasts, as shown in the table below. The upward trend in inflation is expected to continue in the medium term, before gradually tapering to 4.1% in the long term.

Table 6.6: WPI growth forecast assumptions

Financial year	WPI growth (%)
FY26	2.57%
FY27	0.96%
FY28	5.0%
FY29	5.1%
FY30	4.9%
FY31	4.4%
FY32 onwards	4.1%

Source: FY27 onwards WPI print as per client inputs

Revenue reconciliation

6.17 As part of validating the data provided by the Client, as well as our assumptions around toll calculations, we have reconciled the actual reported revenue on a monthly level for the Asset.

6.18 The Steer revenue calculations have been built up from monthly raw traffic data files, containing monthly data and ticket type information; and the toll notifications – all shared by the client. The comparison, as shown in the table below,

Table 6.7: FY26YTD Revenue reconciliation summary

AADC Modelled (INR Lakhs)	AADC Reported (INR Lakhs)	Modelled vs Reported (Difference %)
18.8	18.9	(0.4%)

Source: Steer comparison between modelled and reported revenue

Traffic and Revenue forecasts

6.19 Based on the traffic and revenue-related forecast assumptions discussed above, we have modelled the traffic and revenue forecasts for the forecast period for the Asset. The table below presents the AADT/PCU and revenue forecast growth rates and CAGRs on this Asset. Further, Appendix B presents the AADT and revenues for the forecast period.

Table 6.8: Forecast traffic forecast for TP1 Dakhina Sekhpur

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	11,049	12,206	16,258	21,610	28,962	42,746
Mini LCV	1,442	1,515	1,703	1,912	2,135	2,522
Bus	765	814	942	1,088	1,276	1,537
LCV	379	392	440	494	552	652
2A	455	474	534	600	672	794
3A	184	181	187	192	198	206
MAV	669	694	782	879	983	1,162
AADT	**14,942**	**16,277**	**20,844**	**26,775**	**34,778**	**49,619**
PCUs	**19,516**	**21,047**	**26,230**	**32,855**	**41,663**	**57,757**

Source: Steer analysis

Table 6.9: Forecast Traffic CAGR (%) for TP1 Dakhina Sekhpur

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	5.1%	5.9%	5.9%	6.0%	5.6%
Mini LCV	2.5%	2.4%	2.3%	2.2%	2.3%
Bus	3.2%	2.9%	2.9%	3.2%	2.8%
LCV	1.7%	2.4%	2.3%	2.2%	2.2%
2A	2.1%	2.4%	2.4%	2.3%	2.3%
3A	(0.9%)	0.6%	0.6%	0.6%	0.5%
MAV	1.9%	2.4%	2.4%	2.3%	2.2%
AADT	**4.4%**	**5.1%**	**5.1%**	**5.4%**	**4.9%**

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
PCUs	**3.8%**	**4.5%**	**4.6%**	**4.9%**	**4.4%**

Source: Steer analysis

Table 6.10: Forecast Revenue for TP1 Dakhina Sekhpur (INR crores), including the Annual Pass Compensation revenue for CJV

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	33.9	40.3	68.1	113.1	189.5	402.8
Mini LCV	4.4	4.9	7.0	9.8	13.7	23.3
Bus	8.5	9.8	14.2	20.5	30.1	51.9
LCV	2.2	2.5	3.6	5.0	6.9	11.8
2A	5.8	6.5	9.3	12.9	18.1	30.7
3A	2.5	2.6	3.4	4.4	5.7	8.5
MAV	13.7	15.4	21.7	30.5	42.7	72.4
Total Revenue	**71.0**	**82.0**	**127.3**	**196.3**	**306.7**	**601.4**

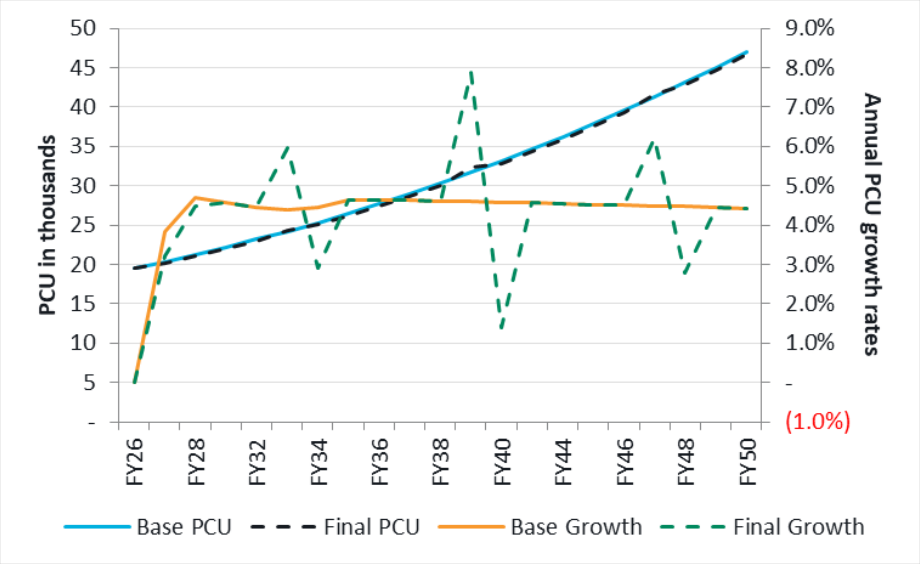
Source: Steer analysis

Table 6.11: Forecast Revenue growth CAGR (%) for TP1 Dakhina Sekhpur

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	9.0%	11.1%	10.7%	10.9%	10.4%
Mini LCV	6.1%	7.3%	7.0%	6.9%	6.9%
Bus	7.1%	7.8%	7.5%	8.0%	7.5%
LCV	6.0%	7.2%	7.0%	6.8%	6.9%
2A	6.0%	7.3%	6.9%	7.0%	6.9%
3A	3.1%	5.3%	5.2%	5.1%	5.0%
MAV	6.0%	7.2%	7.0%	6.9%	6.9%
Total revenue	**7.5%**	**9.2%**	**9.0%**	**9.3%**	**8.9%**

Source: Steer analysis

Figure 6-2 Forecast PCUs and growth rates at TP1 Dakhina Sekhpur



Source: Steer analysis

Target revenues and modification of concession period

6.20 As per the concession agreement, the target revenue should be 9.05 Cr for the month of March 2030 first calculation of target revenue and 21.64 Cr for the month of March 2040 for the second calculation of target revenue. The traffic sampling will be undertaken for a continuous period of 7 days during anytime within 15 days prior to the date on the specified year, previous year and following year. The average thereof will be deemed as 'actual revenue.'

6.21 If the target revenue falls short or exceeds by 20% and 30% for extensions 1 and 2 respectively, the concession period shall be deemed to be modified using the laid-out conditions in the concession agreement. The table below presents the summary of the analysis.

Table 6.12: Target Revenues for Extension 1

Asset	Target Month	Target Revenue	Estimated Revenue			Average Revenue	Variation (%)
		Cr	2029	2030	2031		
LR TP1	Mar-30	9.1	7.81	8.51	9.36	8.56	(5.0%)

Source: Steer analysis

Table 6.13: Target Revenues for Extension 2

Asset	Target Month	Target Revenue	Estimated Revenue			Average Revenue	Variation (%)
		Cr	2029	2030	2031		
LR TP1	Mar-40	21.6	18.57	20.28	22.11	20.32	(6.0%)

Source: Steer analysis

6.22 We have used the average AADT forecast for the target year, previous year and following year as a proxy for 'actual traffic.' We have forecast seasonality of March month to adjust for seasonal trends and arrive at March traffic from AADT traffic, which is then segmented according to the forecast toll segmentation and trip factors and multiplied with respective estimated toll rates to get to a monthly revenue collection.

6.23 As seen from the table above, the target revenue forecast for the Asset is lower than the concession agreement target revenue by around 5.0% for target date 1 and 6.0% for target date 2 respectively. As the difference below above the permitted threshold of 20% and 30% for target date 1 and 2 respectively, no change in the length of the concession agreement is expected.

Upside and Downside cases

Upside and Downside scenario assumptions

6.24 We have developed our base case scenario considering a balanced view on the risks associated with input assumptions around GDP growth and traffic growth elasticities. There is always a risk that the outturn values of these inputs will vary as compared to the assumptions taken due to exogenous impacts, e.g. GDP growth could be influenced both positively and negatively by the impact of monsoons, export-import balances, political changes etc.

6.25 Similarly, traffic growth elasticities could be influenced by increased efficiencies achieved by technology, large shifts in commodity prices globally, changes in local manufacturing practices. However, at this stage we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

6.26 To account for the possible variations in the growth drivers, we are also presenting an Upside (optimistic) and a Downside (pessimistic) scenario. These scenarios are defined by the following variations from the base assumptions:

Table 6.14: Summary of Macro-economic Assumptions for upside and downside cases

Input	Upside	Downside
Macro Assumptions		
GDP/GSDP	+1% every year	-1% every year
WPI	+1% every year	-1% every year
Elasticities	+ 10%	- 10%

Source: Steer analysis

6.27 Further, network developments are highly dependent on governmental directions, policies, legal and financial measure which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside (pessimistic) case. However, at this stage, we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

Impacts-Upside Case

6.28 The upside case impacts included in forecasts are summarised in below.

Table 6.15: Summary of impacts on the Assets

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact
Ganga Expressway	FY27*- 75% FY28 – 100%	+25% of base case	CJV: (0.6%) LCV:(1.1%) 2A: (0.7%) 3A: (2.2%) MAV: (1.0%)
Increase in Passenger traffic due to Ardhakumbh and Mahakumbh Mela	FY31&FY43* (30% of the impact for Ardh-Kumbh) FY37&FY49* (60% of the impact for Mahakumbh		CJV: (5.2%) Bus: (5.5%)

Source: Steer analysis; * Same as base case timeline

Impacts-Downside Case

6.29 The downside case impacts included in forecasts are summarised in below.

Table 6.16: Summary of impacts on the Assets

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact
Ganga Expressway	FY27*- 75% FY28 – 100%	-25% of base case	CJV: (0.9%) LCV:(1.9%) 2A: (1.2%) 3A: (3.7%) MAV: (1.7%)
Increase in Passenger traffic due to Ardhakumbh and Mahakumbh Mela	FY31&FY43* (30% of the impact for Ardh-Kumbh) FY37&FY49 (60% of the impact for Mahakumbh		CJV: (8.6%) Bus: (9.1%)

Source: Steer analysis; * Same as base case timeline

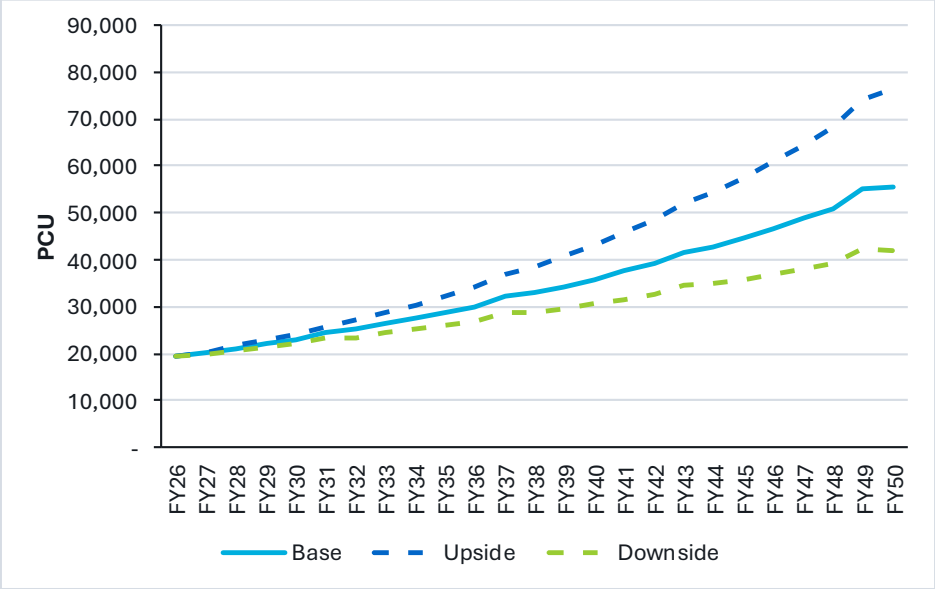
6.30 Based on the above assumptions for upside and downside scenarios, the following table summarizes the upside potential and downside risks associated with the PCU and the revenue for Dakhina Shekpur toll plazas at the end of the concession i.e. FY51.

Table 6.17: Upside potential and Downside PCU scenario – FY51

Toll Plaza	Upside Potential	Downside Risk
Dakhina Shekpur	40.1%	(25.4%)

Source: Steer Analysis of client data

Figure 6.3: Long term PCU forecasts for Dakhina Shekpur TP including upside and downside scenario



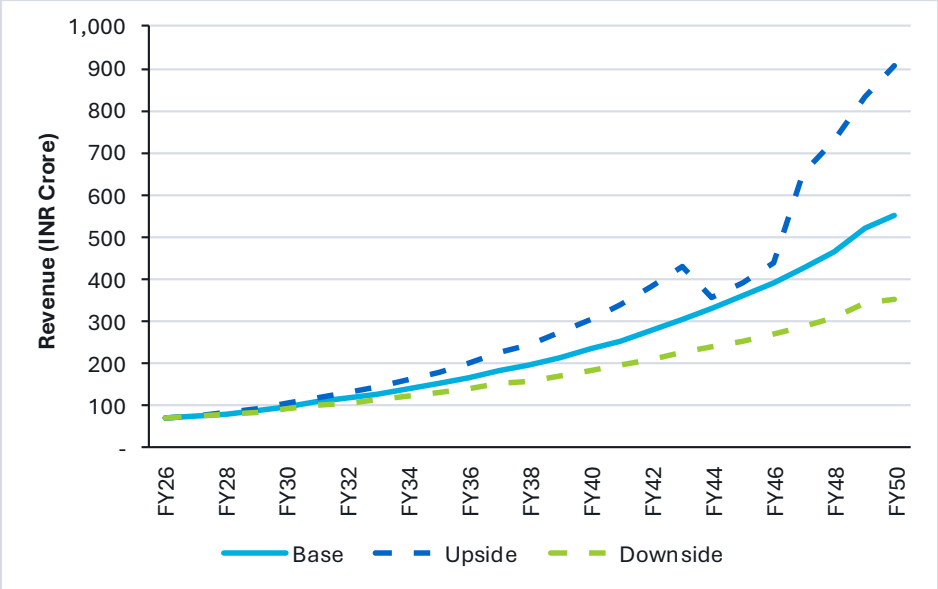
Source: Steer Analysis

Table 6.18: Upside potential and Downside Revenue scenario – FY51

Toll Plaza	Upside Potential	Downside Risk
Dakhina Shekpur	67.3%	(37.7%)

Source: Steer Analysis of client data

Figure 6.4: Long term Revenue forecasts for Dakhina Shekpur TP including upside and downside scenario



Source: Steer Analysis

6.31 Revenue projections exhibit variability in both the upside and downside cases, driven by fluctuations in macro-economic factors such as WPI, GDP/GSDP, elasticities and the network impacts.

Summary outlook

6.32 Passenger movement on the Asset is the largest share of traffic on this Asset. On one side is the state capital of Lucknow and on the other side is the state judicial capital and a major tourism/pilgrim centre of Prayagraj. Cars are expected to see a healthy growth on the Asset following the overall behavioural shift of users with the increasing per capita income.

6.33 The Asset benefits from its strategic location connecting the east-west movement of goods from Uttarakhand and Northern Uttar Pradesh towards South-eastern Uttar Pradesh, Jharkhand, and West Bengal. The 3A/MAV traffic on the Asset is a mix of regional and long-distance traffic carrying a variety of commodities ranging from agricultural products, manufacturing items and minerals. This portion of traffic is assumed to see a strong growth relationship with the national GDP and state GSDP.

6.34 Our findings and estimates in this report are based on our understanding from the site visit, analysis of primary data available both from surveys and the toll management system (both historical and current), macroeconomic assumptions prescribed by the Client, feedback gathered from Client meetings and secondary publicly available data. There can be both positive and negative risks associated with assumptions and the forecasts using them as summarised below:

6.35 Overall, we see a positive outlook for the region and the Asset, given that it serves major urban centres of Lucknow and Prayagraj and eastern Uttar Pradesh as a whole. The underlying growth drivers of the corridor are strong and are expected to deliver long term sustained growth.

Appendices

A Top 10 OD Pairs

A.1 Further to the OD analysis presented in Chapter 3 this appendix presents the top 10 OD pairs at each toll plaza. For both CJVs and MAVs and OSVs the top OD Pairs are combined below:

Table A.1: CJV, Bus and Mini Bus top 10 OD pair shares at TP1 Dakhina Sekhpur

	OD Pair	Share
1.	Raebareli-Lucknow	32%
2.	Lucknow-Prayagraj	13%
3.	Bachhrawan-Lucknow	8%
4.	Bachhrawan-nigoha	3%
5.	Lalganj-Lucknow	2%
6.	Lucknow-Pratapgarh	2%
7.	Mohanlalganj-Raebareli	2%
8.	Lucknow-Fatehpur	2%
9.	Mohanlalganj-Bachhrawan	2%
10.	Lucknow-Lucknow	1%

Source: Steer analysis of OD data

Table A.2: 3A and MAV top 10 OD pair shares at TP1 Dakhina Sekhpur

	OD Pair	Share
1.	Raebareli-Lucknow	15%
2.	Lucknow-Prayagraj	11%
3.	Lucknow-Varanasi	5%
4.	Bachhrawan-Lucknow	4%
5.	kundanganj-Lucknow	4%
6.	Lucknow-Banda	3%
7.	Lalganj-Lucknow	2%
8.	Varanasi-NCT of Delhi	2%
9.	Kanpur-Prayagraj	1%
10.	Lucknow-Pratapgarh	1%

B Data collection exercise

B.1 To validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

3 days TVC count

Table C.1: 3-day TVC counts at TP1 Dakhina Sekhpur

Date	Toll Plaza	Source	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	Total
23-02-2026	TP1	TVC	12,026	1,485	716	841	339	213	689	16,309
24-02-2026	TP1	TVC	12,317	1,660	787	826	404	236	781	17,011
25-02-2026	TP1	TVC	13,650	1,707	808	852	407	219	779	18,423

Source: Steer analysis

Table C.2: WADT TVC vs TMS

	Source	CJV +Mini LCV	LCV	Bus	2A	3A+ MAV	OSV	Total
TP1	TVC	14,282	770	840	383	972	-	**17,248**
	TMS	14,078	431	819	565	987	-	**16,880**

Source: Steer analysis and Client data

Zone list

Table C.3: Zone list used for OD analysis

Zone No	Zone Name	State
1	Kalli Paschim	Uttar Pradesh
2	Mohanlalganj	Uttar Pradesh
3	Mastipur	Uttar Pradesh
4	Churwa	Uttar Pradesh
5	Dehwa	Uttar Pradesh
6	malhipur	Uttar Pradesh
7	Bachhrawan	Uttar Pradesh

Zone No	Zone Name	State
8	kundanganj	Uttar Pradesh
9	Kandawan	Uttar Pradesh
10	peerun	Uttar Pradesh
11	Harchandpur	Uttar Pradesh
12	Kathwara	Uttar Pradesh
13	Gangaganj	Uttar Pradesh
14	Thulendi	Uttar Pradesh
15	isiya	Uttar Pradesh
16	Dostpur	Uttar Pradesh
17	nigoha	Uttar Pradesh
18	uday pur	Uttar Pradesh
19	badan khera	Uttar Pradesh
20	purseni	Uttar Pradesh
21	Kankaha	Uttar Pradesh
22	Hilauli	Uttar Pradesh
23	Neewa	Uttar Pradesh
24	Asrenda	Uttar Pradesh
25	Nagram	Uttar Pradesh
26	Pariwan	Uttar Pradesh
27	Karora	Uttar Pradesh
28	Devi Khera	Uttar Pradesh
29	Tamanpur	Uttar Pradesh
30	Beraru	Uttar Pradesh
31	Sivli	Uttar Pradesh
32	Pahnasa	Uttar Pradesh
33	Barvaliya	Uttar Pradesh
34	Utranva	Uttar Pradesh
35	Raebareli	Uttar Pradesh
36	Maharajganj	Uttar Pradesh
37	Ayyubganj	Uttar Pradesh
38	Musafirkhana	Uttar Pradesh
39	Jais	Uttar Pradesh
40	Gauriganj	Uttar Pradesh
41	Lalganj	Uttar Pradesh
42	purwa	Uttar Pradesh
43	Haidargarh	Uttar Pradesh

Zone No	Zone Name	State
44	Unchahar	Uttar Pradesh
45	Salon	Uttar Pradesh
46	Nidhasan	Uttar Pradesh
47	Ajgain	Uttar Pradesh
48	Kanpur	Uttar Pradesh
49	Lucknow	Uttar Pradesh
50	Prayagraj	Uttar Pradesh
51	Agra	Uttar Pradesh
52	Aligarh	Uttar Pradesh
53	Ambedkar Nagar	Uttar Pradesh
54	Amethi	Uttar Pradesh
55	Amroha	Uttar Pradesh
56	Auraiya	Uttar Pradesh
57	Azamgarh	Uttar Pradesh
58	Badaun	Uttar Pradesh
59	Baghpat	Uttar Pradesh
60	Bahraich	Uttar Pradesh
61	Ballia	Uttar Pradesh
62	Balrampur	Uttar Pradesh
63	Banda	Uttar Pradesh
64	Barabanki	Uttar Pradesh
65	Bareilly	Uttar Pradesh
66	Basti	Uttar Pradesh
67	Bijnor	Uttar Pradesh
68	Bulandshahr	Uttar Pradesh
69	Chandauli	Uttar Pradesh
70	Chitrakoot	Uttar Pradesh
71	Deoria	Uttar Pradesh
72	Etah	Uttar Pradesh
73	Etawah	Uttar Pradesh
74	Faizabad	Uttar Pradesh
75	Farrukhabad	Uttar Pradesh
76	Fatehpur	Uttar Pradesh
77	Firozabad	Uttar Pradesh
78	Gautam Buddha Nagar	Uttar Pradesh
79	Ghaziabad	Uttar Pradesh

Zone No	Zone Name	State
80	Ghazipur	Uttar Pradesh
81	Gonda	Uttar Pradesh
82	Gorakhpur	Uttar Pradesh
83	Hamirpur	Uttar Pradesh
84	Hapur	Uttar Pradesh
85	Hardoi	Uttar Pradesh
86	Hathras	Uttar Pradesh
87	Jalaun	Uttar Pradesh
88	Jaunpur	Uttar Pradesh
89	Jhansi	Uttar Pradesh
90	Kannauj	Uttar Pradesh
91	Kanpur Dehat	Uttar Pradesh
92	Kanpur nagar	Uttar Pradesh
93	kasganj	Uttar Pradesh
94	Kaushambi	Uttar Pradesh
95	Kushinagar	Uttar Pradesh
96	Lakhimpur Kheri	Uttar Pradesh
97	Lalitpur	Uttar Pradesh
98	Mahamaya Nagar	Uttar Pradesh
99	Mahoba	Uttar Pradesh
100	Mainpuri	Uttar Pradesh
101	Mathura	Uttar Pradesh
102	Mau	Uttar Pradesh
103	Meerut	Uttar Pradesh
104	Mirzapur	Uttar Pradesh
105	Moradabad	Uttar Pradesh
106	Muzaffarnagar	Uttar Pradesh
107	Pilibhit	Uttar Pradesh
108	Pratapgarh	Uttar Pradesh
109	Rampur	Uttar Pradesh
110	Saharanpur	Uttar Pradesh
111	Sambhal	Uttar Pradesh
112	Sant Kabir Nagar	Uttar Pradesh
113	Sant Ravi Das Nagar(bhadohi)	Uttar Pradesh
114	Shahjahanpur	Uttar Pradesh
115	Shamli	Uttar Pradesh

Zone No	Zone Name	State
116	Shrawasti	Uttar Pradesh
117	Siddharth Nagar	Uttar Pradesh
118	Sitapur	Uttar Pradesh
119	Sonbhadra	Uttar Pradesh
120	Sultanpur	Uttar Pradesh
121	Unnao	Uttar Pradesh
122	Varanasi	Uttar Pradesh
123	Kolkata	West Bengal
124	Durgapur	West Bengal
125	Jamshedpur	Jharkhand
126	Kharagpur	West Bengal
127	Ranchi	Jharkhand
128	Aurangabad	Bihar
129	Patna	Bihar
130	Andhra Pradesh	Andhra Pradesh
131	Arunanchal Pradesh	Arunanchal Pradesh
132	Assam	Assam
133	Bihar	Bihar
134	Chandigarh	Chandigarh
135	Chhattisgarh	Chhattisgarh
136	Dadara & Nagar Havelli	Dadara & Nagar Havelli
137	Daman & Diu	Daman & Diu
138	Goa	Goa
139	Gujarat	Gujarat
140	Haryana	Haryana
141	Himachal Pradesh	Himachal Pradesh
142	Jammu & Kashmir	Jammu & Kashmir
143	Jharkhand	Jharkhand
144	Karnataka	Karnataka
145	Kerala	Kerala
146	Madhya Pradesh	Madhya Pradesh
147	Maharashtra	Maharashtra
148	Manipur	Manipur
149	Meghalaya	Meghalaya
150	Mizoram	Mizoram
151	Nagaland	Nagaland

Zone No	Zone Name	State
152	NCT of Delhi	NCT of Delhi
153	Puducherry	Puducherry
154	Punjab	Punjab
155	Rajasthan	Rajasthan
156	Sikkim	Sikkim
157	Tamil Nadu	Tamil Nadu
158	Telangana	Telangana
159	Tripura	Tripura
160	Uttarakhand	Uttarakhand
161	West Bengal	West Bengal
162	Odisha	North India
163	Nepal	East & North East of India
164	Dhaka	Odisha
165	Alwar	Rajasthan

Source: Steer analysis of OD data

Direction-wise commodity distribution

Table C.4: Commodity distribution towards Raebareli for TP1 Dakhina Sekhpur

Commodities	LCV	2A	3A	MAV
Agriculture	4%	5%	4%	6%
Groceries	23%	16%	13%	19%
Construction	-	4%	8%	13%
Petroleum	6%	9%	10%	5%
Manufacturing	24%	21%	12%	8%
Automobiles	1%	1%	5%	6%
Miscellaneous	10%	13%	5%	4%
Metals	6%	5%	5%	7%
Empty	27%	26%	39%	34%

Source: Steer analysis of OD data

Table B.5: Commodity distribution towards Lucknow for TP1 Dakhina Sekhpur

Commodities	LCV	2A	3A	MAV
Agriculture	8%	7%	6%	8%
Groceries	21%	12%	8%	5%
Construction	5%	5%	30%	46%
Petroleum	2%	5%	6%	4%
Manufacturing	9%	11%	15%	7%

Commodities	LCV	2A	3A	MAV
Automobiles	1%	1%	1%	2%
Miscellaneous	9%	11%	10%	3%
Metals	2%	4%	2%	5%
Empty	44%	44%	23%	21%

Source: Steer analysis of OD data

Trip length distribution

Table C.6: Trip length frequency for TP1 Dakhina Sekhpur

Distance range	LCV	2A	3A	MAV
0-100 km	48%	37%	35%	26%
100-300 km	31%	36%	32%	34%
300-500 km	13%	13%	15%	21%
500-1000 km	7%	9%	14%	12%
>1000 km	1%	4%	4%	7%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer analysis of OD data

C Detailed forecasts

Traffic forecasts

This section presents the detailed traffic forecasts for the forecast period until FY51, year of expected close of the concession. The following two tables show the AADT and traffic growth, respectively.

Table C.1: Forecasts for (background + impacts) AADT at TP1 Dakhina Sekhpur

Vehicle Type	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	Total	PCU
FY27	11,509	1,478	789	384	463	181	679	15,484	20,144
FY28	12,206	1,515	814	392	474	181	694	16,277	21,047
FY29	12,947	1,552	839	401	486	182	711	17,119	22,009
FY30	13,707	1,588	864	411	497	183	728	17,979	22,989
FY31	14,799	1,625	908	420	509	184	745	19,191	24,361
FY32	15,336	1,663	914	430	521	185	763	19,812	25,066
FY33	16,258	1,703	942	440	534	187	782	20,844	26,230
FY34	17,227	1,743	970	451	547	188	801	21,925	27,446
FY35	18,245	1,784	998	462	560	189	820	23,057	28,714
FY36	19,313	1,826	1,027	472	573	190	839	24,242	30,037
FY37	21,283	1,869	1,104	483	587	191	859	26,375	32,405
FY38	21,610	1,912	1,088	494	600	192	879	26,775	32,855
FY39	22,842	1,955	1,119	506	614	193	899	28,129	34,354
FY40	24,131	1,999	1,150	517	628	194	920	29,540	35,913
FY41	25,481	2,044	1,182	529	643	195	941	31,015	37,538
FY42	26,894	2,089	1,215	540	657	197	962	32,555	39,230
FY43	28,962	2,135	1,276	552	672	198	983	34,778	41,663
FY44	29,919	2,182	1,283	564	686	199	1,005	35,838	42,825
FY45	31,535	2,229	1,317	577	701	200	1,027	37,586	44,732
FY46	33,224	2,277	1,353	589	716	201	1,049	39,409	46,715
FY47	34,987	2,325	1,389	601	732	202	1,071	41,308	48,777
FY48	36,828	2,374	1,425	614	747	203	1,094	43,285	50,921

Vehicle Type	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	Total	PCU
FY49	40,357	2,424	1,526	627	763	204	1,117	47,017	54,949
FY50	40,746	2,474	1,500	640	778	205	1,140	47,483	55,456
FY51	42,746	2,522	1,537	652	794	206	1,162	49,619	57,757

Source: Steer analysis

Table C.2: Forecasts for (background +impacts) AADT growth rates (%) at TP1 Dakhina Sekhpur

Vehicle Type	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	Total	PCU
FY27	4.2%	2.5%	3.2%	1.4%	1.8%	(1.6%)	1.6%	3.6%	3.2%
FY28	6.1%	2.5%	3.1%	2.1%	2.3%	(0.1%)	2.2%	5.1%	4.5%
FY29	6.1%	2.4%	3.0%	2.4%	2.5%	0.6%	2.5%	5.2%	4.6%
FY30	5.9%	2.3%	2.9%	2.3%	2.4%	0.6%	2.4%	5.0%	4.5%
FY31	8.0%	2.3%	5.1%	2.3%	2.4%	0.6%	2.4%	6.7%	6.0%
FY32	3.6%	2.3%	0.7%	2.3%	2.4%	0.6%	2.4%	3.2%	2.9%
FY33	6.0%	2.4%	3.0%	2.4%	2.4%	0.6%	2.4%	5.2%	4.6%
FY34	6.0%	2.4%	3.0%	2.4%	2.4%	0.6%	2.4%	5.2%	4.6%
FY35	5.9%	2.4%	3.0%	2.4%	2.4%	0.6%	2.4%	5.2%	4.6%
FY36	5.9%	2.3%	2.9%	2.3%	2.4%	0.6%	2.4%	5.1%	4.6%
FY37	10.2%	2.3%	7.4%	2.3%	2.4%	0.6%	2.4%	8.8%	7.9%
FY38	1.5%	2.3%	(1.4%)	2.3%	2.3%	0.6%	2.3%	1.5%	1.4%
FY39	5.7%	2.3%	2.9%	2.3%	2.3%	0.6%	2.3%	5.1%	4.6%
FY40	5.6%	2.3%	2.8%	2.3%	2.3%	0.6%	2.3%	5.0%	4.5%
FY41	5.6%	2.2%	2.8%	2.2%	2.3%	0.6%	2.3%	5.0%	4.5%
FY42	5.5%	2.2%	2.8%	2.2%	2.2%	0.6%	2.2%	5.0%	4.5%
FY43	7.7%	2.2%	5.0%	2.2%	2.2%	0.6%	2.2%	6.8%	6.2%
FY44	3.3%	2.2%	0.5%	2.2%	2.2%	0.5%	2.2%	3.0%	2.8%
FY45	5.4%	2.2%	2.7%	2.2%	2.2%	0.5%	2.2%	4.9%	4.5%
FY46	5.4%	2.1%	2.7%	2.1%	2.2%	0.5%	2.2%	4.8%	4.4%
FY47	5.3%	2.1%	2.7%	2.1%	2.1%	0.5%	2.1%	4.8%	4.4%
FY48	5.3%	2.1%	2.6%	2.1%	2.1%	0.5%	2.1%	4.8%	4.4%
FY49	9.6%	2.1%	7.1%	2.1%	2.1%	0.5%	2.1%	8.6%	7.9%
FY50	1.0%	2.1%	(1.7%)	2.1%	2.1%	0.5%	2.1%	1.0%	0.9%
FY51	4.9%	2.0%	2.5%	2.0%	2.0%	0.5%	2.0%	4.5%	4.1%

Source: Steer analysis

Revenue forecasts

Table C.3: Forecasts for final (background +impacts) Revenue (INR Crores) including the annual pass compensation at TP1 Dakhina Sekhpur

Vehicle Type	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	Total
FY27	36.2	4.6	9.0	2.3	6.1	2.5	14.3	74.9
FY28	40.3	4.9	9.8	2.5	6.5	2.6	15.4	82.0
FY29	45.5	5.3	10.6	2.7	7.0	2.8	16.5	90.5
FY30	50.2	5.7	11.5	2.9	7.5	2.9	17.7	98.5
FY31	56.5	6.1	12.5	3.1	8.0	3.1	19.0	108.3
FY32	62.1	6.6	13.3	3.3	8.7	3.3	20.4	117.6
FY33	68.1	7.0	14.2	3.6	9.3	3.4	21.7	127.3
FY34	76.0	7.5	15.3	3.8	9.9	3.6	23.3	139.4
FY35	83.9	8.1	16.5	4.1	10.6	3.8	25.0	151.9
FY36	93.4	8.6	17.8	4.4	11.4	4.0	26.7	166.3
FY37	105.9	9.1	19.9	4.7	12.1	4.2	28.6	184.4
FY38	113.1	9.8	20.5	5.0	12.9	4.4	30.5	196.3
FY39	125.6	10.5	22.0	5.3	13.9	4.6	32.7	214.6
FY40	139.3	11.3	23.8	5.7	14.9	4.9	35.0	234.9
FY41	153.4	12.1	25.5	6.1	15.9	5.1	37.4	255.4
FY42	169.0	12.9	27.4	6.5	17.0	5.4	40.0	278.0
FY43	189.5	13.7	30.1	6.9	18.1	5.7	42.7	306.7
FY44	204.2	14.6	31.6	7.4	19.4	6.0	45.8	329.0
FY45	226.4	15.7	34.0	7.9	20.7	6.3	48.7	359.6
FY46	248.5	16.7	36.4	8.4	22.1	6.6	52.2	391.0
FY47	274.7	17.9	39.2	9.0	23.7	6.9	55.8	427.2
FY48	303.8	19.2	42.2	9.7	25.3	7.3	59.6	467.0
FY49	347.1	20.4	47.2	10.3	27.0	7.7	63.6	523.2
FY50	367.2	21.8	48.4	11.0	28.8	8.1	67.9	553.2
FY51	402.8	23.3	51.9	11.8	30.7	8.5	72.4	601.4

Source: Steer analysis

Control Information

Prepared by

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002,
India
+91 124 441 8650
www.steergroup.com

Prepared for

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1,
Sector 16, Noida- 201301 (UP, India)

Steer project/proposal number

23741311

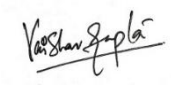
Client contract/project number

Transit 11.0

Author/originator

Vineet Karlapalem

Reviewer/approver



Vaibhav Gupta

Other contributors

Shipra Bhatia, Ayushman Rai, Samridha Kalaiyan, Harshit Garg

Distribution

Client: Cube Highways Steer:

Version control/issue number

Date

April 2026

steergroup.com

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence Mahua-Bharatpur Expressway Limited

Cube Highways Fund Advisors Private Limited
Our ref: 23741311
Client ref: Transit 11.0

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence Mahua-Bharatpur Expressway Limited

Prepared by:	Prepared for:
Steer Suite No. S3,Vatika Business Centre, Vatika Triangle, MG Road, Gurgaon, Haryana, 122002, India	Cube Highways Fund Advisors Private Limited 1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1, Sector 16, Noida-201301 (UP, India)
+91 124 441 8650	Client ref: Transit 11.0
www.steergroup.com	Our ref: 23741311

Steer has prepared this material for [Company]. This material may only be used within the context and scope for which Steer has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer shall be deemed to confirm their agreement to indemnify Steer for all loss or damage resulting therefrom. Steer has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

steer

Contents

Project Transit: Traffic Due Diligence Mahua-Bharatpur Expressway Limited		**1**
Disclaimer		**i**
Glossary Items		**iii**
1	**Introduction**	**1**
	The assignment	1
	Our approach	2
	Contents of this report	3
2	**The Asset**	**4**
	Introduction	4
	Strategic network	4
	Concession and tolling details	6
	Key Economic activities	7
	Alternate Routes	8
3	**Traffic Description**	**11**
	Introduction	11
	Historical trends	12
	Data Collection exercise	20
	Overview	20
	Key findings of the TVC data analysis	21
	Key findings of origin-destination analysis	24
	Conclusions	30
4	**Socio Economic Context**	**32**
	Introduction	32
	Population growth	32
	Economic Indicators	33
	Economic growth	36
	Forecasts for growth drivers	38
5	**FY26 Base Year AADT and Traffic growth analysis**	**41**
	Introduction	41
	FY26 Base year AADT estimates	41
	Estimation of background elasticities	43
	Forecasts for background elasticities	47
6	**Forecasts: Network overlays and forecasts**	**49**
	Introduction	49
	Analysis of potential network/developmental impacts	50
	Revenue forecasting assumptions	52
	Traffic and Revenue forecasts	56
	Upside and Downside cases	59
	Summary outlook	62

Figures

Figure 2.1: Asset location in the regional network context 4
Figure 2.2: Asset context 5
Figure 2.3: Typical cross section of the Asset road and toll plazas 6
Figure 3.1 Ticket-segmentation for CJV at TP1 Amoli 16
Figure 3.2 Ticket-segmentation for MAV at TP1 Amoli 17
Figure 3.3 Ticket-segmentation for CJV at TP2 Ludhawai 17
Figure 3.4 Ticket Segmentation for MAV at TP2 Ludhawai 18
Figure 3.5 TVC WADT- TP1 21
Figure 3.6 TVC WADT- TP2 22
Figure 3.7: Comparison between TVC and TMS daily traffic data on TP1 Amoli (2026) 22
Figure 3.8: Comparison between TVC and TMS daily traffic data on TP2 Ludhawai (2023) 23
Figure 3.9 Comparison between vehicle shares from TVC and TMS WADTs- TP1 23
Figure 3.10 Comparison between vehicle shares from TVC and TMS WADTs- TP2 24
Figure 3.11: Zonal influence at TP1 Amoli 26
Figure 3.12: Zonal influence at TP2 Ludhawai 26
Figure 3.13: Internal-external distribution at TP1 Amoli 27
Figure 3.14: Internal-external distribution at TP2 Ludhawai 27
Figure 3.15: Commodity distribution at TP1 29
Figure 3.16: Commodity distribution at TP2 29
Figure 3.17: Trip length distribution, TP1 Amoli 30
Figure 3.18: Trip length distribution, TP2 Ludhawai 30
Figure 4.1: Annual growth – Index of Industrial Production (FY16-FY26YTD) 34
Figure 4.2: Total number of registered motor vehicles in India (per 1000 population 35
Figure 4.3: Per Capita Income 35
Figure 4.4: YoY growth in expenditure components of GDP 36
Figure 4.5: Month on Month IIP performance 37
Figure 4.6: Industrial components of GVA 37
Figure 4.7: Evolution of Rajasthan's state GDP and national GDP; FY12-24 38
Figure 4.8: GDP-GSDP forecast 40
Figure 5.1: Relationship between CJV traffic and Rajasthan GSDP 44
Figure 5.2: Relationship between LCV+Bus+2A combined traffic and Rajasthan GSDP 45
Figure 5.3: Relationship between 3A+MAV combined traffic and India GDP 46
Figure 6.1: Alternate routes and Asset route shown against the regional network context 50
Figure 6.2: Long-term PCU forecasts for Amoli (including upside and downside scenarios) 60
Figure 6.3: Long-term PCU forecasts for Ludhawai (including upside and downside scenarios) 61
Figure 6.4: Long-term revenue forecasts for Amoli (including upside and downside scenarios) 61
Figure 6.5 Long-term revenue forecasts for Ludhawai (including upside and downside scenarios) 62

Tables

Table 1.1: Scope of work and sources of data 1
Table 2.1: Summary of concession 6
Table 2.2: Single toll rates on the Asset (INR), applicable July 2025 to June 2026 7
Table 2.3: Section Wise Delhi Mumbai Expressway status 9
Table 3.1: PCU factors 11
Table 3.2: Historical evolution in AADT by vehicle class at TP1 – Amoli 12
Table 3.3: Historical Tollable Traffic Levels at TP1 Amoli 12
Table 3.4: Historical evolution in AADT by vehicle class at TP2 – Ludhawai 12
Table 3.5: Historical Tollable Traffic Levels at TP2 Ludhawai 13
Table 3.6: Historical revenue evolution (in INR crores) and AADC (in INR Lakh) : 14
Table 3.7: Typical ticket types sold at NHAI plazas 15
Table 3.8: Timeline of national ETC implementation 16
Table 3.9: Historical ticket segmentation at TP1 Amoli (LCVs) 18
Table 3.10: Historical ticket segmentation at TP1 Amoli (Bus) 18
Table 3.11: Historical ticket segmentation at TP1 Amoli (2 Axle) 19
Table 3.12: Historical ticket segmentation at TP2 Ludhawai (LCV) 19
Table 3.13: Historical ticket segmentation at TP2 Ludhawai (Bus) 19
Table 3.14: Historical ticket segmentation at TP2 Ludhawai (2 Axle) 19
Table 3.15: Overloading shares for FY19 - FY26 20
Table 3.16: Data collection schedule 21
Table 3.17: Sample rates for OD data 25
Table 3.18: Zone aggregations for zonal influence analysis 25
Table 3.19: Aggregate commodity categories 27
Table 4.1: CAGR of population in India 32
Table 4.2: Population Growth in India (2001 – 2011) 33
Table 5.1: Seasonality correction factors for TP1 Amoli 42
Table 5.2: Seasonality correction factors for TP2 Ludhawai 42
Table 5.3 Adopted base estimates - TP1 Amoli 43
Table 5.4: Adopted base estimates- TP2 Ludhawai 43
Table 5.5: Identified growth drivers to model traffic growth 43
Table 5.6: Derived elasticities from regression analysis and assumed forecast elasticities for background growth 47
Table 6.1: Key intermediate and final outputs in the forecast 49
Table 6.2: List of network/other developments 51
Table 6.3 Impact due to Delhi Mumbai Expressway, TP1 Amoli 51
Table 6.4: Impact due to Delhi Mumbai Expressway, TP2 Ludhawai 52
Table 6.5: Completion of Agra-Gwalior Construction 52
Table 6.6: Trip factors on Asset 52
Table 6.7: Forecast toll segmentation, FY26 onwards at TP1 Amoli 53
Table 6.8: Forecast toll segmentation, FY26 onwards at TP2 Ludhawai 54

Table 6.9: Annual pass compensation for CJVs (in Crore)	54
Table 6.10: Overloading assumptions for forecast years FY26 onwards under various ticket categories	54
Table 6.11: WPI growth forecast assumptions	55
Table 6.12: Revenue reconciliation summary for FY26	56
Table 6.13: Traffic forecasts (with impacts) AADT forecast for TP1 Amoli	56
Table 6.14: Traffic forecasts (with impacts) CAGR (%) for TP1 Amoli	56
Table 6.15: Revenue forecasts (INR crores) for TP1 Amoli	57
Table 6.16: Revenue forecasts CAGR (%) for TP1 Amoli	57
Table 6.17: Traffic forecasts (with impacts) AADT forecast for TP2 Ludhawai	57
Table 6.18: Traffic forecasts (with impacts) CAGR(%) for TP2 Ludhawai	58
Table 6.19: Revenue forecasts (INR crores) forecast for TP2 Ludhawai	58
Table 6.20: Revenue forecasts CAGR (%) for TP2 Ludhawai	58
Table 6.21: Summary of Macro-economic Assumptions for upside and downside cases	59
Table 6.22: Summary of impacts on the Assets	59
Table 6.23: Summary of impacts on the Assets	60
Table 6.24: Upside potential and Downside PCU scenario - FY32	60
Table 6.25: Upside potential and Downside Revenue scenario - FY32	61
Table 6.26: CJV and Bus top 10 OD pair shares at TP1 Amoli	66
Table 6.27: Zone list used for OD analysis	68

Appendices

A	**Developments in sand-mining**
B	**Top 10 OD Pairs**
C	**Data Collection Exercise**
D	**Detailed Forecasts**

Disclaimer

This report has been produced for the sole benefit of Cube Highways Pvt. Ltd ("the Client"). The report may only be relied upon by Approved Addressees in accordance with the terms of our engagement letter. This Report (the "Report") is confidential and disclosed only for information purposes, and it may not be relied upon by any party other than the Client or a Party to a Reliance Letter, and Steer: a) makes no warranty, expressed or implied, with respect to the use of any information or methods disclosed in this Report; and b) assumes no liability with respect to the use of any information or methods disclosed in this document. Any such party by its acceptance or use of this Report releases Steer from any liability for direct, indirect, consequential, or special loss or damage whether arising in contract, warranty, express or implied, tort or otherwise.

The Report is based on standard professional efforts, and information available to us at the time the review took place and is subject to time and budget constraints of the Report's scope of work. This Report, information and statements contained herein, are all based on third party data provided to us, or sourced by us, and Steer has not sought to establish the reliability of the data, except as specifically stated in the Report. Steer bears no responsibility for the results of any actions taken on the basis of third-party data. Certain forward-looking statements in the Report are estimates based on interpretations or assessments of information available at the time of writing. The Report is thus to be viewed as an assessment that is time-relevant, specifically referring to conditions at the time of the review. Steer undertakes no obligation to update the Report for any reason. While the estimates contained in the Report are not precise forecasts, they do represent, in our view a reasonable expectation of the future, based on information we have been provided with or sourced. However, the estimates necessarily rely on numerous assumptions and judgements, and circumstances may occur over the timeframe of the project that go counter to these assumptions and judgements and that affect the project's realized revenues. Actual events may differ from those assumed, and events are subject to change. Therefore, Steer makes or provides no warranty, whether implied or otherwise, as to the accuracy of forward-looking information presented. Further, it is important to note that forecasts presented represent long term growth profiles; the results for individual time periods may vary from forecasted values.

Traffic Consultant developed the relationships in the models used to produce the forecasts for the projects based on data available through February 2026. This report does not consider variations in traffic performance due to changing macro and force majeure events such (but not limited to) as global wars, economic uncertainty (high inflation, global recession), and changes in the regulatory environment. The situation remains dynamic and is subject to significant change in the short and medium term. In this challenging context, Traffic Consultant has produced base forecasts with a view on a possible scenario for the traffic forecasts. However, it is important to note that this is only one view, and there continues to remain uncertainty as to the short-term, intermediate or prolonged effects of and responses to such macro-economic/force majeure events. As a result, no assurance can be provided by Traffic Consultant that the scenarios and assumptions Traffic Consultant has identified will prove to be accurate. Given the uncertainty inherent in this scenario, Traffic Consultant advises that all readers of the Report consider the Report in the context of their own assessment of the impact of such events.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE ISSUE OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES.

Glossary Items

Acronym	Meaning
2A/ Truck	2 Axle/ Truck
3A	3 Axle
AADT	Annual Average Daily Traffic
BOT	Build Operate Transfer
CAGR	Compound Annual Growth Rate
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DPR	Detailed Project Report
ETC	Electronic Toll Collection, also referred to as FASTag
FY	Financial Year
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HAM	Hybrid Annuity Model
HCM/ EME	Heavy Commercial Vehicles/ Earth Moving Machinery
IE reports	Independent Engineers' reports
IHMCL	Indian Highway Management Company Limited
INR	Indian Rupees
InvIT	Infrastructure Investment Trust
km	Kilometer
LCV/ LGV	Light Commercial Vehicles/ Light Goods Vehicle
LMV	Light motor vehicles
MADT	Monthly average daily traffic
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NSDP	National State Domestic Production
OD	Origin Destination
OSV	Over sized vehicles
PCU	Passenger Car Unit; it is a measure of standard vehicle unit to convert all vehicle classes to a single unit by using PCU factors to compute total traffic on an Asset.
Q1	Quarter 1 of financial year, from April to June
Q2	Quarter 2 of financial year, from July to September
Q3	Quarter 3 of financial year, from October to December
Q4	Quarter 4 of financial year, from January to March
RNP	Registered Number Plate
SCF	Seasonality Correction Factor

Acronym	Meaning
SH	State Highway
T&R	Traffic and Revenue
TMS	Traffic Management System
TVC	Traffic Volume Count
WADT	Weekly average daily traffic
YTD	Year to Date

1 Introduction

The assignment

1.1 The Cube Highways Fund Advisors Private Limited (the "Client") has commissioned Steer Davies Gleave India Private Limited ("Steer") for a traffic due diligence to be carried out on the Mahua-Bharatpur Toll Road (hereafter called "Asset"). This report forms part of the annual fair market valuation (FMV) undertaken as part of the "Transit 11 project". This report presents an update of the traffic and revenue forecasts based on actual traffic data available up to February 2026 and latest macro-economic, and network assumptions.

1.2 The Asset Mahua-Bharatpur consists of a single stretch of toll road with two toll plazas. For the purpose of this report, we hereafter call the toll plazas present on the Asset as TP1 and TP2 respectively.

- TP1 – Amoli
- TP2 – Ludhawai

1.3 Our scope of work for the traffic and revenue forecasting process includes:

Table 1.1: Scope of work and sources of data

Scope of work	Data source
• Review of historical Traffic Management System (TMS) data, Origin-Destination (OD) data, Vendor reports and documents	• Provided by client for the period between Apr'09 and Mar '26, with FY26 base AADT and forecasts considering data up to Feb'26
• Historical analysis and forecasts for baseline growth, including; — Background growth, — Seasonality	• Historical toll plaza data provided by Client and benchmarks from Assets in the vicinity wherever long time series historical data was not available
• Validation of Revenue reported in FY26YTD	• TMS data provided by Client • Revenue reconciliation using toll plaza traffic and ticket type data to calculate revenue and reconciling it with toll plaza reported revenue.
• Origin Destination (OD) analysis to understand growth drivers: — Zonal influence and Top OD pairs — Commodity distribution — Trip length distribution	• Origin Destination (OD) surveys undertaken by Steer in 2026 (TP1) and 2023 (TP2) respectively
• Analysis of upcoming network improvements and other developments, that may have future impacts on traffic	• Secondary research and our in-house experience of working in the vicinity of the Asset. Impact analysis to be conducted by Steer based on

Scope of work	Data source
	Generalised Journey Cost spreadsheet-based analysis
• Historical revenue analysis and forecasts for revenue estimation, including — Toll segmentation and trip factors, — Overloading shares,	• Calculated from historical data provided by Client
• Final traffic growth forecasts including baseline growth rates and potential future impacts •	• Elasticity based base growth and potential impacts from secondary research and Steer's in-house experience of working in the vicinity of the Asset
• Toll revenue estimation for the entire concession including toll evolution	• Toll evolution based on toll notification published by National Highway Authority of India (NHAI); and Gross Domestic Product (GDP) & Wholesale Price Index (WPI) trends as shared by the client

Our approach

1.4 Our approach follows well-established practices for forecasting ongoing traffic growth on an existing/brownfield Asset. The analysis focused on two sets of issues, namely:

- understanding the traffic that is currently using the Asset; and
- identifying how and why that traffic is likely to change in the future.

1.5 To understand the current traffic on the Asset, we have analysed traffic data from multiple independent sources:

- Client-provided secondary data, including:
  - TMS data starting April FY09 to February 2026. The historical traffic and revenue presented in Chapter 3 considers information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated
  - Concession agreement and toll notifications for FY25 and FY26
  - Previous studies related to traffic and revenue
  - Steer-commissioned OD survey on 18th Feb 2026 at TP1 and on 27th June 2023 at TP2 of the Asset to validate any change in growth drivers and travel patterns.
  - Steer-commissioned TVC survey from 17 – 19th Feb at TP1 and 26th June 2023 to 29th June 2023 at TP2
- We undertook revenue reconciliation for FY26YTD, by building up revenue from the traffic reported by each of the toll plaza and subsequently match it to the reported revenue for FY26 using the prevalent toll rates and reported segmentation/toll-frequencies for FY26, this is a key part of our analysis to validate the segmentation/toll-frequency assumptions and the Annual Average Daily Traffic (AADT) reported for each of the toll plaza.

1.6 The estimation of future traffic demand on the Asset was undertaken through:

- Estimating FY26 base year position by applying seasonality correction factors (SCFs) on the 11 months of actual traffic data available (April to February)
- Secondary research to understand plans for new developments and progress of ongoing developments on the Asset.
- Steer independent primary surveys and site visits to validate our network and contextual understanding.
- Developing a bespoke growth model for each Asset/plaza/toll class to forecast year-on-year traffic growth from FY26 to the end of concession period.
- Investigating the elasticity of historical traffic growth compared to state (GSDP) and national (GDP) growth. Where historical data is limited, we have benchmarked the Asset against our Steer knowledge base (e.g., similar Asset types in the same state or on the same corridor), to derive appropriate elasticities.
- Applying our elasticities to independent GDP forecasts as provided by client.
- Identifying and analysing the potential impacts of any relevant changes to the competitive position of each Asset – these include impacts of changes to road network including expressways and opening of competitive modes of travel.
- Identifying and analysing any other potential impacts to traffic and revenue on each Asset – these include axle load norms, axle shift for heavy goods.
- Considering changes in trends of segmentation over time and making suggestions for changes in exemptions in the future
- Preparing traffic and revenue forecast for the Asset for the complete length of concession. The analysis here includes the specific impacts of network, or other exogenous factors specific to the Asset. We have developed a set of forecasting assumptions for three scenarios: a base case and upside and downside scenarios.

Contents of this report

1.7 The report has been divided into the following chapters, including Chapter 1 providing an introduction:

- Chapter 1 introduces the methodology and approach to undertake the traffic and revenue due diligence;
- Chapter 2 describes the key characteristics of the Asset and its surrounding road network, primarily based on site visits;
- Chapter 3 summarises the current and historical traffic on the Asset, including results from the TMS, TVC and OD analysis;
- Chapter 4 presents the socio-economic context of the corridor and region/state containing the Asset, along with our approach and results on estimating background traffic demand growth; and
- Chapter 5 presents our baseline year forecast and summarises our results on estimating background traffic demand growth
- Chapter 6 summarises our assessment of network impacts and presents concession traffic and revenue forecasts for the Asset along with the assumptions for upside and downside cases

2 The Asset

Introduction

2.1 This chapter provides a description of the Asset, primarily based on primary (site visits) data, our understanding of the region and network surrounding the Asset. We cover the strategic network context, followed by key economic activities and network developments around the Asset.

Strategic network

2.2 The Asset is situated in the state of Rajasthan, connecting Mahua to Bharatpur, near the border of Rajasthan with south-western Uttar Pradesh (UP).

2.3 Figure 2.1 shows the regional road network in which the Asset is located.

Figure 2.1: Asset location in the regional network context

Source: Steer cartography using OpenStreetMap data

2.4 This Asset primarily caters to three different types of strategic movements:

- **Short-distance trips** including tourism and leisure trips between some of the most attractive tourist destinations in India. Such trips are mostly comprising of CJVs which are either local or run between key tourist locations of Agra and Bharatpur at one end and Jaipur on the other.
- **Medium-distance trips** between Rajasthan and Uttar Pradesh connect marble-processing sites of Rajasthan to its consumption sites in Uttar Pradesh. The Asset also transports significant number of manufactured products across the states of UP and Rajasthan.
- **Long-distance trips** between the region consisting of Gujarat and southern Rajasthan, and UP/East India connects ports and industries of western India to major consumption and production centres in North and East India.

2.5 The Asset is a 57.3 km toll road which forms a part of the NH 21 (Jaipur – Agra – Bareilly) in Rajasthan. This is a four-lane road with two toll plazas, namely, Amoli (TP1) at Km 98.5 (closer to Mahua) and Ludhawai (TP2) at Km 64.5 (closer to Bharatpur). Figure 2.2 provides a closer view of the Asset in the context of its immediate surroundings and location of toll plazas.

Figure 2.2: Asset context

Source: Steer cartography using OpenStreetMap data

Concession and tolling details

2.6 The toll plaza on the Asset have been operational since April 2009 and the Client took over the operations in May 2015. There are 6 years left in the concession period with FY32 being the last year of concession period. Table 2.1 presents a summary of the Asset.

Table 2.1: Summary of concession

Particulars	Details
State	Rajasthan
Highway and lane configuration	NH 21 four lane
Toll plazas	• TP1: Amoli • TP2: Ludhawai
Length (km) as per concession agreement, applicable	• TP1: 38.65 Km • TP2: 18.65 Km
Commencement of operations*	May 2009
Operated by Client since	May 2015
Concession period	25 years
Last year of concession	May, 2031 or FY32

Source: Client data

2.7 Figure 2.3 shows a typical cross-section of the Asset and its toll plazas.

Figure 2.3: Typical cross section of the Asset road and toll plazas

Source: Steer site visit

2.8 The tolls on the Asset are collected for the following vehicle category with rates as shown in Table 2.2 below. The toll plazas have dedicated ETC/FASTag lanes for electronic tolling.

Table 2.2: Single toll rates on the Asset (INR), applicable July 2025 to June 2026

Type of Vehicle	Single Journey Fee	
	TP1 Amoli	TP2 Ludhawai
CJV	55	25
LCV	100	45
Bus/Truck	200	95
3A/MAV	320	155
HCM/EME/OSV	320	155

Source: NHAI Revision of User fee

2.9 The Asset currently issues tickets including single, local commercial, local personal and through ticket under NHAI concession. There are no return and monthly tickets issued on the Asset. The local commercial and local personal ticket categories are discounted single entry tickets for trips within 20kms and 10kms respectively. The Asset issues special category of "through ticket" where a user can buy a ticket for both plazas, a common ticket to cross the entire length, this ticket can be bought at either plaza which can be redeemed at another. Further, detailed information on this have been provided in Chapter 3 of the report.

Key Economic activities

2.10 Rajasthan is the largest state in India by area, sharing borders with five major states- Uttar Pradesh, Haryana, Punjab, Madhya Pradesh, and Gujarat. It is rich in natural resources particularly minerals and produces about 57 different minerals.[1] Predominantly an agrarian economy and a major producer of grains, oilseeds and edible oil, Rajasthan has seen a rise in the service sector (transport, storage and communication, financial services, real estate, professional services, public administration and other service) recently wherein the sector contributed to 47.7% to state's GSVA in FY26 followed by agriculture at 26.5% and industries at 25.7%.[2]

Urban centres, business, and tourism

2.11 The state of Rajasthan and its bordering cities in UP (e.g. Agra and Mathura) are known for their tourist destinations. This contributes significantly to high passenger traffic volumes both within cities and on highways. The Bharatpur area with the presence of the Keoladeo Ghana National Park is a major attraction for tourists, known for its birds. The capital city of Jaipur, located on one end of the Asset, is a thriving urban city which is the main centre of administration, governance, culture, education, business and service sector in the state. It is a prominent tourism destination contributing majorly to the flourishing hospitality industry in the state. This reflects in considerable passenger volumes between the three nodes of India's Golden Triangle - Delhi, Jaipur and Agra – observed on the Asset engaged in tourism and related activities. In recent times, the city has also emerged as a promising hub for global outsourcing and IT industry. Jaipur's strategic location on the

[1] http://www.mines.rajasthan.gov.in/dmgcms/page?menuName=YzCjPSj/AU7RGgRfpUoY5A==#:~:text=Rajasthan%20is%20the%20richest%20state,zinc%20ores%2C%20selenite%20and%20wollastonite.

[2] Rajasthan State Economic Survey 2025-26

golden quadrilateral connects it with major industrial, agricultural, and cultural centres of Chennai, Kolkata, Delhi, and Mumbai.

Marble, cement, and sand

2.12 The State is also a leading producer of Masonry stone with around 136.1 million tonnes of production in FY24.[3] Areas such as Kishangarh, Kota and Dausa produce stone and sand, apart from being a hub of major marble processing centres, with a history of supplying marble to the rest of India.

2.13 Rajasthan accounts for 70 per cent of the country's stone production. There are 4,920 mining leases in the state[4]. Rajasthan produces 90 percent of the marble and sandstone in the country. In terms of Granite, in FY24 Rajasthan produced more than 10.4 million tonnes compared to 9.3 million tonnes in FY23[5]. This is due to the increased export demand from countries like US, China and Europe.

2.14 Sandmining in India has long faced issues of corruption involving local mafias and a lack of proper implementation of mining policies by the government. In November FY18, when Supreme Court order ruled the requirement of environmental clearances for all sand mines, including those less than five hectares of size, there was a reported drop in traffic carrying construction-related commodities on the Asset, particularly sand. However, in 2020, following the implementation of the Major and Minor Mineral Policy, the mining industry in the state was regularized by imposing a ban on illegal mining activities. Additionally, sand mining leases were reduced to two years, with an improved replenishment cycle. The policy also mandated the use of 25% M-Sand (manufactured sand) as an alternative to riverbed sand for construction activities in Rajasthan.

2.15 After the policy implementation, the combination of reduced legalized sand mining, award of leases, and increasing demand for construction material for local activities led to a continued demand for sand and other construction materials in the region. In terms of lease tenure related to this commodity within the Rajasthan mining policy:

- Sand mining leases- 2 years (re-award of new leases after 2 years): Additionally, to reduce illegal mining and allow for the full replenishment cycle of rivers in the region, the state government has reduced the validity of sand mining leases from the existing five years to two years.
- Aggregate mining leases- 5 years (re-award of new leases after 5 years)

Alternate Routes

2.16 For long-distance trips connecting Gujarat and southern Rajasthan to Uttar Pradesh and other eastward states, there is an alternative route along NH 27 that joins Udaipur and Kanpur via Chittorgarh-Kota-Jhansi. Majority of travel patterns are already well established and the choice between using NH27 vs. NH48 and the Asset for east-west movements has been established over a number of years. However, for a small proportion of traffic on NH27; the route via the Asset is expected to become more

[3] Minor mineral production in Rajasthan

[4] 70% of stone production in India comes from Rajasthan: RIICO Chairman (knnindia.co.in)

[5] Granite production in Rajasthan

attractive as the key feeders of the Asset improve. In Chapter 6, we have discussed how the completion of southern bypass of Agra Ring Road improves the relative level of service on the Asset corridor and has a positive impact. The traffic impact of Jaipur Ring Road is already part of the current volumes appearing on the Asset and no further adjustments have been made to the traffic forecasts.

2.17 During our site visit to the Asset, no major micro-diversions through local roads were observed close to the toll plazas. Chapter 6 provides a discussion and estimation of potential impacts on the Asset.

Delhi-Mumbai Expressway

2.18 The Delhi-Mumbai Expressway is a 1290-KM long greenfield expressway that has been developed to provide an improved 8-lane route to long-distance traffic between North/Western India to Mumbai. The competing movements which may choose to take the DME are as follows:

Traffic originating near Uttar Pradesh and Rajasthan

- Vehicles making trips between Northern Uttar Pradesh i.e Moradabad, Bareilly, Haldwani going towards Jaipur/Alwar/Rajasthan which earlier made the trip via NH21 section of Moradabad- Aligarh- Mathura- Bharatpur- Amoli- Amoli – Mahwa – Laxmangarh – Alwar, now has an alternative available in the form of the DME which provides direct connectivity from Faridabad. The alternative route will materialise as a conjunction of the DME and the Faridabad bypass. It will provide connectivity from Dausa – NE4 – Faridabad bypass at Kaligaon.
- By virtue of the route being supplemented by the Faridabad bypass, traffic destined to Delhi and north will get access to smoother passage by being able to avoid entering the city altogether.

2.19 A few sections of the greenfield expressway have been made operational with Sohna-Dausa-Lalsot section (Feb'23), Madhya Pradesh section (Sep'23), Vadodara-Bharuch section (Feb'24), Lalsot-Sawai-Madhopur section (Feb'24) and the Kota-Bundi Section (Dec'24) already being operationalised.

2.20 An additional spur has been constructed between Bandikui on NE4 and Bagrana on the Jaipur Ring Road (which is located west of TP1). This spur has been operational since July 2025[6]. As a result, a significant part of the increase in volumes observed by virtue of the DME has diverted away from the NH21 corridor. Based on the site observation, the section wise update on the Delhi Mumbai Expressway section is given below:

Table 2.3: Section Wise Delhi Mumbai Expressway status

S. No	Section	Length (in km)	Sub-Section	State	Status	Expected Data of Completion
1	Delhi-Faridabad-KMP	59	Faridabad-KMP	Delhi, Haryana	Operational	Opened Nov'24

[6] **Bandikui-Jaipur Expressway open to public, cuts Delhi-Jaipur travel time to 3 hours| India News**

S. No	Section	Length (in km)	Sub-Section	State	Status	Expected Data of Completion
2	Sohna-KMP-Vadodara	844	Sohna – Sawai Moadhopur	Haryana	Operational	Opened Sept'23
			Sawai-Madhopur-Jhalawar	Sawai-Madhopur-Jhalawar	Under Construction	Operational under trial on one side.
			Jhalawar-Timarwani	Jhalawar-Timarwani	Operational	Opened Sept'23
			Timarwani-Vadodara	Madhya Pradesh, Gujarat	Under Construction	Expected mid 2026 (90-% construction completed)[7]
3	Vadodara – Virar	354	Vadodara-Bharuch	Gujarat	Operational	Opened Feb'24
			Bharuch-Virar	Gujarat, Maharashtra	Under Construction	Expected in early 2028[8]
4	Virar- JNPT	92	Virar- JNPT	Maharashtra	Under Construction	Expected FY28
Spur Development						
5	Jaipur – Bandikui Expressway	67	Jaipur – Bandikui	Rajasthan	Operational	Operational July 2025

[7] Delhi-Mumbai Expressway: Latest package-wise update on Gujarat section | DeshGujarat

[8] https://deshgujarat.com/2025/05/31/delhi-mumbai-expressway-in-gujarat-section-wise-progress-update/.

3 Traffic Description

Introduction

3.1 This chapter outlines the historical and current traffic and revenues on the Asset, as well as our analysis of origin-destination (OD) data and traffic volume count (TVC) data. This includes data collected as a part of this study and previous studies of this Asset, as well as data provided by the Client.

3.2 Traffic demand data is generally collected and analysed to understand the volume and vehicle composition of demand currently using the Asset, while OD data is used to obtain a better understanding of commodity movements, travel patterns, trip lengths, trip purposes and areas of influence in the vicinity of the Asset, as well as the commodities being moved by goods vehicle. This analysis, combined with our understanding of the Asset (based on our site visits), enables us to identify the key drivers of demand, on the Asset.

3.3 Actual toll plaza data is used as the primary basis from which the current/base year annual average daily traffic (AADT) is established. This data is typically provided by the Client and independently analysed and validated by us using traffic volume count (TVC) information.

3.4 The below sections present historical traffic and revenue information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.

PCU factors considered for reporting

3.5 The PCU values have been taken from 'IRC 64:1990- Guidelines for Capacity of Roads in Rural Areas'. For MAV, based on the discussion with the Client, we have referred to the rigid and trailer splits in the latest TVC counts conducted in 2026 for calculating the effective PCU for MAVs. For rigid trailer trucks we have assumed a PCU factor of 3, whereas for trailer trucks we have assumed a PCU factor of 4.5. These factors have been used to arrive at the PCU values presented in the following sections.

Table 3.1: PCU factors

Vehicle Category	PCU Factor
CJV	1.0
Mini LCV	1.0
LCV	1.5
Bus/2A/3A	3.0
MAV	4.05

Vehicle Category	PCU Factor
OSV	4.5

Source: Steer analysis and IRC64,1990

Historical trends

3.6 The following table presents the historical variation in traffic volume at both the Asset plazas, in terms of total AADT, vehicle shares and yearly volume growth. The table below shows the traffic evolution on TP1 and TP2 of recent years (between FY16 and FY26)

Table 3.2: Historical evolution in AADT by vehicle class at TP1 – Amoli

Class	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR (16-26)
CJV	4,085	3,930	4,125	4,313	4,453	5,023	5,660	7,077	7,417	8,260	8,543	7.7%
LCV	1,069	1,060	1,085	966	867	454	303	295	293	293	286	(12.3%)
Bus/2A	1099	970	1035	1156	1230	1111	1373	1614	1724	1,920	1,946	7.5%
3A/MAV	3,594	3,705	4,229	3,506	3,512	3,640	3,540	3,715	3,852	3,978	4,136	1.4%
Total	**9,847**	**9,665**	**10,474**	**9,941**	**10,062**	**10,229**	**10,875**	**12,701**	**13,286**	**14,451**	**14,910**	**4.2%**
PCU	**23,530**	**23,424**	**25,972**	**23,419**	**23,656**	**23,768**	**24,560**	**27,396**	**28,617**	**30,558**	**31,547**	**3.0%**

Source: Steer analysis of the Client data, FY26 AADT represents the full year actual (April to March); Note: On this toll plaza, we have 3A/MAV combined volumes. However, for PCU calculations, to maintain consistency, we have used the shares derived from the latest TVC on the plaza

Table 3.3: Historical Tollable Traffic Levels at TP1 Amoli

Class	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR (16-26)
CJV	3,654	3,591	3,932	4,186	4,343	4,501	5,457	6,858	7,143	7,859	8,224	8.5%
LCV	1,049	1,043	1,077	959	861	435	296	290	287	285	281	(12.3%)
Bus/2A	1,039	954	1,025	1,147	1,224	1,096	1,360	1,605	1,711	1,905	1,936	6.4%
3A/MAV	3,360	3,551	4,160	3,450	3,454	3,577	3,502	3,672	3,775	3,956	4,129	2.1%
Tollable AADT	**9,102**	**9,139**	**10,194**	**9,742**	**9,881**	**9,610**	**10,615**	**12,423**	**12,914**	**14,004**	**14,571**	**4.8%**
Tollable PCU	**21,942**	**22,388**	**25,458**	**23,027**	**23,285**	**22,917**	**24,153**	**26,968**	**27,984**	**30,011**	**31,165**	**3.6%**

Source: Steer analysis of Client data; FY26 AADT represents the full year actual (April to March)

Table 3.4: Historical evolution in AADT by vehicle class at TP2 – Ludhawai

Class	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR (16-26)
CJV	4,266	4,278	4,588	4,876	5,208	5,837	6,916	8,421	8,724	9,557	10,060	9.0%
LCV	1,250	1,219	1,253	1,134	1,050	464	330	359	334	310	301	(13.3%)
Bus/2A	1076	985	1073	1164	1244	1142	1402	1653	1773	1,994	1,999	7.4%
3A/MAV	3,442	3,753	4,335	3,493	3,505	3,625	3,526	3,695	3,801	3,976	4,138	1.9%
Total	**10,034**	**10,236**	**11,249**	**10,667**	**11,007**	**11,069**	**12,174**	**14,129**	**14,631**	**15,836**	**16,497**	**5.1%**
PCU	**23,299**	**24,250**	**27,230**	**24,205**	**24,699**	**24,629**	**25,886**	**28,872**	**29,926**	**32,095**	**33,253**	**3.6%**

Source: Steer analysis of the Client data, FY26 AADT represents the full year actual (April to March); Note: On this toll plaza, we have 3A/MAV combined volumes. However, for PCU calculations, to maintain consistency, we have used the shares derived from the latest TVC on the plaza

Table 3.5: Historical Tollable Traffic Levels at TP2 Ludhawai

Class	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR (16-26)
CJV	4,001	3,933	4,328	4,741	5,089	5,413	6,694	8,207	8,484	9,215	9,710	9.3%
LCV	1,239	1,202	1,234	1,125	1,043	453	325	354	329	304	296	(13.3%)
Bus/2A	1056	969	1059	1155	1238	1129	1392	1647	1763	1,951	1,988	6.5%
3A/MAV	3,397	3,637	4,200	3,403	3,439	3,607	3,521	3,687	3,774	3,962	4,130	2.0%
Tollable AADT	**9,694**	**9,740**	**10,820**	**10,424**	**10,808**	**10,603**	**11,932**	**13,893**	**14,350**	**15,432**	**16,124**	**5.2%**
Tollable PCU	**22,775**	**23,362**	**26,353**	**23,665**	**24,285**	**24,077**	**25,607**	**28,600**	**29,540**	**31,558**	**32,832**	**3.7%**

Source: Steer analysis of Client data; FY26 AADT represents the full year actual (April to March)

3.7 As of FY26, the Asset is recording ~29,000 PCUs, with both plazas witnessing similar trends on a PCU as well as vehicle level. In terms of vehicle composition, CJVs are the largest contributors, accounting for over 57% of the traffic at TP1 and 61% at TP2, followed by MAVs with a share of around 30%.

3.8 3A/MAVs maintain significant importance as the second-largest traffic contributor on the Asset, holding a share of 27% at TP1 and 25% at TP2. This dominance in traffic is linked to the state's thriving marble and sand mining activities, which generate substantial demand for goods transportation services. Overall, the combination of historical trends and current insights highlights the dynamic nature of traffic patterns, influenced by infrastructural developments, regulatory changes, and regional economic activities

3.9 In terms of traffic growth, TP1 and TP2 observed a PCU CAGR of 3.0% and 3.6% respectively, between FY16 and FY26. For CJVs, TP1 witnessed a strong 7.7% CAGR between FY16 and FY26, while TP2 recorded a commendable 9.0% CAGR during the same period. This can be largely attributed to the upswing in tourism activity in Rajasthan, coupled with the reopening of popular tourist destinations. Notably, TP2 outpaced TP1 in growth due to its strategic proximity to pilgrimage sites such as Mahendipur Balaji, Mahua, and Agra, which experienced a surge in daily CJV trips. Additionally, TP2's direct connectivity to Morena and Gwalior via NH21 further bolstered the higher traffic volumes observed in this region.

3.10 The growth trajectory for 3A/MAV category has been relatively slower (1.4% CAGR at TP1 and 1.9% CAGR at TP2) over the same period. This stagnant trend is attributed to various factors affecting goods vehicle growth, including the diversion of traffic due to the opening of the Delhi Mumbai Expressway in February 2023 and fluctuations caused by erratic rainfall and holiday seasons like Diwali, particularly evident in lower October traffic volumes.

3.11 On MBEL, 2A and Buses have the same toll rates. (INR 200 and INR 95 for TP1 and TP2 respectively for a single ticket in FY26) and so do 3A and MAV (INR 320 and INR 155 for TP1 and TP2 respectively for a single ticket in FY26). Although 2A and Buses share the same toll rate, the current TMS reports them as separate categories. In contrast, 3A and MAV are combined into a single category. However, post FASTag implementation there

has been a reclassification of Buses and 2As which are now tolled basis their vehicle mapping. To accurately assess the historical growth of these categories and adjust for any discrepancies due to this reclassification, we have combined the 2A and Bus categories for our analysis.

3.12 To further validate individual growth of each category (Bus/2A/3A/MAV), we conducted independent counts at various points in time to ensure the true representation of individual volumes for the asset. The results of the split are presented in the 'Key findings of the TVC data analysis' section of Chapter 3 of the report. Therefore, the split that we have derived from our counts is the split we are using in our projection to forecast the growth of each individual category for this Asset.

Historical Revenue

3.13 Table 3.6 below presents the reported historical revenue on the Asset.

Table 3.6: Historical revenue evolution (in INR crores) and AADC (in INR Lakh) :

	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY16 –FY26
Amoli												
Total	**31.9**	**31.5**	**41.0**	**39.1**	**42.8**	**44.0**	**53.5**	**62.7**	**68.6**	**74.2**	**77.3**	
AADC	8.7	8.6	11.2	10.7	11.7	12.1	14.6	17.2	18.7	20.3	21.2	9.3%
Ludhawai												
Total	**20.8**	**26.5**	**31.1**	**28.7**	**28.4**	**21.6**	**27.1**	**31.7**	**34.3**	**36.8**	**38.5**	
AADC	5.7	7.3	8.5	7.9	7.8	5.9	7.4	8.7	9.4	10.1	10.6	6.4%
Asset (Cr)	**52.7**	**58.0**	**72.1**	**67.8**	**71.3**	**65.6**	**80.7**	**94.4**	**102.9**	**111.0**	**115.8**	**8.2%**

Source: Steer analysis of the Client data, FY26 includes data till Mar'26

3.14 The revenue collection for the Asset has increased from INR 52.7 Cr in FY16 to INR 115.8Cr in FY26, witnessing a CAGR of 8.2%. Similarly, daily collection on the Asset has increased from INR 25.9 lakh in FY23 to INR 31.8 lakh in FY26. This growth can be attributed to various factors, including increased tourism activity in Rajasthan and re-opening of tourist places which led to positive revenue increase on the Asset. Positive tick in revenue prior FY23 is due to post-pandemic recovery, as discussed earlier.

3.15 Furthermore, an increase in overloading revenue has contributed to higher revenue receipts from FY22 onwards. In FY26, the daily overloading collection at Amoli is INR 0.91 lakhs, while at Ludhawai, it stands at INR 0.44 lakhs.

Toll Frequencies

3.16 Toll frequency or segmentation is typically the share of each ticket category recorded for a particular vehicle type. Each vehicle category has different segmentation. As a part of historical analysis, we calculate the toll frequency for each vehicle category from the monthly data shared by the client. The most common ticket categories observed on a typical National Highway concession are: Single, Return, Monthly, Local and Exempt. Given the local nature of traffic, some Assets offer custom made local passes to attract the local commuters to opt for these category passes instead of evading toll. Brief description of different ticket-types is given in the subsequent table.

3.17 Understanding the toll frequency gives insights into the nature of traffic. CJVs generally have higher shares of return passes or monthly passes, while heavy trucks mostly have single tickets since they travel long distance. However, this varies from Asset to Asset or even toll plaza to toll plaza. The Asset catering to short distance local traffic generally observes high share of return or other local monthly passes while the Asset catering to strategic long-distance traffic generally observes high share of single ticket traffic. The same can be verified through OD data where the vehicle category with high single ticket shares would have longer trip length with one of their trip end outside the Asset state. Other reasons for high single shares include the absence of return, local passes, through in and through-out tickets issued on the Asset. This is especially post- FASTag implementation where the user is allowed to pay at each toll plaza.

3.18 However, on this Asset since return and monthly passes are not available, 90% of the tickets issued are single. Primarily, the traffic which is not eligible for local personal and commercial passes have single ticket as the only option, which explains high share of single traffic on the Asset, as discussed in the next section.

3.19 The following are the types of tickets being sold at the plazas of the Asset.

Table 3.7: Typical ticket types sold at NHAI plazas

Category	Description
Single	Allows the vehicle to cross the toll plaza once
Local Personal	Discounted monthly pass only for private cars of residents within 20km radius of toll plaza
Local Commercial	50% discount on single trips for commercial vehicles registered in the local district
Exemptions	Officially exempted vehicles like ambulance, police cars, key political personnel etc.
Through traffic	Allows vehicle to buy ticket one plaza of the Asset and get redeemed at another and vice versa

Introduction of Annual pass for CJVs

3.20 The National Highway Authority of India launched the “The FASTag Annual Pass” on August 15, 2025, a prepaid facility that allows private CJVs to travel across designated National Highway and National Expressway toll plazas. The annual pass is worth INR 3,000. The pass is valid for one year or 200 trips, whichever occurs first and is applicable only to private, non-commercial vehicles (Car/Jeep/Vans).

Since this pass has been introduced by NHAI, it is not valid on

- state governed toll plazas on highways
- state governed toll plazas expressways
- Parking areas or other non-NHAI tolling locations

3.21 The pass can be activated via the RajmargYatra app or the NHAI website, and links directly to an existing FASTag.

The Annual Pass aims to:

- Promote cashless and seamless travel on national highways.

- Reduce congestion and improve traffic flow at tolls
- Provide cost-effective travel for frequent users of NH/NE toll roads

FASTag implementation

3.22 Government of India has introduced (and more recently, mandated) Electronic Toll Collection (ETC) across National Highways in India, collected via "FASTag". The timeline of ETC implementation is presented in the following table.

Table 3.8: Timeline of national ETC implementation

Date	ETC Development
2014	FASTag system set up as a pilot on the Ahmedabad to Mumbai stretch of the Golden Quadrilateral, in November 2014 it was also implemented on the Delhi to Mumbai stretch of the Quadrilateral.
December 2019	FASTag is made mandatory on all National Highways with only one lane on either side keep as a Cash lane, cash users entering ETC lanes were charged double the toll.
February 2021	FASTag is made mandatory for all vehicles at every toll plaza in the country starting 15th Feb 2021

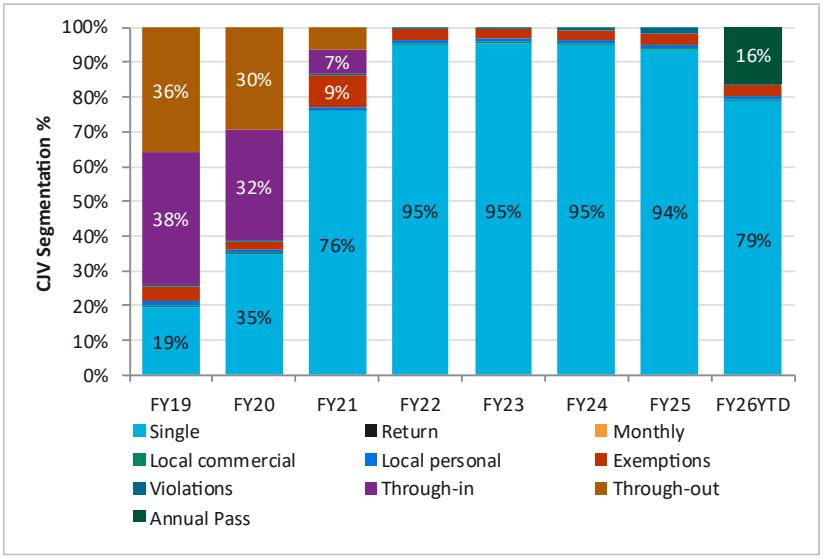
Source: NHAI.gov.in and Wikipedia

3.23 As we can see from Table 3.8 above most of the categories of vehicle types across the toll plaza are reporting more than 95% FASTag penetration, with CJV's also reporting more than 90% proportions. These high penetration levels improve the overall service levels of the toll plaza and reduces the transaction time.

Segmentation

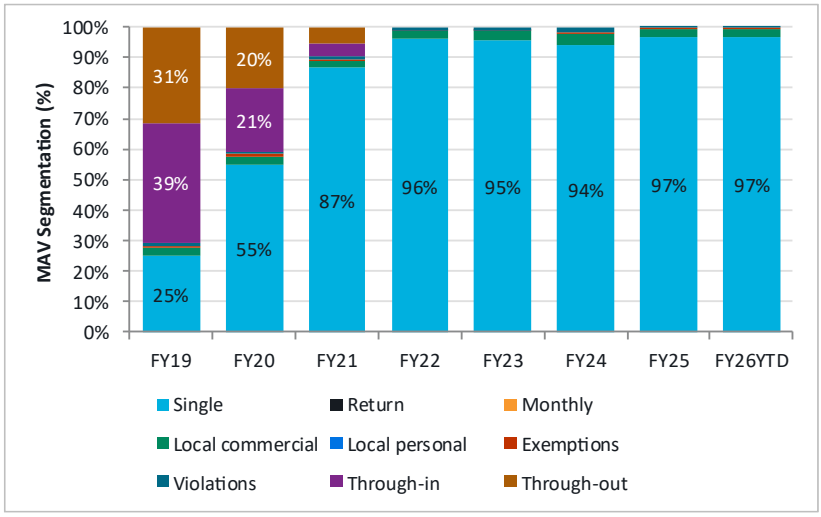
3.24 The following figures provide the toll segmentation for the historical years at TP1 Amoli and TP2 Ludhawai for CJV and MAV while the table provides the same for the remaining vehicle types.

Figure 3.1 Ticket-segmentation for CJV at TP1 Amoli



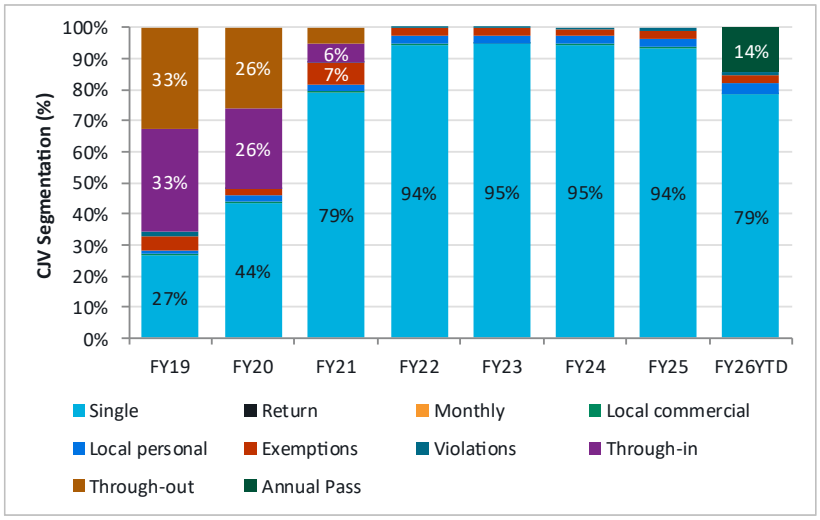
Source: Steer analysis of the Client data, FY26 YTD includes data till February'26; Segmentation does not include return trips

Figure 3.2 Ticket-segmentation for MAV at TP1 Amoli



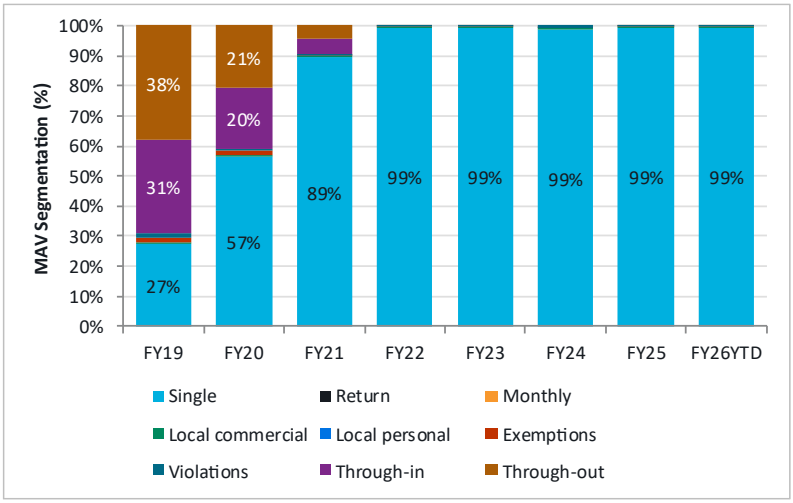
Source: Steer analysis of the Client data, * FY26 YTD includes data till February'26; Segmentation does not include return trips

Figure 3.3 Ticket-segmentation for CJV at TP2 Ludhawai



Source: Steer analysis of the Client data, FY26 YTD includes data till February '25; Segmentation does not include return trips

Figure 3.4 Ticket Segmentation for MAV at TP2 Ludhawai



Source: Steer analysis of the Client data, * FY26 YTD includes data till February'26; Segmentation does not include return trips

3.25 CJV segmentation observed on the Asset remained stable between FY22 and FY25, with the share of single trips observed to be in the range of 94%-95% for both TP1 and TP2. However, the introduction of annual passes for CJVs in August 2025 by the NHAI has led to the respective shares being 79% as of February 2026. The rapid adoption of the pass can be seen by the 16% and 14% shares observed at TP1 and TP2 respectively, as of FY26YTD.

3.26 It is important to note that the Asset does not offer a return ticket option, which explains the disproportionately high proportion of single-ticket transactions in the toll segmentation. Also, the CJVs plying on the Asset are doing short-medium distanced movement within 300kms also in the Figure 3.17 and Figure 3.18 below. Major share of these CJV trips originate outside 10kms of the Asset making them non-valid for a discounted local pass. This is in line with the Asset being a major tourist driven corridor fetching passenger from other surrounding regions.

Table 3.9: Historical ticket segmentation at TP1 Amoli (LCVs)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26YTD
Single	25%	31%	66.0%	97%	97%	97%	97%	98%
Local commercial	2%	2%	2.1%	1%	1%	1%	1%	1%
Violation	0%	0%	0.5%	1%	0%	0%	1%	0%
Exemption	1%	1%	3.5%	2%	2%	2%	2%	1%
Through traffic in	35%	33%	15%	-	-	-	-	-
Through traffic out	36%	33%	13.5%	-	-	-	-	-

Table 3.10: Historical ticket segmentation at TP1 Amoli (Bus)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26YTD
Single	13%	44%	93%	99%	99%	99%	95%	99%
Local commercial	1%	1%	1%	0%	0%	1%	3%	1%
Violation	1%	0%	0%	0%	0%	0%	1%	0%
Exemption	0%	0%	1%	0%	0%	0%	2%	0%

Through traffic in	39%	29%	3%	0%	0%	-	-	-
Through traffic out	41%	27%	3%	-	-	-	-	-

Table 3.11: Historical ticket segmentation at TP1 Amoli (2 Axle)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26YTD
Single	36%	18%	32%	94%	91%	97%	95%	98%
Local commercial	2%	1%	2%	4%	7%	2%	3%	1%
Violation	0%	0%	1%	-	0%	0%	1%	0%
Exemption	1%	1%	2%	2%	3%	1%	2%	1%
Through traffic in	31%	41%	33%	-	-	-	-	-
Through traffic out	30%	39%	31%	-	-	-	-	-

Table 3.12: Historical ticket segmentation at TP2 Ludhawai (LCV)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26YTD
Single	33%	42%	68%	93%	93%	94%	93%	96%
Local commercial	2%	3%	3%	6%	5%	4%	5%	3%
Violation	1%	0%	0%	0%	0%	0%	0%	0%
Exemption	1%	1%	2%	1%	2%	2%	2%	1%
Through traffic in	30%	28%	14%	0%	0%	-	-	-
Through traffic out	31%	27%	13%	-	-	-	-	-

Table 3.13: Historical ticket segmentation at TP2 Ludhawai (Bus)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26YTD
Single	17%	45%	93%	99%	99%	99%	99%	98%
Local commercial	2%	1%	0%	0%	1%	1%	1%	2%
Violation	0%	-	0%	0%	0%	0%	0%	0%
Exemption	0%	0%	1%	1%	0%	0%	0%	0%
Through traffic in	35%	26%	3%	0%	0%	-	-	-
Through traffic out	42%	28%	3%	-	-	-	-	-

Table 3.14: Historical ticket segmentation at TP2 Ludhawai (2 Axle)

	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26YTD
Single	36%	16%	37%	99%	96%	99%	99%	99%
Local commercial	2%	0%	0%	0%	1%	0%	1%	0%
Violation	0%	0%	0%	0%	0%	0%	0%	0%
Exemption	2%	1%	1%	0%	3%	1%	0%	1%
Through traffic in	30%	41%	31%	-	-	-	-	-
Through traffic out	30%	41%	30%	-	-	-	-	-

Source: Steer analysis of the Client data, FY26 YTD includes 11 months of data from Apr'25-Feb'26

Overloading

3.27 The Asset being a part of NHAI concession follows the NHAI Overloading policy released in 2016 which bans the overloading of commercial vehicle on any NHAI toll plaza. In case of non-compliance, overloaded vehicles on the Asset are charged twice the toll fee they would otherwise pay for a Single ticket at the toll plaza.

3.28 The plaza currently charges overloading under single and local commercial category. These shares are determined using the total single journey traffic and total local commercial traffic. The table shows the share of overloaded vehicles paying twice the Single journey toll fee on each toll plaza upto FY26YTD. FY25 reported a lower percentage of overloading shares as compared to FY24. This can be a result of strict regulatory implementation of less overloading and the rainfall impact for most of the year on construction traffic which did not appear on the Asset.

Table 3.15: Overloading shares for FY19 - FY26

Class	TP1 Amoli							TP2 Ludhawai						
	Single Overloading shares													
	FY19	FY20	FY22	FY23	FY24	FY25	FY26	FY19	FY20	FY22	FY23	FY24	FY25	FY26
LCV	1.4%	8.0%	7.0%	6.0%	3.9%	3.9%	2.5%	0.1%	1.6%	4.5%	3.4%	2.1%	2.2%	1.7%
2A	5.3%	12.2%	31.4%	22.3%	11.2%	8.1%	3.6%	0.5%	5.3%	9.9%	5.1%	6.1%	4.9%	2.9%
MAV	6.1%	11.0%	10.3%	8.2%	5.7%	5.7%	5.3%	0.7%	9.0%	10.5%	8.6%	5.6%	6.3%	6.3%
	Local Commercial Overloading shares													
LCV	1.2%	3.2%	27.9%	55.6%	0.0%	-	-	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%	-
2A	15.2%	31.4%	9.3%	17.8%	0.0%	-	-	-	-	-	-	-	-	-
MAV	15.2%	38.3%	83.9%	83.7%	0.0%	-	-	0.1%	4.1%	32.4%	30.1%	0.1%	0.1%	0.1%

Source: Steer review of Client TMS data

Data Collection exercise

Overview

3.29 To validate and inform our forecasts, we collected primary data on the Asset through the surveys listed in Table 3-11 below. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas, which Steer also commissioned with a third party. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

Table 3.16: Data collection schedule

TP	3-day videography-based TVC			1-day OD survey	
	Start date	End date	Time (hrs)	Start date	Start time
TP1	17th Feb 2026	19 Feb 2026	0000-2359	17th Feb 2026	0900 hours
TP2	26 Jun 2023	29 Jun 2023	0000-2359	26 June 2023	27 June 2023

2Source: Steer analysis

3.30 It should be noted that, in our experience, traffic on national highways shows variation across the week due to the economic activities surrounding each road. To derive a representative TVC count considering daily variation, three-day traffic counts are generally recommended, and hence, in order to fully understand the impact of this weekly fluctuation on the Asset, we collected three-day counts at each toll plaza.

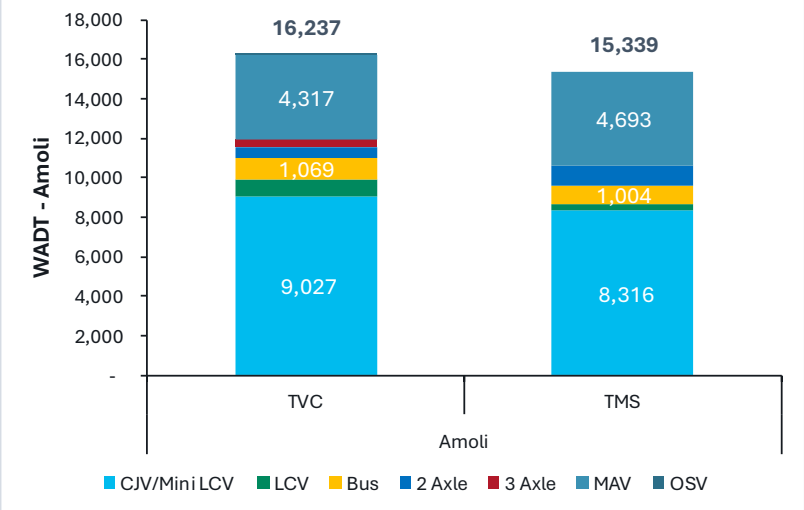
3.31 Please also note that current OD survey data was available only at Amoli toll plaza and not Ludhawai. Since Amoli and Ludhawai toll plazas show similar traffic profiles, as observed both from the historical data and our site visits, the OD findings seen at Amoli can be applied to Ludhwai as well.

Key findings of the TVC data analysis

TVC vs TMS comparison

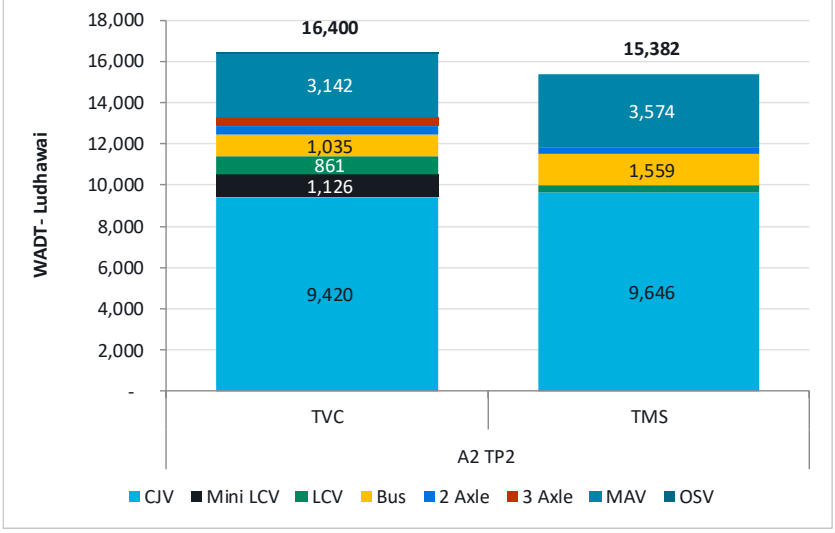
3.32 Taking an average of the seven-day TVC counts (17th Feb – 19th Feb 2026 , 0000-2359 hours) for TP1 and (26th Jun– 29th Jun 2023, 0000-2359 hours), we obtained the following weekly average daily traffic(WADT) for each toll plaza. This WADT excludes non-toll able vehicle such as tractors, two-wheelers, bullock-carts, etc., but includes officially exempt vehicles such as police cars, ambulances, emergency response vehicle, government vehicle and other vehicle types officially allowed as 'exempted' under the concession agreement.

Figure 3.5 TVC WADT- TP1



Source: Steer analysis of TVC data

Figure 3.6 TVC WADT- TP2

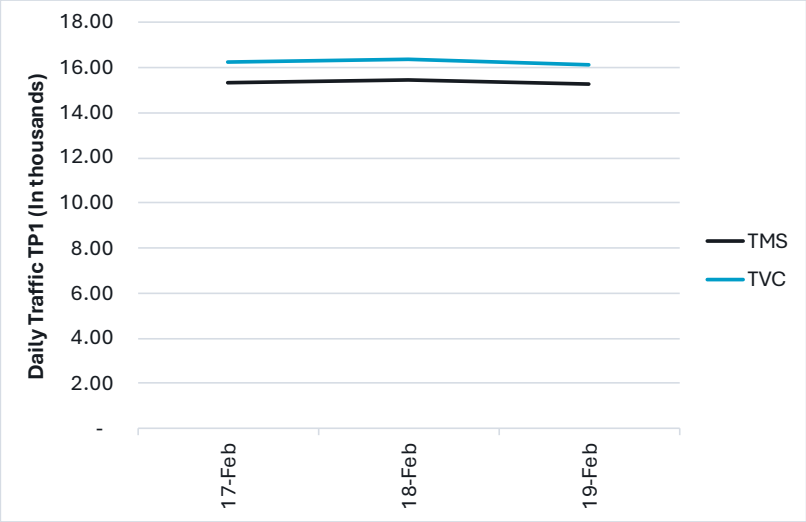


Source: Steer analysis of TVC data

3.33 As we use the TMS data to estimate the base year AADT, we have used our TVC data to validate the TMS data on those specific days, as provided by the Client.

3.34 The following figures show the comparison between the daily traffic observed by TVC and TMS for the two toll plazas. As shown in Figure 3.7 and Figure 3.8 below, the TVC and TMS overall are within the acceptable range of variation.[9]

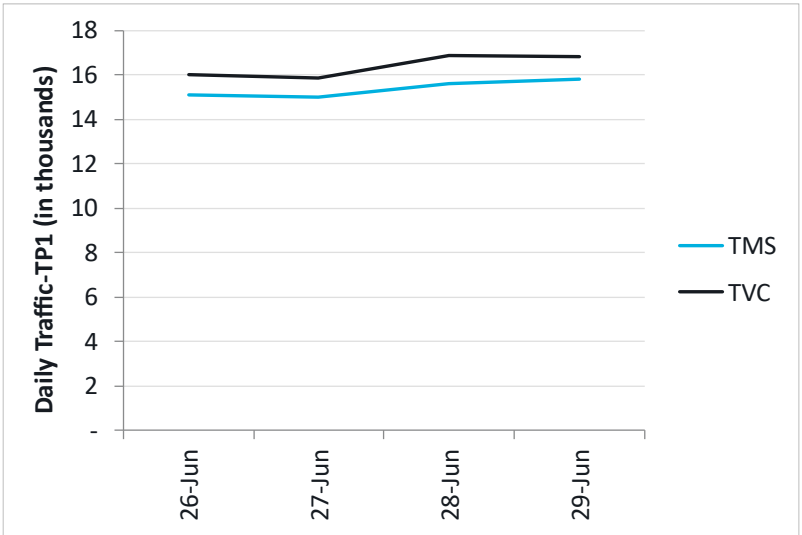
Figure 3.7: Comparison between TVC and TMS daily traffic data on TP1 Amoli (2026)



Source: Steer analysis of TVC and Client TMS data

[9] One of the reasons for the difference between TVC and TMS is the different time slots being considered. TMS data provided ranges from 0600 hrs to 0559 hrs whereas TVC data ranges from 0000 hrs to 1159 hrs.

Figure 3.8: Comparison between TVC and TMS daily traffic data on TP2 Ludhawai (2023)



Source: Steer analysis of TVC and Client TMS data

3.35 Figure 3.9 and Figure 3.10 below compare the shares of vehicle types at both plazas, between TVC and TMS data. It can be observed from the figure below, while shares of CJVs are higher for TVC compared to TMS, it is vice-versa for other vehicle categories. This difference can be attributed to common misclassification of vehicle categories as well as the TMS not recording a portion of the local mini LCVs.

Figure 3.9 Comparison between vehicle shares from TVC and TMS WADTs- TP1

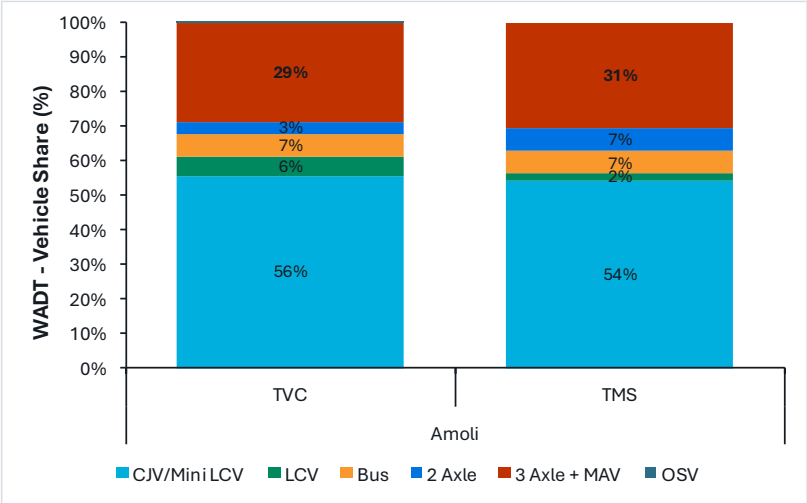
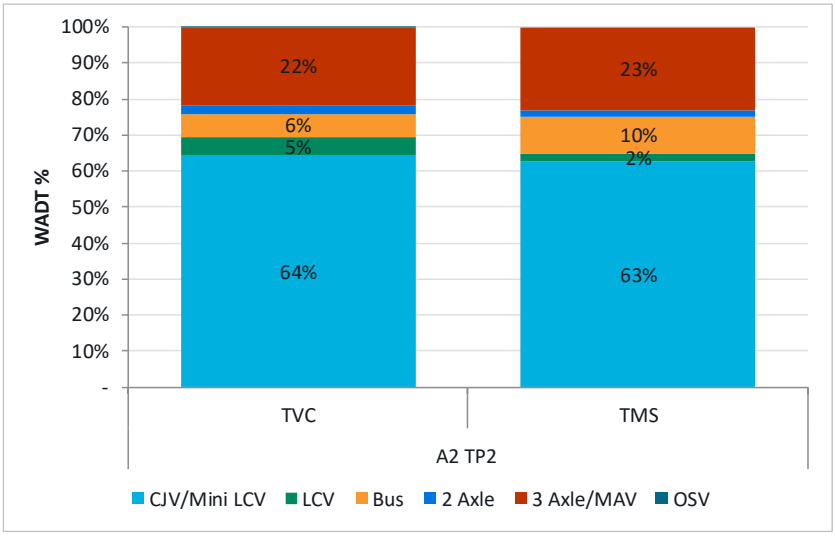


Figure 3.10 Comparison between vehicle shares from TVC and TMS WADTs- TP2



Source: Steer analysis of TVC and Client TMS data

3.36 Considering the smaller variation between the TVC and TMS data for the largest revenue generator 3A+MAVs, and an approximate match in the traffic volumes, the Client data has been used to estimate base year traffic.

Key findings of origin-destination analysis

Overview

3.37 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Asset. The OD analysis presented here is based on data collected on behalf of the Client in February 2026 at TP1 and June 2023 at TP2. More recent OD surveys were not undertaken as this Asset has a long operational history and we did not believe material changes in these patterns would have occurred in this period.

3.38 We have analysed the regional drivers of demand based on the following analysis:

1. Zonal influence
2. Commodity distribution
3. Top OD pairs
4. Trip length distribution

3.39 While zonal analysis and the list of top OD pairs help us to understand ‘where’ people and goods travel, commodity distribution sheds light on ‘what’ goods get transported on this Asset. Trip length distribution show ‘how far’ vehicles and people travel, and goods get transported. This set of analysis is generally used to estimate key drivers of traffic and aid making informed forecasting assumptions related to traffic demand elasticities, growth drivers and exogenous impacts.

Sample rates

3.40 Sample rates help understand the reliability of OD data. They are calculated by dividing OD samples captured by the traffic counts (based on the TVC data) during the corresponding time period. Table 3.17 below presents the sample rates for key vehicle

type aggregations at TP1 Amoli. We believe that the sample rates of the OD data are reasonable for the analysis required.

Table 3.17: Sample rates for OD data

Vehicle type	TP2 Amoli
Passenger (CJV+Bus)	13%
Goods (LCV+2A+3A+MAV)	42%

Source: Steer analysis of OD data

Zone categories

3.41 To facilitate better understanding of key regional traffic drivers as determined by their OD zones, and influenced by various towns, cities, states and regions in the vicinity of the Asset, we have aggregated zonal data as described in Table 3.18 below. The methodology behind this aggregation of zones may vary as per the characteristics displayed by the different Assets being studied.

Table 3.18: Zone aggregations for zonal influence analysis

Aggregate Zone	Description
Local	Local zones are those that fall on or very close to the Asset.
IAOI (Immediate Area of Influence)	IAOI zones are the locations which generate traffic and lie within approximately 75-150 km distance from the Asset.
Rest of Rajasthan	Rest of the cities/Districts in the state that Asset lies in (other than Local/IAOI)
Rest of Uttar Pradesh	Uttar Pradesh (excluding parts of Uttar Pradesh which are a part of IAOI Agra, Mathura)
Rest of North India	Uttarakhand, Haryana, Punjab, Jammu and Kashmir
Central NCR	Delhi State, including New Delhi
Gujarat & Maharashtra	Gujarat and Maharashtra (including Mumbai)
Central India	Madhya Pradesh, Chhattisgarh
South India	Tamil Nadu, Karnataka, Kerala, Andhra Pradesh
East & Northeast India	West Bengal, Orissa, Jharkhand and Northeast Indian states
Outside India	Nepal, Bhutan, Bangladesh

Source: Steer analysis

Zonal influence

3.42 The zonal influence is the contribution of the zone or the zonal aggregation to trips by a vehicle type. This section presents the zonal influence at TP1 Amoli, aggregated based on zonal aggregation listed in the previous sub-section. Please note that zonal influence is analysed based on trip ends and not trips. [10]

[10] For example, if out of 100 trips at a toll plaza on an Asset, 10 trips are between Hyderabad and Delhi and 90 trips are between Hyderabad and Chennai, then zonal influence of Hyderabad would be 50% since one end of all trips are at Hyderabad. Likewise, zonal influence of Delhi and Chennai would be 5% and 45%, respectively.

3.43 As can be seen from Figure 3.11 and Figure 3.12 below that the influence of local + IAOI zones (trip ends in the Asset's proximity) has the highest share across vehicle types. In terms of CJVs, TP1 and TP2 have a 52% and 70% share of such trips, while for MAVs, the corresponding figures are 31% and 32%.

3.44 In terms of MAVs, a substantial share of influence is also observed from Uttar Pradesh (15% at TP1 and 12% at TP2); Gujarat & Maharashtra (11% & 18% respectively) as well as East & Northeast India (5% and 10% respectively)

Figure 3.11: Zonal influence at TP1 Amoli

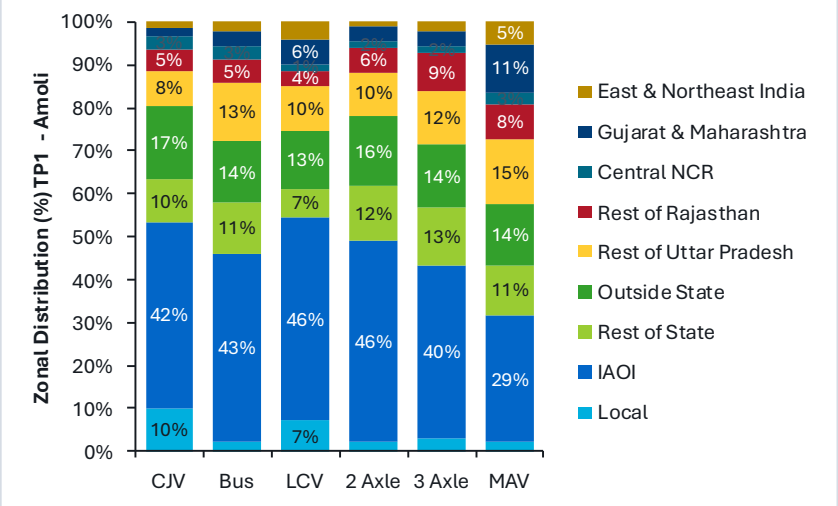
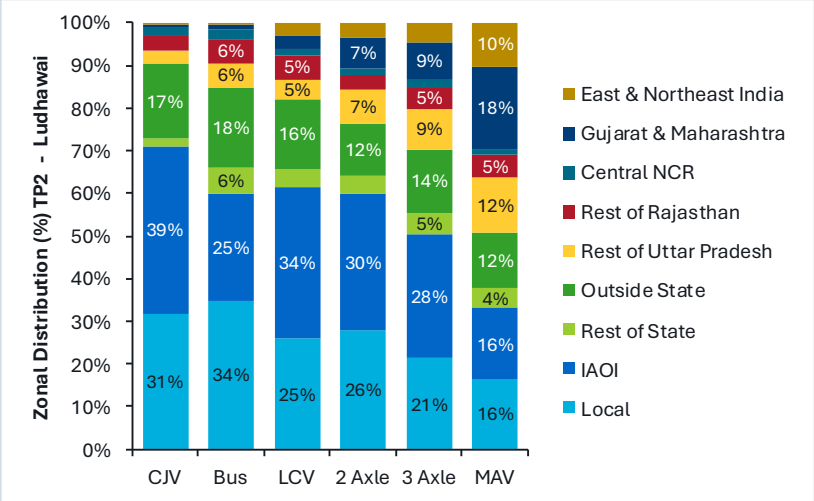


Figure 3.12: Zonal influence at TP2 Ludhawai



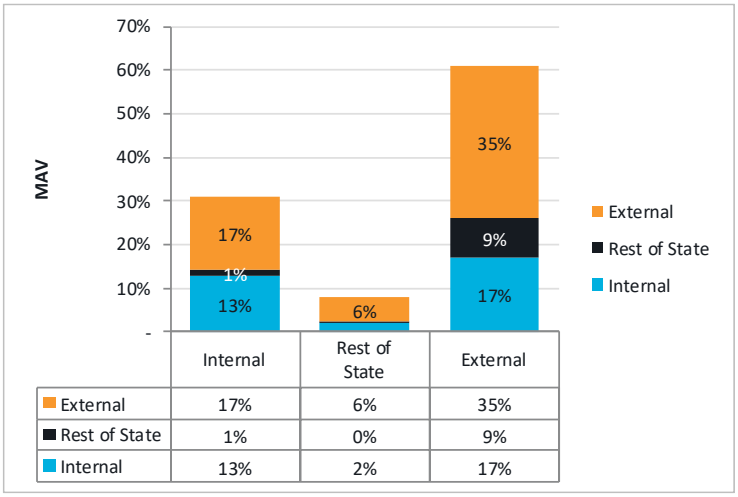
Source: Steer analysis of OD data

Internal External analysis

3.45 Internal-External analysis helps in identifying the trips which have both the origin and destination on or near the Asset i.e local/IAOI zones (Internal-Internal or I-I), any one end on the Asset (Internal-External or I-E), or neither end on the Asset i.e. through trips (External-External or E-E). RoS here represents areas within the state which are neither local or IAOI. 'Internal' zones are those that were analysed as 'local' and 'IAOI' in the zonal influence analysis, i.e. lying on the Asset, while 'External' zones are areas lying outside the state.

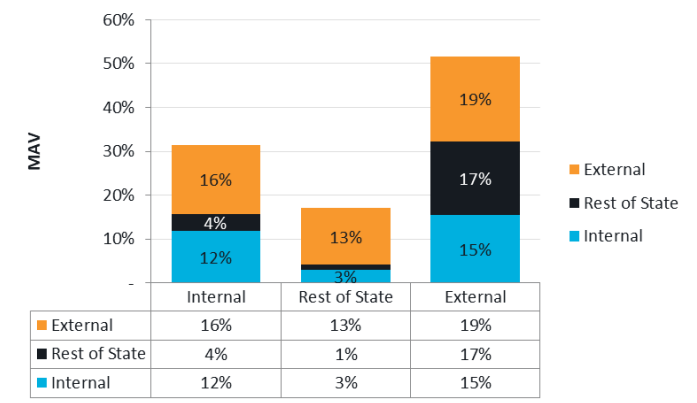
3.46 Figure 3.13 and Figure 3.14 show the distribution of trips based on these categories, for MAVs specifically. Understandably, these reflect the observations seen in the zonal influence presented earlier, at a higher level of aggregation but at a trip level.

Figure 3.13: Internal-external distribution at TP1 Amoli



	Internal	Rest of State	External
External	17%	6%	35%
Rest of State	1%	0%	9%
Internal	13%	2%	17%

Figure 3.14: Internal-external distribution at TP2 Ludhawai



	Internal	Rest of State	External
External	16%	13%	19%
Rest of State	4%	1%	17%
Internal	12%	3%	15%

Source: Steer analysis of OD data

3.47 We see that TP1 Amoli has about 35% of E-E trips for MAVs even though there is limited economic activity in the vicinity of the Asset, since the traffic on this Asset is largely non divertible due to absence of any other viable alternate roads. TP2 , on the other hand, has a lower share of external-external trips (19%) as per the last survey.

Commodity distribution

3.48 We have grouped various commodities into aggregate categories for ease of interpretation, as shown in the table below. The charts in the following sub-section present information in terms of aggregate commodity categories.

Table 3.19: Aggregate commodity categories

Commodity Description	Code	Combined codes used for charts
Agriculture Products / Cash crops (Wheat, Rice, Sugar cane,Maize etc.)	AGR	AGR

Cattle Food / Live Stock (sheep, ghoat, cow,cattle food etc)	LIV	
Perishable Items (Fruits, vegetables)	PER	GRO
Animal Products/Dairy/Eggs/Fish/Meat/Animals	DFM	
Groceries / Food items (Soap, Salt, Sugar, Pulses, Spices, Biscuits, bread,cool drinks, beer etc.)	GRO	
Building Material / Construction (Cement, Lime, Brick, fly ash, etc)	CNS	CNS
Sand/Clay	SND	
Stone (kota stone, marble, Granite, Aggregate stone etc.)	STN	
Ceramic	CRM	
Petroleum Products (Oil, LPG, CNG, etc.)	PET	PET
Chemicals / Fertilizers (Acids,Fertilizers etc.)	CHM	
Electrical/Manufacturing items (Electronic items, Medicine, Leather, Wine, Rubber/ Tyre, Plastics, Cloth, Paper etc.)	MAN	MAN
Raw Wood,Cork & Wood Products, Furn	WUD	
Machinery / Spare parts	MAC	
Automobiles (Finished products, auto parts, Car/bike manufacturing, New Chassis)	AUT	AUT
Basic / Fabricated Metals (Iron, Steel / Metal)	MET	MET
Mining Minerals (Coal, Gypsum, Cobalt etc.)	MIN	
Empty	EMT	EMT
Container	CTR	MSC
Miscellaneous (Parcel, Courier, House hold items etc.)	MSC	
Passengers	PAS	
Scrap	SCR	

Source: Steer analysis

3.49 Figure 3.16 and Figure 3.16 below present the commodity distribution for goods vehicles at both toll plazas, at the total level. Construction products are observed to have the highest shares (24% for MAVs at TP1 and 17% at TP2). It majorly comprises of marble being transported from mining hubs within Rajasthan such as Kota, Kishangarh towards Uttar Pradesh, Bihar, Odisha etc.

3.50 15-17% shares of miscellaneous items (that include couriers, parcels, and other consumer goods) indicate the prevalence of urban demand centres connected by the Asset, and the increasing penetration of e-commerce in cities across the country.

Figure 3.15: Commodity distribution at TP1

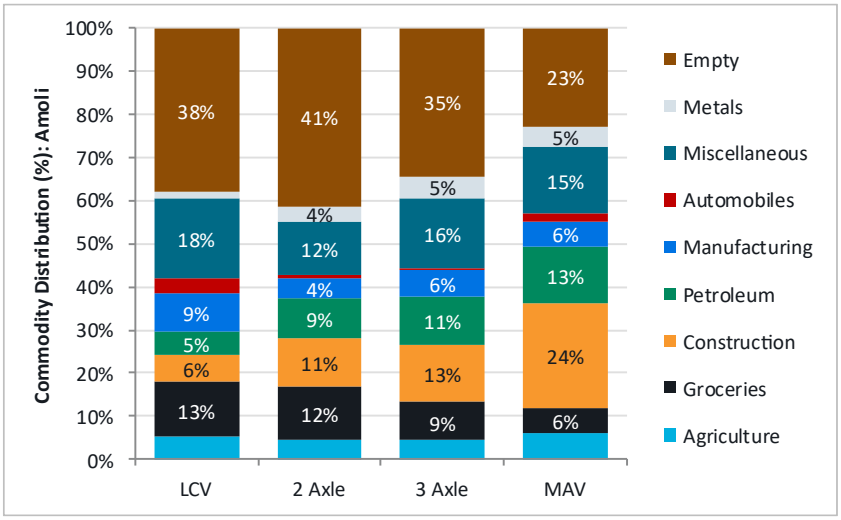
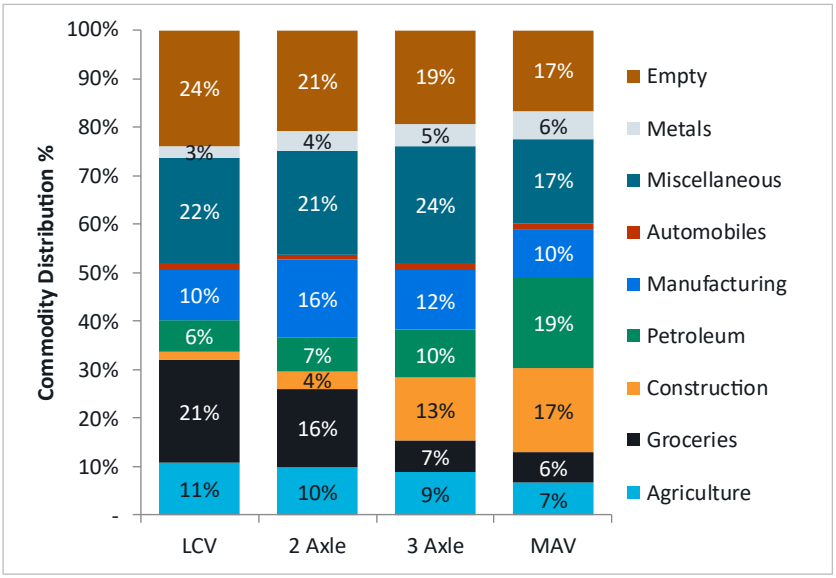


Figure 3.16: Commodity distribution at TP2



Source: Steer analysis of OD data

Trip length analysis

3.51 Trip-length distribution provides the distance-based profile of various vehicle categories. This helps to validate assumptions around the share of macro-economic drivers, inputs from zonal influence and toll segmentation. For ease of interpretation, we have categorised distances into 5 groups – local (0-65km), short-distance (65-300 km), medium-distance (300-500 km), long-distance (500-1000 km) and very-long-distance (1,000 – 5,000 km). The trip distances were derived as driving distances from Google Distance Matrix Tool based on zonal coordinates for OD pairs.[11]

[11] Google Distance API is a tool that is available on a chargeable basis from Google Maps Platform. Link: **https://developers.google.com/maps/documentation/distance-matrix/start**. Travel distance and time information for driving/transit under various congestion scenarios can be extracted through this tool by using macro-enabled Excel, R, etc.

Figure 3.17: Trip length distribution, TP1 Amoli

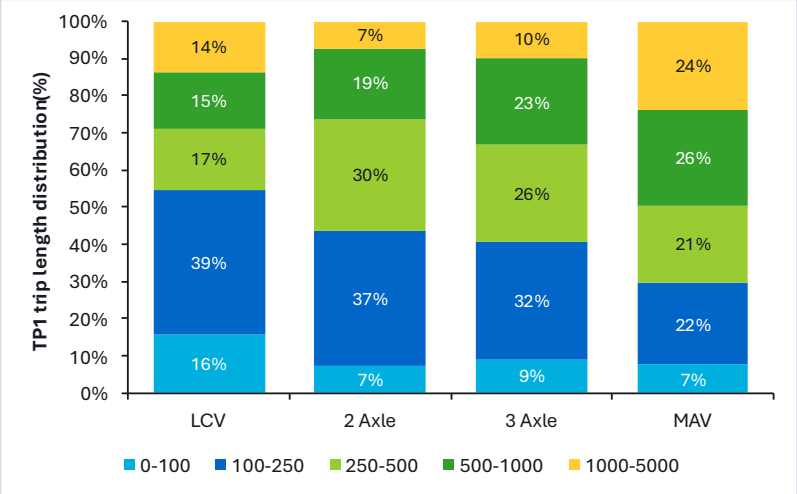
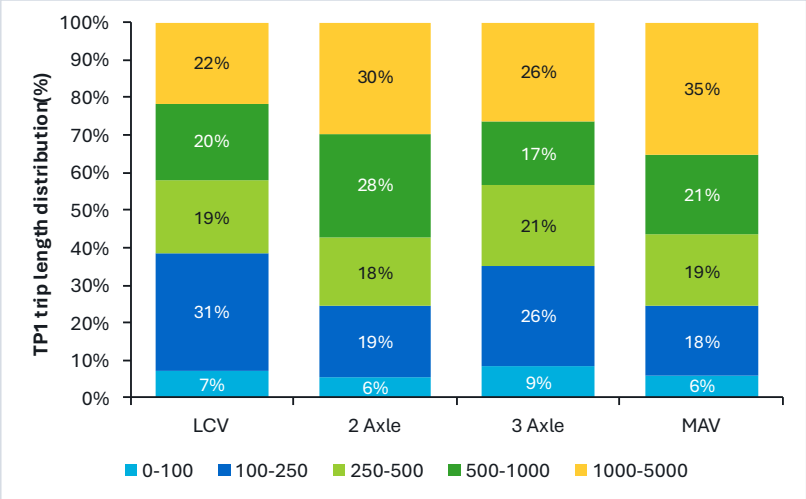


Figure 3.18: Trip length distribution, TP2 Ludhawai



Source: Steer analysis of OD data

3.52 As seen in Figure 3.17 and Figure 3.18 above, a significant share of trips across vehicle categories are less than 500km in length. These shares are observed to be higher on TP1 Amoli, due to its relative proximity to Jaipur.

3.53 On the other hand, over half of MAV trips at both plazas are seen to be longer than 500 km in length due to long distance movements between Gujarat at one end and Uttar Pradesh, east and north-eastern India at the other end. These findings are in line with the zonal influence and top OD pairs observed on the Asset as well.

Conclusions

3.54 In FY26, TP1 Amoli witnessed a total AADT of 14,910 and TP2 had a corresponding figure of 16,497. Looking at the vehicle shares of this Asset, the dominant vehicle class is CJV, holding 57% of vehicle share at TP1 and 61% at TP2 in FY26. Further, MAVs at TP1 has a higher share (22% compared to 15% at TP2).

3.55 The TVC counts does show some variation on the TMS, at the total level TMS is 5.9% lower than TVC at TP1, and 3% lower than TVC at TP2. However, the differences are small for

larger revenue generating categories (3A, MAV and OSV combined), being 0.5% and 1.4% at TP1 and TP2 respectively, which gives us confidence in the data moving forward

3.56 Key takeaways from the zonal distribution analysis include the dominant influence of IAOI and local trips, particularly for CJVs which is largely influenced by the demand centre of Jaipur. Construction materials and household/consumer products hold the greatest commodity shares, along with substantial shares for petroleum and manufactured goods.

3.57 The overall characteristic of the Asset is strategic is nature connecting several key urban and economic activity centres of Jaipur, Agra, Bharatpur in immediate vicinity with wider generators and attractors of south Rajasthan, Gujrat, Maharashtra to Uttar Pradesh and Delhi NCR also being connected by the Asset. Urban population and tourism linked growth is seen as an added advantage for CJV and Bus traffic.

4 Socio Economic Context

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the Asset is in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions of the region where the Asset is located and conditions on a national scale. These include:

- Changes in factors such as population, economic growth (regional and national) and industrial production; and
- Other local factors such as strategic port growth, and growth in local industries near the Assets.

4.2 In turn, the change in the competitive position of the Asset (and thus of the traffic capture it will achieve) derives from how the service offered and the prices charged on the Asset change in comparison to competing roads; and whether any new competing road facilities are available.

4.3 In this chapter, we assess the socio-economic indicators relevant to traffic growth on the Asset.

Population growth

4.4 We have analysed the key socioeconomic drivers of the background traffic demand in the state of Rajasthan where the Asset is located.

National Level

4.5 The total population in India has grown at a Compound Annual Growth Rate (CAGR) of 1.5% since 2000, decreasing over the years, as shown in Table 4.1 below. The World Bank forecasts this growth to decrease to 0.6% CAGR by the 2030-45 period.

Table 4.1: CAGR of population in India

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
1970 - 1985	2.3%	1.9%	3.8%
1985 - 2000	2.0%	1.7%	2.9%
2000 - 2015	1.5%	1.0%	2.6%
2015 – 2030*	1.0%	0.3%	2.3%
2030 – 2045*	0.6%	-0.3%	1.9%

Source: World Bank Data on Health Nutrition and Population Statistics, *forecast population growth

State Level

4.6 Table 4.2 shows the evolution of population in the state of Rajasthan (containing the Asset), compared to that of the country. Overall, as can be seen, the trend observed at the country level is also noticeable at the state level, namely, a move towards urban agglomeration with the growth in rural population being slower than that of urban population. Further, Rajasthan has grown at a rate which is slightly higher than the country average, in the decade between 2001 and 2011.

Table 4.2: Population Growth in India (2001 – 2011)

State	2001 Population (m)			2011 Population (m)			CAGR (2001 – 2011)		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Rajasthan	56.5	43.3	13.2	68.5	51.5	17.0	2.0%	1.8%	2.6%
India	1,028	742	286	1,210	833	377	1.6%	1.2%	2.8%

Source: National Institution for Transforming India (NITI Aayog) – Census Data

4.7 Due to the complexities of patterns of urbanisation, and the very dynamic nature of local population migration (which are very difficult to forecast with accuracy), we do not use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide the underlying socio-economic context of the state/trends in the regions in which the Asset is located.

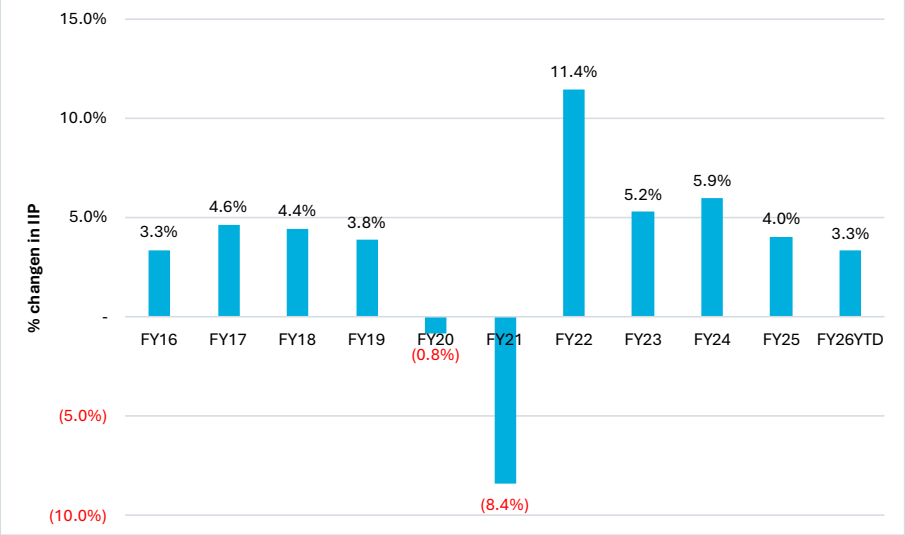
Economic Indicators

Industrial Production

4.8 The Index of Industrial Production (IIP) is a composite indicator that measures the short-term changes in the volume of production for a basket of industrial products. The IIP data tracks the manufacturing activity in different sectors of an economy, with mining, manufacturing, and electricity being the three broad sectors constituting the IIP.

4.9 At an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20 (as presented in Figure 4.1 below). In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. Post the immediate recovery in FY22, IIP growth has since stabilised, with FY25 recording 4%, and FY26YTD (till February 2026) recording 3.3% growth over FY25.

Figure 4.1: Annual growth – Index of Industrial Production (FY16-FY26YTD)



Source: Ministry of Statistics and Program Implementation (MoSPI). FY26YTD represents data till Feb'26

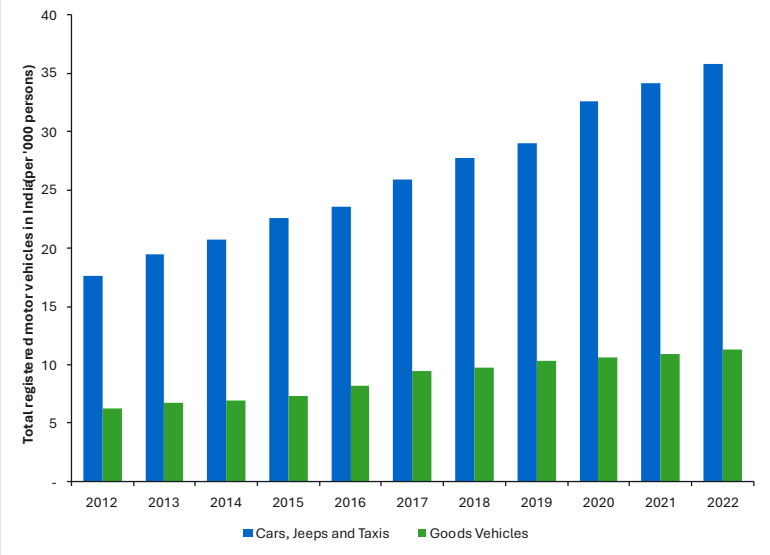
4.10 Since state-level IIP data is not as readily available as national level IIP, we have presented national IIP here to indicate nationwide activity in key industrial sectors like power, manufacturing, and mining, all of which influence long-distance commercial movements across the nation, and not unique to this asset. We, however, do not use it to forecast future travel demand growth since long-term forecast for IIP is not available through official sources such as MOSPI, RBI or through multilateral organisations like WB, or the IMF.

Vehicle Ownership

4.11 The gap in car ownership between India and developed nations remains substantial – with 36 cars/jeeps/taxis and 11 commercial vehicles per thousand people, as of FY22 (the latest year for which official data is available). However, with increasing per capita income levels, a booming economy and the subsequent increase in demand for mobility, the number of registered vehicles has been on a gradual upward trend

4.12 Overall, India still stands at a very nascent stage in the vehicle saturation curve, offering huge potential for growth going forward. Between FY12 and FY22, the CAGR for CJV and goods' vehicles registered in India was 8.6% and 7.3% respectively.

Figure 4.2: Total number of registered motor vehicles in India (per 1000 population

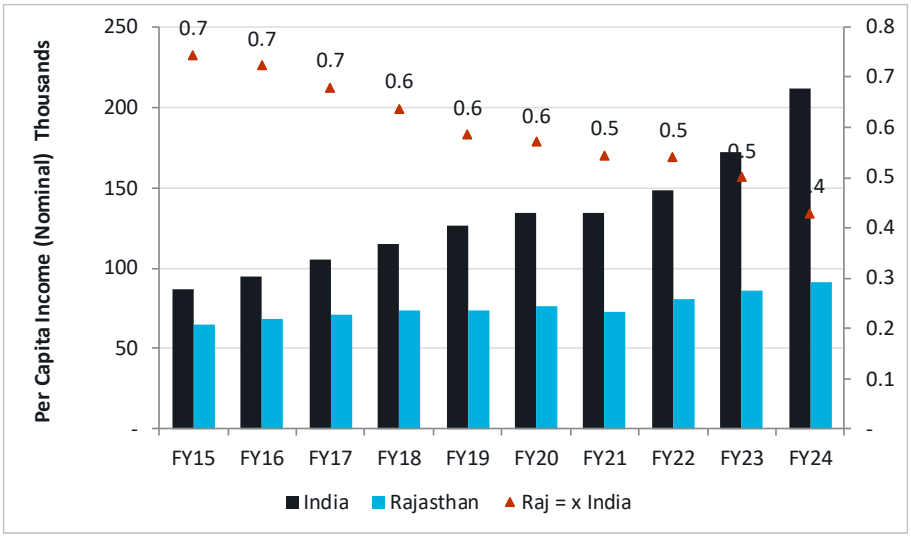


Source: Ministry of Road Transport and Highways (MoRTH)

Per Capita Income (PCI)

4.13 The per capita income of the state where the Asset lies, i.e., Rajasthan has been lower than the national average, trending at 50-60% of the national per capita income in the recent years. This level of income suggests that the asset is influenced by both Delhi and north and Uttar Pradesh, both of which have exhibited faster growth than Rajasthan's statewide trends in recent years and are expected to continue on this trajectory. Going forward, we therefore expect local consumption to be strong which would drive the growth in both passenger and commercial traffic.

Figure 4.3: Per Capita Income



Source: Steer analysis of MoSPI data

4.14 However, given the difficulty in obtaining granular district level PCI data it is not advisable to use this as a growth driver. Also, the long-term forecast for PCI is not available we therefore refrain from using it to forecast traffic.

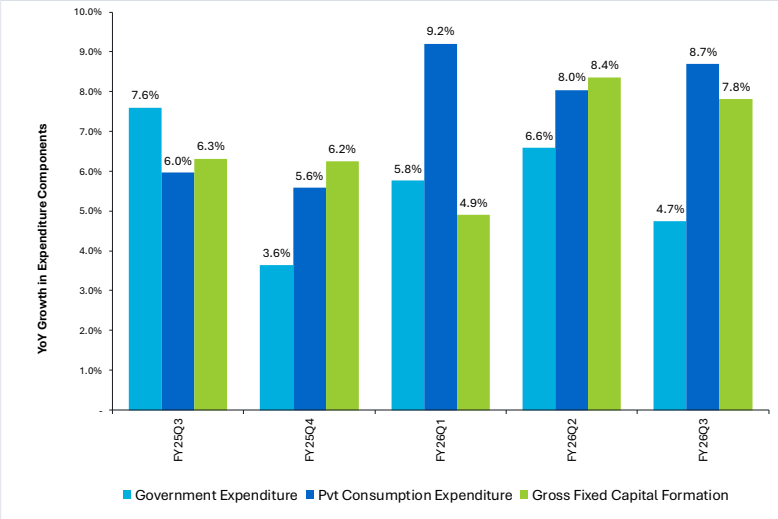
Economic growth

India's Performance

4.15 Despite a slowdown in the economy during H1FY25, the Indian economy has observed strong growth each quarter since FY25Q2, with the latest published estimates for FY26Q3 GDP at 7.8% over FY25Q3. This performance has been driven by strong growth in investment and consumption expenditures and higher consumer optimism for the year ahead[12].

4.16 The figure below, we present quarterly Y-o-Y growth in three major components of GDP – government expenditures, consumption expenditures, and business investment (gross fixed capital expenditure) over the past year (FY25Q3-FY26Q3).

Figure 4.4: YoY growth in expenditure components of GDP



Source: Steer Analysis of MOSPI Data

4.17 While consumption and investment expenditures have continued to show consistent growth over the past two quarters, government expenditures observed a marginal decline in FY25Q4. In FY26Q1, government expenditures rebounded, recording 5.8% growth over FY25Q1 levels.

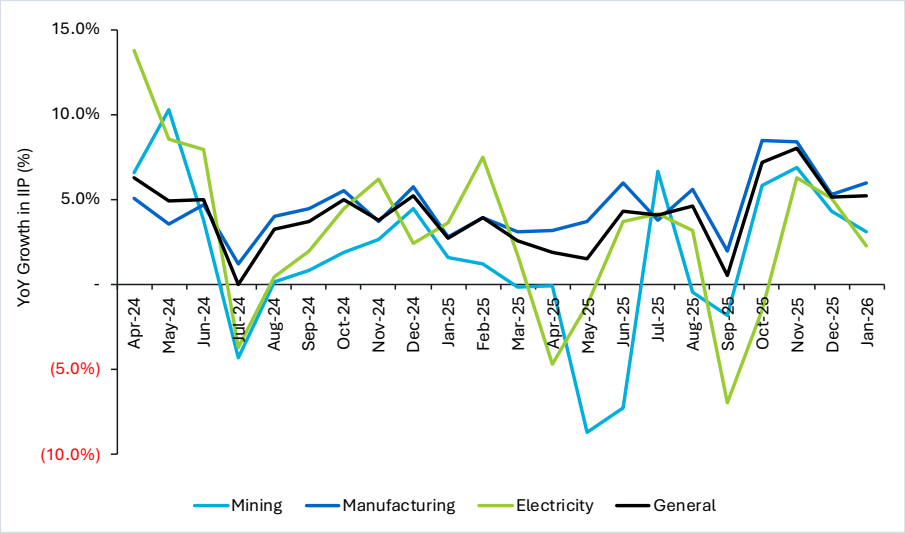
4.18 Performance across different types of industrial activities (such as Mining, Manufacturing, and Power Generation) directly impact freight movement and commercial traffic volume growth across the country, including on the Asset. In the figure below, we present growth trends in IIP – a measure that tracks the performance of the economy across these activities. As of FY26YTD (Apr'25-Feb '26), the Manufacturing sector continues to perform strongly, recording positive y-o-y growth since FY25Q3. While industrial activity across the two other sectors (i.e., Power Generation and Mining) dropped between May and Jun/Jul '25, they have since rebounded and show signs of continued growth going forward.

4.19 In addition to monthly trends in IIP, the figure below presents y-o-y growth of quarterly GVA in four industrial sectors - Mining (& Quarrying), Manufacturing, Electricity (and other Utilities), and Construction. While the Mining and Power sectors observed decline and

[12] Government of India PIB Release (27th February 2026)

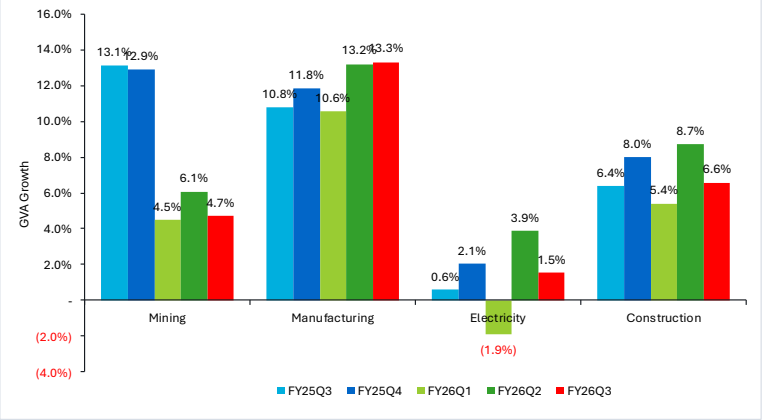
muted growth in FY26Q1, the Manufacturing and Construction sectors experienced strong growth. While overall economic growth has remained resilient as of FY26YTD, performance across industries have varied, impacting economic growth across different regions and on the Asset as well.

Figure 4.5: Month on Month IIP performance



Source: Steer Analysis of MOSPI Data

Figure 4.6: Industrial components of GVA



Source: Steer Analysis of MOSPI Data

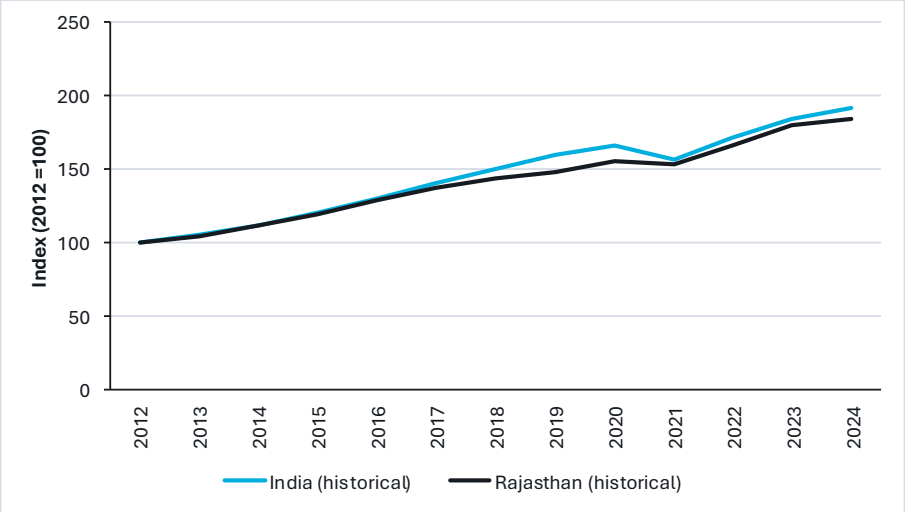
GDP and GSDP Growth

4.20 Over the period FY12-FY24, the Indian economic has grown at a CAGR of approx. 6% aided by growth in the tertiary sector which grew at a CAGR of approx. 6.9% over the same period. The economic growth of Rajasthan (state GSDP) has been somewhat slower than the country overall for the past 5 years but it seems to have caught up with the national rate since the COVID19 pandemic. [13]

[13] GSDP is the Gross State Domestic Product i.e., the GDP equivalent for a particular state, it is the final value of goods and services produced by a particular state

4.21 The Asset, lies in the state of Rajasthan. The state contributes approximately 5% to India's GDP. The following figures illustrates the evolution of India and Rajasthan GDP.

Figure 4.7: Evolution of Rajasthan's state GDP and national GDP; FY12-24



Source: Ministry of Statistics and Program Implementation (MoSPI)

Economic activity in the state

4.22 Rajasthan, the largest (area-wise) state in India, is in the north-western part of the country. In terms of sectoral contribution to the state GDP, tertiary sector has the highest share followed by primary and secondary, with the shares remaining stable during the last five years.

4.23 The tourism and transport sector constitutes a major share of the state's tertiary sector. Rajasthan is considered a favoured tourist destination in India, with key tourist attractions being Jaipur, Jodhpur, Jaisalmer, Bharatpur and Udaipur. In 2018, the state attracted over 50 million domestic tourist arrivals in the country whereas, in terms of foreign tourist arrivals it holds fifth position with over 1.7 million tourist visiting state every year. [14]

4.24 In terms of secondary sector, the state has key industrial areas in Kishangarh (marble); Manesar (automobile), Pali and Jodhpur (textiles), Chittorgah - Neemuch (cement), Kota (stone). Rajasthan is one of the largest mineral producing states in India and the sole producer of lead and zinc ores in the country. The state has one of the largest limestone reserves, making it a hub for cement industries. In terms of agricultural produce, the state is largely known for its production of wheat, cotton, cereals and pulses.

Forecasts for growth drivers

4.25 Following the discussion in Chapter 4 on the nature of economic activity in the state of Rajasthan, in this section, we describe the assumptions in relation to forecasts of the key macro-economic drivers of traffic growth. We have based our forecast on GDP and GSDP using forecasts of GDP as provided by the Client.

[14] http://tourism.gov.in/sites/default/files/Other/India%20Tourism%20Statistics%20at%20a%20Glance%202019.pdf

National GDP

4.26 After the last period of economic slowdown in FY11-12, the country experienced an economic downturn again in late FY19 with FY20 having reported a GDP growth of 4% (relative to an average growth rate of 7% per year between FY13 and FY19). India's GDP growth declined as domestic investment and consumption demand were already under stress because of the liquidity crunch before Covid-19. Other factors that contributed to the economic slowdown included reduced growth rates in automobile sales and production, liquidity crunch in credit markets and rising number of Non-Performing Assets (NPAs) within the banking sector, as well as lower manufacturing production and lower rural consumption.[15]

4.27 The Covid19 outbreak had a significant impact on the Indian economy during the first two quarters of FY21 as government mandated lockdowns across the country effectively stalled economic activity and growth. The growth momentum eventually picked up in Q3 of FY21, with a sharp rebound in the economy in FY22 (GDP recorded 9.7% growth over FY21), and has since observed a consistent growth of 7.6% in FY23, 9.2% in FY24 and 6.5% in FY25.

4.28 Figure 4.8 below shows client provided GDP projections for India. The forecast provided by the Client expects the India GDP to grow at 6.5% between FY27-FY28 and gradually tapering down to 4.1% by FY32, end of concession. The India GDP growth forecast provided by the Client is broadly in line with other independent forecasts available from reliable sources such as IMF, World Bank and RBI in the medium term.

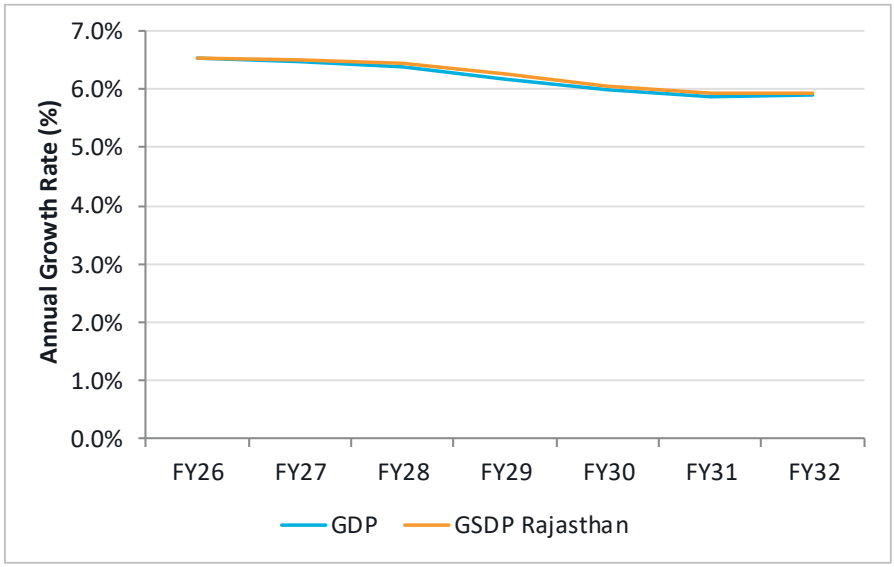
4.29 Over the near term, Rajasthan's GSDP growth assumes to continue outpacing the national GDP throughout the concession period. We believe this is a realistic position based on the current and future development plans of local and state governments

4.30 There are significant investments expected to take place as part of the state's plan and Rajasthan is expected to receive a significant proportion of these investments, given its leading position in industrial investments. Higher than expected GSDP growth rate across the concession period could be achieved if such investments were realised as they are expected to give an additional boost to Rajasthan's state economy.

4.31 In the long term, we believe that as other smaller state economies of India catch up with the national economic growth, the gap between growth rates of larger state economies, such as Gujarat, Maharashtra and Karnataka, and the national GDP growth rate will start reducing.

[15] **Data | India's GDP was on a downward slope even before COVID-19 wreaked havoc - The Hindu** (September 2020)

Figure 4.8: GDP-GSDP forecast



Source: GDP forecast provided by Client, GSDP based on Steer analysis

5 FY26 Base Year AADT and Traffic growth analysis

Introduction

5.1 In this chapter, we present our approach, assumptions and results for base (or background) traffic growth for each vehicle category on the Asset.

5.2 Traffic growth is commonly related to a variety of macro-economic and industry- or commodity-specific factors (hereafter referred to as 'traffic growth drivers'). These growth drivers are typically identified from the results of the OD data analysis and the site visits that help us appreciate the nature of traffic movement – 'what' travels 'where' and 'why'.

5.3 To understand the historical traffic trends in relation to these growth drivers, we carry out regression analysis to determine the historical relationship between each traffic belonging to each major vehicle category and its macroeconomic growth driver at each toll plaza. The dynamics of traffic demand is the dependent variable while the dynamics of one or more identified growth drivers are the independent or explanatory variables.

5.4 Typically, passenger and light commercial vehicles like cars, buses, LCVs and 2-axle trucks grow in line with the GSDP of the state where the toll road is located. Heavy vehicle traffic like 3-axle trucks and MAVs grow in line with the national GDP. This could be because most light vehicles tend to travel shorter distances within the state, whereas a significant proportion of heavy vehicles carry commodities for long-distances across the country. These commodities also tend to be part of industry ecosystems whose demand-supply relationships are scattered across the country and therefore relate more with GDP growth.

FY26 Base year AADT estimates

5.5 The base year is the year on which long-term background forecast growth rates are applied to derive year-wise average annual daily traffic (AADT) estimates for forecast years. This is therefore an important aspect of our forecasting approach as traffic and ultimately revenue forecasts for future years are built on top of the base year traffic estimate. We have used FY26 as the base year for AADT estimates for the forecast years.

5.6 As described previously in Chapter 3, to establish the base year (FY26) traffic position, we utilized information from various sources – including from the Client and our context knowledge, to assess a reasonable demand on the corridor.

Methodology

5.7 The base traffic for FY26 has been estimated using 11 months of actual traffic data (April to February). Each toll plaza's seasonality correction factors were applied on the actual

MADTs of Apr-25 to Feb-26 to obtain seasonally corrected estimates for FY26 traffic. An average of these estimates was considered to be the FY26 base traffic.

Seasonal Correction Factors

5.8 Traffic on any Asset varies on a month-on-month level. Such variations maybe due to monsoons (typically Jul to Sept) or due to festivals in the region. For e.g. It is observed that typically the truck traffic during the first half of the financial year (April-September) is generally lower than the annual average, mainly because of peak summer season followed by monsoons affecting the freight movement patterns in large parts of the country in the July-September period. In addition to these there may be other seasonal variations specific to the Asset.

5.9 In order to normalise for these variations across the year to provide an AADT estimate, Seasonality Correction Factors (SCF) are used. SCFs are estimated to convert the monthly traffic numbers to an AADT level while accounting for seasonal variation due to local/national festivals, weather changes and/or temporary external impacts. These are typically estimated using historical data for each plaza and vehicle category over multiple years. An SCF >1 means that the traffic for the month is lower than the annual average and vice-versa.

5.10 To achieve this, we studied the seasonality between monthly average daily traffic (MADT) – We have analysed the seasonality trends between monthly average daily traffic (MADT) and AADT for data during the historical years of tolling (as described in Chapter 3, section 3.19), excluding the years that were impacted by specific events. This averaged seasonality trend is then applied to the monthly traffic to obtain AADT as mentioned in the previous sections.

5.11 The seasonality factors assumed for individual vehicle types are shown in the table below.

Table 5.1: Seasonality correction factors for TP1 Amoli

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	0.98	1.02	0.95	1.02	1.03	1.12	1.14	0.94	0.93	1.06	0.98	0.91
LCV	0.99	1.01	0.96	1.09	1.15	1.14	1.03	1.00	0.98	1.02	0.84	0.97
Bus/2A	1.06	1.01	1.00	1.08	1.10	1.04	0.99	0.93	0.98	1.04	0.89	0.93
3A/MAV	1.09	1.03	1.05	1.07	1.12	1.06	1.01	1.03	0.91	0.95	0.87	0.92

Table 5.2: Seasonality correction factors for TP2 Ludhawai

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	0.98	1.00	0.95	1.04	1.03	1.12	1.13	0.94	0.94	1.04	0.95	0.94
LCV	0.99	1.05	0.99	1.05	1.11	1.09	1.05	0.96	0.95	0.98	0.86	1.05
Bus/2A	1.06	1.02	0.99	1.08	1.09	1.04	1.00	0.94	0.99	1.04	0.88	0.94
3A/MAV	1.09	1.03	1.04	1.06	1.12	1.05	1.01	1.03	0.92	0.95	0.87	0.92

Source: Steer analysis of Client historical TMS data

Adopted FY26 base estimates

5.12 Based on the above methodology and inputs, the adopted base for both toll plazas has been shown below:

Table 5.3 Adopted base estimates - TP1 Amoli

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	8,262	8,469	8,573	3.8%
LCV	293	286	291	(0.6%)
Bus/2A	1,919	1,936	1,956	2.0%
3A/MAV	3,977	4,127	4,177	5.0%
Total	**14,451**	**14,819**	**14,997**	**3.8%**
PCUs	**30,077**	**31,064**	**31,433**	**4.5%**

Source: Steer analysis: FY25 actual full year, FY26YTD includes 11 months of FY26, FY26A is adopted base for FY26. Note: On this toll plaza, we have 3A/MAV combined volumes. However, for PCU calculations, to maintain consistency, we have used the shares derived from the latest TVC on the plaza

Table 5.4: Adopted base estimates- TP2 Ludhawai

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	9,557	9,994	10,070	5.4%
LCV	310	300	302	(2.5%)
Bus/2A	1,994	1,989	2,009	0.7%
3A/MAV	3,976	4,128	4,172	4.9%
Total	**15,836**	**16,412**	**16,552**	**4.5%**
PCUs	**31,618**	**32,770**	**33,081**	**4.6%**

Source: Steer analysis: FY25 actual full year, FY26YTD includes 11 months of FY26, FY26A is adopted base for FY26. Note: On this toll plaza, we have 3A/MAV combined volumes. However, for PCU calculations, to maintain consistency, we have used the shares derived from the latest TVC on the plaza

5.13 From the above tables it can be ascertained that TP1 and TP2 are expected to grow by 4.0% and 4.2% in PCU terms respectively, in FY26. This growth on both toll plazas is being driven off a robust growth profile observed in 3A/MAVs. This can be attributed to the overall growth of the urban centres in close vicinity of the Asset including increased economic activity helping commercial traffic growth.

5.14 We have combined Bus and 2A volumes for our base estimation because as mentioned before, TMS reports discrepancies in the data. Therefore, the split that we have derived from our counts is the split we are using in our projection to forecast the growth of each individual category for this Asset.

Estimation of background elasticities

5.15 Elasticities, in the case of traffic growth are the relationships between traffic and growth drivers. Multiplied with forecasts of growth drivers like GDP or GSDP, they provide the forecasts of background traffic growth rates.

5.16 Table 5.5 presents the growth drivers identified to model the forecast background traffic growth rates.

Table 5.5: Identified growth drivers to model traffic growth

Vehicle type	GDP India	GSDP Rajasthan

Car		100%
LCV		100%
Bus		100%
2A	100%	
3A	100%	
MAV	100%	

Source: Steer analysis of Client data

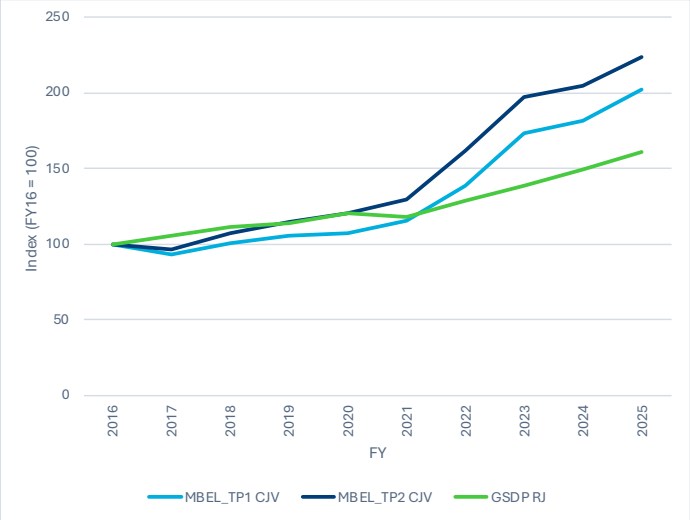
5.17 The TMS data for the Asset reports 3A and MAV together where Bus and 2A reported separately, hence splits were required to understand the 3A and MAV growth pattern. For this Asset Car, Bus and LCV do more regional movement as validate from OD trip length and zonal analysis hence the growth of this vehicle category is more influenced by Rajasthan GSDP. Whereas 2A, 3A and MAV carry heavy commodities like construction material and agricultural products from Rajasthan across states and internationally hence more linked to GDP growth.

5.18 For the purpose of regression analysis we have considered the period of FY16-24. FY16 and before were chequered period for the Asset with combination of illegal mining and overloading ban. The commercial traffic did not witness significant negative impact on volumes except for first nation-wide lockdown in March and April 2021. Hence we have considered FY21 and FY22 for the regression analysis.

CJV

5.19 It was observed from the OD data that CJVs primarily cater to regional movements between Jaipur, Bharatpur, Agra and other towns in the vicinity of the Asset. We have therefore assumed Rajasthan GSDP to be the growth driver for modelling growth of CJV traffic. Figure 5.1 shows the relationship between indexed values of CJV traffic and Rajasthan GSDP at TP1 Amoli and TP2 Ludhawai. CJV traffic on TP1 has shown 8.1% growth from FY16-25 while for the same period TP2 recorded 9.4%.

Figure 5.1: Relationship between CJV traffic and Rajasthan GSDP



Source: Steer analysis of Client TMS data and publicly available GDP/GSDP data

5.20 Generally, we would expect that in fast-growing economies with relatively low car ownership levels, car traffic growth rates are often in line with or are slightly higher than growth in GSDP/GDP (i.e. suggesting elasticities at or just above 1.0). Further, the opening

of the Delhi Mumbai section upto Lalsot has had a significant impact on Car traffic on the corridor on both toll plazas adding additional impetus to car growth. This has also increased the influence of tourism related movement on the Asset, due to the significant volumes contributed by DME onto the corridor and hence it is expected that car growth will remain robust on the Asset. In addition, there is an expected increase in car ownership proportion of overall population as the economy grows.

5.21 Taking note of the positive outlook for passenger traffic on the tourism-driven Asset we have assumed a forecast background elasticity of 1.10 with respect to Rajasthan GSDP for CJV at both the toll plazas.

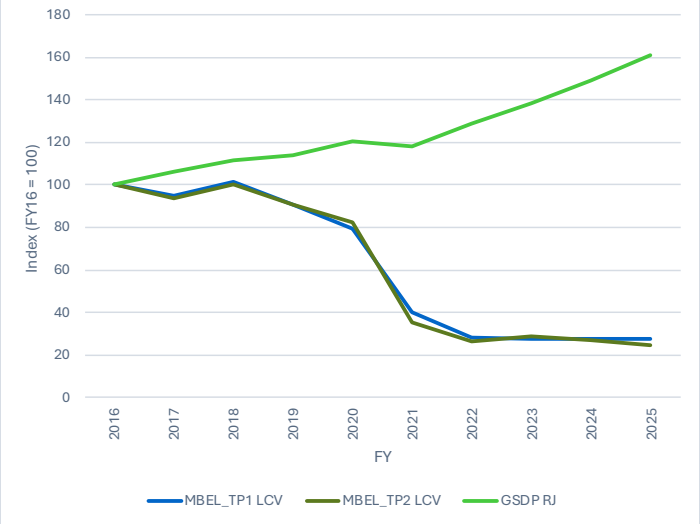
LCV, Bus, 2A

5.22 Compared to heavy vehicles such as 3A and MAV, LCV, Buses and 2As are used for more regional movements within the state – Rajasthan in this case as seen in the OD data analysis. More than 80% of LCVs and Buses and 70% of 2As have one trip end in Rajasthan. We have therefore taken GSDP of Rajasthan would be a more appropriate growth driver to model growth of Bus+LCV+2A traffic. Figure 5.2 shows the relationship between indexed values of Bus+LCV+2A combined traffic and Rajasthan's GSDP.

5.23 Between 2016 and 2025, the growth rate of Bus+2A+LCV remained flat. During this time period, it was noticed that disaggregate traffic for LCVs rose slower than traffic for Buses and 2As. This could be attributable to a variety of factors, one of which is the reclassification of LCVs and 2As, which has been seen as a prevalent tendency across the country's toll highways. However, beginning in 2022, the combined volume of Bus+LCV+2A has begun to show indications of recovery, as shown in Figure 5.2 below.

5.24 Bus growth tends to be largely supply-driven in many parts of the country, with new buses being bought and deployed by the government at different intervals of time. Based on our experience across the country, buses on inter-urban and tourism corridors show elasticities of 0.4 to 0.6 with respect to the GSDP. Based on the regression results and benchmarks, we have therefore assumed an elasticity of 0.5 with respect to GSDP Rajasthan.

Figure 5.2: Relationship between LCV+Bus+2A combined traffic and Rajasthan GSDP



Source: Steer analysis of Client TMS data and publicly available GDP/GSDP data

5.25 Based on the results of the regression, analysis of historical trends on the Asset, as well as our previous experience on benchmark Assets the elasticity assumption for LCVs is 0.3 on both TPs, and for Bus and 2A which have witnessed relatively stronger growth is 0.5 and 0.6 respectively for both toll plazas.

3A/MAV Trucks

5.26 Compared to lighter trucks like LCV and 2A, 3A and MAV have more national or long-distance movements covering several states. Given that manufacturing-related commodities tend to take prominence in the commodity distribution resulting in traffic growth in 3A and MAV to be dependent on industry demand-supply ecosystems spread across the country, therefore we have taken GDP as the growth driver to model the traffic growth in 3A and MAV. Figure 5.3 shows the relationship between indexed values of 3A+MAV combined traffic and India's GDP.

5.27 Historically, 3A+MAV combined traffic grew positively in the FY16-18 period at 8% at TP1 Amoli and 12% at TP2, before losing volumes in FY19 and FY20. However, for the recent period of FY16-25 TP1 Amoli witnessed CAGR of 1.1% and TP2 Ludhawai observed 1.6% growth. This is shown in the figure below:

Figure 5.3: Relationship between 3A+MAV combined traffic and India GDP

Source: Steer analysis of Client TMS data and publicly available GDP data

5.28 Major reasons associated with this slower growth is:

- Implementation of stringent sand mining policy 2020 in Rajasthan which reduced the illegal sand mining and associated 3A and MAV traffic (FY18-20) in the region
- Completion of Jaipur Ring Road improvising access of regions beyond Jaipur.
- Completion of Dausa to Lalsot section of DME. 3A/MAV volumes remained steady in the third quarter of FY23 on TP1 Amoli. This might be linked to the introduction of the DME in Feb 2023, which has provided an alternate route for traffic between Uttar Pradesh/Moradabad/Bareilly and Rajasthan/Jaipur/Alwar.

5.29 We believe 3A to grow slower as compared to MAV due to a shifting preference seen for MAVs from 3As for long-distance movements. This could be because MAVs have higher load capacity which generate economies of scale and therefore lower costs. However, it

is unlikely that 3A trucks will disappear from the market completely as there are best suited for certain commodities or movements.

5.30 Based on the above points, we have assumed elasticities of 0.40 and 0.85 for 3A and MAV trucks respectively, with respect to India GDP growth.

Forecasts for background elasticities

5.31 Table 5.6 presents a summary of the results of the regression analysis carried out on the historical toll plaza data and the macroeconomic (GDP/GDSP) growth, along with the assumed forecast elasticities for background traffic growth.

5.32 The forecast elasticities are assumed to remain constant over the concession period as the logistics sector in still in early stages of development in India (95% of trucks still owned by operators owning less than 5 trucks). Car ownership levels are still around 30-35 per 1000 people, and it is likely to take a few years before the market reaches maturity. These trends are based on a long-term understanding of historical relationships and an overall outlook on the growth of the region and the country.

Table 5.6: Derived elasticities from regression analysis and assumed forecast elasticities for background growth

Vehicle type	Growth driver	History		Forecast	
		Derived elasticity	Years considered	Assumed forecast elasticity	Evolution of elasticity
TP1					
Car	GSDP Rajasthan	1.50	FY16-25	1.10	No change
LCV*	GSDP Rajasthan	<0.10	FY16-25 *(LCV+2A+Bus)*	0.30	No change
Bus*	GSDP Rajasthan			0.60	No change
2A*	GDP			0.80	No change
3A*	GDP	0.20	FY16-25 *(3A+MAV)*	0.10	No change
MAV*	GDP			0.85	No change
TP2					
Car	GSDP Rajasthan	1.73	FY16-25	1.10	No change
LCV*	GSDP Rajasthan	<0.1	FY16-25 *(LCV+2A+Bus)*	0.30	No change
Bus*	GSDP Rajasthan			0.60	No change
2A*	GDP			0.80	No change
3A*	GDP	0.29	FY16-25 *(3A+MAV)*	0.10	No change
MAV*	GDP			0.85	No change

Source: Steer analysis of Client data; regression was run on LCV-2A-Bus (against GSDP), and 3A-MAV (with GDP) combined. *The results of the regressions yielded insignificant results based on the tstat values of the outputs of the regression.

6 Forecasts: Network overlays and forecasts

Introduction

6.1 Following the discussion on our forecast of background growth rates in the previous chapter, this chapter first covers the potential network impacts on traffic growth on the Asset. Thereafter, we present our assumptions around toll segmentation, trip factors and evolution of toll rates for the forecast period which are used to forecast revenues as derived from forecast traffic. In the final section, this chapter summarises traffic growth rates for the forecast years. Table 6.1 lists key intermediate and final outputs that have presented in chapter 3, 5 and 6.

Table 6.1: Key intermediate and final outputs in the forecast

Forecast	Final outputs	Intermediate outputs	Inputs	Chapter
Traffic	Base year AADT	ADT, SCF estimate for base year	Historical SCF and year-to-date AADT	Chapter 3, 5
	Background traffic growth	Background forecast elasticity	Historical elasticities with respect to growth drivers	Chapter 3,5, Appendix C
		Forecasts for growth drivers	Historical performance of growth drivers along with Client's GDP line	Chapter 4,5, Appendix C
	Impact growth rates and staging	Impacts	Asset vs alternate route costs for ongoing/upcoming network and other developments	Chapters 2,6
Revenue	Annual/daily revenue forecasts	Forecast toll segmentation: Trip frequencies and trip factors	Historical trip frequencies	Chapter 3,6
			Historical trip factors	Chapter 6
		Future toll rates	Toll evolution	Chapter 6

Source: Steer analysis

6.2 All traffic is presented as AADT for vehicle category at each plaza, for financial years (April-March). All revenue is presented in Rupees (nominal terms). Though FY32 is the last year of concession, we have developed our forecasts until FY34 for the Client's reference in the Appendices.

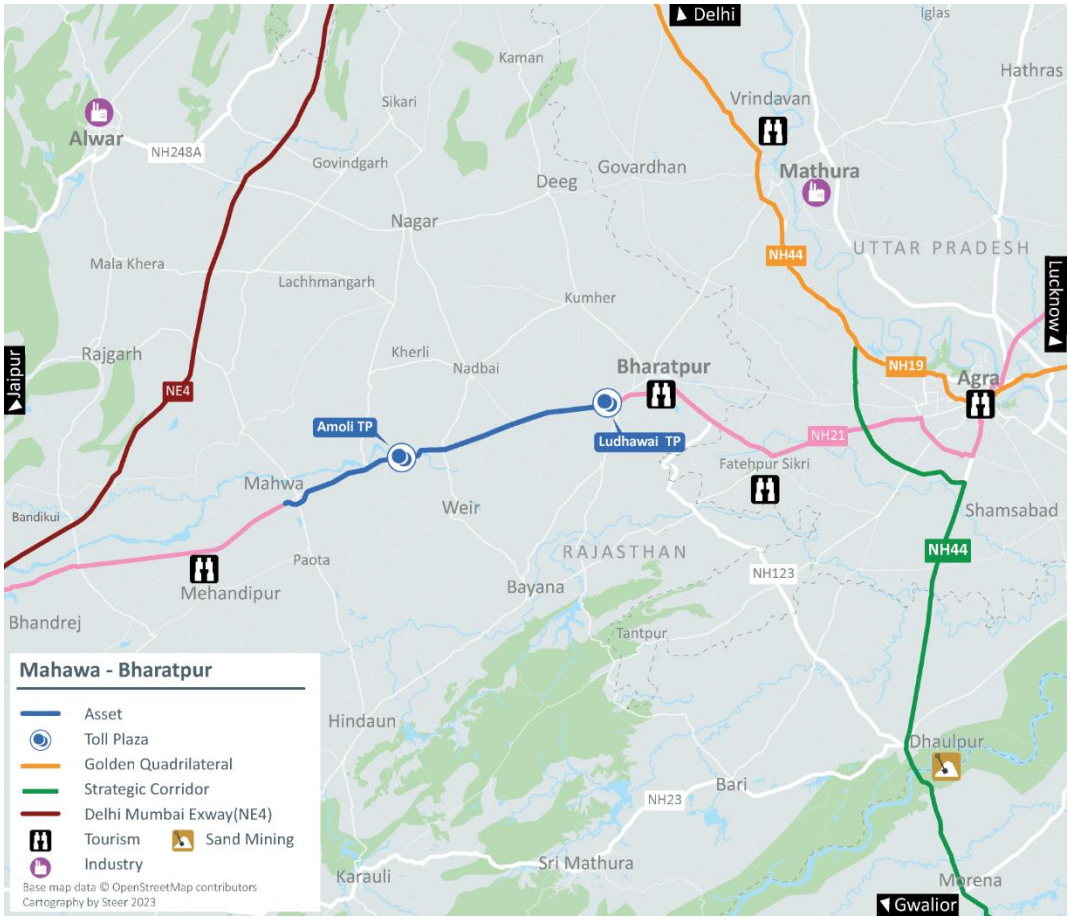
Analysis of potential network/developmental impacts

Summary of alternate routes and planned changes

6.3 The section below details the impacts which we believe would affect traffic on the Asset during the concession period. As discussed earlier in chapter 2, in order to assess the impacts on the Asset, whether positive or negative, we have studied developments (alternate roads, feeder roads and regulatory) in the surrounding road network.

6.4 The map below shows the road network surrounding the Asset.

Figure 6.1: Alternate routes and Asset route shown against the regional network context



Source: Steer analysis and cartography Recovery of traffic as observed in Q3 FY23Ease

6.5 Apart from the recovery of traffic as observed in Q3 FY23, network developments include the construction of and Agra Ring Road. Table 6.2 presents the upcoming network/other developments, corresponding alternate/feeder routes, year of completion and indicative direction of impact on the Asset.

Table 6.2: List of network/other developments

S. No.	Development	Route affected	Year of impact	Impact (+/-)	Toll plaza
1.	Delhi- Mumbai Expressway	Delhi-Jaipur connection through the expressway via Dausa interchange is expected to provide faster connectivity and improved level of service	FY27 onwards	-ve	TP1 & TP2
2.	Construction of Agra-Gwalior Expressway	Additional construction material required for the Agra-Gwalior Expressway will be sourced from Alwar and transported via MBEL Asset	FY27 onwards	+ve	TP1 & TP2

Source: Steer analysis.

Impact assessment for network/other developments

6.6 As seen in the previous sub-section, the assessed impacts primarily fall into either the category of road network developments or development in other modes of transport. Under network developments, changes in the road network could be either brownfield (upgrade to existing road) or greenfield (development of new road). We typically assess impacts of the changes in costs and travel time on routes in these networks using binary logit models that compare generalised journey costs (GJC) between Asset and alternate routes. Under other developments, we typically use historical occurrences of the future event and benchmark observations from regional reference Assets. However, each case is dealt individually in its own network or industry context.

6.7 The subsections below include a narrative of each of the improvements, as listed in the table above, and impacts associated from each of these. While this section deals with impacts that have been considered in our forecasts, Appendices A (Queries) and C (Other Impacts) present Steer's responses to the Client on queries and on the list of impacts from the scope of works part of this commission.

Delhi- Mumbai Expressway

6.8 NHAI is building a greenfield expressway connecting Delhi and Mumbai. The Delhi-Mumbai Expressway (DME) will connect Delhi to Mumbai with a dual carriageway with six lanes per direction. At 1350km long, it will drastically reduce travel length and times from Delhi to Mumbai. With this alignment, it is expected that once it's completed in FY26.

6.9 The benefits will also be most valued by long distance users which can make end to end trips. However, this Asset is expected to have minimal impact as it caters to more east-west movement. We have assumed that the impact will be realised over two years, starting FY27.

Table 6.3 Impact due to Delhi Mumbai Expressway, TP1 Amoli

Vehicle type	FY27 onwards
Staging	*100%*
2A	(0.4%)

3A	(0.2%)
MAV	(0.4%)

Source: Steer analysis of OD data, Client TMS data and publicly available information

Table 6.4: Impact due to Delhi Mumbai Expressway, TP2 Ludhawai

Vehicle type	FY27 onwards
Staging	*100%*
2A	(0.4%)
3A	(0.2%)
MAV	(0.4%)

Source: Steer analysis of OD data, Client TMS data and publicly available information

Construction of Agra-Gwalior Expressway

6.10 Additional construction material required for the Agra-Gwalior Expressway will be transported through the MBEL Asset, which will further increase MAV traffic from FY27 onwards. However, we assume that this impact will taper off by FY29, as the expressway construction is expected to be completed by then. The phasing of the impact will see 80% of the impact in FY27, and 100% of the impact playing out in FY28 and FY29.

Table 6.5: Completion of Agra-Gwalior Construction

Impact	TP1 Amoli		TP2 Ludhwai	
	FY27 (80%)	FY28 (100%)	FY27 (80%)	FY28 (100%)
MAV	1.1%	1.4%	1.1%	1.4%

Source: Steer analysis of OD data, Client TMS data and publicly available information

Revenue forecasting assumptions

6.11 To forecast the revenues for a particular year, the traffic forecast for each vehicle type is converted into tickets sold, which is then multiplied with the corresponding toll rate, which grows over the years as defined in the Concession Agreement. While “trip factors” provide the conversion factor to the former, i.e. traffic (trips) to tickets sold, “toll segmentation” provides the latter i.e. the breakup of trips paying each ticket type. This section discusses assumptions related to trip factors, toll segmentation and toll rates for the forecast period.

Trip factors

6.12 Trip factors are used to calculate the revenue for the trips made on passes such as return, local personal, monthly passes. The trip factors assumed are based on the latest FY24 data available and listed in the table below:

Table 6.6: Trip factors on Asset

Forecast	CJV/Mini LCV	LCV	Bus	2A	3A	MAV
Single	1	1	1	1	1	1
Monthly	45	45	50	45	45	45

Forecast	CJV/Mini LCV	LCV	Bus	2A	3A	MAV
Local commercial	1	1	1	1	1	1

Source: Steer analysis of Client TMS data

Toll segmentation

6.13 The Ministry of Road Transport & Highways has finalized a compensation formula for existing toll concessionaires to offset revenue loss from the Annual Pass scheme for non-commercial vehicles[16].

6.14 Across multiple assets, the share of annual pass trips has been rising on a monthly basis since August 5. A corresponding decline in other ticket categories including Single and Return journeys has been observed.

6.15 CJV Segmentation for FY26 has been developed using the pre annual pass segmentation till 14th August 2025, and post-annual pass segmentation from 15th August 2025 till 28th February 2026. The share of annual pass trips in March 2026 has been assumed to be the same as the share of annual pass trips in the last 10 days of February 2026.

6.16 The segmentation for CJVs in FY27 has been assumed to be the same as the estimated March 2026 segmentation as trends suggest that the share of annual pass trips have stabilised.

6.17 For other vehicle categories we have analysed the historical TMS data split by ticket categories, to understand trends, as shown in Chapter 3. For the traffic and revenue forecast, FY26YTD (Apr- Feb) as discussed in the earlier sections, can be considered a normal period.

6.18 The table below provides the toll segmentation assumed for the period of forecast. We believe with FASTag penetration stabilising and reaching upto 100% in MAVs and minimal impact of COVID-19 during these months, FY26YTD segmentation provides us with stable toll segmentation which can be used for the forecast years.

Table 6.7: Forecast toll segmentation, FY26 onwards at TP1 Amoli

Ticket Category	CJV (FY26)	CJV (FY27)	Mini LCV	LCV	Bus	2A	3A/MAV
Single	79%	63%	94%	98%	98%	98%	97%
Local commercial	0%	0%	0%	1%	1%	1%	3%
Local personal	1%	1%	1%	-	-	-	-
Exemptions	3%	3%	3%	1%	1%	1%	0%
Violations	1%	1%	1%	0%	0%	0%	0%
Annual pass	16%	32%	-	-	-	-	-

Source: Steer analysis of Client TMS data

[16] Finalization-Concessionaire-Annual-Pass-Facility-on-NHs-01092025.pdf

Table 6.8: Forecast toll segmentation, FY26 onwards at TP2 Ludhawai

Ticket category	CJV (FY26)	CJV (FY27)	Mini LCV	LCV	Bus	2A	3A/MAV
Single	79%	64%	93%	96%	99%	99%	99%
Local commercial	0%	0%	0%	3%	0%	0%	0%
Local personal	3%	3%	3%	-	-	-	-
Exemptions	3%	3%	3%	1%	1%	1%	0%
Violations	1%	1%	1%	0%	0%	0%	0%
Annual pass	14%	29%	-	-	-	-	-

Source: Steer analysis of Client TMS data

6.19 There is no other toll category being charged, apart from the official list in the gazetted NHAI Revision of User fee rate w.e.f. 01.07.2022. This set of toll segmentation assumes that further changes in toll categories, unless specific discounts are offered, which is unlikely.

6.20 The Annual pass compensation is separately calculated using the formula prescribed by NHAI in the same circular. Following Table 6.6 presents the Annual pass compensation computed for the toll plaza.

Table 6.9: Annual pass compensation for CJVs (in Crore)

Toll Plaza	FY26	FY27	FY28	FY29	FY30	FY31	FY32
Amoli	2.5	5.3	6.2	6.6	7.6	8.7	9.3
Ludhawai	1.2	2.6	2.8	3.5	3.8	4.0	5.0

Source: Steer Analysis

Overloading

6.21 Overloaded vehicles on the Asset are charged twice the toll fee they would otherwise pay for their ticket type at the toll plaza. We have assumed that the FY26YTD overloading shares would continue in the forecast years. The table shows the assumptions for share of overloaded vehicles that are considered to pay twice the toll fee of the respective toll segmentation category, due to overloading.

Table 6.10: Overloading assumptions for forecast years FY26 onwards under various ticket categories

Vehicle type	Single	Local Commercial
TP1 Amoli		
LCV	2.5%	0.0%
Bus	0.6%	0.0%
2A	3.6%	0.0%
MAV	5.3%	0.0%
TP2 Ludhawai		
LCV	1.7%	0.0%

Bus	0.2%	0.0%
2A	2.9%	0.0%
MAV	6.3%	0.1%

Source: Steer review of Client TMS data

Toll evolution

6.22 Based on the concession agreement and the gazetted toll notification, we understand that base toll rates increase every year (revision month is July) based on WPI-linked inflation (as of March). These are rounded up to the nearest five to estimate the final toll rate charged to users.

6.23 We have used actual toll rates from the FY25 toll notifications and latest print WPI for the month of March'25 for FY26 to validate the modelling of future toll evolution. Increase in WPI was calculated based on the Client's WPI forecasts, as shown in Table 6.11 below. The upward trend in inflation is expected to continue in the medium term, before gradually tapering to 4.1% by FY32.

6.24 These forecasts provided by the Client. The WPI forecasts available from other independent forecasting agencies may vary from this assumption and could be lower or higher than that provided by the Client.

Table 6.11: WPI growth forecast assumptions

Financial year	WPI growth (%)
FY26	2.05%
FY27	2.4%
FY28	5.0%
FY29	5.1%
FY30	4.9%
FY31	4.4%
FY32	4.1%

Source: FY26 as per actual WPI March print. FY27 onwards WPI print as per client

Revenue reconciliation

6.25 As part of validating the data provided by the Client, as well as our assumptions around toll calculations, we have reconciled the actual reported revenue on a daily level for the Asset. To reconcile we have used the FY26YTD segmentation, FY26YTD AADT and compared it with the reported revenue for the year. The exercise was undertaken at an annual level. The comparison, as shown in Table 6.12 below, depicts the modelled revenue vs the reported revenue difference, and the difference lies within 0.1%, this gives us the confidence in the assumptions around segmentation and trip factors for future forecast purposes.

Table 6.12: Revenue reconciliation summary for FY26

TP	Steer modelled revenue (INR lakh)	Reported revenue (INR lakh)	Difference (%)
TP1 Amoli	16.6	16.6	0.1%
TP2 Ludhawai	8.18	8.19	0.2%

Source: Steer comparison between modelled and reported revenue for FY26YTD

Traffic and Revenue forecasts

6.26 Based on the traffic and revenue-related forecast assumptions discussed above, we have modelled the traffic and revenue for the forecast period for the Asset. The table below presents the AADT/PCU and revenue forecast numbers and CAGRs on this Asset for both TP1 Amoli and TP2 Ludhawai. Further, Appendix B presents the AADT and revenues for the forecast period. Detailed forecast is tabled in Annexure C of the report.

Table 6.13: Traffic forecasts (with impacts) AADT forecast for TP1 Amoli

Vehicle Type	FY26	FY27	FY28	FY29	FY30	FY31	FY32
CJV	7,673	8,222	8,805	9,410	10,035	10,691	11,389
Mini LCV	899	946	995	1,045	1,095	1,147	1,202
LCV	291	297	302	308	313	319	325
Bus	1,402	1,457	1,513	1,570	1,627	1,685	1,745
2A	554	581	611	641	672	703	736
3A	333	335	337	339	341	343	345
MAV	3,844	4,083	4,317	4,544	4,709	4,944	5,192
AADT	**14,997**	**15,921**	**16,880**	**17,856**	**18,792**	**19,832**	**20,933**
PCU's	**31,433**	**33,255**	**35,106**	**36,955**	**38,575**	**40,518**	**42,567**

Source: Steer analysis

Table 6.14: Traffic forecasts (with impacts) CAGR (%) for TP1 Amoli

Vehicle Type	FY26-FY27	FY27-FY28	FY28-FY30	FY30-FY32	FY26-FY32
CJV	7.2%	7.1%	6.8%	6.5%	6.8%
Mini LCV	5.2%	5.2%	4.9%	4.8%	4.9%
LCV	2.0%	1.9%	1.8%	1.8%	1.9%
Bus	3.9%	3.9%	3.7%	3.6%	3.7%
2A	4.8%	5.1%	4.9%	4.7%	4.8%
3A	0.5%	0.6%	0.6%	0.6%	0.6%
MAV	6.2%	5.7%	4.4%	5.0%	5.1%
AADT	**6.2%**	**6.0%**	**5.5%**	**5.5%**	**5.7%**
PCU's	**5.8%**	**5.6%**	**4.8%**	**5.0%**	**5.2%**

Source: Steer analysis

Table 6.15: Revenue forecasts (INR crores) for TP1 Amoli

Vehicle Type	FY26	FY27	FY28	FY29	FY30	FY31	FY32
CJV	12.2	10.5	12.0	13.9	15.1	17.0	18.5
Mini LCV	1.7	1.8	2.0	2.3	2.5	2.7	2.9
LCV	1.1	1.1	1.2	1.2	1.4	1.4	1.5
Bus	10.1	10.8	11.7	12.7	13.9	15.1	16.3
2A	4.1	4.4	4.9	5.3	5.9	6.5	7.1
3A	3.8	3.9	4.2	4.4	4.7	4.9	5.2
MAV	46.2	50.6	56.5	62.1	67.7	74.1	81.7
Total	**79.2**	**83.1**	**92.4**	**101.9**	**111.1**	**121.8**	**133.3**

Source: Steer analysis

Table 6.16: Revenue forecasts CAGR (%) for TP1 Amoli

Vehicle Type	FY26-FY27	FY27-FY28	FY28-FY30	FY30-FY32	FY26-FY32
CJV	(7.4%)	14.8%	25.7%	10.7%	7.2%
Mini LCV	2.6%	12.7%	21.4%	8.9%	9.3%
LCV	1.6%	6.0%	17.2%	6.7%	6.5%
Bus	3.2%	8.6%	19.2%	8.3%	8.3%
2A	3.7%	9.9%	21.9%	9.5%	9.5%
3A	1.8%	6.3%	11.2%	5.3%	5.2%
MAV	4.7%	11.7%	19.8%	9.9%	10.0%
Total	**2.4%**	**11.3%**	**20.2%**	**9.5%**	**9.1%**

Source: Steer analysis

Table 6.17: Traffic forecasts (with impacts) AADT forecast for TP2 Ludhawai

Vehicle Type	FY26	FY27	FY28	FY29	FY30	FY31	FY32
CJV	9,013	9,658	10,342	11,053	11,787	12,557	13,378
Mini LCV	1,057	1,112	1,169	1,227	1,286	1,348	1,412
LCV	302	308	314	320	325	331	337
Bus	1,440	1,496	1,553	1,612	1,670	1,730	1,791
2A	569	596	627	658	689	722	756
3A	336	338	340	342	344	346	348
MAV	3,836	4,075	4,309	4,535	4,699	4,934	5,181
AADT	**16,552**	**17,582**	**18,654**	**19,747**	**20,802**	**21,968**	**23,203**
PCU's	**33,464**	**35,420**	**37,409**	**39,401**	**41,160**	**43,256**	**45,467**

Table 6.18: Traffic forecasts (with impacts) CAGR(%) for TP2 Ludhawai

Vehicle Type	FY26-FY27	FY27-FY28	FY28-FY30	FY30-FY32	FY26-FY32
CJV	3.5%	7.1%	6.8%	6.5%	6.8%
Mini LCV	2.6%	5.2%	4.9%	4.8%	4.9%
LCV	1.0%	1.9%	1.8%	1.8%	1.9%
Bus	1.9%	3.9%	3.7%	3.6%	3.7%
2A	2.4%	5.1%	4.9%	4.7%	4.8%
3A	0.2%	0.6%	0.6%	0.6%	0.6%
MAV	3.1%	5.7%	4.4%	5.0%	5.1%
AADT	**3.1%**	**6.1%**	**5.6%**	**5.6%**	**5.8%**
PCU's	**2.9%**	**5.6%**	**4.9%**	**5.1%**	**5.2%**

Source: Steer analysis

Table 6.19: Revenue forecasts (INR crores) forecast for TP2 Ludhawai

Vehicle Type	FY26	FY27	FY28	FY29	FY30	FY31	FY32
CJV	6.5	5.7	7.1	7.8	8.4	8.9	10.7
Mini LCV	0.9	0.9	1.2	1.3	1.3	1.4	1.6
LCV	0.5	0.5	0.6	0.6	0.6	0.7	0.7
Bus	4.9	5.4	5.9	6.4	6.9	7.4	8.1
2A	2.0	2.2	2.4	2.7	2.9	3.2	3.5
3A	1.9	2.0	2.0	2.1	2.3	2.4	2.5
MAV	22.8	25.0	27.3	30.2	33.1	36.0	39.7
Total	**39.5**	**41.7**	**46.4**	**51.1**	**55.6**	**60.0**	**66.8**

Source: Steer analysis

Table 6.20: Revenue forecasts CAGR (%) for TP2 Ludhawai

Vehicle Type	FY26-FY27	FY27-FY28	FY28-FY30	FY30-FY32	FY26-FY32
CJV	(6.5%)	23.4%	18.5%	13.1%	8.6%
Mini LCV	2.6%	21.2%	14.5%	11.2%	10.4%
LCV	5.2%	4.9%	13.6%	6.5%	6.9%
Bus	4.6%	9.4%	17.5%	8.2%	8.7%
2A	5.1%	10.7%	20.2%	9.4%	9.9%
3A	1.8%	4.1%	12.5%	4.8%	4.9%
MAV	4.7%	9.4%	21.2%	9.4%	9.7%
Total	**2.8%**	**11.3%**	**19.7%**	**9.6%**	**9.2%**

Source: Steer analysis

Upside and Downside cases

Upside and Downside scenario assumptions

6.27 We have developed our base case scenario considering a balanced view on the risks associated with input assumptions around GDP growth and traffic growth elasticities. There is always a risk that the outturn values of these inputs will vary as compared to the assumptions taken due to exogenous impacts, e.g. GDP growth could be influenced both positively and negatively by the impact of monsoons, export-import balances, political changes etc.

6.28 Similarly, traffic growth elasticities could be influenced by increased efficiencies achieved by technology, large shifts in commodity prices globally, changes in local manufacturing practices. However, at this stage we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

6.29 To account for the possible variations in the growth drivers, we are also presenting an Upside (optimistic) and a Downside (pessimistic) scenario. These scenarios are defined by the following variations from the base assumptions:

Table 6.21: Summary of Macro-economic Assumptions for upside and downside cases

Input	Upside	Downside
Macro Assumptions		
GDP/GSDP	+1% every year	-1% every year
WPI	+1% every year	-1% every year
Elasticities	+ 10%	- 10%

Source: Steer analysis

6.30 Further, network developments are highly dependent on governmental directions, policies, legal and financial measure which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside (pessimistic) case. However, at this stage, we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

Impacts-Upside Case

6.31 The upside case impacts included in forecasts are summarised in below.

Table 6.22: Summary of impacts on the Assets

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact	
			TP1 Amoli	TP2 Ludhawai
Delhi- Mumbai Expressway	FY27*	+25% of base case	2A: (0.3%) 3A: (0.1%) MAV: (0.3%)	2A: (0.3%) 3A: (0.1%) MAV: (0.3%)
Completion of Agra-Gwalior Construction	FY27*		MAV: 1.7%	MAV: 1.8%

Source: Steer analysis; * Same as base case timeline

Impacts-Downside Case

6.32 The downside case impacts included in forecasts are summarised in below.

Table 6.23: Summary of impacts on the Assets

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact	
			TP1 Amoli	TP2 Ludhawai
Delhi- Mumbai Expressway	FY27	-25% of base case	2A: (0.4%) 3A: (0.2%) MAV: (0.5%)	2A: (0.4%) 3A: (0.2%) MAV: (0.5%)
Completion of Agra-Gwalior Construction	FY27*		MAV: 1.0%	MAV: 1.1%

Source: Steer analysis; * Same as base case timeline

Upside and Dowside Forecasts

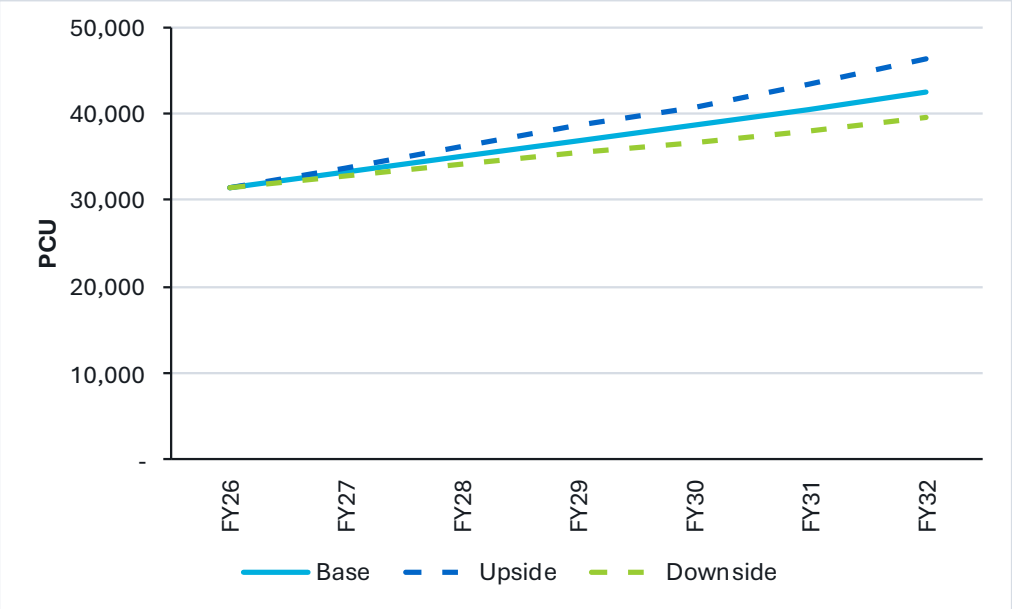
6.33 Based on the above assumptions for upside and downside scenarios, the following table summarizes the upside potential and downside risks associated with the PCU and the revenue for Amoli and Ludhawai toll plazas at the end of the concession i.e. FY32.

Table 6.24: Upside potential and Downside PCU scenario - FY32

Toll Plaza	Upside Potential	Downside Risk
Amoli	8.7%	(7.2%)
Ludhawai	8.8%	(7.3%)

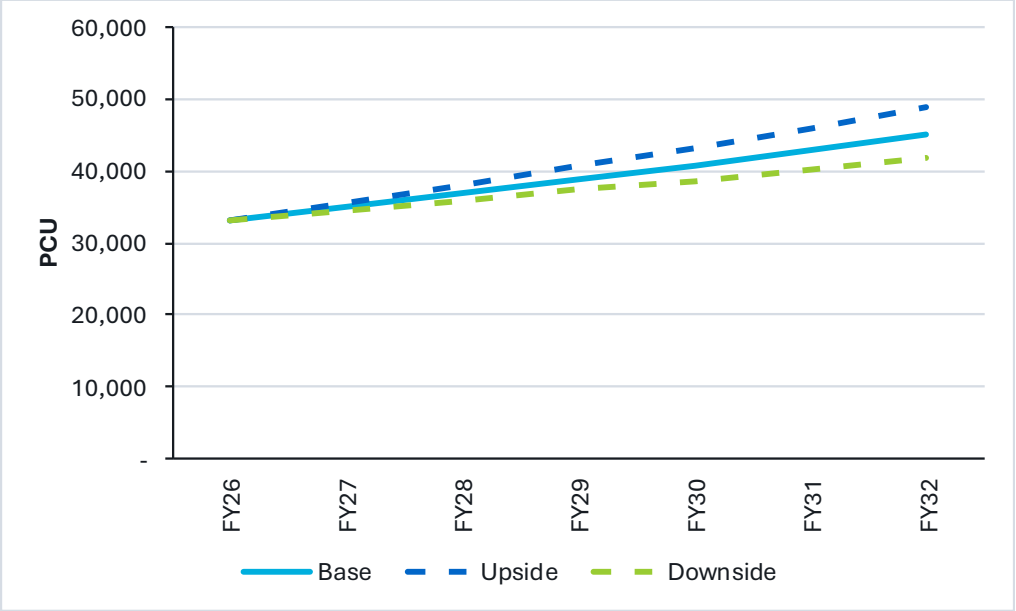
Source: Steer Analysis of client data

Figure 6.2: Long-term PCU forecasts for Amoli (including upside and downside scenarios)



Source: Steer Analysis

Figure 6.3: Long-term PCU forecasts for Ludhawai (including upside and downside scenarios)



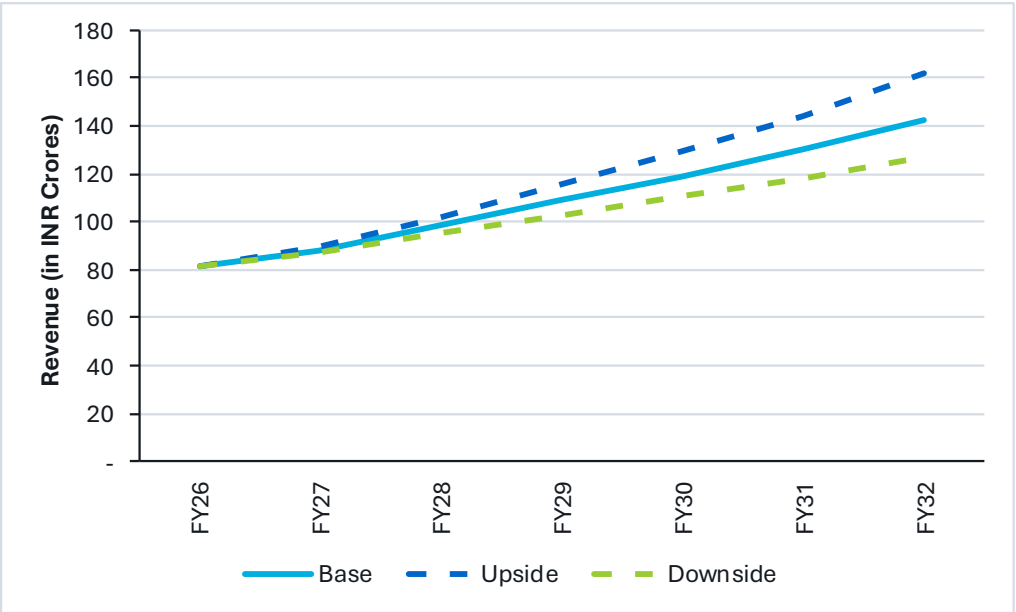
Source: Steer Analysis

Table 6.25: Upside potential and Downside Revenue scenario - FY32

Toll Plaza	Upside Potential	Downside Risk
Amoli	13.6%	(10.7%
Ludhawai	13.3%	(12.8%)

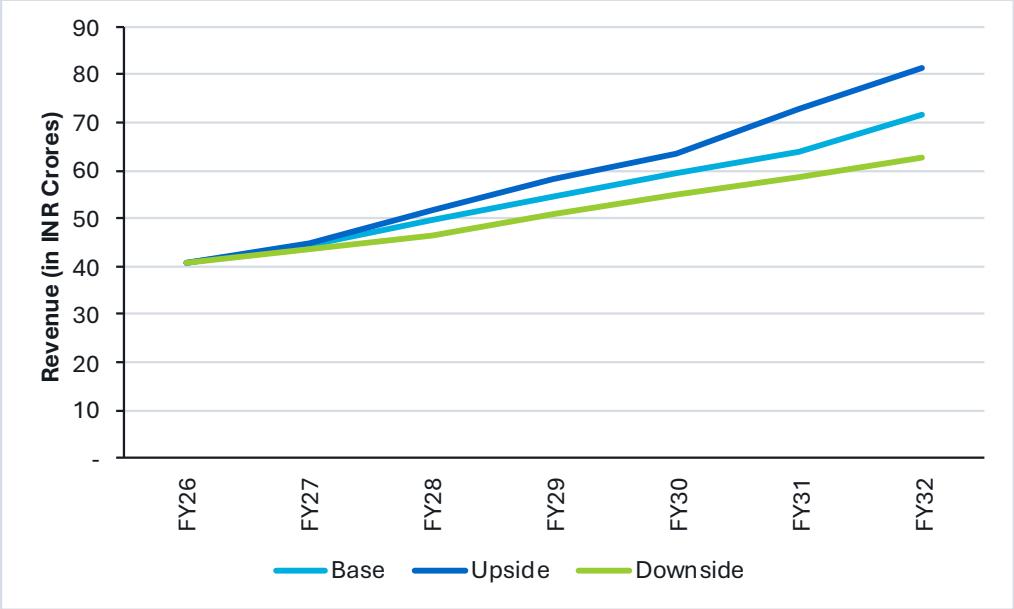
Source: Steer Analysis of client data

Figure 6.4: Long-term revenue forecasts for Amoli (including upside and downside scenarios)



Source: Steer Analysis

Figure 6.5 Long-term revenue forecasts for Ludhawai (including upside and downside scenarios)



Source: Steer Analysis

Summary outlook

6.34 Passenger traffic on the Asset is driven by local movements connecting key urban centers of Jaipur, Agra, Alwar, and Bharatpur. Tourism and leisure travel between Jaipur at one end and Bharatpur and Agra at the other also contributes to passenger and bus movements, as the Asset is part of the Golden Triangle corridor (Delhi NCR, Agra, Jaipur). Even though the recent pandemic impacted passenger and tourism-related traffic, the trend of increased use of personal vehicles has led to a good recovery of car traffic in recent months.

6.35 Goods traffic are driven by agriculture commodities, construction-related traffic including stone and sand, apart from a good spread of consumption-related commodities meeting urban demand. With the lifting of sandmining ban the Asset has seen a small recovery in MAVs. The recovery in recent months has shown underlying strength in the traffic growth drivers along the Asset corridor which is expected to continue driving growth on this corridor. While the impact of the Dausa-Lalsot road and Jaipur Ring Road have started to materialize, the opening of the Bandikui spur in July 2025 is expected to have a further negative impact on the Asset.

6.36 Our findings and estimates in this report are based on our understanding from the site visit, analysis of primary data available both from surveys (including OD surveys from June February 2026 at TP1 and June 2023 at TP2) and the toll management system (both historical and current, up to February 2026), macroeconomic assumptions prescribed by the Client, feedback from Client meetings, and secondary publicly available data. There can be both positive and negative risks associated with assumptions and the forecasts using them as summarized.

6.37 Overall, we see a positive outlook for the region and the Asset, given that it serves major urban centres of Jaipur, Agra, Bharatpur, Alwar and Delhi NCR. It is also the primary route

on the tourism corridor connecting Jaipur with Bharatpur and Agra. The underlying growth drivers of the corridor are strong and are expected to deliver long term sustained growth.

Appendices

A Developments in sand-mining

A.1 This appendix provides a chronological account of developments – policy, regulatory and judicial – in sand-mining applicable across India and particularly in Rajasthan. Please note that this list is not exhaustive and is meant to gain a high-level understanding of the issues surrounding sand-mining that affect movement of sand on the Asset.

Table A.1: History of policy and regulatory changes, and court judgements affecting sand-mining

Event	Timeline
National	
Recommendations of MoEF core group	2010
SC ruling - Orders MoEF to formulate guidelines for sustainable sand-mining	Feb FY12
MoEFCC Sustainable Sand Mining Management Guidelines - Calls for site-specific surveys by district administration - Environmental clearance mandatory for all sand mines - DEAC and DEIAA committees for less than 5 hectare mines Stop of mining during monsoon months (June-September)	Mar FY16
Amendment of EIA Notification 2006 - EI clearance mandatory for all small-scale sand mines Treat cluster mines within 500 m as single mine	May FY17
SC ban on sand-mining; prohibits 82 large sand-mining lease holders	Nov FY18
SC refuses to remove ban	Jan, Aug FY19
Rajasthan	
Mining policy	2015
NGT: Even existing licence holders need to get environmental clearance	Jan FY15
Not clear if manufactured sand can meet demand and quality needs	FY19
"Mining ban give rise to sand mafia"	Oct FY19
SC stays Rajasthan HC order that allowed sand-mining at mines with issued LoIs	May FY20
Manufactured sand policy being considered and licences for small plots being allowed	Sept FY19, Jul FY20
Replenishment study of sand mines to be taken up	Aug FY20
Rajasthan HC asks PS (RJ) to issue compounding fee on vehicle – apply consistent approach	Sept FY20
Rajasthan M-sand policy announced	2020
Revised M-sand policy and 27 monitoring teams deployed across the state	2024

Source: Steer research

B Top 10 OD Pairs

B.1 Further to the OD analysis presented in Chapter 3 this appendix presents the top 10 OD pairs at TP1 Amoli. Please see this data for both CJVs and Bus as well as 3As and MAVs combined below.

Table 6.26: CJV and Bus top 10 OD pair shares at TP1 Amoli

	OD Pair	Share
1.	Bharatpur-Jaipur	7.7%
2.	Agra-Jaipur	5.7%
3.	Mathura-Jaipur	4.2%
4.	Aligarh-Jaipur	2.5%
5.	Bharatpur-Mahwa	2.2%
6.	Dausa-Bharatpur	2.2%
7.	Delhi-Jaipur	1.8%
8.	Ajmer-Bharatpur	1.8%
9.	Dhaulpur-Jaipur	1.4%
10.	Mathura-Dausa	1.3%

Source: Steer analysis

Table B.1: 3A and MAV top 10 OD pair shares at TP2 Ludhawai

	OD Pair	Share
1.	Agra-Jaipur	4.6%
2.	Bharatpur-Jaipur	4.0%
3.	Mathura-Jaipur	2.3%
4.	Agra-Ajmer	1.7%
5.	Kanpur Nagar-Jaipur	1.6%
6.	Ajmer-Bharatpur	1.6%
7.	Ajmer-Kanpur Nagar	1.3%
8.	Ajmer-Mathura	1.0%
9.	Aligarh-Jaipur	1.0%
10.	Bharatpur-Bhusawar	0.9%

C Data collection exercise

C.1 In order to validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

TVC counts

Table C.1: 3-day TVC counts at TP1 Amoli

Date	CJV	MLCV	LCV	Bus	2A	3A	MAV	OSV	Total
17-02-2026	7,999	972	850	1,062	571	367	4,410	-	**16,231**
18-02-2026	8,165	985	1,008	1,079	570	322	4,222	1	**16,352**
19-02-2026	8,065	894	901	1,066	520	364	4,318	1	**16,129**

Source: Steer analysis

Table C.2: 4-day TVC counts at TP2 Ludhawai

Date	CJV	MLCV	LCV	Bus	2A	3A	MAV	OSV	Total
26-06-2023	8,915	1,251	814	1,025	357	466	3,183	7	**16,018**
27-06-2023	8,929	1,075	953	1,073	368	395	3,069	11	**15,873**
28-06-2023	9,709	1,191	879	1,034	476	399	3,188	7	**16,883**
29-06-2023	10,127	987	799	1,009	406	363	3,128	5	**16,824**

Source: Steer analysis

Table C.3: Consolidated WADT for both TP1 Amoli and TP2 Ludhawai

Toll plaza	Source	CJV+ Mini LCV	LCV	Bus	2A	3A + MAV	OSV	Total
TP1	TVC	9,027	920	1,069	554	4668	1	**16,237**
	TMS	8,316	311	1,004	1,014	4,693	-	**15,339**
TP2	TVC	10,546	861	1,035	402	3,548	8	**16,400**
	TMS	9,646	329	1,559	275	3,574	-	**15,382**

Source: Steer analysis

Zone list

Table 6.27: Zone list used for OD analysis

Zone No	Zone name	Description/State
1	Andaman & Nicobar Island	State
2	Visakhapatnam	State
3	Itanagar	State
4	Assam	State
5	Bihar	State
6	Chandigarh	State
7	Chhattisgarh	State
8	Dadara & Nagar Havelli	State
9	Daman & Diu	State
10	Goa	State
11	Bhuj	State
12	Julana	State
13	Shmila	State
14	Srinagar	State
15	Jharkhand	State
16	Karnataka	State
17	Kochi	State
18	Lakshadweep	State
19	Hanumana	State
20	Maharashtra	State
21	Manipur	State
22	Meghalaya	State
23	Mizoram	State
24	Nagaland	State
25	Rest of NCT of Delhi	State
26	Puducherry	State
27	Punjab	State
28	Rawatbhata	State
29	Sikkim	State
30	Chennai	State
31	Telangana	State
32	Tripura	State
33	Robertsganj	State

Zone No	Zone name	Description/State
34	Dehradun	State
35	Kolkata	State
36	Odisha	State
37	Jhalawar	District
38	Agra	District
39	Jhansi	District
40	Ahmadabad	District
41	Sheopur	District
42	Jhunjhunun	District
43	Jodhpur	District
44	Ajmer	District
45	Shivpuri	District
46	Junagadh	District
47	Shrawasti	District
48	Jyotiba Phule Nagar	District
49	Kachchh	District
50	Aligarh	District
51	Alirajpur	District
52	Siddharth Nagar	District
53	Kaithal	District
54	Allahabad	District
55	Sidhi	District
56	Sikar	District
57	Alwar	District
58	Ambala	District
59	Ambedkar Nagar	District
60	Singrauli	District
61	Amreli	District
62	Sirohi	District
63	Sirsa	District
64	Kannauj	District
65	Anand	District
66	Sitapur	District
67	Kanpur Dehat	District
68	Kanpur Nagar	District
69	Kansiram Nagar	District

Zone No	Zone name	Description/State
70	Anuppur	District
71	Sonbhadra	District
72	Ashoknagar	District
73	Sonipat	District
74	Auraiya	District
75	Delhi	District
76	Karnal	District
77	Azamgarh	District
78	Katni	District
79	Baghpat	District
80	Delhi	District
81	Kaushambi	District
82	Bahraich	District
83	Balaghat	District
84	Sultanpur	District
85	Kheda	District
86	Ballia	District
87	Surat	District
88	Kheri	District
89	Balrampur	District
90	Surendranagar	District
91	Banas Kantha	District
92	Banda	District
93	Banswara	District
94	The Dangs	District
95	Bara Banki	District
96	Baran	District
97	Bareilly	District
98	Barmer	District
99	Tikamgarh	District
100	Barwani	District
101	Basti	District
102	Kota	District
103	Tonk	District
104	Betul	District
105	Udaipur	District

Zone No	Zone name	Description/State
106	Kurukshetra	District
107	Bharartpur	District
108	Bharuch	District
109	Kushinagar	District
110	Bhavnagar	District
111	Ujjain	District
112	Bhilwara	District
113	Bhind	District
114	Umaria	District
115	Bhiwani	District
116	Lalitpur	District
117	Unnao	District
118	Bhopal	District
119	Bijnor	District
120	Vadodara	District
121	Bikaner	District
122	Valsad	District
123	Varanasi	District
124	Lucknow	District
125	Vidisha	District
126	Budaun	District
127	Bulandshahr	District
128	Maharajganj	District
129	Bundi	District
130	Burhanpur	District
131	Mahendragarh	District
132	Delhi	District
133	Mahesana	District
134	Delhi	District
135	Mahoba	District
136	Mainpuri	District
137	West Nimar	District
138	Chandauli	District
139	Mandla	District
140	Mandsaur	District
141	Mathura	District

Zone No	Zone name	Description/State
142	Chhatarpur	District
143	Yamunanagar	District
144	Mau	District
145	Chhindwara	District
146	Jind	District
147	Dausa	District
148	Karauli	District
149	Meerut	District
150	Sawai Madhopur	District
151	Mewat	District
152	Mirzapur	District
153	Chitrakoot	District
154	Chittaurgarh	District
155	Moradabad	District
156	Churu	District
157	Morena	District
158	Tapi	District
159	Muzaffarnagar	District
160	Damoh	District
161	Nagaur	District
162	Datia	District
163	Deoria	District
164	Dewas	District
165	Narmada	District
166	Narsimhapur	District
167	Dhar	District
168	Navsari	District
169	Dhaulpur	District
170	Neemuch	District
171	New Delhi	District
172	Delhi	District
173	Dindori	District
174	Delhi	District
175	Dohad	District
176	Delhi	District
177	Dungarpur	District

Zone No	Zone name	Description/State
178	Delhi	District
179	Pali	District
180	Palwal	District
181	Panch Mahals	District
182	Panchkula	District
183	East Nimar	District
184	Panipat	District
185	Panna	District
186	Etah	District
187	Etawah	District
188	Faizabad	District
189	Faridabad	District
190	Patan	District
191	Farrukhabad	District
192	Fatehabad	District
193	Fatehpur	District
194	Firozabad	District
195	Pilibhit	District
196	Porbandar	District
197	Gandhinagar	District
198	Pratapgarh	District
199	Ganganagar	District
200	Gautam Bhuddha Nagar	District
201	Ghaziabad	District
202	Ghazipur	District
203	Rae Bareli	District
204	Gonda	District
205	Gorakhpur	District
206	Raisen	District
207	Rajgarh	District
208	Guna	District
209	Rajkot	District
210	Rajsamand	District
211	Gurgaon	District
212	Gwalior	District
213	Hamirpur	District

Zone No	Zone name	Description/State
214	Rampur	District
215	Hanumangarh	District
216	Harda	District
217	Ratlam	District
218	Hardoi	District
219	Mahamaya Nagar	District
220	Rewa	District
221	Rewari	District
222	Rohtak	District
223	Hisar	District
224	Hoshangabad	District
225	Sabar Kantha	District
226	Sagar	District
227	Saharanpur	District
228	Indore	District
229	Jabalpur	District
230	Jaipur	District
231	Jaisalmer	District
232	Jalaun	District
233	Sant Kabir Nagar	District
234	Sant Ravi Das Nagar(bhadohi)	District
235	Jalor	District
236	Satna	District
237	Jamnagar	District
238	Sehore	District
239	Seoni	District
240	Shahdol	District
241	Jaunpur	District
242	Jhabua	District
243	Shahjahanpur	District
244	Jhajjar	District
245	Shajapur	District
246	Agra	City
247	Fatehpur Sikri	City
248	Vrindavan	City
249	Mehandipur	City

Zone No	Zone name	Description/State
250	Bharatpur	City
251	Mandwar	City
252	Jaipur	City
253	Mahwa	City
254	Balaheri	City
255	Bandikui	City
256	Banetha	City
257	Banskho	City
258	Bhangarh	City
259	Brahmbad	City
260	Chandrana	City
261	Chomu	City
262	Dhanawar	City
263	Dhiradi	City
264	Dolika	City
265	Hindaun	City
266	Kherli	City
267	Kumher	City
268	Merta	City
269	Nadoti	City
270	Neemrana	City
271	Nihalpura	City
272	Paparda	City
273	Arauda	City
274	Bagrana	City
275	Bamanpura	City
276	Bassi	City
277	Baswa	City
278	Bayana	City
279	Bhainsa	City
280	Bhandana	City
281	Bhandrej	City
282	Bhot	City
283	Bhusawar	City
284	Binua	City
285	Chainpura	City

Zone No	Zone name	Description/State
286	Chaksu	City
287	Dausa	City
288	Deeg	City
289	Doodhli	City
290	Dopur	City
291	Dubbi	City
292	Geejgarh	City
293	Halena	City
294	Helak	City
295	Jasota	City
296	Jhar	City
297	Jhera	City
298	Kalera	City
299	Kanauta	City
300	Kanjoli	City
301	Khairwal	City
302	Khan Bhankri	City
303	Kharkara	City
304	Kishangarh	City
305	Kolwa	City
306	Kumha	City
307	Lalwas	City
308	Lotwara	City
309	Lulhara	City
310	Luniawas	City
311	Madoli	City
312	Mariyada	City
313	Mehandipur	City
314	Mitrapura	City
315	Nadbai	City
316	Paharsar	City
317	Paota	City
318	Pipalkhera	City
319	Ramshighpura	City
320	Raniwas	City
321	Rohtaspura	City

Zone No	Zone name	Description/State
322	Sainthal	City
323	Sikindra	City
324	Sindoli	City
325	Singwara	City
326	Sinpini	City
327	Somara	City
328	Sujanpura	City
329	Sukhawali	City
330	Todabhim	City
331	Vamanpura	City
332	Weir	City
333	Ludhawai	City
334	Amoli	City
335	Myanmar	State
336	Bhutan	State
337	Bangladesh	State
338	Noida	City
339	Bhutan	Country
340	Chokawada	Town
341	Dudhu	Town

Direction-wise commodity distribution

Table C.4: Commodity distribution at TP1 Amoli (towards Jaipur)

Commodities	LCV	2 Axle	3 Axle	MAV
Agriculture	4%	4%	2%	6%
Groceries	11%	7%	4%	5%
Construction	9%	10%	14%	11%
Minerals	-	-	-	-
Petroleum	4%	10%	11%	9%
Manufacturing	5%	4%	3%	6%
Automobiles	-	1%	1%	0%
Miscellaneous	14%	10%	20%	14%
Metals	1%	1%	1%	4%
Empty	51%	54%	45%	44%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer analysis

Table C.5: Commodity distribution at TP1 Amoli (towards Agra)

Commodities	LCV	2 Axle	3 Axle	MAV
Agriculture	7%	6%	8%	6%
Groceries	14%	21%	16%	6%
Construction	3%	14%	12%	33%
Minerals	-	-	-	-
Petroleum	7%	8%	12%	16%
Manufacturing	12%	6%	11%	6%
Automobiles	7%	1%	-	3%
Miscellaneous	22%	16%	11%	16%
Metals	2%	7%	11%	5%
Empty	26%	22%	20%	9%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer analysis of OD data

Trip length distribution

Table C.6: Trip length distribution at TP2 Ludhawai

Distance range	LCV	2 Axle	3 Axle	MAV
0-50	3%	7%	4%	7%
50-100	8%	9%	3%	2%
100-250	40%	39%	37%	32%
250-500	30%	17%	30%	26%
1000-5000	13%	15%	19%	23%

Source: Steer analysis

D Detailed forecasts

D.1 Further to the summary of forecasts presented in Chapter 6, this appendix presents detailed forecasts.

Traffic forecasts (with Impacts)

D.2 This section presents the detailed traffic forecasts for the forecast period until FY32, year of expected close of the concession. The following two tables show the traffic growth rates and AADT, respectively.

Table D.1: Traffic forecasts (base + impacts) traffic – TP1 Amoli

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY27	8,222	946	297	1,457	581	335	4,083	**15,921**	**33,255**
FY28	8,805	995	302	1,513	611	337	4,317	**16,880**	**35,106**
FY29	9,410	1,045	308	1,570	641	339	4,544	**17,856**	**36,955**
FY30	10,035	1,095	313	1,627	672	341	4,709	**18,792**	**38,575**
FY31	10,691	1,147	319	1,685	703	343	4,944	**19,832**	**40,518**
FY32	11,389	1,202	325	1,745	736	345	5,192	**20,933**	**42,567**

Table D.2: Traffic forecasts (base + impacts) traffic – TP2 Ludhawai

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY27	9,658	1,112	308	1,496	596	338	4,075	**17,582**	**35,013**
FY28	10,342	1,169	314	1,553	627	340	4,309	**18,654**	**36,979**
FY29	11,053	1,227	320	1,612	658	342	4,535	**19,747**	**38,948**
FY30	11,787	1,286	325	1,670	689	344	4,699	**20,802**	**40,691**
FY31	12,557	1,348	331	1,730	722	346	4,934	**21,968**	**42,764**
FY32	13,378	1,412	337	1,791	756	348	5,181	**23,203**	**44,949**

Source: Steer analysis

Revenue forecasts (with Impacts)

D.3 The following table presents the year-wise annual revenue forecasts for the forecast period until FY32.

Table D.3: Forecasts revenue (INR crores) – TP1 Amoli

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	15.8	1.8	1.1	10.8	4.4	3.9	50.6	**88.3**
FY28	18.2	2.0	1.2	11.7	4.9	4.2	56.5	**98.6**
FY29	21.1	2.3	1.2	12.7	5.3	4.4	62.1	**109.0**
FY30	22.7	2.5	1.4	13.9	5.9	4.7	67.7	**118.7**
FY31	25.8	2.7	1.4	15.1	6.5	4.9	74.1	**130.5**
FY32	27.9	2.9	1.5	16.3	7.1	5.2	81.7	**142.6**

Source: Steer analysis

Table D.4: Forecasts revenue (INR crores) – TP2 Ludhawai

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	8.3	0.9	0.5	5.4	2.2	2.0	25.0	**44.3**
FY28	10.4	1.2	0.6	5.9	2.4	2.0	27.3	**49.7**
FY29	11.4	1.3	0.6	6.4	2.7	2.1	30.2	**54.6**
FY30	12.1	1.3	0.6	6.9	2.9	2.3	33.1	**59.3**
FY31	12.9	1.4	0.7	7.4	3.2	2.4	36.0	**64.0**
FY32	15.7	1.6	0.7	8.1	3.5	2.5	39.7	**71.8**

Source: Steer analysis

Control Information

Prepared by

Steer
Suite No. S3,Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002, India
+91 124 441 8650
www.steergroup.com

Prepared for

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1,
Sector 16, Noida- 201301 (UP, India)

Steer project/proposal number

Our ref: 23741311

Client contract/project number

Client ref: Transit 11.0

Author/originator

Vineet Karlapalem

Reviewer/approver

Vaibhav Gupta

Other contributors

Shipra Bhatia, Ayushman Rai, Samridha Kalaiyan, Harshit Garg

Distribution

Client: Cube Highway Pvt. Ltd Steer:

Version control/issue number

Date

April 2026

steergroup.com

steer

Final Report

April 2026

Project Transit: Traffic Due Diligence of Madurai-Kanyakumari Tollway Limited

Cube Highways Fund Advisors Private Limited

Our ref: 23741311

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence of Madurai-Kanyakumari Tollway Limited

Prepared by:

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002,
India

+91 124 441 8650
www.steergroup.com

Prepared for:

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1, Sector 16, Noida- 201301 (UP, India)

Client ref: Transit 11
Our ref: 23741311

Steer has prepared this material for Cube Highways Fund Advisors Private Limited. This material may only be used within the context and scope for which Steer has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer shall be deemed to confirm their agreement to indemnify Steer for all loss or damage resulting therefrom. Steer has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

steer

Contents

	Disclaimer	i
Glossary Items		**iii**
1	**Introduction**	**5**
	The assignment	5
	Our approach	6
	Contents of this report	7
2	**The Asset**	**9**
	Introduction	9
	Strategic network	9
	Concession and tolling details	10
	Key economic activities	12
	Alternate routes	14
3	**Traffic Description**	**16**
	Introduction	16
	Historical trends	17
	Toll Frequencies	23
	Key findings of the TVC data analysis	31
	WADT estimates	31
	Key findings of origin-destination analysis	34
	Overview	34
	Sample rates	34
	Zone Categories	34
	Zonal Influence	35
	Internal External analysis	37
	Conclusions	45
4	**Socio economic context and traffic growth**	**47**
	Introduction	47
	Population growth	47
	Economic Indicators	48
	Economic growth	51
	Forecasts for growth drivers	54
5	**FY26 Base Year AADT and Traffic growth Analysis**	**56**
	FY26 Base year AADT estimates	56
	Estimation of background elasticities	60
6	**Forecast: Network overlays and forecasts**	**65**
	Introduction	65
	Analysis of potential network/developmental impacts	65
	Revenue forecasting assumptions	67
	Toll segmentation	69

Traffic and Revenue forecasts	72
Target revenues and modification of concession period	78
Upside and Downside cases	79
Summary outlook	85

Figures

Figure 2-1: Asset location in the regional network context	9
Figure 2-2: Asset context	10
Figure 2-3: TP2 Etturvattam, RAMCO Cement Plant and India Cement Plant	11
Figure 3-1: Ticket segmentation for CJV at TP1	25
Figure 3-2: Ticket segmentation for MAVs at TP1	26
Figure 3-3: Ticket segmentation for CJV at TP2	26
Figure 3-4: Ticket segmentation for MAV at TP2	27
Figure 3-5: Ticket segmentation for CJV at TP3	27
Figure 3-6: Ticket segmentation for MAV at TP3	28
Figure 3-7: Ticket segmentation for CJV at TP4	28
Figure 3-8: Ticket segmentation for MAV at TP4	29
Figure 3-9: Comparison between TVC and TMS daily traffic data on TP1 (2021)	31
Figure 3-10: Comparison between TVC and TMS daily traffic data on TP2 (2021)	32
Figure 3-11: Comparison between TVC and TMS daily traffic data on TP3	32
Figure 3-12: Comparison between TVC and TMS daily traffic data on TP4	33
Figure 3-13: Comparison between vehicle shares from TVC and TMS WADTs	33
Figure 3-14: Zonal influence at TP1 Kappalur	36
Figure 3-15: Zonal influence at TP2 Etturvattam	36
Figure 3-16: Zonal influence at TP3 Salaipudhur	37
Figure 3-17: Zonal influence at TP4 Nanguneri	37
Figure 3-18: Internal-external distribution at TP1 Kappalur	38
Figure 3-19: Internal-external distribution at TP2 Etturvattam	38
Figure 3-20: Internal-external distribution at TP3 Salaipudhur	39
Figure 3-21: Internal-external distribution at TP4 Nanguneri	39
Figure 3-22: Commodity distribution at TP1 Kappalur (Total)	41
Figure 3-23: Commodity distribution at TP2 Etturvattam (Total)	42
Figure 3-24: Commodity distribution at TP3 Salaipudhur (Total)	42
Figure 3-25: Commodity distribution at TP4 Nanguneri (Total)	43
Figure 3-26: Trip length distribution TP1 Kappalur	44
Figure 3-27: Trip length distribution TP2 Etturvattam	44
Figure 3-28: Trip length distribution TP3 Salaipudhur	44
Figure 3-29: Trip length distribution TP4 Nanguneri	45
Figure 4-1: Annual growth - Index of Industrial Production	49
Figure 4-2: Total number of registered motor vehicles in India (per 1000 population	50

Figure 4-3: Per capita income 50
Figure 4-4: YoY growth in expenditure components of GDP 51
Figure 4-5: Month on Month IIP performance 52
Figure 4-6: Industrial components of GVA 52
Figure 4-7: Evolution of Tamil Nadu's state GDP and National GDP, FY12-24 53
Figure 4-8: GDP-GSDP forecast 55
Figure 6.1: Vizhinjam port traffic 67

Tables

Table 1.1: Scope of work and sources of data 5
Table 2.1: Asset description and key metrics 11
Table 2.2: Single toll rates on the Asset (INR), applicable for FY26 12
Table 3.1: PCU factors 16
Table 3.2: Historical Traffic Levels at TP1 Kappalur 17
Table 3.3: Historical Tollable Traffic Levels at TP1 Kappalur 17
Table 3.4: Historical Traffic Levels at TP2 Etturvattam 18
Table 3.5: Historical Tollable Traffic at TP2 Etturvattam 19
Table 3.6: Historical Traffic Levels at TP3 Salaipudhur 19
Table 3.7: Historical Tollable Traffic at TP3 Salaipudhur 20
Table 3.8: Historical Traffic Levels at TP4 Nanguneri 21
Table 3.9: Historical Tollable Traffic at TP4 Nanguneri 21
Table 3.10: Total Revenue (in INR Cr) and AADC (in INR Lakhs) by vehicle type at TP1 Kappalur 22
Table 3.11: Total Revenue (in INR Cr) and AADC (in INR Lakhs) by vehicle type at TP2 Etturvattam 22
Table 3.12: Total Revenue (in INR Cr) and AADC (in INR Lakhs) by vehicle type at TP3 Salaipudhur 23
Table 3.13: Total Revenue (in INR Cr) and AADC (in INR Lakhs) by vehicle type at TP4 Nanguneri 23
Table 3.14: Typical ticket types sold at NHAI plazas 24
Table 3.15: Ticket segmentation for LCV, Bus, 2A and 3A at TP1 Kappalur 29
Table 3.16 Ticket segmentation for LCV, Bus, 2A and 3A at TP2 Etturvattam 29
Table 3.17 Ticket segmentation for LCV, Bus, 2A and 3A at TP3 Salaipudhur 29
Table 3.18 Ticket segmentation for LCV, Bus, 2A and 3A at TP4 Nanguneri 30
Table 3.19: Data collection exercise 30
Table 3.20: WADT from TVC counts 31
Table 3.21: Sample rates for OD data 34
Table 3.22: Zone aggregations for zonal influence analysis 35
Table 4.1: CAGR of population in India 47
Table 4.2: Population Growth in Tamil Nadu and India (2012 – 2024) 48
Table 5.1: SCF factors for TP1 Kappalur 57
Table 5.2: SCF Factors for TP2 Etturvattam 57
Table 5.3: SCF Factors for TP3 Salaipudhur 57

Table 5.4: SCF Factors for TP4 Nanguneri 58
Table 5.5: Adopted base estimates: TP1: Kappalur 58
Table 5.6: Adopted base estimates: TP2: Etturvattam 58
Table 5.7: Adopted base estimates: TP3: Salaipudhur 59
Table 5.8: Adopted base estimates: TP4: Nanguneri 59
Table 5.9: Identified growth drivers to model traffic growth 61
Table 5.10: Passenger and Commercial growth with normalised FY22 – MK TP1 61
Source: Steer Analysis; Note; Passenger includes CJV and Bus traffic whereas Commercial includes 2A/3A/MAV traffic Table 5.11: Passenger and Commercial growth with normalised FY22 – MK TP2 61
Table 5.12: Passenger and Commercial growth with normalised FY22 – MK TP3 62
Table 5.13: Passenger and Commercial growth with normalised FY22 – MK TP4 62
Table 5.14: Elasticity recommendations for the Asset 63
Table 6.1: Impact of 6 laning LOS improvement for TP1 Kappalur 66
Table 6.2: Impact of 6 laning LOS improvement for TP4 Nanguneri 66
Table 6.3 Impact of Vizhinjam port traffic for TP4 Nanguneri 66
Table 6.4: Trip factors for the forecast years for TP1 Kappalur 67
Table 6.5: Trip factors for the forecast years for TP2 Etturvattam 68
Table 6.6: Trip factors for the forecast years for TP3 Salaipudhur 68
Table 6.7: Trip factors for the forecast years for TP4 Nanguneri 68
Table 6.8: Segmentation for forecast years, TP1 Kappalur 69
Table 6.9: Segmentation for forecast years, TP2 Etturvattam 70
Table 6.10: Segmentation for forecast years, TP3 Salaipudhur 70
Table 6.11: Segmentation for forecast years, TP4 Nanguneri 70
Table 6.12: Annual pass compensation for CJVs (in Crore) 71
Table 6.13: WPI growth forecast assumptions 71
Table 6.14: FY26YTD Revenue reconciliation summary (INR Lakhs) 72
Table 6.15: Traffic forecast (With Impacts) for TP1 Kappalur 72
Table 6.16: Traffic growth CAGR (%) for TP1 Kappalur 72
Table 6.17: Revenue forecast (With Impacts) for TP1 Kappalur (INR Cr) including the Annual Pass Compensation Revenue for CJV 73
Table 6.18: Revenue growth CAGR (%) for TP1 Kappalur 73
Table 6.19: Traffic forecast (With Impacts) for TP2 Etturvattam 74
Table 6.20: Traffic growth CAGR (%) TP2 Etturvattam 74
Table 6.21: Revenue forecast (with impacts) for TP2 Etturvattam (INR Cr) 74
Table 6.22: Revenue growth CAGR (%) for TP2 Etturvattam 75
Table 6.23: Traffic forecast (With Impacts) for TP3 Salaipudhur 75
Table 6.24: Traffic growth CAGR (%) TP3 Salaipudhur 75
Table 6.25: Revenue forecast (with impacts) for TP3 Salaipudhur (INR Cr) 76
Table 6.26: Revenue growth CAGR (%) for TP3 Salaipudhur 76
Table 6.27: Traffic forecast (With Impacts) for TP4 Nanguneri 76

Table 6.28: Traffic growth CAGR (%) for TP4 Nanguneri	77
Table 6.29: Revenue forecast (with impacts) for TP4 Nanguneri (INR Cr)	77
Table 6.30: Revenue growth CAGR (%) for TP4 Nanguneri	78
Table 6.31: Target Revenues for Extension 1	79
Table 6.32: Target Revenues for Extension 2	79
Table 6.33: Summary of Macro-economic Assumptions for upside and downside cases	80
Table 6.34: Summary of impacts on the Assets	80
Table 6.35: Summary of impacts on the Assets	81
Table 6.36: Upside potential and Downside PCU scenario – FY51	81
Table 6.37: Upside potential and Downside Revenue scenario – FY51	83

Appendices

A Top 10 OD pairs

B Detailed Forecasts

C Client Sensitivity Analysis: Upside and Downside Sensitivity

Disclaimer

This report has been produced for the sole benefit of Cube Highways Pvt. Ltd. This Report (the "Report") is confidential and disclosed only for information purposes, and it may not be relied upon by any party other than the Client or a Party to a Reliance Letter, and Steer: a) makes no warranty, expressed or implied, with respect to the use of any information or methods disclosed in this Report; and b) assumes no liability with respect to the use of any information or methods disclosed in this document. Any such party by its acceptance or use of this Report releases Steer from any liability for direct, indirect, consequential, or special loss or damage whether arising in contract, warranty, express or implied, tort or otherwise.

The Report is based on standard professional efforts, and information available to us at the time the review took place and is subject to time and budget constraints of the Report's scope of work. This Report, information and statements contained herein, are all based on third party data provided to us, or sourced by us, and Steer has not sought to establish the reliability of the data, except as specifically stated in the Report. Steer bears no responsibility for the results of any actions taken based on the third-party data.

Certain forward-looking statements in the Report are estimates based on interpretations or assessments of information available at the time of writing. The Report is thus to be viewed as an assessment that is time-relevant, specifically referring to conditions at the time of the review. Steer undertakes no obligation to update the Report for any reason.

While the estimates contained in the Report are not precise forecasts, they do represent, in our view a reasonable expectation of the future, based on information we have been provided with or sourced. However, the estimates necessarily rely on numerous assumptions and judgements, and circumstances may occur over the timeframe of the project that go counter to these assumptions and judgements and that affect the project's realized revenues. Actual events may differ from those assumed, and events are subject to change. Therefore, Steer makes or provides no warranty, whether implied or otherwise, as to the accuracy of forward-looking information presented. Further, it is important to note that forecasts presented represent long-term growth profiles; the results for individual time periods may vary from forecasted values.

Traffic Consultant developed the relationships in the models used to produce the forecasts for the projects based on data available through February 2026. This report does not consider variations in traffic performance due to changing macro and force majeure events such (but not limited to) as global wars, economic uncertainty (high inflation, global recession), and changes in the regulatory environment. The situation remains dynamic and is subject to significant change in the short and medium term. In this challenging context, Traffic Consultant has produced base forecasts with a view on a possible scenario for the traffic forecasts. However, it is important to note that this is only one view, and there continues to remain uncertainty as to the short-term, intermediate or prolonged effects of and responses to such macro-economic/force majeure events. As a result, no assurance can be provided by Traffic Consultant that the scenarios and assumptions Traffic Consultant has identified will prove to be accurate. Given the uncertainty inherent in this scenario, Traffic Consultant advises that all readers of the Report consider the Report in the context of their own assessment of the impact of such events.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE ISSUE OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES.

Glossary Items

Acronym	Meaning
2A/ Truck	2 Axle/ Truck
3A	3 Axle
AADT	Annual Average Daily Traffic
BOT	Build Operate Transfer
CAGR	Compound Annual Growth Rate
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DPR	Detailed Project Report
ETC	Electronic Toll Collection, also referred to as FASTag
FY	Financial Year
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HAM	Hybrid Annuity Model
HCM/ EME	Heavy Commercial Vehicles/ Earth Moving Machinery
IE reports	Independent Engineers' reports
INR	Indian Rupees
km	Kilometer
LCV/ LGV	Light Commercial Vehicles/ Light Goods Vehicle
LMV	Light motor vehicles
MADT	Monthly average daily traffic
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NHIIMPL	National Highways Infra Investment Managers Private Limited
NSDP	National State Domestic Production
OD	Origin Destination
OSV	Oversized vehicles
PCU	Passenger Car Unit; it is a measure of standard vehicle unit to convert all vehicle classes to a single unit by using PCU factors to compute total traffic on an Asset.
Q1	Quarter 1 of financial year, from April to June
Q2	Quarter 2 of financial year, from July to September
Q3	Quarter 3 of financial year, from October to December
Q4	Quarter 4 of financial year, from January to March
RNP	Registered Number Plate
SCF	Seasonality Correction Factor
SH	State Highway

Acronym	Meaning
T&R	Traffic and Revenue
TMS	Traffic Management System
TVC	Traffic Volume Count
WADT	Weekly average daily traffic
YTD	Year to Date

1 Introduction

The assignment

1.1 The Cube Highways Fund Advisors Private Limited (the "Client") has commissioned Steer Davies Gleave India Private Limited ("Steer") for a traffic due diligence to be carried out on the Madurai-Kanyakumari Tollway Road (hereafter called "Asset"). This report forms part of the annual fair market valuation (FMV) undertaken as part of the "Transit 11 project". This report presents an update of the traffic and revenue forecasts based on actual traffic data available up to February 2026 and latest macro-economic assumptions.

1.2 The Asset Madurai-Kanyakumari consists of four toll road sections, each of which has a separate special purpose vehicle (SPV). For this report, we hereafter call the four SPVs together as Asset and toll plazas on each section as TP1-TP4.

- Madurai Kanyakumari Tollways Limited: MKTL: TP1 – Kappalur
- Kanyakumari Etturvattam Tollways Limited: KETL: TP2 – Etturvattam
- Salaipudhur Madurai Tollways Limited: SMTL: TP3 – Salaipudhur
- Nanguneri Kanyakumari Tollways Limited: NKTL: TP4 – Nanguneri

1.3 Our scope of work for the traffic and revenue forecasting process includes:

Table 1.1: Scope of work and sources of data

Scope of work	Data source
• Review of historical Traffic Management System (TMS) data, Vendor reports and documents	• Provided by client for the period between Oct'20 and Mar '26, with FY26 base AADT and forecasts considering data up to Feb'26.
• Historical analysis and forecasts for baseline growth, including; – Background growth, and – Seasonality trends	• Historical data provided by the Client and benchmarking using plazas in the vicinity or of similar nature of the Asset has been done wherever sufficient data was unavailable
• Validation of revenue reported in FY26YTD	• TMS data provided by Client • Revenue reconciliation using toll plaza traffic and ticket type data to calculate revenue and reconciling it with toll plaza reported revenue
• Origin Destination (OD) analysis to understand growth drivers: – Zonal influence and Top OD pairs – Commodity distribution – Trip length distribution	• Origin Destination (OD) surveys undertaken by Steer. Surveys were undertaken on TP1 and TP2 in 2023 and 2021 respectively. On TP3 and TP4 surveys were conducted for this Study in February 2026.

Scope of work	Data source
• Analysis of upcoming network improvements and other developments, that may have future impacts on traffic	• Secondary research and our in-house experience of working in the vicinity of the Asset. Impact analysis to be conducted by Steer based on Generalised Journey Cost spreadsheet-based analysis
• Historical revenue analysis and forecasts for revenue estimation, including – Toll segmentation and trip factors, – Overloading shares	• Calculated from historical data provided by Client
• Final traffic growth forecasts including baseline growth rates and potential future impacts	• Elasticity based base growth and potential impacts from secondary research and Steer's in-house experience of working in the vicinity of the Asset
• Toll revenue estimation for the entire concession, including toll evolution	• Toll evolution based on latest toll notification published by National Highway Authority of India (NHAI); and latest Wholesale Price Index (WPI) trends as shared by the client

Our approach

1.4 Our approach follows well-established practices for forecasting ongoing traffic growth on an existing/brownfield Asset. The analysis has essentially focused on two sets of issues, namely:

- understanding the traffic that is currently using the Asset; and
- identifying how and why that traffic is likely to change in the future.

1.5 To understand the current traffic on the Asset, we have analysed traffic data from multiple independent sources as given below:

- Client-provided secondary data, including:
  - TMS data starting October 2020 to February 2026. The historical traffic and revenue presented in Chapter 3 considers information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.
  - Concession agreement and toll notifications for FY25 and FY26.
  - Previous studies related to traffic and revenue.
- In the previous studies of 2023 and 2021, Steer-commissioned OD surveys on TP1 Kappalur and TP2 Etturvattam to validate any change in growth drivers and travel patterns. Survey on TP1 was conducted on 28th August 2023 and on TP2 on 1st July 2023.
- In this Study, Steer commissioned OD and TVC surveys on TP3 Salaipudhur and TP4 Nanguneri to observe the change in travel patterns and growth drivers. OD survey on TP3 was conducted on 23rd February 2026 and on TP4 on 24th February 2026.
- TVC surveys on TP3 and TP4 was conducted from 23rd Feb'26 to 25th Feb'26.
- We undertook revenue reconciliation for FY26 YTD, by building up revenue from the traffic reported by each of the toll plazas and subsequently matching them to the

reported revenue for FY26YTD using the prevalent toll rates and reported segmentation/toll-frequencies for FY26YTD. This has been a key part of our analysis to validate the segmentation/toll-frequency assumptions, and the Annual Average Daily Traffic (AADT) reported for each of the toll plazas.

1.6 The estimation of future traffic demand on the Asset was undertaken through:

- Estimating the FY26 base year position. The FY25 AADT was calculated using the monthly traffic data for FY25. The FY25 AADT thus computed was then grown with elasticity linked GDP/GSDP growth to arrive at the FY26 expected traffic. To determine the estimates for FY26, the expected FY26 traffic was validated against the 11 months of actual FY26 traffic (Apr to Feb) and necessary adjustments were made where required.
- Secondary research to understand plans for new developments and progress of ongoing developments on the Asset.
- Steer independent primary surveys and site visits to validate our network and contextual understanding.
- Developing a bespoke growth model for each Asset/plaza/toll class to forecast year-on-year traffic growth from FY26 to the end of concession period.
- Investigating the elasticity of historical traffic growth compared to state (GSDP) and national (GDP) growth. Where historical data is limited, we have benchmarked the Asset against our Steer knowledge base (e.g., similar Asset types in the same state or on the same corridor), to derive appropriate elasticities.
- Applying our elasticities to independent GDP forecasts as provided by client.
- Identifying and analysing the potential impacts of any relevant changes to the competitive position of each Asset – these include impacts of changes to road network including expressways and opening of competitive modes of travel.
- Identifying and analysing any other potential impacts to traffic and revenue on each Asset – these include axle load norms, axle shift for heavy goods, FASTag implementation.
- Considering changes in trends of segmentation over time and making suggestions for changes in exemptions in the future
- Preparing traffic and revenue forecast for the Asset for the complete length of the concession. We have developed a set of forecasting assumptions for three scenarios: a base case and upside and downside scenarios.

Contents of this report

1.7 The report has been divided into the following chapters, including Chapter 1 providing an introduction:

- Chapter 1 introduces the methodology and approach to undertake the traffic and revenue due diligence;
- Chapter 2 describes the key characteristics of the Asset and its surrounding road network, primarily based on site visits;
- Chapter 3 summarises the current and historical traffic on the Asset, including results from the TMS, TVC and OD analyses;
- Chapter 4 presents the socio-economic context of the corridor and region/state containing the Asset, along with our approach and results on estimating background traffic demand growth; and

- Chapter 5 presents our baseline year forecast and summarises our results on estimating background traffic demand growth
- Chapter 6 summarises our assessment of network impacts and presents concession traffic and revenue forecasts for the Asset along with the assumptions for upside and downside cases.

2 The Asset

Introduction

2.1 This chapter provides a description of the Asset, based on both primary data (from site visits), and our understanding of the region and network surrounding the Asset. We cover the strategic network context, followed by key economic activities and network developments around the Asset.

Strategic network

2.2 The Asset is situated in the state of Tamil Nadu, connecting Madurai, and northern Tamil Nadu and states north of Tamil Nadu with the cities and towns in southern Tamil Nadu and Thiruvananthapuram in Kerala. The following figure shows the regional road network in which the Asset is located.

Figure 2-1: Asset location in the regional network context

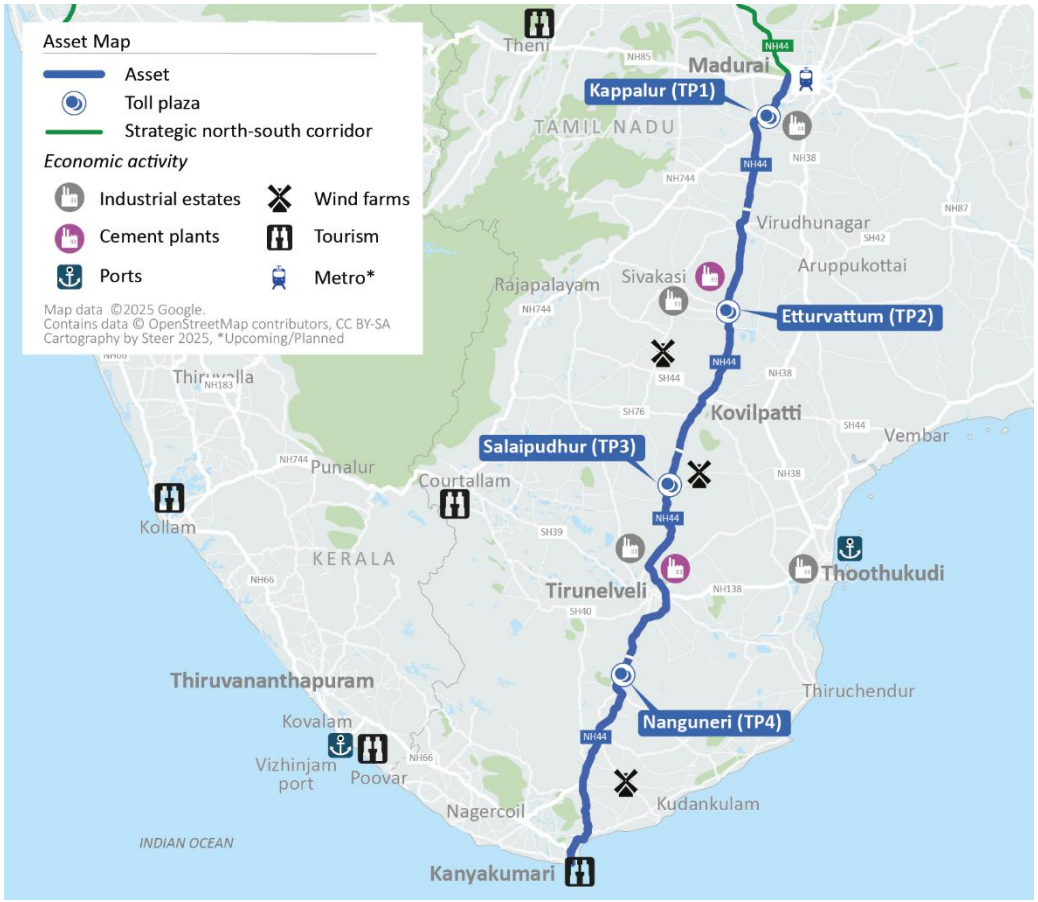
Source: Steer cartography

2.3 This Asset primarily caters to three different types of strategic movements:

- **Long-distance trips** between North India and Southern states like Andhra Pradesh, Telangana and Karnataka at one end and southern Tamil Nadu and Thiruvananthapuram at the other end.
- **Medium-distance trips** between Chennai and Bangalore at one end and southern parts of Tamil Nadu and Thiruvananthapuram at the other end.
- **Short-distance trips** between cities and towns in southern Tamil Nadu including Madurai, Thirumangalam, Tuticorin, Virudhunagar, Sivakasi, Kovilpatti, Tirunelveli and Thiruvananthapuram.

2.4 The Asset is a 243-km toll road which lies on NH44 in Tamil Nadu. It is a four-lane road with four toll plazas. The following figure provides a closer view of the Asset in the context of its immediate surroundings.

Figure 2-2: Asset context



Source: Steer cartography using OpenStreetMap data

Concession and tolling details

2.5 The three southern toll plazas (TP2: Etturvattam, TP3: Salaipudhur and TP4: Nanguneri) on the Asset have been operational since FY12 while the northernmost toll plaza (TP1 Kappalur) has been operational since FY11. The Client took over operations of the Asset in October 2020.

2.6 The following table provides a key metrics of the Asset that have their chainage from KM 0.0 to KM 243.470 of NH44.

Table 2.1: Asset description and key metrics

Asset	Particulars
State	Tamil Nadu
Highway and lane configuration	NH 44 four-lane
Toll plazas	• SPV 1: TP1: Kappalur • SPV 2: TP2: Etturvattam • SPV 3: TP3: Salaipudhur • SPV 4: TP4: Nanguneri
Road Length (km) as per concession agreement	• TP1: 52.30km • TP2: 64.20km • TP3: 63.50km • TP4: 63.47km
Commencement of operations	• TP1: Sep 2012 • TP2: 15 2011 • TP3: 23 2011 • TP4: 23 2011
Operated by Client since	October 2020
Concession period	30 years
Last year of concession	FY51

Source: Client data

2.7 The figure below shows a typical cross-section of the Asset and its toll plazas.

Figure 2-3: TP2 Etturvattam, RAMCO Cement Plant and India Cement Plant

Source: Steer site visits

2.8 Tolls are collected for the vehicle categories and rates as shown in the following table. The toll plazas have dedicated ETC/FASTag lanes for electronic tolling.

2.9 Due to general elections in India from Apr-May'24, the toll rates on the national highways across the country were changed in June 2024 onwards, instead of April 2024. For FY26 the toll rates changed from Apr'25 across most of the national highways in India including the Asset. It is understood that the revised toll rates issued in October 2025 using the updated inflation linking factor have not been implemented at the Asset. The following table summarizes the toll rates applicable for FY26.

Table 2.2: Single toll rates on the Asset (INR), applicable for FY26

Type of Vehicle	Single Journey Fee			
	TP1 Kappalur	TP2 Etturvattam	TP3 Salaipudhur	TP4 Nanguneri
CJV	105	105	130	115
LCV	170	170	205	185
Bus/Truck	355	355	435	390
3A	385	390	475	425
MAV/HCM/EME	555	560	680	610
OSV	675	680	830	740

Source: NHAI Revision of User fee rate w.e.f. 01.04.2025

Key economic activities

2.10 Of the four plazas, TP1 Kappalur has the highest urban influence, with the toll plaza being in the suburbs of Madurai. It is situated between Madurai city and the municipality of Thirumangalam. The Asset is in a highly urbanised region of Tamil Nadu, with densities peaking at either ends of the Asset cluster – i.e., near Madurai and Kanyakumari. Demand is driven by a consumption-based economy with major economic activities surrounding cement manufacturing, container terminal, textile plants, wind power and industrial estates like State Industries Promotion Corporation of Tamil Nadu Limited (SIPCOT).

Cement

2.11 The toll plazas TP2: Etturvattam and TP3: Salaipudhur have two large cement plants close to them, namely Ramco Cements at RR Nagar (near Virudhunagar) and India Cements at Sankarnagar (north of Tirunelveli). Both are Chennai based cement companies which cater to most of the local residential and infrastructure development demand and some in surrounding states like Kerela and Andhra Pradesh.

2.12 The India Cements factory, set up in 1949 and located just north of Tirunelveli on the Asset, has an annual production capacity of 4.7 million tonnes, as per FY23 report.[1] Limestone is one of the main raw materials for cement manufacture and Nanjankulam Limestone Mines, located nearby, is one of the captive limestone mines of the Sankar Nagar factory. Besides, the Ramco Cements factory at RR Nagar in Virudhunagar is another large cement plant which grew from an annual capacity of 2 to 3.9million.

[1] The Ramco Cements Limited (RAMCOCEM) Q4 FY23 Earnings Concall Transcript | AlphaStreet

Industrial estates

2.13 The southern Tamil Nadu region in the immediate area of influence of the Asset and hosts several industrial estates including at Kappalur (Madurai), Gangaikondan (Tirunelveli) and Nanguneri. While Kappalur and Gangaikondan are already operational, the Nanguneri SEZ (Special Economic Zones) already has land allotted but is not operational yet. As per the latest information, Tamil Nadu state Government is planning to acquire 1000 acres from private developers for Nanguneri SEZ (Special Economic Zones). [2]

2.14 The Tamil Nadu Small Industries Corporation (SIDCO) industrial estate at Kappalur, located on the southern part of the Madurai bypass, is a 700-acre facility established in 1974. It has 400 units related to food processing, fabrication, textile and hardware industries and employs over 15,000 people until 2024.[3] The SIPCOT (State Industries Promotion Corporation of Tamil Nadu Limited) at Gangaikondan houses units like the LPG storage godowns of the Indian Oil Corporation, South India Bottling Company, ATC Tyres Private Limited, Nova Carbon Company and Bosch Limited.

2.15 The industrial city of Tuticorin and the surrounding region hosts the Tuticorin Port which is one of the 12 'major' ports of the country and has two container terminals.[4] There are several power plants including the Tuticorin Thermal Power Station and private ones like the captive Sterlite Industries plant. Other industries include salt pans, oil mills, chemical factories and export-based businesses.

2.16 The Asset also lies on the Chennai-Kanyakumari Industrial Corridor (CKIC) which covers 23 districts and aims to promote port-based economic development. The project aims to promote balanced regional growth and development of the southern districts. Six industrial nodes have been identified as part of the Comprehensive Development Plan of which Madurai-Dindigul-Virudhunagar-Theni and Thoothukudi-Tirunelveli have been prioritised as part of Phase-I.[5]

2.17 Based on the site observations and the latest reports it was found that India's biggest mega textile park under PM Mitra is under development in Virudhunagar and is expected to get completed by end of 2027 along the Asset on NH44 closer TP2 Etturvattam plaza. [6]

Wind power

2.18 Tamil Nadu is the top producer of wind energy in the country with an installed capacity of about 8.7 GW across Coimbatore, Tiruppur, Tirunelveli, Thoothukudi and Kanyakumari districts[7].

2.19 Though the Madurai and Tirunelveli region were traditionally agricultural regions, with older wind farms primarily located in the southern Tirunelveli/Kanyakumari region,

---

[2] 20 years on, Nanguneri SEZ yet to flourish - The Hindu
[3] https://www.thehindu.com/news/national/tamil-nadu/industrial-estates-in-wait-and-watch-mode/article31674890.ece**, accessed on 30 March 2021**
[4] https://www.vocport.gov.in/knowyourport.aspx
[5] http://tidco.com/chennai-kanyakumari-industrial-corridor/#:~:text=The%20Chennai%20Kanyakumari%20Industrial%20Corridor,Tamil%20Nadu
[6] https://www.thehindu.com/news/cities/Coimbatore/nearly-190-acres-allotted-to-23-investors-at-pm-mitra-park-in-virudhunagar/article70691979.ece
[7] Wind energy generation picks up in T.N., consumption expected to peak at 100 million units a day this year - The Hindu

commissioning of wind farms in other parts of these southern districts and even western districts like Coimbatore have expanded the wind energy business. Ettaiyapuram town near Thoothukudi is a major producer and storage for wind pillar and mills. Player including Sembcorp Energy India produce these mills there.

Urban consumption centres

2.20 Given the highly urbanised nature of the region including cities like Madurai, Tirunelveli and Trivandrum, and towns like Virudhunagar, Kovilpatti and Tuticorin, there is a lot of consumption-related retail activity in the region. A lot of this regional consumption demand is met by LCVs and 2As, apart from 3As. MAVs primarily serve long-distance traffic part of the strategic movement from and to northern states.

2.21 The cities and towns in the region are culturally connected and show leisure-based car and bus travel not only between cities and towns in the southern districts but also to and from Chennai. Tourism includes both pilgrimage and leisure travel. Destinations like Rameswaram and Kanyakumari are renowned pilgrimage destinations while other cities that have religious destinations include Madurai and Tirunelveli. Leisure destinations in the immediate vicinity of the Asset are Courtallam, Cape Comorin and Manjolai Estates in Tenkasi, Kanyakumari and Tirunelvei districts.

2.22 Besides the urban centres mentioned above, the Asset also serves as the highway link between southern Tamil Nadu and Kerala. Hill stations (Thekkady, Kodaikanal and Munnar), beaches in Kerala are popular tourist destinations for domestic tourists from Tamil Nadu. Besides, Thiruvananthapuram and Kanyakumari districts are culturally connected and show inter-urban passenger movements.

Alternate routes

2.23 As seen on the map in the earlier section, the Asset lie at the southern end of NH 44, the traditional north-south corridor connecting North India with South India terminating at Kanyakumari.

2.24 For the three types of movements observed on the Asset – long-distance, medium-distance and short-distance trips – that were explained earlier in this chapter, this section introduces potential alternate routes available for diversion.

- **Long-distance:** There is no long-distance alternate to the Asset. NH 66 - the long-distance north-south corridor along the coast connecting Mumbai with Kanyakumari, does not directly compete with the Asset as it passes through highly urban and congested areas in Kerala. The Asset is the primary link between Tamil Nadu and states north of Tamil Nadu at one end and the southern districts of Tamil Nadu including Madurai, Virudhunagar, Tirunelveli, Kanyakumari and Thiruvananthapuram (Kerala) at the other end.
- **Medium-distance**: There are two major medium-distance alternatives available.
  - The Madurai-Tuticorin Expressway (MTEL) on NH 38 connects Madurai more directly with Tuticorin (2.5 hours, 150 km) compared to the Asset through Kovilpatti (3 hours, 170 km). Port traffic between the northern Tamil Nadu hinterland and the Tuticorin Port primarily use this route. However, due to current 4-lane expansion of NH38 under Chennai-Kanyakumari by National Highway Authority of India (NHAI), the section is under construction. With that, our Asset

has continued to gain some traffic. Since, the shift of traffic volume is insignificant hence no impact is considered in Chapter 6.[8]

- The NH 744 route between Madurai and Kollam, through Rajapalayam, is another competitive alternate for road users having Courtallam and Kollam district (Kerala) as destinations. Chapter 6 presents the analysis of potential impact due to the planned upgrade of NH 744 in the future. While four-laning is in progress, OD analysis suggests that there is negligible inscope traffic between Madurai and Kollam passing the Asset toll plazas. Accordingly, no impact has been considered for the completion of NH 744.
- **Micro-diversion**: There are local roads that help road users bypass the toll plazas. While some of these movements have already been contained and the issues being addressed, two alternates had significant amount of traffic. We believe that this new level of traffic is expected to continue in the forecast period other than the increase in construction activity observed around Kanyakumari. A base correction for this has been elaborated in Chapter 6.

[8] **Ecr: Ecr Being Widened At ₹24,435cr | Chennai News - Times of India (indiatimes.com)**

3 Traffic Description

Introduction

3.1 This chapter outlines the current traffic and revenue on the Asset, as well as our analysis of origin-destination (OD) data and traffic count data. This encompasses data, which was collected as a part of this study, as well as data provided by the Client.

3.2 Traffic demand data is generally collected and analysed to understand the volume and vehicle composition of demand currently using the Asset, while OD data is used to obtain; a) better understanding of travel patterns, trip lengths, trip purposes and areas of influence in the vicinity of the Asset, and b) the commodities being moved by goods vehicles. Combined with our understanding of the Asset (based on our site visits), this analysis enables us to identify the key drivers of demand on the Asset.

3.3 Actual toll plaza data is used as the basis from which the current/base year annual average daily traffic (AADT) is established. This data is typically provided by the Client and independently analysed and validated by us using traffic volume count (TVC) information.

3.4 The below sections present historical traffic and revenue information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.

PCU Factor assumption

3.5 The PCU values have been taken from 'IRC 64:1990- Guidelines for Capacity of Roads in Rural Areas'. For MAV, based on the discussion with the Client, we have referred to the rigid and trailer splits in the latest TVC counts conducted in 2026 on TP3 Salaipudhur and TP4 Nanguneri for calculating the effective PCU for MAVs. For rigid trailer trucks we have assumed a PCU factor of 3, whereas for trailer trucks we have assumed a PCU factor of 4.5. These factors have been used to arrive at the PCU values presented in the following sections.

Table 3.1: PCU factors

Vehicle Category	PCU Factor
CJV/ Mini LCV	1.0
LCV	1.5
Bus	3.0
2A	3.0
3A	3.0
MAV*	3.4

Vehicle Category	PCU Factor
OSV	4.5

Source: Steer analysis, * Rigid-Trailer PCU

Historical trends

3.6 The following table illustrates the traffic data over the period of 5 years from October 2020 – March 2026 (provided by the Client) at a plaza level. There is lack of long-term historical data available on the Asset since tolling was started by the client only in October 2020 and both the available years of data, FY21 and FY22 were impacted by COVID-19 related restrictions. Therefore, starting FY23 traffic on the Asset has started to get normalised with similar travel patterns recorded in FY24 and FY26.

3.7 Table 3.2 and Table 3.3 below depict the historical total and tollable traffic levels at TP1 Kappalur.

Table 3.2: Historical Traffic Levels at TP1 Kappalur

Vehicle category	FY21*	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
CJV	17,121	17,720	18,200	19,245	20,236	22,464	7.3%
LCV	2,369	1,528	1,544	1,563	1,664	1,780	4.9%
Bus	2,697	2,923	2,730	2,991	3,266	3,125	4.6%
2A	1,226	1,264	1,545	1,388	1,358	1,351	(4.4%)
3A	596	567	554	526	541	578	1.4%
MAV	828	871	871	911	974	1,040	6.1%
OSV	-	-	2	5	2	2	
Total	**24,836**	**24,873**	**25,447**	**26,629**	**28,041**	**30,340**	**6.0%**
PCU	**37,045**	**37,237**	**37,976**	**39,426**	**41,548**	**43,841**	**4.9%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21); FY26 AADT represents the full year actual (April to March).

Table 3.3: Historical Tollable Traffic Levels at TP1 Kappalur

Vehicle category	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
CJV	14,507	12,851	15,663	17,026	17,758	19,741	8.0%
LCV	1,858	1,496	1,413	1,449	1,543	1,635	5.0%
Bus	786	979	1,364	1,445	1,726	2,650	24.8%
2A	1,129	1,067	1,231	1,337	1,294	1,265	0.9%
3A	552	506	533	512	517	550	1.1%
MAV	795	794	864	905	966	1,030	6.0%
OSV	2	2	2	5	2	2	
Tollable AADT	**19,629**	**17,693**	**21,070**	**22,679**	**23,806**	**26,874**	**8.4%**

Vehicle category	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
Tollable PCU	**27,342**	**25,393**	**29,805**	**32,107**	**33,899**	**39,103**	**9.1%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21); FY26 AADT represents the full year actual (April to March); Tollable traffic excludes exemption and violation; exemption in buses reduced starting Sept25.

3.8 Passenger traffic at the TP1 Kappalur (CJV/Buses) has shown a consistently increasing trend since the pandemic-impacted year of FY22. CJVs have witnessed a ~7% CAGR from FY23 to FY26. Overall, for the period between FY23 to FY26, the toll plaza had an AADT growth of 6% and a PCU growth of 4.9%. The buses on the plaza have shown a slight degrowth in the initial months of FY26 due to ongoing court case between the NHAI and TNSRTC.

3.9 In terms of the vehicle share, the dominant category at the toll plaza is CJVs – having a 74% share, as of FY26. This is due to the proximity of the Asset to the consumption centres of Madurai and Thirumangalam. Goods vehicles (2A/3A/MAV combined) have a 10% share at the toll plaza, and their volume is the highest amongst the four toll plazas on the Asset, due to the presence of electronic and manufacturing industries in Madurai

3.10 Tollable traffic at the toll plaza showed a higher growth compared to the total (tollable + non-tollable) traffic for FY23 to FY26. TP1 Kappalur recorded a CAGR of 9.1% tollable PCU growth which is 8.4% in case of total traffic.

3.11 Higher tollable PCU growth is majorly driven by Cars and 2A - which reflects reducing exemptions and violations in these categories.

3.12 Table 3.4 and Table 3.5 presents the historical traffic profile on Etturvattam toll plaza.

Table 3.4: Historical Traffic Levels at TP2 Etturvattam

Vehicle category	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
CJV	7,753	7,286	7,723	8,448	9,174	10,153	9.5%
LCV	1,064	793	809	867	947	970	6.3%
Bus	917	980	1,061	1,119	1,261	1,357	8.5%
2A	763	811	835	923	837	791	(1.8%)
3A	323	315	323	340	348	356	3.3%
MAV	632	691	685	771	826	901	9.5%
OSV	3	2	2	6	2	3	
Total	**11,453**	**10,877**	**11,439**	**12,474**	**13,395**	**14,531**	**8.3%**
PCU	**17,508**	**17,147**	**17,934**	**19,544**	**20,753**	**22,197**	**7.4%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21); FY26 AADT represents the full year actual (April to March).

Table 3.5: Historical Tollable Traffic at TP2 Etturvattam

Vehicle category	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
CJV	7,334	6,133	7,355	8,108	8,813	9,761	9.9%
LCV	1,040	760	800	857	932	960	6.3%
Bus	651	546	748	812	1,010	1,267	19.2%
2A	696	720	833	920	834	789	(1.8%)
3A	308	284	321	340	348	354	3.3%
MAV	610	605	683	769	825	899	9.6%
OSV	3	2	2	6	2	3	
Tollable AADT	**10,641**	**9,049**	**10,742**	**11,811**	**12,764**	**14,033**	**9.3%**
Tollable PCU	**15,947**	**13,990**	**16,593**	**18,252**	**19,602**	**21,500**	**9.0%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21); FY26 AADT represents the full year actual (April to March); Tollable traffic excludes exemption and violation; exemption in buses reduced starting Sept25

3.13 At TP2 Etturvatam, CJVs have historically had the highest share of traffic – like TP1 Kappalur. In FY26, the CJV volume was ~10,000, which was approximately 70% of the total traffic observed at the toll plaza. The rationale for high shares of CJV traffic can be attributed to the presence of the large urban settlements and pilgrim sites on the Asset. With increasing tourism activities post COVID-19, the period between FY23 to FY256 witnessed a healthy CAGR in CJVs (9.5%) and Bus (8.5%) traffic on the plaza.

3.14 With the strong presence of industrials units of cement and textile close to TP2, the plaza observes healthy share of commercial traffic (14%). In March 2023, India's first PM Mitra textile park opened in Virudhunagar close to TP2, which is key traffic generator. The opening of the new textile park drove the increase in associated commercial traffic in FY24 (10.4%, compared to FY23). The high volumes of goods vehicles can be explained by the presence of cement plants in the vicinity of the toll plaza (Ramco and India Cement Plants).

3.15 Considering only the tollable traffic (which excludes violations and exemptions), TP2 Etturvatam has observed a higher PCU growth compared to the overall traffic in FY26. TP2 Etturvattam had recorded 9% tollable PCU CAGR which is 7.4% in case of total traffic for the period FY23 to FY26.

3.16 Between FY23-FY26 CJVs have witnessed a higher tollable CAGR rate by 9.9% growth and 19.2% growth in buses.

3.17 Table 3.6 and Table 3.7 below present the historical traffic profile on Salaipudhur toll plaza.

Table 3.6: Historical Traffic Levels at TP3 Salaipudhur

Vehicle category	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
CJV	7,446	6,863	7,135	7,788	8,407	9,497	10.0%

Vehicle category	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
LCV	759	705	731	767	829	880	6.4%
Bus	815	816	908	967	1,075	1,200	9.8%
2A	722	711	730	814	760	735	0.2%
3A	330	283	296	314	315	331	3.8%
MAV	460	494	520	584	680	736	12.3%
OSV	3	2	2	6	4	3	
Total	**10,532**	**9,871**	**10,322**	**11,240**	**12,070**	**13,383**	**9.0%**
PCU	**15,752**	**15,028**	**15,812**	**17,237**	**18,431**	**20,133**	**8.4%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21; FY26 AADT represents the full year actual (April to March).

Table 3.7: Historical Tollable Traffic at TP3 Salaipudhur

Vehicle category	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
CJV	6,870	5,683	6,711	7,343	7,881	8,923	10.0%
LCV	739	663	720	754	817	869	6.5%
Bus	520	457	639	715	858	1,092	19.6%
2A	628	613	727	811	758	732	0.2%
3A	262	242	289	312	315	331	4.6%
MAV	441	442	518	582	678	735	12.4%
OSV	3	2	2	6	4	3	
Tollable AADT	**9,463**	**8,103**	**9,605**	**10,523**	**11,310**	**12,685**	**9.7%**
Tollable PCU	**13,722**	**12,126**	**14,527**	**15,994**	**17,220**	**19,205**	**9.8%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21); FY26 AADT represents the full year actual (April to March); Tollable traffic excludes exemption and violation; exemption in buses reduced starting Sept25.

3.18 Consistent with the trend observed at TPs 1 and 2, CJVs remain the dominant category (having a 70% share in FY25) with trips generated from/to Madurai, Tirunelveli, Kovilpatti and tourism trips towards Kanyakumari as well.

3.19 In terms of volume, CJVs were ranging at ~7800 volume in FY24 on this plaza which reached ~8400 in FY25 and have continued to increase at ~9500 in FY26. This constant rise in volumes has been due to the increased tourism influence of Kanyakumari, Tirunelveli and Madurai.

3.20 Compared to the total (tollable + non-tollable) traffic, the tollable traffic at TP3 Salaipudhur recorded an 9.8% tollable PCU growth from FY23 to FY26. On the other hand, this PCU growth is 8.4% in case of total traffic.

3.21 Higher tollable PCU growth is majorly driven by buses, which observed a 19.6% increase, as compared to a 9.8% increase in overall bus traffic.

3.22 Table 3.8 and Table 3.9 below presents the historical traffic profile on Nanguneri toll plaza.

Table 3.8: Historical Traffic Levels at TP4 Nanguneri

Vehicle category	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
CJV	8,326	8,776	9,389	10,129	10,618	11,858	8.1%
LCV	1,304	749	740	764	780	801	2.7%
Bus	1,039	1,062	1,165	1,175	1,169	1,296	3.6%
2A	570	650	682	723	699	697	0.7%
3A	354	351	387	359	314	335	(4.7%)
MAV	509	491	581	560	593	736	8.2%
OSV	4	2	1	2	1	1	
Total	**12,102**	**12,078**	**12,945**	**13,711**	**14,173**	**15,724**	**6.7%**
PCU	**17,901**	**17,757**	**19,183**	**19,959**	**20,352**	**22,552**	**5.5%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21); FY26 AADT represents the full year actual (April to March).

Table 3.9: Historical Tollable Traffic at TP4 Nanguneri

Vehicle category	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY23-26
CJV	7,683	7,326	9,063	9,785	10,212	11,448	8.1%
LCV	1,269	689	717	741	757	778	2.8%
Bus	731	585	714	751	812	1,175	18.1%
2A	505	505	678	720	694	694	0.8%
3A	339	321	387	358	313	333	(4.9%)
MAV	490	468	579	559	591	734	8.2%
OSV	4	2	1	2	1	1	
Tollable AADT	**11,021**	**9,896**	**12,141**	**12,916**	**13,381**	**15,163**	**7.7%**
Tollable PCU	**15,996**	**14,193**	**17,449**	**18,294**	**18,820**	**21,724**	**7.6%**

Source: Steer analysis of Client data, (FY21* includes 6 months of data from Oct'20 to Mar'21); FY26 AADT represents the full year actual (April to March); Tollable traffic excludes exemption and violation; exemption in buses reduced starting Sept25.

3.23 TP4 Nanguneri has also witnessed a healthy growth in FY25 when compared with FY24 due to increased tourism activities between the hubs of Madurai, Tirunelveli and Kanyakumari. Goods traffic on this Asset, comprising 2A/3A/MAVs, is driven by trips generated to/from Tirunelveli, Kanyakumari and Tuticorin. One of the 12 major ports in India – the V.O Chidambaranar port, is in Tuticorin.

3.24 3A category has largely remained flat historically across all the toll plazas. The reduction in 3A volume is a result of the declining demand for 3A vehicles, which are being replaced by MAV's. MAVs offer higher tonnage capacity making them more cost-effective for transporters. This is consistent with our discussion with various transporters and OEMs across the country who are favouring 5A vehicles for commodity movement due to better unit economics.

3.25 In line with the observation at the other toll plazas on the Asset, when comparing the tollable with the total (tollable + non-tollable) traffic, TP4 Nanguneri has observed a higher PCU growth in FY26 when compared with FY25. TP4 Nanguneri recorded a 7.6% tollable PCU growth, which is higher than that of 5.5% in case of total traffic for FY23-FY26 period.

3.26 A notable development across all the 4 TPs in FY26 has been the uptick in the tollable traffic observed in the bus segment during August and September of FY26 which can be attributed to the resumption of toll payments by Tamil Nadu State Transport Corporation (TNSTC) buses following the Madras High Court's intervention earlier in July 2025.[9] In this case, the Court had directed toll operators under the Madurai–Kanyakumari Tollway and related concessions to bar TNSTC buses from accessing four key toll plazas—Kappalur, Etturavattam, Salaipudhur, and Nanguneri

3.27 Subsequent compliance and settlement discussions led to the reinstatement of toll payments by the state transport undertakings, resulting in the observed increase in tollable transactions for buses across these plazas during the recent months.

3.28 This increase in tollable traffic has resulted in increased revenue collection which is discussed in the section below.

Historical Revenue

3.29 The following tables show the revenue (in INR Lakhs) by each vehicle type at the toll plaza at an annual level and at daily level.

Table 3.10: Total Revenue (in INR Cr) and AADC (in INR Lakhs) by vehicle type at TP1 Kappalur

FY	CJV	LCV	Bus	2A	3A	MAV	OSV	Total	AADC	AADC Growth
FY21*	16.9	3.6	2.9	4.0	2.5	5.3	0.0	**35.2**	**22**	
FY22	34.1	5.9	8.2	9.3	5.2	12.5	0.0	**75.3**	**20**	**(9.1%)**
FY23	44.2	6.4	12.9	11.4	5.9	14.9	0.1	**95.8**	**26**	**31.2%**
FY24	50.6	7.1	14.4	13.2	6.0	16.5	0.1	**107.8**	**29**	**12.3%**
FY25	52.8	7.8	16.2	12.8	6.2	17.8	0.1	**113.7**	**31**	**5.7%**
FY26	51.9	8.6	23.6	13.4	6.8	19.7	0.1	**123.9**	**34**	**9.0%**

Source: Steer analysis of Client data, (FY21* From Oct-20 (last 12 days) to Mar-21; AADC represents Average Annual Daily Collection; FY26 AADT represents the full year actual (April to March) and includes the annual pass compensation revenue

Table 3.11: Total Revenue (in INR Cr) and AADC (in INR Lakhs) by vehicle type at TP2 Etturvattam

FY	CJV	LCV	Bus	2A	3A	MAV	OSV	Total	AADC	AADC Growth
FY21*	9.2	2.1	2.5	2.7	1.4	4.0	0.0	**21.9**	**13**	
FY22	16.5	3.3	4.7	6.3	3.0	9.1	0.0	**42.8**	**12**	**(7.7%)**
FY23	21.7	3.8	7.0	7.9	3.7	11.1	0.0	**55.2**	**15**	**26.0%**
FY24	25.5	4.3	8.1	9.2	4.1	13.2	0.1	**64.5**	**18**	**16.6%**
FY25	27.6	4.8	9.6	8.6	4.2	14.5	0.1	**69.4**	**19**	**7.8%**
FY26	29.4	5.2	12.4	8.6	4.5	16.4	0.1	**76.5**	**21**	**10.2%**

[9] TNSTC vs Madras HC

Source: Steer analysis of Client data, (FY21* From Oct-20 (last 12 days) to Mar-21; AADC represents Average Annual Daily Collection; FY26 AADT represents the full year actual (April to March) and includes the annual pass compensation revenue

Table 3.12: Total Revenue (in INR Cr) and AADC (in INR Lakhs) by vehicle type at TP3 Salaipudhur

FY	CJV	LCV	Bus	2A	3A	MAV	OSV	Total	AADC	AADC Growth
FY21*	10.3	1.7	2.2	2.9	1.4	3.5	0.0	**22.0**	**14**	
FY22	18.5	3.5	5.0	6.5	3.0	8.2	0.1	**44.8**	**12**	**(14.3%)**
FY23	23.9	4.2	7.7	8.4	3.9	10.4	0.1	**58.5**	**16**	**33.6%**
FY24	27.8	4.6	9.0	9.9	4.3	12.2	0.1	**67.9**	**19**	**15.8%**
FY25	30.6	5.1	10.2	9.5	4.4	14.5	0.1	**74.4**	**20**	**9.8%**
FY26	33.5	5.6	13.4	9.6	4.8	16.3	0.1	**83.3**	**23**	**11.9%**

Source: Steer analysis of Client data, (FY21* From Oct-20 (last 12 days) to Mar-21; AADC represents Average Annual Daily Collection; FY26 AADT represents the full year actual (April to March) and includes the annual pass compensation revenue

Table 3.13: Total Revenue (in INR Cr) and AADC (in INR Lakhs) by vehicle type at TP4 Nanguneri

FY	CJV	LCV	Bus	2A	3A	MAV	OSV	Total	AADC	AADC Growth
FY21*	10.6	2.8	2.3	2.2	1.7	3.6	0.0	**23.2**	**14**	
FY22	20.1	3.1	5.4	4.7	3.4	7.3	0.0	**44.0**	**12**	**(14.3%)**
FY23	27.5	3.5	7.2	6.9	4.5	9.9	0.0	**59.6**	**16**	**36.1%**
FY24	31.1	3.8	8.0	7.7	4.4	10.2	0.0	**65.2**	**18**	**9.2%**
FY25	32.8	4.1	8.4	7.6	3.9	10.9	0.0	**67.7**	**19**	**4.0%**
FY26	35.7	4.4	11.5	7.9	4.2	13.9	0.0	**77.7**	**21**	**14.8%**

Source: Steer analysis of Client data, (FY21* From Oct-20 (last 12 days) to Mar-21; AADC represents Average Annual Daily Collection; FY26YTD includes data till Feb'26 and includes the annual pass compensation revenue

3.30 Tables above present, the revenue on the Madurai - Kanyakumari section. It can be inferred from the data that major contributor to the revenue on the Asset is the CJV category which has a share ranging from 35% to 41% of overall revenue across the Asset followed by MAVs which contribute between 16-20% of the overall revenue in case of TP1, TP3 and TP4 whereas for the TP2 the MAV revenue share is around 22%.

Toll Frequencies

3.1 Toll frequency or segmentation is typically the share of each ticket category recorded for a particular vehicle type. This is based on the toll policy which forms a part of the concession agreement. Each vehicle category has different segmentation. As a part of historical analysis, we calculate the toll frequency for each vehicle category from the monthly data shared by the client. The most common ticket categories observed on a typical National Highway are: Single, Return, Monthly, Local and Exempt. Given the local nature of traffic, some toll plazas offer custom made local passes to attract the local commuters to opt for these passes instead of evading toll.

3.2 The following are the types of tickets being sold at the plazas of the Asset.

Table 3.14: Typical ticket types sold at NHAI plazas

Category	Description
Single	Allows the vehicle to cross the toll plaza once
Return	Allows for a return journey within a day with a 50% discount on the return trip.
Monthly Pass	Discounted single entry ticket for users who undertake multiple trips within a month can buy the monthly pass.
Local Personal	Discounted single entry pass only for private cars of residents within 20km radius of toll plaza
Local Commercial	50% discount on single trips for commercial vehicles registered in the local district. This pass allows single entry only
Exemptions	Officially exempted vehicles like ambulance, police cars, key political personnel etc.

3.3 Further, the toll plazas also record violations which are non-paying users, who are not officially allowed under exemptions category but are forced exemptions. For some Assets, the Exemption and violations are at time reported together.

3.4 Generally, over the period the shares of single/return/monthly tickets tend to stabilise within 2-3 years of Asset operations. Only in the cases where trip patterns are expected to change significantly due to urban expansion is where we expect these shares to change over the period or due to some external events impacting the trip patterns.

3.5 Further, FY21 was impacted due to the mandatory implementation of FASTag as a mode of payment, where users were now paying via an online payment system instead of cash payments at the toll plaza. Additionally, in FY22 traffic and travel patterns were impacted by the second wave of COVID-19 in Q1 and Q2. With FY21 and FY22 being impacted these external events, the segmentation began to stabilise from FY23 onwards and reached steady state starting FY24.

Introduction of Annual pass for CJVs

3.6 The National Highway Authority of India launched the “The FASTag Annual Pass” on August 15, 2025, a prepaid facility that allows private CJVs to travel across designated National Highway and National Expressway toll plazas. The annual pass is worth INR 3,000. The pass is valid for one year or 200 trips, whichever occurs first and is applicable only to private, non-commercial vehicles (Car/Jeep/Vans).

Since this pass has been introduced by NHAI, it is not valid on

- state governed toll plazas on highways
- state governed toll plazas expressways
- Parking areas or other non-NHAI tolling locations

3.7 The pass can be activated via the RajmargYatra app or the NHAI website, and links directly to an existing FASTag.

The Annual Pass aims to:

- Promote cashless and seamless travel on national highways.
- Reduce congestion and improve traffic flow at toll plazas.
- Provide cost-effective travel for frequent users of NH/NE toll roads.

Share of traffic by payment type

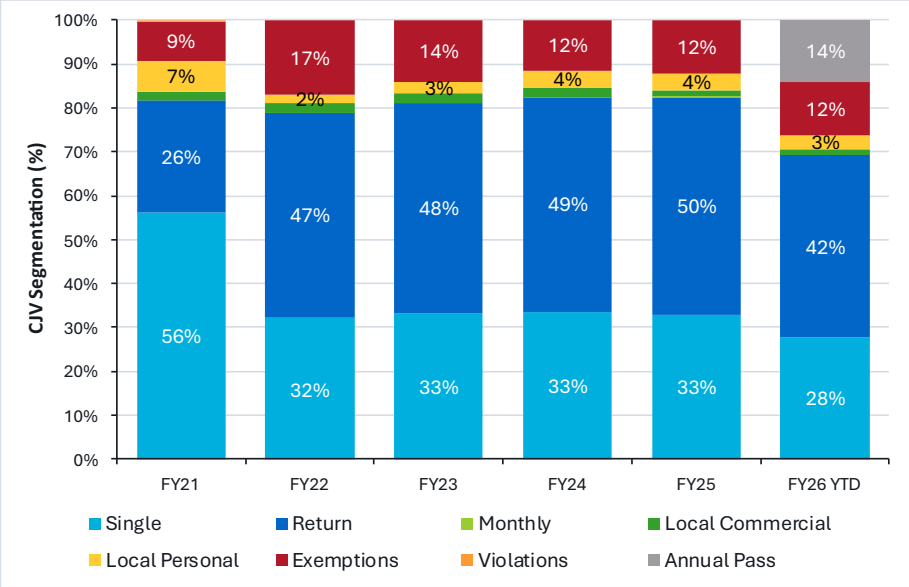
3.8 Since the Asset is located closer to the urban clusters, it caters to a considerable number of daily commuters using the Asset. Generally, the local movement results in multiple CJV trips though the plaza, leading to higher share of return ticket for CJVs. On TP1, the level of exemptions is influenced by higher share of local traffic on the plaza.

3.9 The share of exemptions for CJVs has been stable across all toll plazas, since the reduction in FY22. A high share of non-tollable exempted traffic in buses is seen across the Asset, because of the local nature of the bus traffic. A major reduction can be seen in the exemption category because of the strict implementation of FASTag and this exempted non-paying category traffic has been converted into the Monthly passes and local commercial tickets. However, a large proportion of buses continue to not pay on each of the toll plazas.

3.10 Across the toll plazas, the CJV segmentation shares have largely been consistent from FY23 - FY26. On the other hand, MAVs have exhibited similar trends when compared with previous years where single is dominant ticket category.

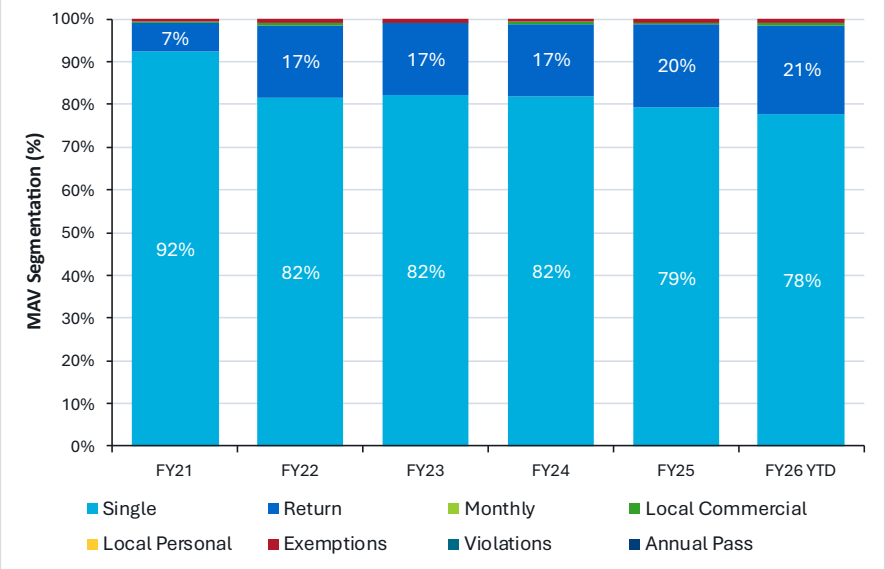
3.11 The figure below shows ticket segmentation for CJV and MAV categories for TP1 Kappalur.

Figure 3-1: Ticket segmentation for CJV at TP1



Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21); FY26YTD includes 11 months of data from Apr-Feb'26

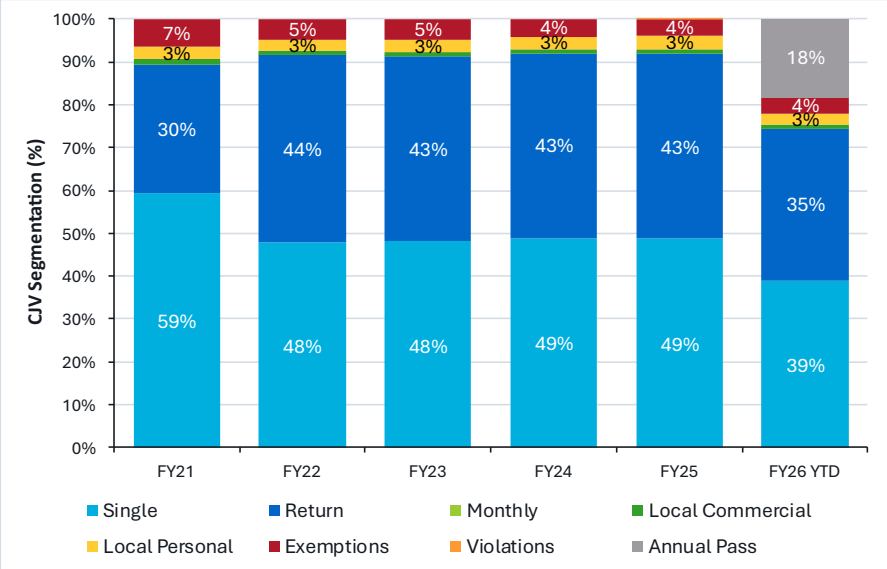
Figure 3-2: Ticket segmentation for MAVs at TP1



Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21), FY26YTD includes 11 months of data from Apr-Feb'26

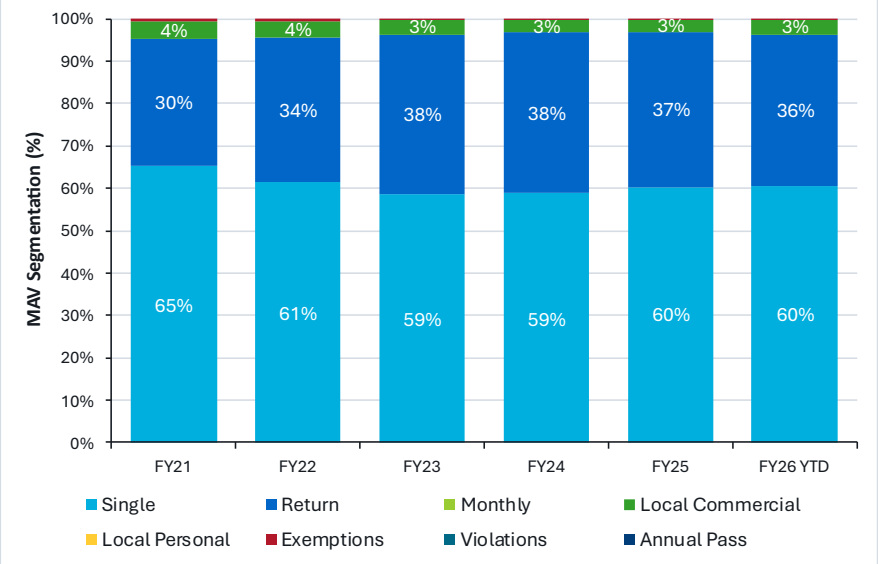
3.12 The figure below shows ticket segmentation for CJV and MAV categories for TP2 Etturvattam.

Figure 3-3: Ticket segmentation for CJV at TP2



Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21); FY26YTD includes 11 months of data from Apr-Feb'26

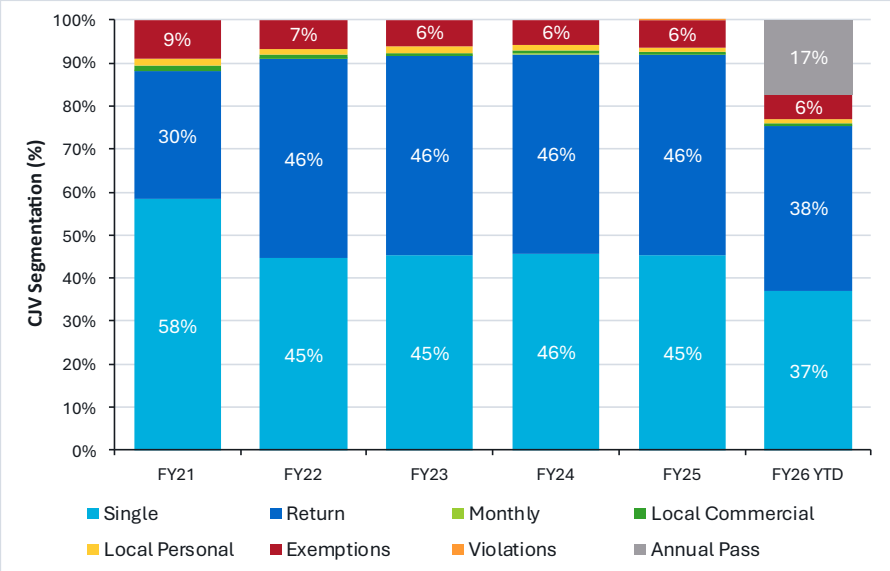
Figure 3-4: Ticket segmentation for MAV at TP2



Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21); FY26YTD includes 11 months of data from Apr-Feb'26

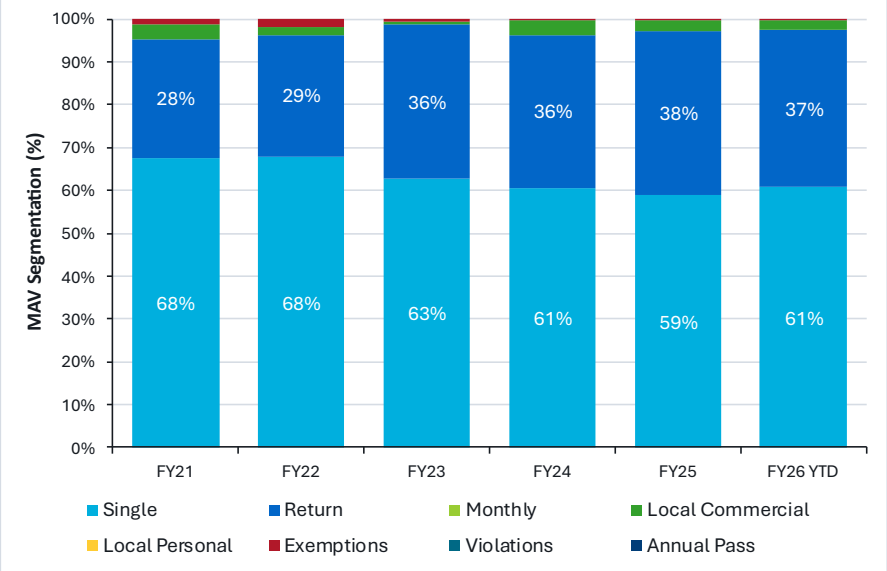
3.13 The figure below shows ticket segmentation for CJV and MAV categories for TP3 Salaipudhur.

Figure 3-5: Ticket segmentation for CJV at TP3



Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21) FY26YTD includes 11 months of data from Apr-Feb'26

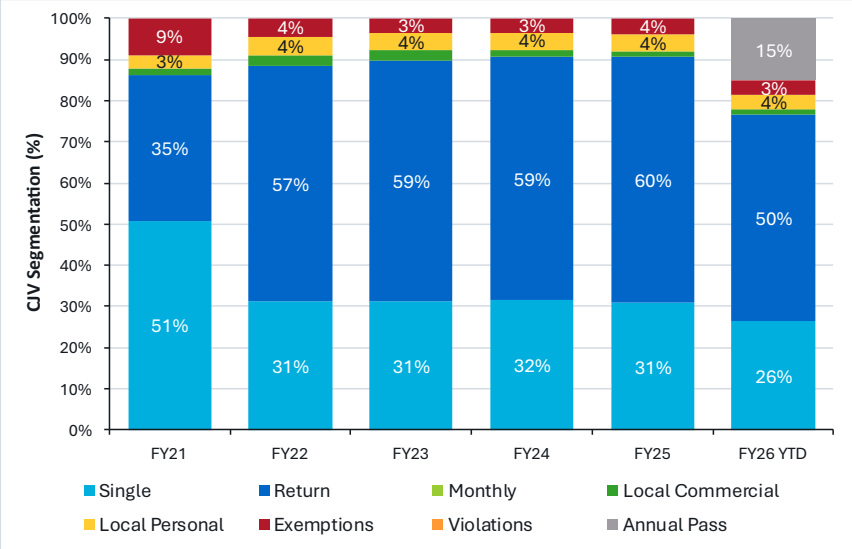
Figure 3-6: Ticket segmentation for MAV at TP3



Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21) ; FY26YTD includes 11 months of data from Apr-Feb'26

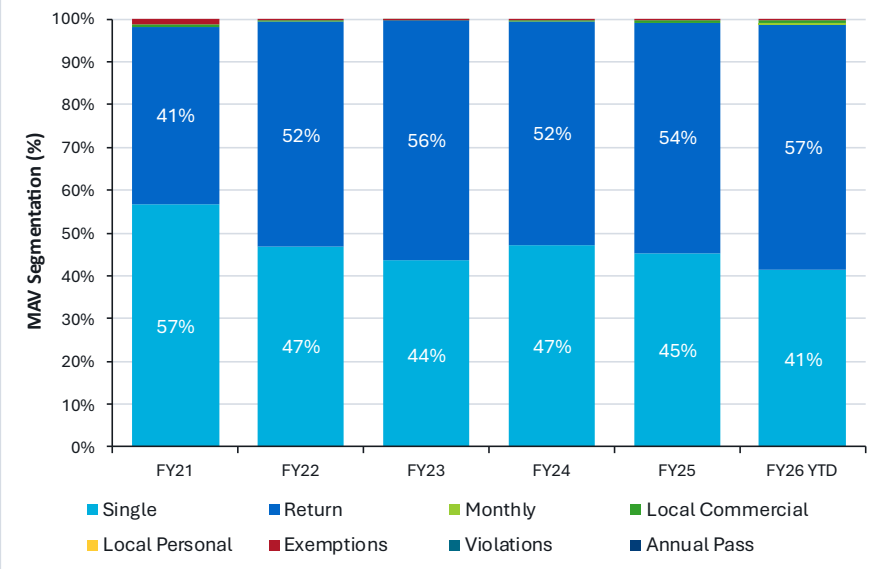
3.14 The figure below shows ticket segmentation for CJV and MAV categories for TP4 Nanguneri.

Figure 3-7: Ticket segmentation for CJV at TP4



Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21) ; FY26YTD includes 11 months of data from Apr-Feb'26

Figure 3-8: Ticket segmentation for MAV at TP4



Source: Steer analysis of Client data (FY21 has data for Oct-20 to Mar-21); FY26YTD includes 11 months of data from Apr-Feb'26

3.15 Table 3.15, Table 3.16, Table 3.17, and Table 3.18 below depict the FY26YTD (Apr- Feb) segmentation for LCV, Bus, 2A and 3A category for all the four Asset plazas:

Table 3.15: Ticket segmentation for LCV, Bus, 2A and 3A at TP1 Kappalur

Ticket Category	LCV	Bus	2A	3A
Single	39%	7%	33%	55%
Return	49%	36%	53%	35%
Local commercial	4%	30%	8%	5%
Monthly	0%	10%	-	0%
Exemption	-	-	-	-

Table 3.16 Ticket segmentation for LCV, Bus, 2A and 3A at TP2 Etturvattam

Ticket Category	LCV	Bus	2A	3A
Single	48%	11%	37%	58%
Return	49%	50%	59%	40%
Local commercial	2%	11%	4%	1%
Monthly	0%	20%	0%	0%
Exemption	-	-	-	-

Table 3.17 Ticket segmentation for LCV, Bus, 2A and 3A at TP3 Salaipudhur

Ticket Category	LCV	Bus	2A	3A
Single	46%	12%	33%	45%
Return	52%	54%	63%	48%
Local commercial	1%	10%	3%	7%
Monthly	0%	15%	0%	0%

Ticket Category	LCV	Bus	2A	3A
Exemption	-	-	-	-

Table 3.18 Ticket segmentation for LCV, Bus, 2A and 3A at TP4 Nanguneri

Ticket Category	LCV	Bus	2A	3A
Single	34%	9%	24%	35%
Return	60%	39%	72%	58%
Local commercial	3%	33%	3%	5%
Monthly	-	9%	0%	1%
Exemption	-	-	-	-

Source: Steer analysis of Client data

Data Collection exercise

3.16 As mentioned earlier, to validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset, comprising the surveys listed below. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas, which Steer commissioned with a third party. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual as well as software-based counting. As part of the current study, OD surveys were undertaken on two toll plazas TP3 and TP4 to understand the change in travel patterns on the Asset. The TVC surveys and OD surveys on TP1 and TP2 were undertaken in 2021 as part of the earlier commission.

Table 3.19: Data collection exercise

Asset	7-day and 3-day videography-based TVC			1-day OD survey			
	Start date	End date	Time (hrs)	Start date	Start time	End Date	End Time
TP1 Kappalur	18 Jan 2021	24 Jan 2021	0000-2359	28 Aug 2023	0900 hours	29 Aug 2023	0900 hours
TP2 Etturvattam	18 Jan 2021	24 Jan 2021	0000-2359	21 Jan 2021	0900 hours	22 Jan 2021	0900 hours
TP3 Salaipudhur	23rd Feb 2026	25th Feb 2026	0000-2359	23rd Feb 2026	0900 hours	24th Feb 2026	0900 hours
TP4 Nanguneri	23rd Feb 2026	25th Feb 2026	0000-2359	24th Feb 2026	0900 hours	25th Feb 2026	0900 hours

Source: Steer analysis

3.17 It should be noted that, in our experience, traffic on national highways shows variation across the week due to the economic activities surrounding each road. To derive a representative TVC count considering daily variation, three-day to seven-day traffic counts are generally recommended, and hence, in order to fully understand the impact of this weekly fluctuation on the Asset, we collected counts at each toll plaza.

Key findings of the TVC data analysis

WADT estimates

3.18 Taking an average of the three/seven-day TVC counts conducted, we obtained the following weekly average daily traffic (WADT) for each toll plaza. This WADT excludes non-tollable vehicles such as tractors, two-wheelers, bullock-carts, etc., but includes officially exempt vehicles such as police cars, ambulances, emergency response vehicles, government vehicles and other vehicle types officially allowed as 'exempted' under the concession agreement.

Table 3.20: WADT from TVC counts

Toll Plaza	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
TP1 Kappalur	16,703	2,189	2,628	3,414	1,072	613	791	27,409
TP2 Etturvattam	7,526	806	1,391	1,172	638	306	699	12,538
TP3 Salaipudhur	6,640	1,297	1,496	1,170	715	334	829	12,484
TP4 Nanguneri	8,793	1,476	1,633	1,368	645	344	739	14,998

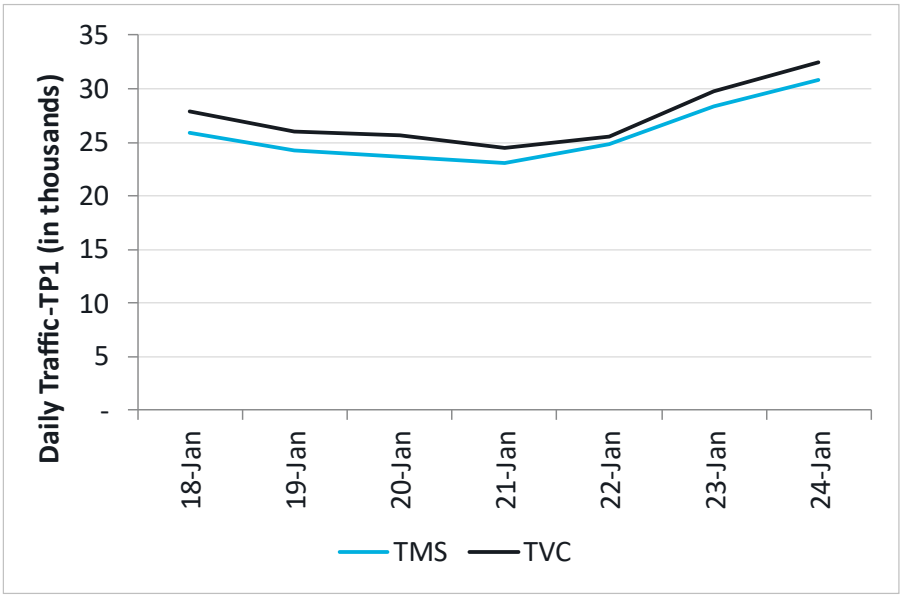
Source: Steer analysis of TVC data

TVC v/s TMS analysis

3.19 As we use the TMS data to estimate the base year AADT, we have used our TVC data to validate the TMS data on those days, as provided by the Client.

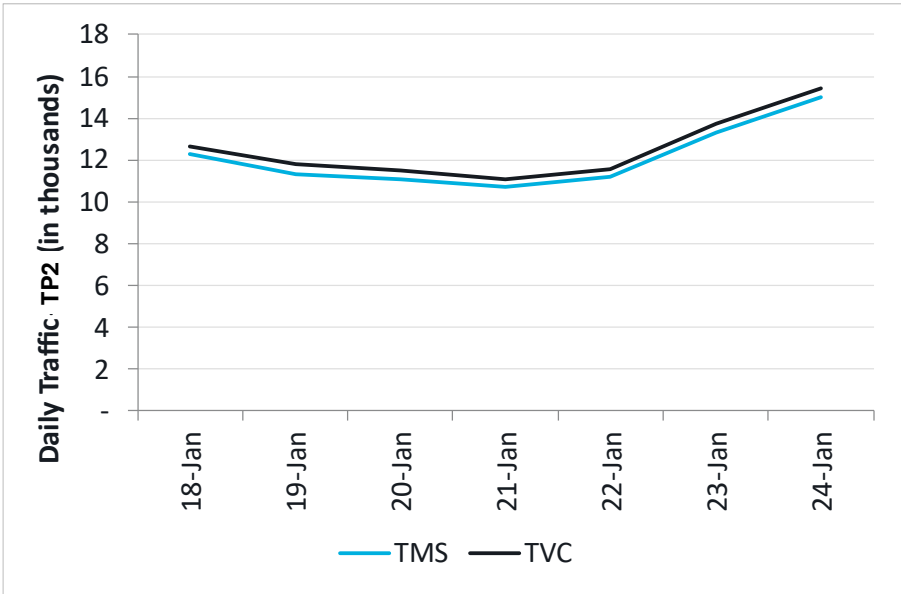
3.20 The following figures show the comparison between the daily traffic observed by TVC and TMS for the four toll plazas. As can be seen from the figures, the overall difference between TVC and TMS over the week for the four toll plazas is within the acceptable range of variation.

Figure 3-9: Comparison between TVC and TMS daily traffic data on TP1 (2021)



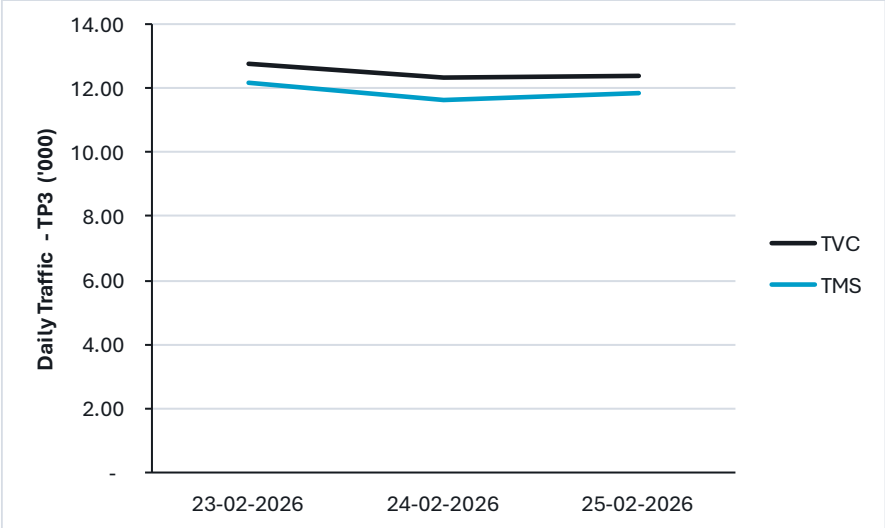
Source: Steer analysis of TVC and Client TMS data

Figure 3-10: Comparison between TVC and TMS daily traffic data on TP2 (2021)



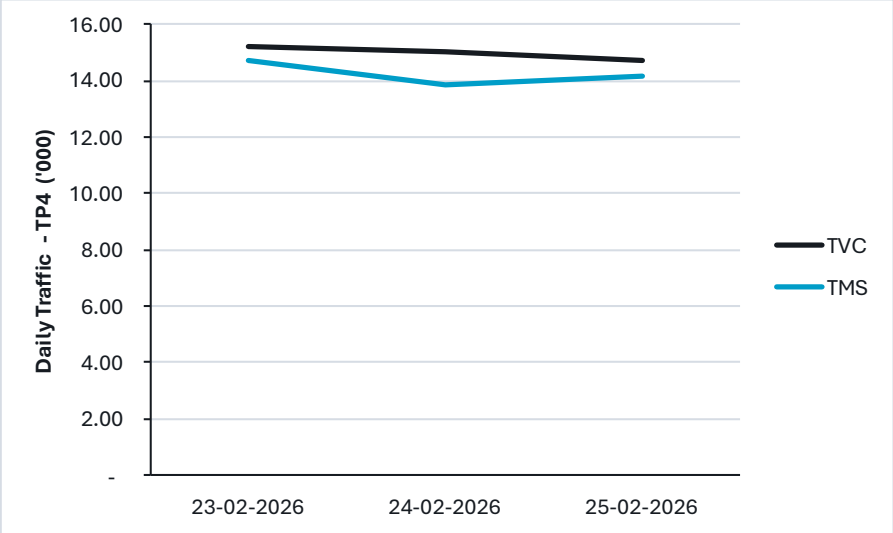
Source: Steer analysis of TVC and Client TMS data

Figure 3-11: Comparison between TVC and TMS daily traffic data on TP3



Source: Steer analysis of TVC and Client TMS data

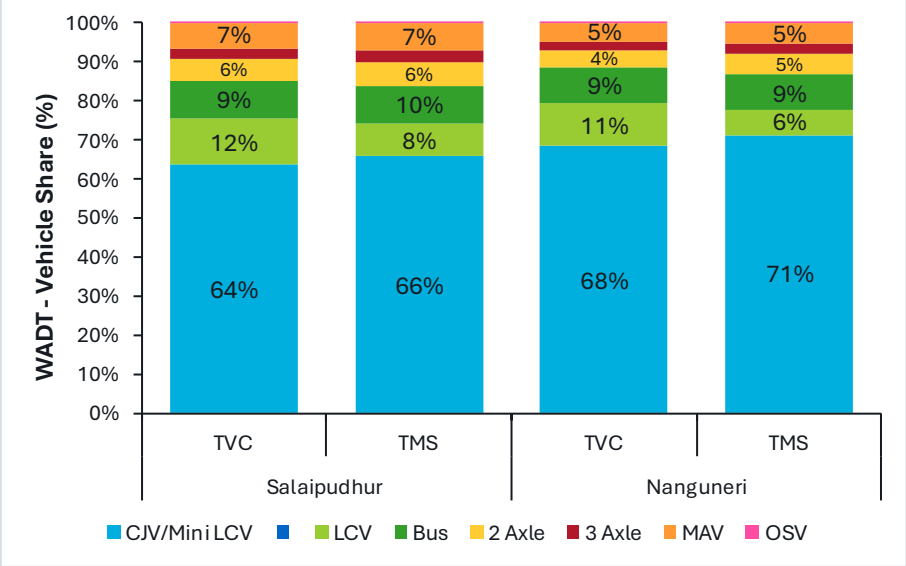
Figure 3-12: Comparison between TVC and TMS daily traffic data on TP4



Source: Steer analysis of TVC and Client TMS data

3.21 The figure below compares the shares of vehicle types at four toll plazas observed by the TVC and TMS data. As can be seen, whilst the share of CJVs and 3A+MAV+OSV is marginally higher for TMS compared to TVC, it is equal for Bus/2A and lower for LCV category. This difference can be attributed to common misclassification of vehicle categories.

Figure 3-13: Comparison between vehicle shares from TVC and TMS WADTs



Source: Steer analysis of TVC and Client TMS data

3.22 Considering the smaller variation between the TVC and TMS data for the largest revenue generator 3A+MAVs, and an overall match in the traffic volumes, our TVC-TMS analysis gives us confidence that the base year traffic calculated using the Client data forms a reliable base year traffic estimate.

Key findings of origin-destination analysis

Overview

3.23 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Asset. As mentioned previously, the OD analysis presented here has been based on the data collected on 23rd Feb and 24th Feb 2026 for TP3: Salaipudhur and TP4: Nanguneri respectively and surveys performed in previous studies for TP1: Kappalur and TP2: Etturvattam.

3.24 We have analysed the regional drivers of demand based on the following analyses:

- Zonal influence
- Commodity distribution
- Top OD pairs
- Trip length distribution

3.25 While zonal analysis and the list of top OD pairs help to understand 'where' people and goods travel, commodity distribution sheds light on 'what' goods get transported. Trip length distribution shows 'how far' vehicles and people travel, and goods get transported. This set of analyses is generally used to estimate the key drivers of traffic and aid the making of informed forecasting assumptions around traffic demand elasticities, growth drivers and exogenous impacts.

Sample rates

3.26 Sample rates help understand the reliability of OD data. They are calculated by dividing OD samples captured by the traffic counts (based on the TMS data) during the same time period. The table below presents the sample rates for passenger and goods vehicle type aggregations at the toll plaza. We believe that the sample rates of the OD data are reasonable for the analysis required.

Table 3.21: Sample rates for OD data

Vehicle type	TP1 Kappalur	TP2 Etturvattam	TP3 Salaipudhur	TP4 Nanguneri
Passenger (CJV+Bus)	43%	27%*	22%	18%
Goods (LCV+2A+3A+MAV)	78%	31%*	77%	56%

Source: Steer analysis of OD data, *The surveys took place during the COVID-19 pandemic due to which the vehicles were reluctant to stop and answer the enumerators leading to lower sample rate.

Zone Categories

3.27 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones, and influenced by various towns, cities, states and regions in the vicinity of the Asset, we have aggregated zonal data as described in the table below. The methodology behind this aggregation of zones may vary as per the characteristics displayed by the different Asset being studied.

Table 3.22: Zone aggregations for zonal influence analysis

Aggregate Zone	Description
Local	Local zones are those that fall on or very close to the Asset.
IAOI (Immediate Area of Influence)	IAOI zones are the locations which generate traffic and lie within approximately 75-150 km distance from the Asset.
Rest of Tamil Nadu (TN)	Rest of the cities/Districts in the state that Asset lies in (other than Local/IAOI)
Kerala	Kerala
Karnataka	Karnataka
AP & Telangana	Andhra Pradesh and Telangana
North India	Uttarakhand, Haryana, Punjab, Jammu and Kashmir etc
West India	Gujarat and Maharashtra
East & Northeast India	West Bengal, Orissa, Jharkhand and Northeast Indian states
Central India	Madhya Pradesh

Source: Steer analysis

Zonal Influence

3.28 The zonal influence is the contribution of the zone or the zonal aggregation to trips by a vehicle type. This section presents the zonal influence[10] at each toll plaza of each Asset, based on zonal aggregation listed in the previous sub-section. it should be noted that zonal influence is analysed on trip ends and not trips.

3.29 It is seen that the local, IAOI, and Rest of TN zonal shares - constitute the majority of zonal influence for all vehicle types – with more than 95% for CJVs to about 85% for MAVs. As expected, heavier vehicles have more movement to/from the rest of the state and country. This analysis is further supported by the top 10 OD pairs, given in the appendix which show that the majority of the trips originate and end in areas which are in either of the three zonal categories mentioned above.

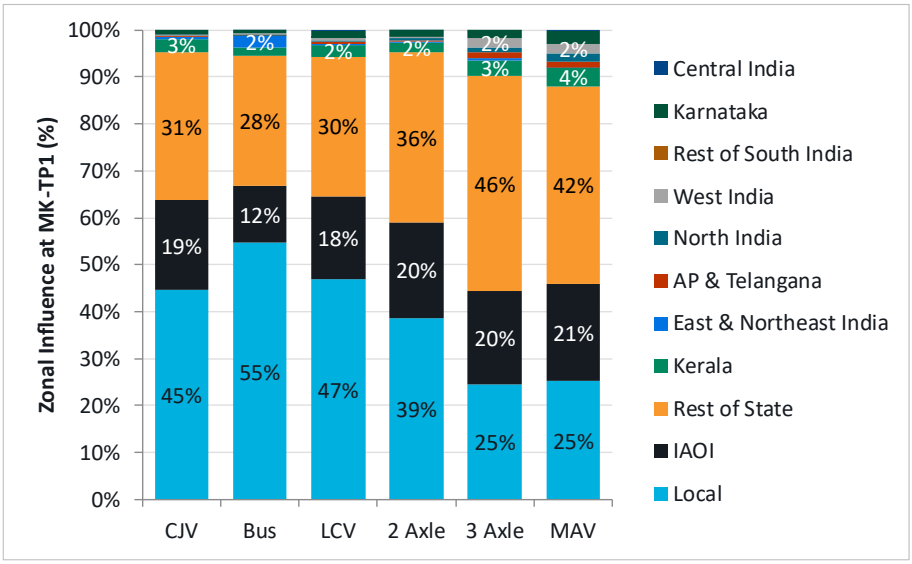
3.30 As can be seen from the following figures, at TP1 Kappalur (Figure 3-14), there is a higher share of Rest of State trips for both the passenger and commercial vehicles wherein Local and IAOI zones combined such as Madurai, Tirumangalam, Virudhunagar etc have the greatest influence on CJV, Buses, with around 50-55% of the total share. These shares decrease with axle numbers, indicating that majority of the local movement is led by smaller vehicles. There is also a significant influence on the heavy goods traffic from areas in rest of the state like Tirunelveli, Chennai, Kanyakumari and Coimbatore with 55% and 53% influence on 3A and MAV traffic respectively.

[10] For example, if out of 100 trips at a toll plaza on an Asset, 10 trips are between Hyderabad and Delhi and 90 trips are between Hyderabad and Chennai, then zonal influence of Hyderabad would be 50% since one end of all trips are at Hyderabad. Likewise, zonal influence of Delhi and Chennai would be 5% and 45%, respectively.

3.31 Going from Kappalur towards Nanguneri (Figure 3-17), the local zones have decreasing influence while IAOI and rest of Tamil Nadu zones have increasing influence. This is understandable given that the southern stretch of the Asset has more urban villages and towns located further away from the highway. For example, at TP2 Etturvattam (Figure 3-15) and TP3 Salaipudhur (Figure 3-16), more than 50% of the zonal influence across all vehicle categories are from areas in the rest of the state and at TP4 Nanguneri (Figure 3-17), majority of the influence on traffic is from Rest of State zones across categories with 72% and 64% influence on 3A and MAV traffic respectively.

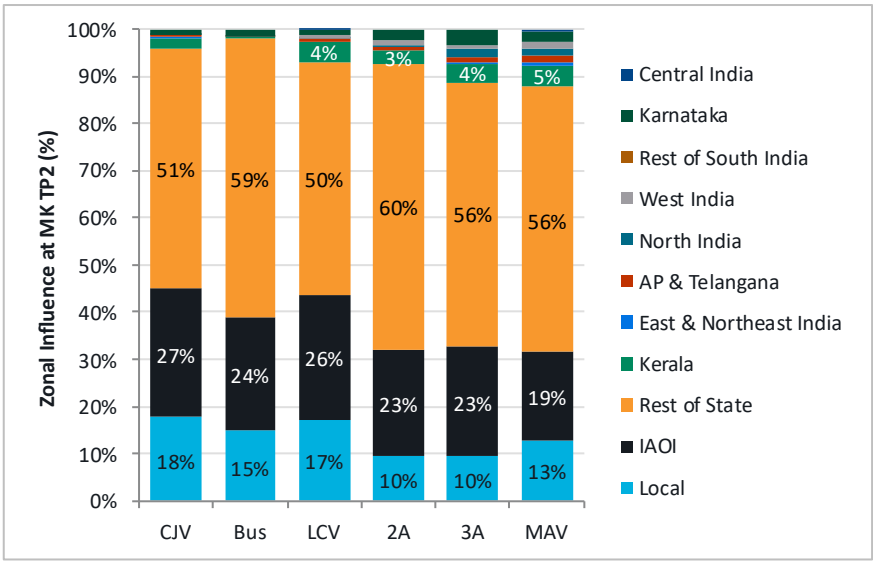
3.32 Outside Tamil Nadu, areas in Kerala such as Thiruvananthapuram has the highest influence of about 5-6% on traffic across all toll plazas because the Asset connects the southern part of Tamil Nadu to Kerala, wherein Thiruvananthapuram and Kanyakumari districts are culturally and economically connected cities with inter-urban traffic movements.

Figure 3-14: Zonal influence at TP1 Kappalur



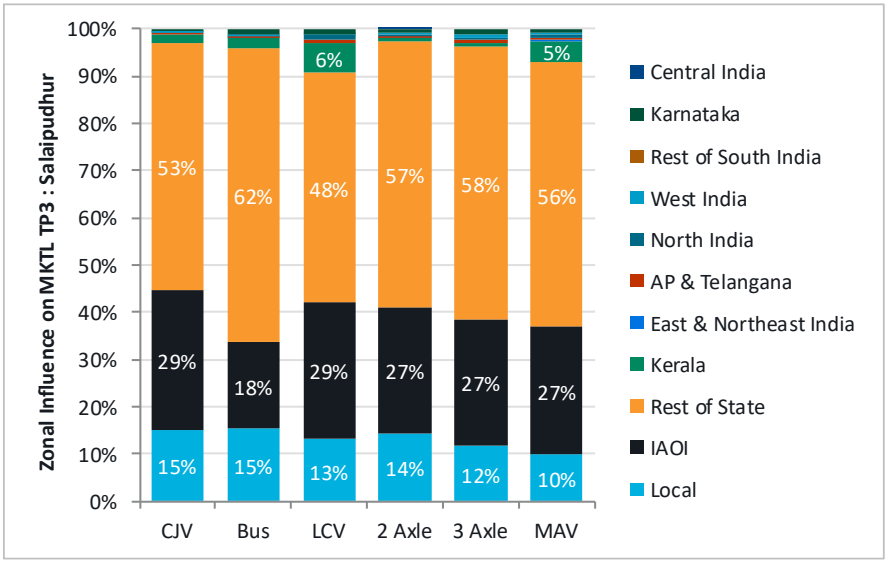
Source: Steer analysis of OD data

Figure 3-15: Zonal influence at TP2 Etturvattam



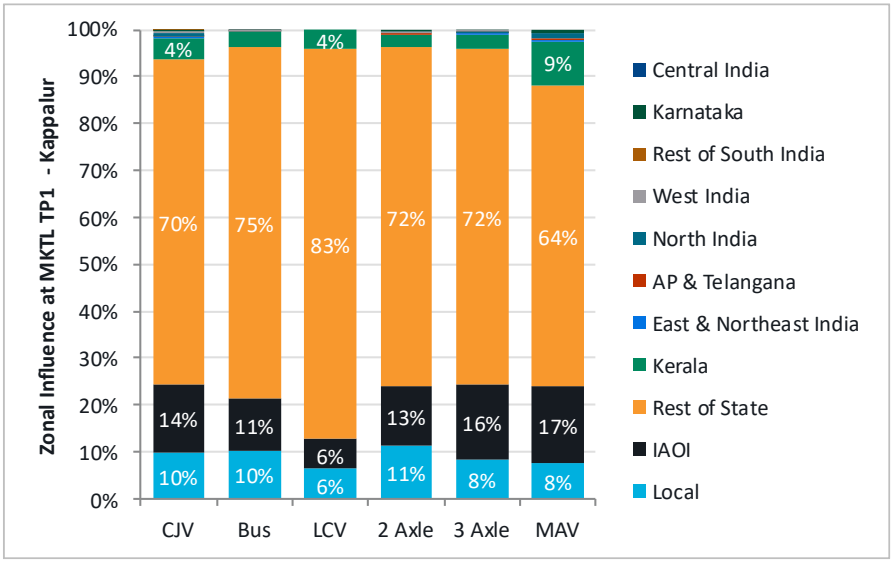
Source: Steer analysis of OD data

Figure 3-16: Zonal influence at TP3 Salaipudhur



Source: Steer analysis of OD data

Figure 3-17: Zonal influence at TP4 Nanguneri



Source: Steer analysis of OD data

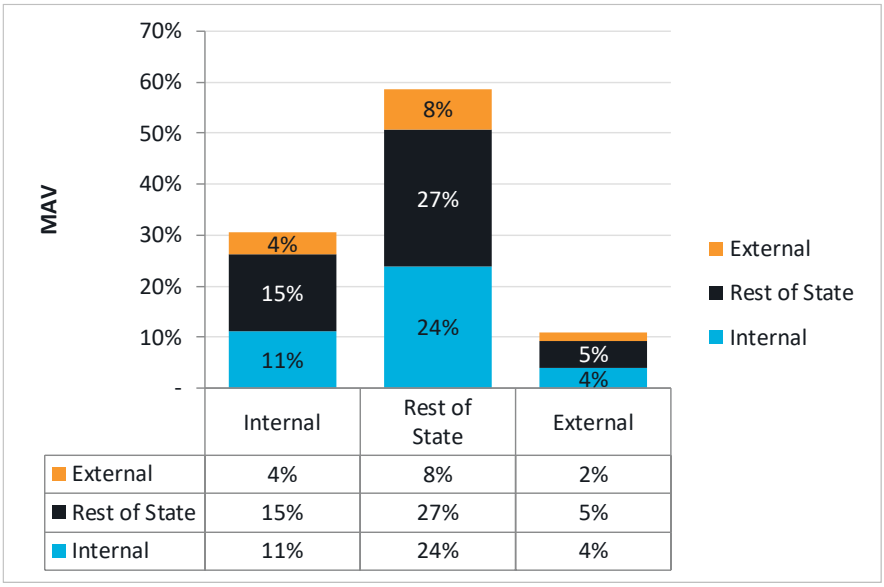
Internal External analysis

3.33 Internal-External analysis helps in identifying the trips which have both the origin and destination on or near the Asset i.e local/IAOI zones (Internal-Internal or I-I), any one end on the Asset (Internal-External or I-E), or neither end on the Asset i.e. through trips (External-External or E-E). RoS here represents areas within the state which are neither local or IAOI. 'Internal' zones are those that were analysed as 'local' and 'IAOI' in the zonal influence analysis, i.e. lying on the Asset, while 'External' zones are areas lying outside the state.

3.34 The figures below shows the distribution of trips based on these categories. Understandably, these reflect the observations seen in the zonal influence presented earlier, at a higher level of aggregation.

3.35 In line with our understanding from zonal influence analysis above and site visits, it is seen that a significant number of trips either originate and end internally i.e., within local or IAOI zones or have at least one end of the trip in rest of state with very less external to external movement of traffic on the Asset across all toll plazas.

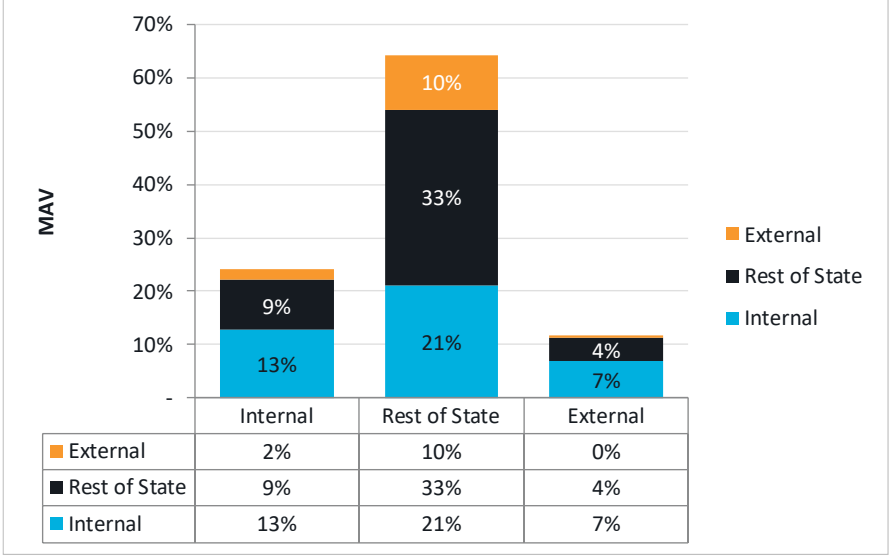
Figure 3-18: Internal-external distribution at TP1 Kappalur



	Internal	Rest of State	External
External	4%	8%	2%
Rest of State	15%	27%	5%
Internal	11%	24%	4%

Source: Steer analysis of OD data

Figure 3-19: Internal-external distribution at TP2 Etturvattam



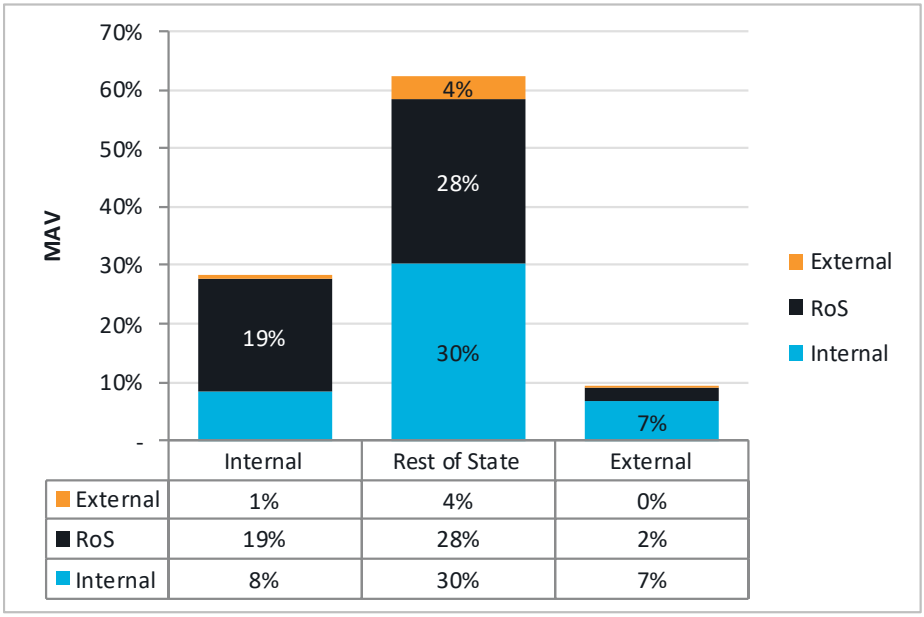
	Internal	Rest of State	External
External	2%	10%	0%
Rest of State	9%	33%	4%
Internal	13%	21%	7%

Source: Steer analysis of OD data

3.36 At TP1 Kappalur (Figure 3-18), more than 50% of the passenger trips are Internal-Internal with this share decreasing for the goods vehicle traffic wherein the majority of the trips originate in and are destined towards areas in the rest of the state like Chennai,

Coimbatore, Tirunelveli etc. This share is even higher at TP2 Etturvattam (Figure 3-19) wherein RoS-RoS trips are the highest across all vehicle categories. At TP3 Salaipudhur (Figure 3-20) and TP4 Nanguneri (Figure 3-21), apart from the high I-I movement seen especially in passenger traffic, the goods vehicle traffic sees a high number of trips originating from RoS and ending at internal areas near the Asset

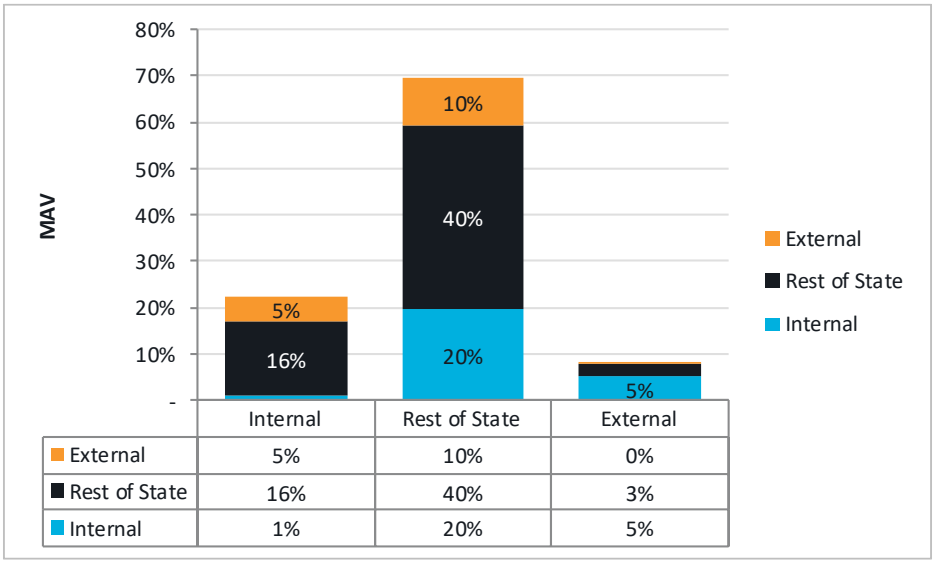
Figure 3-20: Internal-external distribution at TP3 Salaipudhur



	Internal	Rest of State	External
External	1%	4%	0%
RoS	19%	28%	2%
Internal	8%	30%	7%

Source: Steer analysis of OD data

Figure 3-21: Internal-external distribution at TP4 Nanguneri



	Internal	Rest of State	External
External	5%	10%	0%
Rest of State	16%	40%	3%
Internal	1%	20%	5%

Source: Steer analysis of OD data

Commodity distribution

3.37 We have grouped various commodities into aggregate categories for ease of interpretation, as shown in the table below. The charts in the following sub-section present information in terms of aggregate commodity categories.

Commodity Description	Code	Combined codes used for charts
Agriculture Products / Cash crops (Wheat, Rice, Sugar cane,Maize etc.)	AGR	AGR
Cattle Food / Live Stock (sheep, ghoat, cow,cattle food etc)	LIV	
Perishable Items (Fruits, vegetables)	PER	GRO
Animal Products/Dairy/Eggs/Fish/Meat/Animals	DFM	
Groceries / Food items (Soap, Salt, Sugar, Pulses, Spices, Biscuits, bread,cool drinks, beer etc.)	GRO	
Building Material / Construction (Cement, Lime, Brick, fly ash, etc)	CNS	CNS
Sand/Clay	SND	
Stone (kota stone, marble, Granite, Aggregate stone etc.)	STN	
Ceramic	CRM	
Petroleum Products (Oil, LPG, CNG, etc.)	PET	PET
Chemicals / Fertilizers (Acids,Fertilizers etc.)	CHM	
Electrical/Manufacturing items (Electronic items, Medicine, Leather, Wine, Rubber/ Tyre, Plastics, Cloth, Paper etc.)	MAN	MAN
Raw Wood,Cork & Wood Products, Furn	WUD	
Machinery / Spare parts	MAC	
Automobiles (Finished products, auto parts, Car/bike manufacturing, New Chassis)	AUT	AUT
Basic / Fabricated Metals (Iron, Steel / Metal)	MET	MET
Mining Minerals (Coal, Gypsum, Cobalt etc.)	MIN	
Empty	EMT	EMT
Container	CTR	MSC
Miscellaneous (Parcel, Courier, House hold items etc.)	MSC	
Passengers	PAS	
Scrap	SCR	

Source: Steer analysis

3.38 The commodity analysis from the OD data shows that overall manufacturing items is the main commodity item being carried on the Asset across all toll plazas followed by agricultural and grocery items. Also, construction goods seem to be a key commodity that is carried by MAVs especially at TP3 Salaipudhur wherein about 33% of the MAVs transported construction material including cement on the Asset. The high commodity share of manufacturing items could be attributed to the presence of several industrial estates along the Asset such as the Tamil Nadu Small Industries Corporation (SIDCO) industrial estate at Kappalur, industrial city of Tuticorin and an industrial estate in Gangaikondan, Tirunelveli.

3.39 At TP1 Kappalur (Figure 3-22), manufacturing items such as medicines, machine parts, paint etc is key commodity carried by both light and heavy goods vehicle making up for

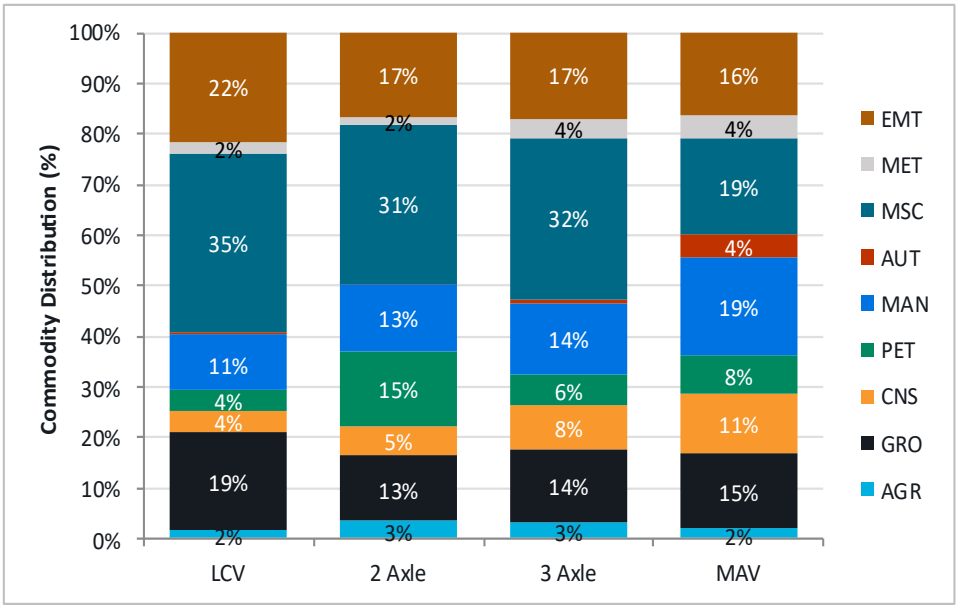
~10-20% share across all vehicle categories. Direction wise, it is seen that a significantly higher share (13%) of MAV carry construction goods in the direction of Tirunelveli compared to those moving towards Madurai which could be attributed to the presence of India Cements plant just north of Tirunelveli and Ramco Cements near Virudhunagar. Also 22% of MAV carry manufactured good towards Tirunelveli, which is much higher than the proportion (13%) in the opposite direction. This difference is attributable to the presence of the warehouses and SIDCO industrial estate in the vicinity of TP1 Kappalur. This also stems from the connectivity provided to the Thoothukudi port from Tiruneveli.

3.40 At TP2 Etturvattam (Figure 3-23), grocery items such as biscuits, juice, sweets and other household items make up for the top commodity item that is carried by both the light and heavy goods vehicle with a 17% share for MAV and 22% share for 3A traffic, given the proximity of highly urbanised cities such as Madurai, Virudhunagar, Tirunelveli making up for the regional consumption demand. Direction wise, a relatively higher share of MAVs (more than 30%) moving towards Kanyakumari carried cement compared to those moving in the direction of Madurai.

3.41 At TP3 Salaipudhur (Figure 3-24), petroleum products are at the top of the commodity mix for 3A and MAV traffic, along with a major share of 3A and MAV traffic is dedicated towards carrying construction materials given the proximity of the toll plaza to cement plants nearby. Direction wise, there is a higher share of light good vehicles carrying agriculture and grocery items in the direction of Madurai to Kanyakumari with around 19% of the MAV carrying construction goods. A considerable share of empty vehicles is observed travelling towards Kanyakumari to Madurai, given the regional and short- to medium-distance movement of commodities.

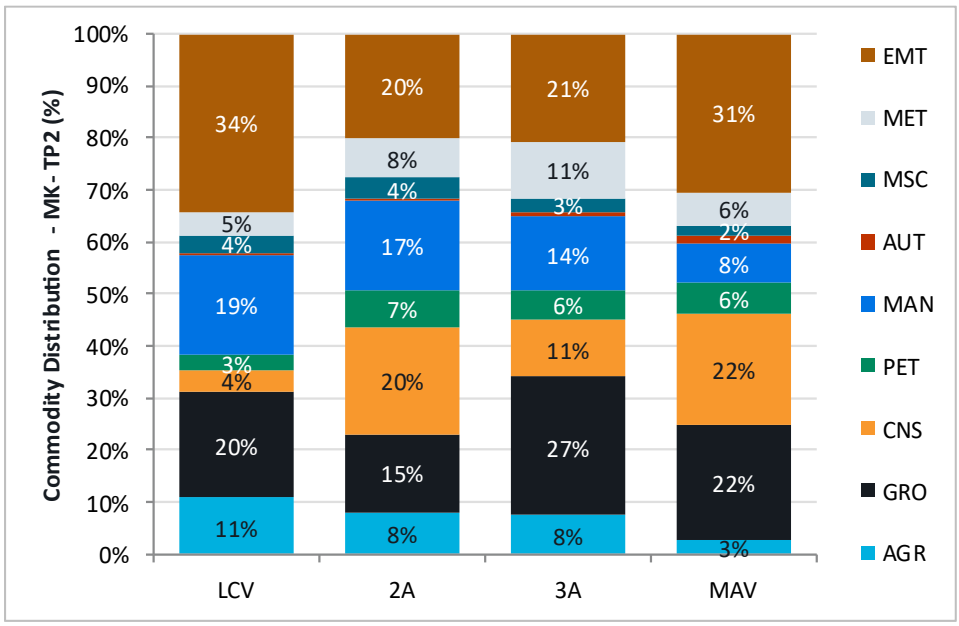
3.42 At TP4 Nanguneri (Figure 3-25), agriculture items are the top commodity category for light good vehicles whereas manufacturing items, cement and construction items make up for a high share in the overall commodity mix for 3A and MAV traffic. Direction wise, there is a relatively higher share of heavy goods traffic carrying cement, agriculture items and construction material in the direction of Kanyakumari and a very high share of empty light and heavy goods vehicle moving in the direction of Madurai.

Figure 3-22: Commodity distribution at TP1 Kappalur (Total)



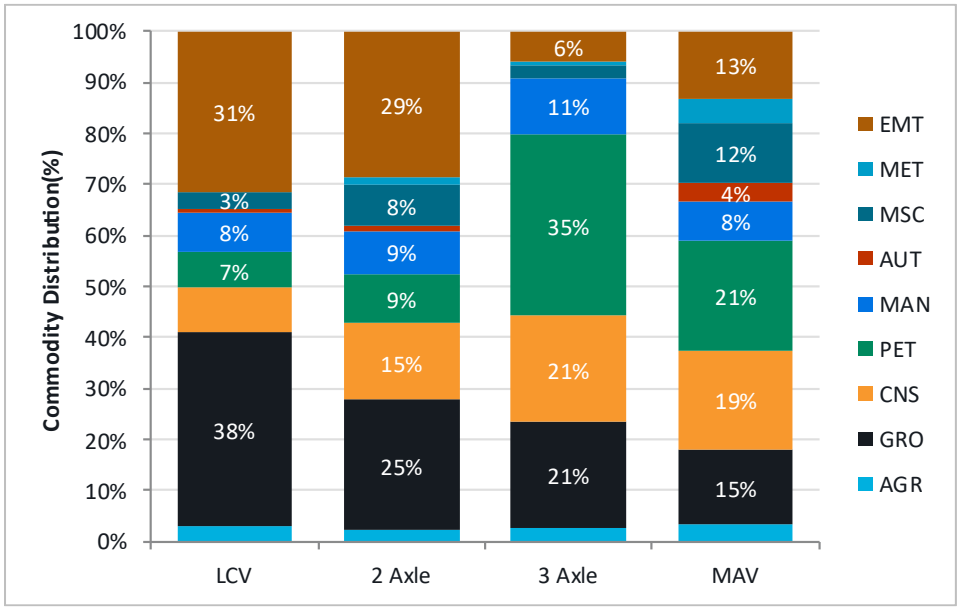
Source: Steer analysis of OD data

Figure 3-23: Commodity distribution at TP2 Etturvattam (Total)



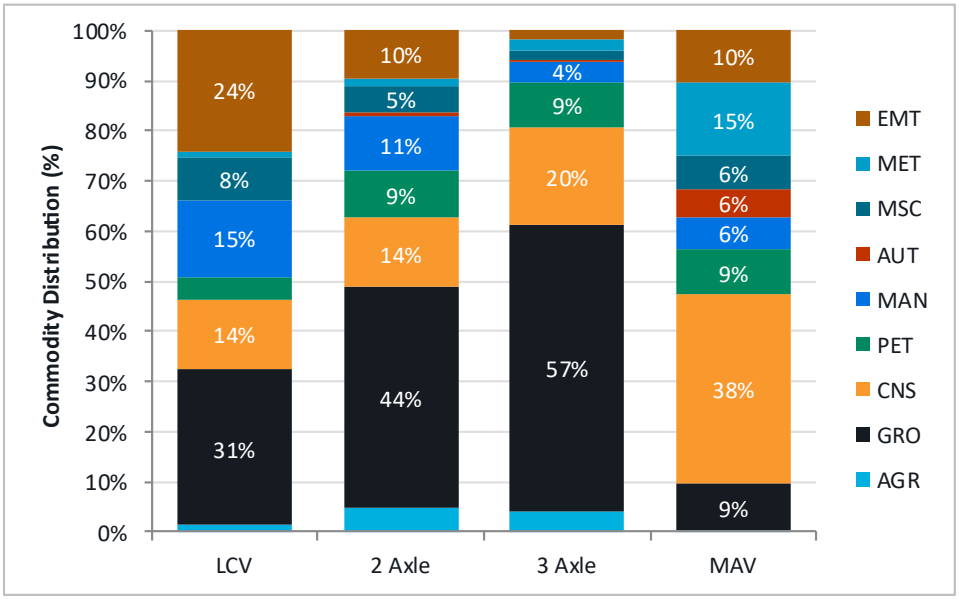
Source: Steer analysis of OD data

Figure 3-24: Commodity distribution at TP3 Salaipudhur (Total)



Source: Steer analysis of OD data

Figure 3-25: Commodity distribution at TP4 Nanguneri (Total)



Source: Steer analysis of OD data

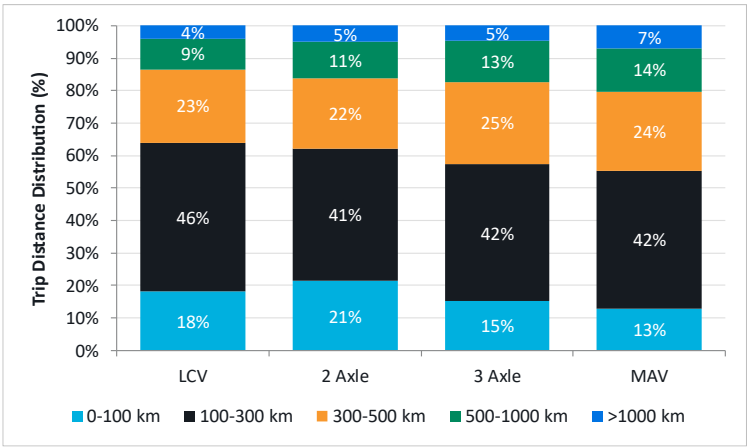
Trip length analysis

3.43 Trip-length distribution provides the distance-based profile of various vehicle types. This aids in validating assumptions around the share of macro-economic drivers, inputs from zonal influence and toll segmentation. For ease of interpretation, we have categorised distances into 5 groups – local (0-100km), short-distance (100 - 300 km), medium-distance (300 – 500 km), long-distance (500-1000 km), and very-long distance (+1000 km). The trip distances were derived as driving distances from Google Distance Matrix Tool based on zonal coordinates for OD pairs.[11]

3.44 Supporting the observations made in zonal & internal-external analysis in the previous sections, the figure below highlights, contributing to local movements on the Asset. The major proportion of the heavy goods traffic covers longer distances of 300-500 km and 500-1000 km to places such as Tirunelveli, Chennai, Coimbatore etc. Across all the plazas, 6-9% of MAV travel long distance over 1000kms.

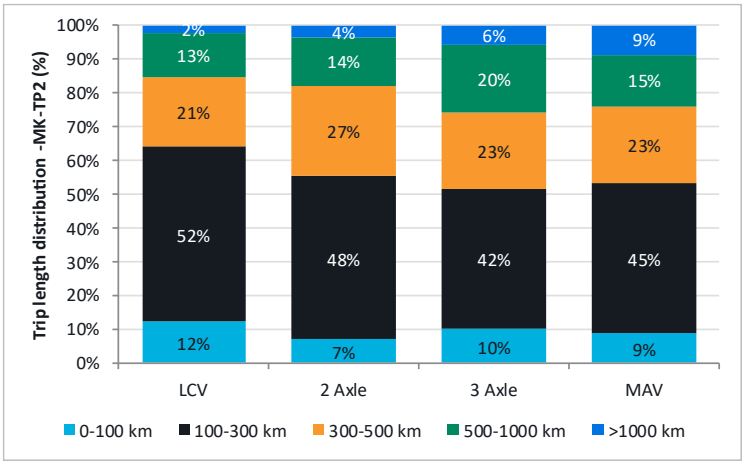
[11] Google Distance API is a tool that is available on a chargeable basis from Google Maps Platform. Link: **https://developers.google.com/maps/documentation/distance-matrix/start**. Travel distance and time information for driving/transit under various congestion scenarios can be extracted through this tool by using macro-enabled Excel, R, etc.

Figure 3-26: Trip length distribution TP1 Kappalur



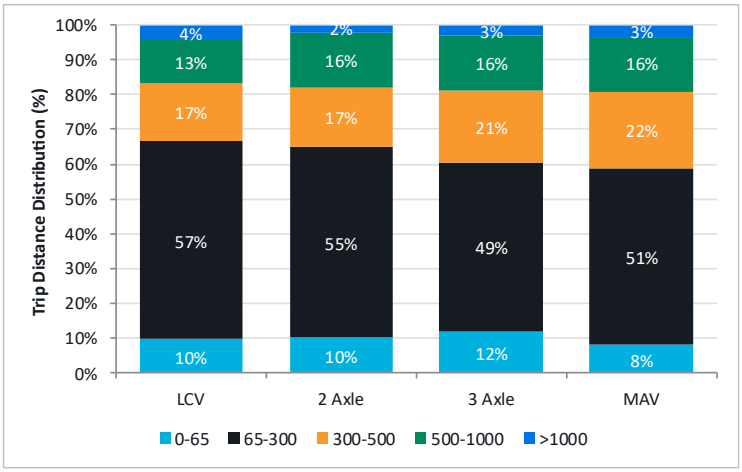
Source: Steer analysis of OD data

Figure 3-27: Trip length distribution TP2 Etturvattam



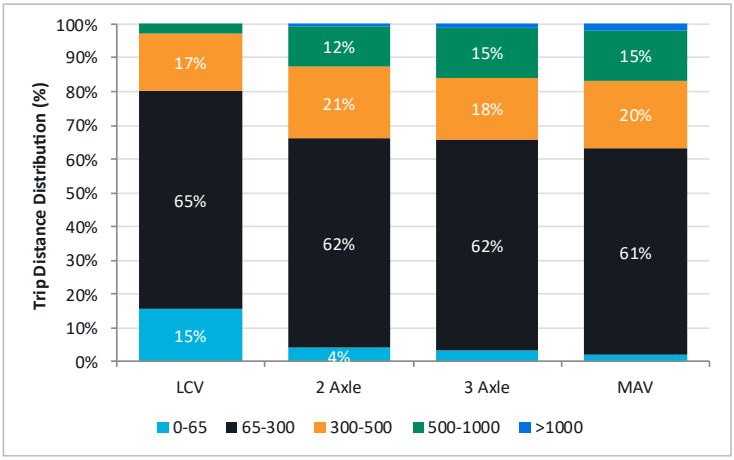
Source: Steer analysis of OD data

Figure 3-28: Trip length distribution TP3 Salaipudhur



Source: Steer analysis of OD data

Figure 3-29: Trip length distribution TP4 Nanguneri



Source: Steer analysis of OD data

Conclusions

3.45 Traffic on the Asset is dominated by CJVs which make up approximately 70% of the total vehicle composition at every plaza, with the rest dominated by buses, 2As and LCVs – the last two being the dominant goods vehicle type carrying regional movement of goods on the Asset. Heavy goods vehicles (3As and MAVs) make up a small but considerable share of the total traffic.

3.46 CJVs, having the highest share in vehicle proposition, and contribute the maximum in the revenue as well. Across all the plazas, CJVs make up around 45% of the total revenue with MAVs contributing to 16-21% to the total share (Historical Revenue)

3.47 In terms of ticket segmentation, the share of single journeys has reduced across the categories as the share of return journey tickets increased. For MAVs, Single tickets have remained dominant on the asset – with TP1 holding a share of ~78% in FY26YTD, TP2 with a share of 60%, TP3 with a share of 61%. At TP4, the share of single tickets has remained stable at 41%, with return tickets dominating at 57% in FY26YTD. The proportion of exemptions has remained similar historically at each plaza. The Asset observes 4%-12% exemptions for CJVs, with the highest of ~12% being at TP1 Kappalur due to its proximity from urban cluster Madurai having high local influence.

3.48 As a part of previous study, the TVC data shows minor variation on the TMS data, where at a total level, the TVC data is approximately 3% higher than the TMS data. This gives us confidence that the base year traffic calculated using the Client traffic data forms a reliable base year traffic estimate.

3.49 The OD analysis found that in terms of zonal influence, at TP1 Kappalur, local and IAOI zones have the greatest influence on CJV, Buses and LCV and as we towards the southern part of the Asset (to Nanguneri), the local zones have decreasing influence while IAOI and rest of Tamil Nadu zones have major influence on the traffic, especially the heavy goods vehicles. Outside Tamil Nadu, Thiruvananthapuram in Kerala has the most significant influence given its cultural connection with Kanyakumari and the resultant inter-urban traffic movements.

3.50 The key commodity transported on the Asset across all four toll plazas is manufacturing items such as medicines, machine parts, electronics etc followed by agricultural and

grocery items. Also, MAV's carrying cement make up for a very high share of traffic on the Asset especially at TP3 Salaipudhur given the proximity to cement plants such as India Cements plant just north of Tirunelveli and Ramco Cements near Virudhunagar.

3.51 The internal and external distribution highlights that majority of trips either originate and end internally i.e within local or IAOI zones or have at least one end of the trip in RoS with very less E-E movement of traffic on the Asset across all toll plazas. This is further supported by the trip length distribution analysis which shows that between 60-70% of the passenger traffic travel shorter distances of up to 300 km, contributing to local movements on the Asset whereas most of the heavy goods vehicle travel longer distances of 300-500km and 500-1000 km to places such as Tirunelveli, Chennai, Coimbatore etc with very few longer external movements to places such as Mumbai, Uttar Pradesh and Hyderabad. Overall, the OD analysis shows that the Asset has significant inter-urban traffic and regional economies of wind, cement and industrial estates providing captive traffic.

3.52 To understand the overall change in the growth drivers and travel pattern, we compared our 2023 OD results with one conducted in 2021 as a part of previous studies. It was observed that currently on TP1, the share of empty across 2A, 3A and MAV have reduced by ~5-10%. While the share of miscellaneous items parcels courier and automobiles have witnessed increase at TP1. Similar trends are observed on TP2. Other commodities including construction, manufacturing, agriculture and groceries have similar shares. Same is validated through zonal analysis where the share of local trips across vehicles categories have shifted ~5-10% from Outside Tamil Nadu share.

4 Socio economic context and traffic growth

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the roads are in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions in the region where the Asset is located and the country. These include:

- Changes in factors such as population, economic growth (regional and national) and industrial production; and
- Other local factors such as strategic port growth, and growth in local industries near the Asset.

4.2 In turn, the change in the relative competitive position of the Asset (and thus of the traffic capture they can achieve) derives from how the relative offer for the roads changes, i.e. the service offered, and the tolls charged on the project roads, in comparison to that on competing roads; and whether any competing road facilities are planned.

4.3 In this chapter, we have assessed the trends of the above growth drivers, as indicators of the socio-economic conditions in the regions surrounding the Asset.

Population growth

4.4 We have analysed the key socioeconomic drivers of the background traffic demand in Tamil Nadu state, where the Asset is located.

National level

4.5 Table 4.1 below shows that the total population in India has grown at a Compound Annual Growth Rate (CAGR) of 1.5% since 2000, decreasing over the years, as shown in the table below. The World Bank forecasts this growth to decrease to 0.6% CAGR by the 2030-45 period.

Table 4.1: CAGR of population in India

	CAGR		
Years	**Total Population (m)**	**Rural Population (m)**	**Urban Population (m)**
1970 – 1985	2.3%	1.9%	3.8%
1985 – 2000	2.0%	1.7%	2.9%
2000 – 2015	1.5%	1.0%	2.6%

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
2015 – 2030*	1.0%	0.3%	2.3%
2030 – 2045*	0.6%	-0.3%	1.9%

Source: World Bank Data on Health Nutrition and Population Statistics, *forecast population growth.

State level

4.6 Table 4.2 shows the evolution of population in Tamil Nadu state, compared to that of the country. The CAGR of population in Tamil Nadu has been considerably slower vis-à-vis that of India.

Table 4.2: Population Growth in Tamil Nadu and India (2012 – 2024)

State	2012 Population (m)	2024 Population (m)	CAGR (2012 – 2024)
Tamil Nadu	72.43	76.93	**0.5%**
India	1210	1,395	**1.2%**

Source: Ministry of Statistics and Program Implementation estimates

4.7 Due to the complexities of the patterns in which urbanisation takes place, and the very dynamic nature of local population migration (which are very difficult to forecast with accuracy), we do not use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide a socio-economic context of the state/trends in the regions in which the Asset is located.

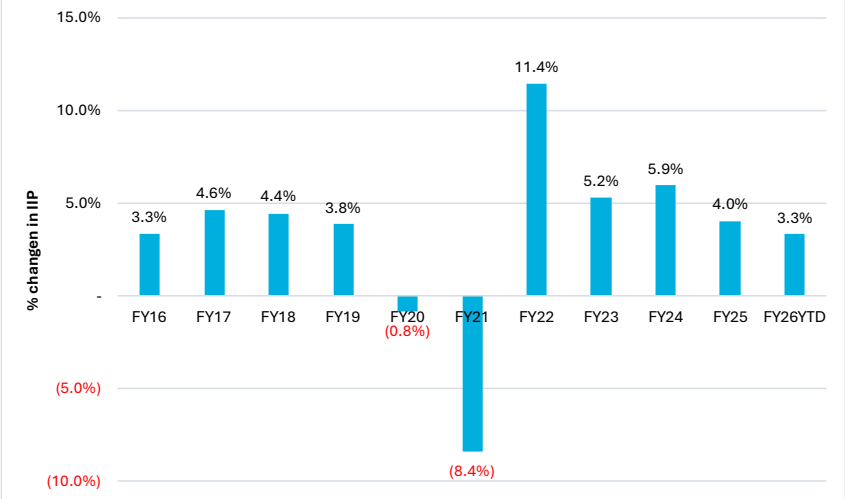
Economic Indicators

Industrial Production

4.8 The Index of Industrial Production (IIP) is a composite indicator that measures the short-term changes in the volume of production for a basket of industrial products. The IIP data tracks the manufacturing activity in different sectors of an economy, with mining, manufacturing, and electricity being the three broad sectors constituting the IIP.

4.9 The figure below shows that at an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20. In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. Post the immediate recovery in FY22, IIP growth has since stabilised, with FY25 recording 4%, and FY26YTD (till February 2026) recording 3.3% growth over FY25.

Figure 4-1: Annual growth - Index of Industrial Production



Source: Steer Analysis of MoSPI

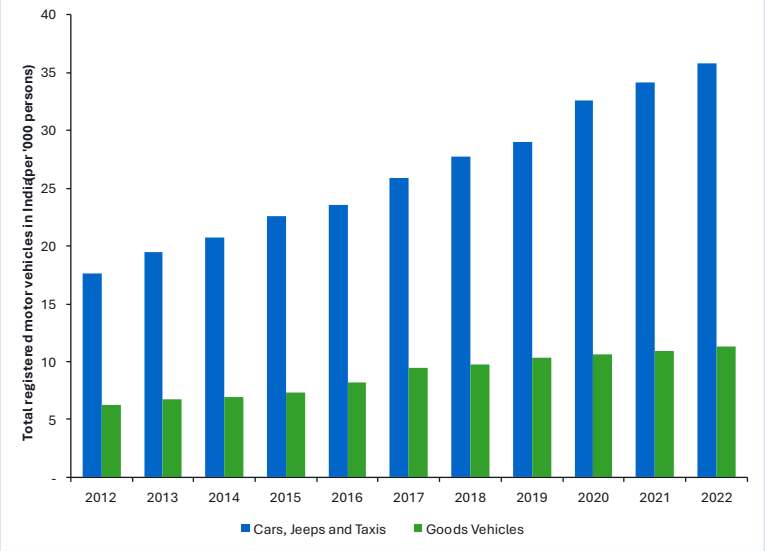
4.10 Since state-level IIP data is not as readily available as national level IIP, we have presented national IIP here to indicate nationwide activity in key industrial sectors like power, manufacturing, and mining, all of which influence long-distance commercial movements across the nation, and not unique to this asset. We however, do not use it to forecast future travel demand growth since long-term forecast for IIP is not available through official sources such as MOSPI, RBI or through multilateral organisations like WB, or the IMF.

Vehicle ownership

4.11 The gap in car ownership between India and developed nations remains substantial – with 36 cars/jeeps/taxis and 11 commercial vehicles per thousand people, as of FY22 (the latest year for which official data is available). However, with increasing per capita income levels, a booming economy and the subsequent increase in demand for mobility, the number of registered vehicles has been on a gradual upward trend

A.1 Overall, India still stands at a very nascent stage in the vehicle saturation curve, offering huge potential for growth going forward. Between FY12 and FY22, the CAGR for CJV and goods' vehicles registered in India was 8.6% and 7.3% respectively

Figure 4-2: Total number of registered motor vehicles in India (per 1000 population



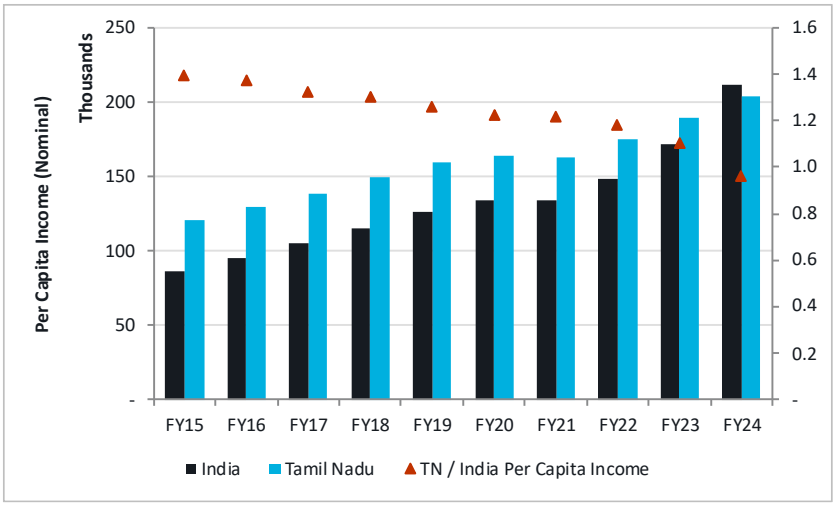
Source: Ministry of Road Transport and Highways (MoRTH)

Per Capita Income (PCI)

4.12 The per capita income of the state where the Assets lies i.e., Tamil Nadu is similar as compared to the national average, however in dollar terms, PCI of just $2,000 per head indicates that the state is at a very early stage of consumption curve. Going forward, we therefore expect local consumption to be strong which would drive the growth in both passenger and commercial traffic.

4.13 However, given the difficulty in obtaining granular district level PCI data it is not advisable to use this as a growth driver. Also, the long-term forecast for PCI is not available we therefore refrain from using it to forecast traffic.

Figure 4-3: Per capita income



Source: Ministry of Statistics and Program Implementation (MoSPI)

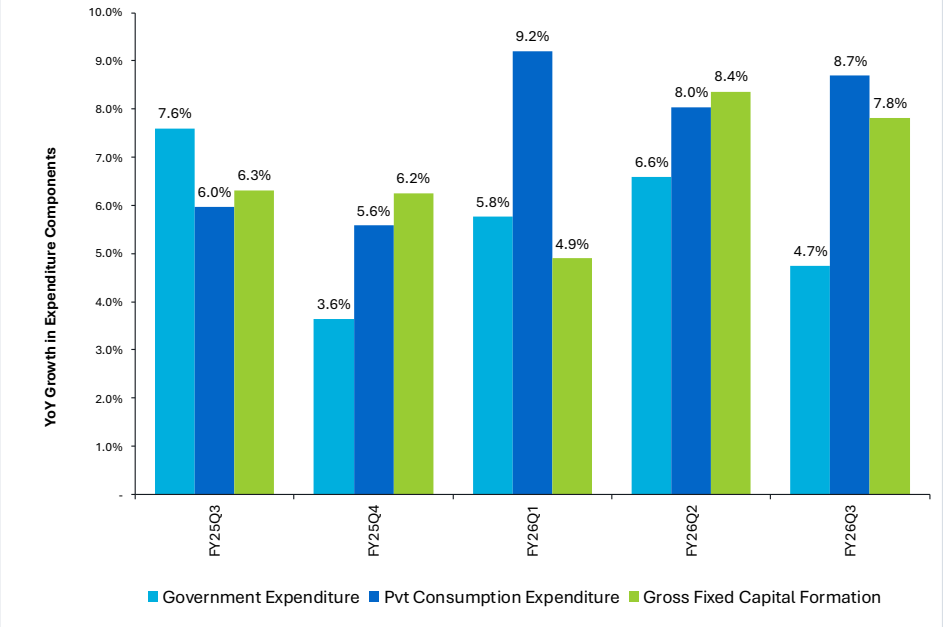
Economic growth

India's Performance

4.14 Despite a slowdown in the economy during H1FY25, the Indian economy has observed strong growth each quarter since FY25Q2, with the latest published estimates for FY26Q3 GDP at 7.8% over FY25Q3. This performance has been driven by strong growth in investment and consumption expenditures and higher consumer optimism for the year ahead[12].

4.15 The figure below, we present quarterly Y-o-Y growth in three major components of GDP – government expenditures, consumption expenditures, and business investment (gross fixed capital expenditure) over the past year (FY25Q3-FY26Q3).

Figure 4-4: YoY growth in expenditure components of GDP



Source: Steer Analysis of MOSPI Data

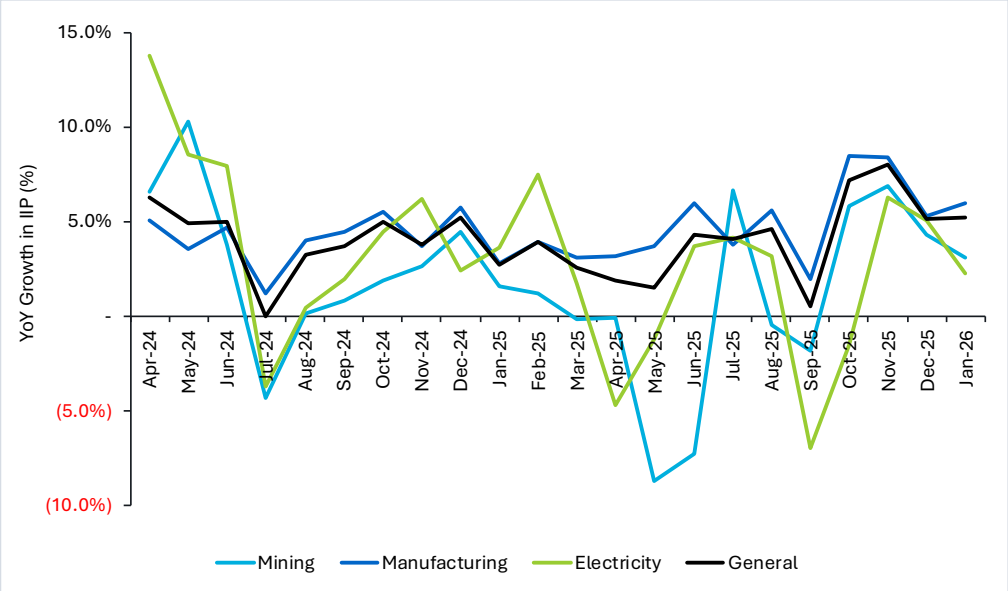
4.16 While consumption and investment expenditures have continued to show consistent growth over the past two quarters, government expenditures observed a marginal decline in FY25Q4. In FY26Q1, government expenditures rebounded, recording 5.8% growth over FY25Q1 levels.

4.17 Performance across different types of industrial activities (such as Mining, Manufacturing, and Power Generation) directly impact freight movement and commercial traffic volume growth across the country, including on the Asset. In the figure below, we present growth trends in IIP – a measure that tracks the performance of the economy across these activities. As of FY26YTD (Apr'25-Feb '26), the Manufacturing sector continues to perform strongly, recording positive y-o-y growth since FY25Q3. While industrial activity across the

[12] Gov**ernment of India PIB Release (27th February 2026)**

two other sectors (i.e., Power Generation and Mining) dropped between May and Jun/Jul '25, they have since rebounded and show signs of continued growth going forward.

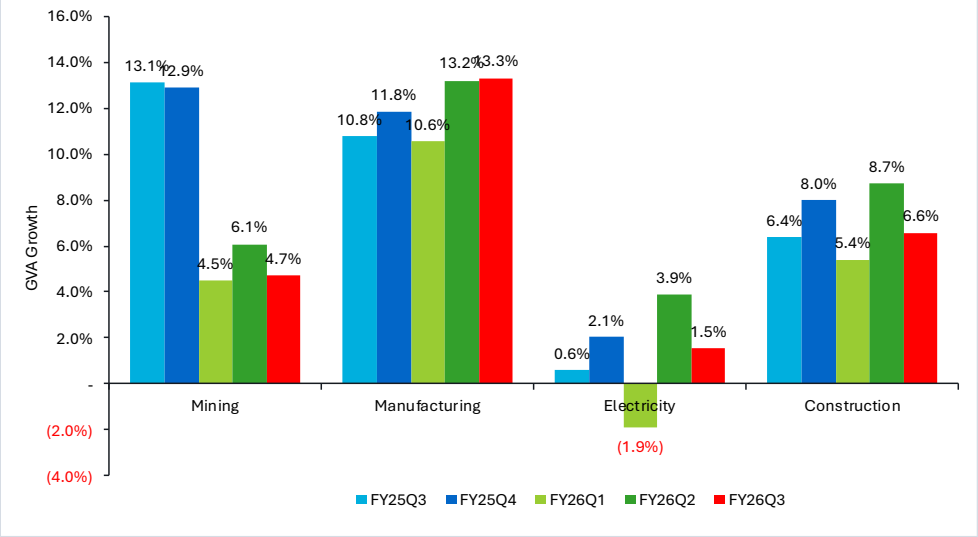
Figure 4-5: Month on Month IIP performance



Source: Steer Analysis of MOSPI Data

4.18 In addition to monthly trends in IIP, the figure below presents y-o-y growth of quarterly GVA in four industrial sectors - Mining (& Quarrying), Manufacturing, Electricity (and other Utilities), and Construction. While the Mining and Power sectors observed decline and muted growth in FY26Q1, the Manufacturing and Construction sectors experienced strong growth. While overall economic growth has remained resilient as of FY26YTD, performance across industries have varied, impacting economic growth across different regions and on the Asset as well.

Figure 4-6: Industrial components of GVA



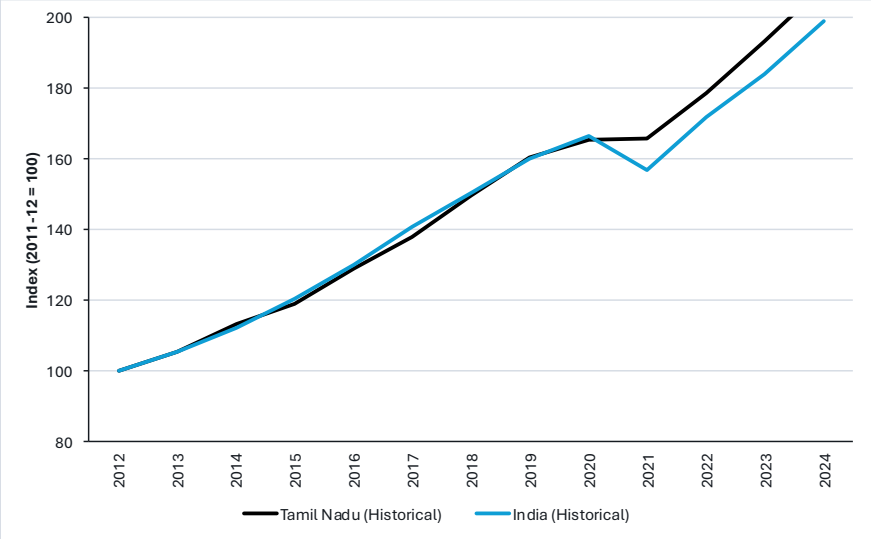
Source: Steer Analysis of MOSPI Data

GDP and GSDP Growth

4.19 Over the period FY12-FY24, the Indian economic has grown at a CAGR of approx. 6% aided by growth in the tertiary sector which grew at a CAGR of approx. 6.9% over the same period. The economic growth of Tamil Nadu (state GSDP)[13] been faster than the country overall. Tamil Nadu's GSDP CAGR was 6.3% between FY12-24. Tamil Nadu approximately contributes 9% to the India's GDP. In terms of per capita income, Tamil Nadu has a higher per capita income than the country.

4.20 The Asset Madurai-Kanyakumari, lie in the state of Tamil Nadu. Tamil Nadu's state GSDP has historically grown at a rate that is equal or slightly lower than the national trend. The following figures illustrates the evolution of Tamil Nadu's GSDP during FY12-24.

Figure 4-7: Evolution of Tamil Nadu's state GDP and National GDP, FY12-24



Source: Steer Analysis of MOSPI Data)

4.21 The official historical GDP and GSDP data for India are released by the Ministry of Statistics and Program Implementation (MoSPI). The GDP forecasts for India are available from various reliable sources such as Oxford Economics and Consensus Economics[14], but state-specific GSDP forecasts are not published by any such sources. To derive state GSDP forecasts, we rely on past trends of the relationship between GDP and GSDP and develop GSDP forecasts as a function of our assumed GDP forecasts[15].

4.22 For any indicator to be used as a growth driver to forecast traffic, a reliable source of historical and forecast data availability for that indicator is the key requirement. Of the key socioeconomic indicators discussed above, GDP was assessed to be the only growth driver for which reliable data is available both in terms of historical and forecast data.

---

[13] GSDP is the Gross State Domestic Product i.e., the GDP equivalent for a particular state, it is the final value of goods and services produced by a particular state

[14] **Consensus Economics - Economic Forecasts and Indicators**

[15] Assuming that the historical long-term relationship between GSDP and GDP sustains over the short-term, we project future growth in GSDP as a function of our GDP growth forecast. We taper the relationship of GSDP growth to converge to GDP growth gradually over the long-term.

Therefore, to forecast traffic, we use GDP/GSDP as our key growth drivers.

Forecasts for growth drivers

4.23 Following the discussion in Chapter 2 on the nature of economic activity in the state of Tamil Nadu, in this section, we describe the assumptions in relation to forecasts of the key macro-economic drivers of traffic growth. Particularly, we have based our forecast on GDP and GSDP projections provided by the Client.

National GDP

4.24 After the last period of economic slowdown in FY11-12, the country experienced an economic downturn again in late FY19 with FY20 having reported a GDP growth of 4% (relative to an average growth rate of 7% per year between FY13 and FY19). India's GDP growth declined as domestic investment and consumption demand were already under stress because of the liquidity crunch before Covid-19. Other factors that contributed to the economic slowdown included reduced growth rates in automobile sales and production, liquidity crunch in credit markets and rising number of Non-Performing Assets (NPAs) within the banking sector, as well as lower manufacturing production and lower rural consumption.[16]

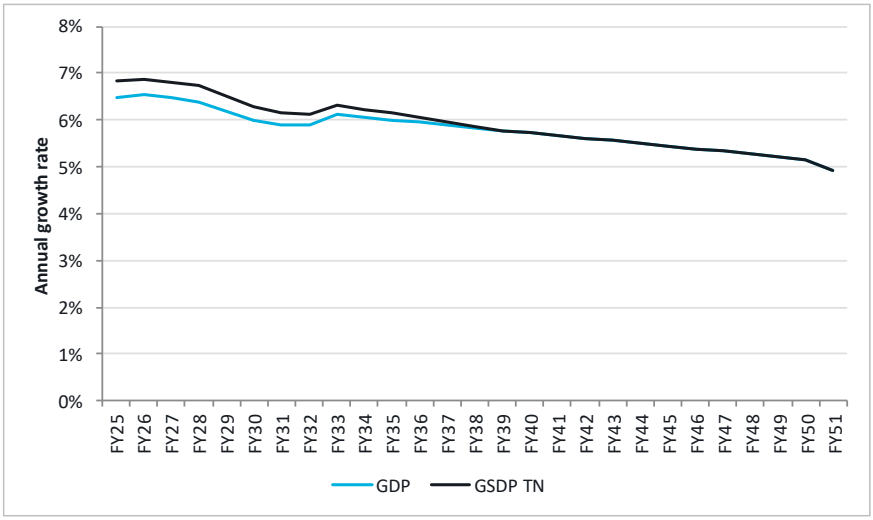
4.25 The Covid19 outbreak had a significant impact on the Indian economy during the first two quarters of FY21 as government mandated lockdowns across the country effectively stalled economic activity and growth. The growth momentum eventually picked up in Q3 of FY21, with a sharp rebound in the economy in FY22 (GDP recorded 9.7% growth over FY21) and has since observed a consistent growth of 7.6% in FY23, 9.2% in FY24 and 6.5% in FY25 (as per the SAE) before slowing down over the past year due to several domestic and external factors.

4.26 Figure 4-8 below shows Client-provided GDP projections for India. The forecast provided by the Client expects the Indian GDP to grow at 6.3% between FY27-FY30 and gradually tapers down to 5.2% by FY51, end of concession. The India GDP growth forecast provided by the Client is broadly in line with other independent forecasts available from reliable sources such as IMF, World Bank and RBI in the medium term.

4.27 The GDP-GSDP lines are expected to converge by FY38. The chart below shows the forecast growth lines for GDP and Tamil Nadu GSDP.

[16] **Data | India's GDP was on a downward slope even before COVID-19 wreaked havoc - The Hindu** (September 2020)

Figure 4-8: GDP-GSDP forecast



Source: GDP forecast provided by the Client

5 FY26 Base Year AADT and Traffic growth Analysis

Introduction

5.1 In this section, we present our approach, assumptions, and results for base (or background) traffic growth for each vehicle category on the Asset.

5.2 Traffic growth is commonly related to a variety of macro-economic and industry- or commodity-specific factors (hereafter referred to as 'traffic growth drivers'). These growth drivers are typically identified from the results of the OD data analysis and the site visits that help us appreciate the nature of traffic movement – 'what' travels 'where' and 'why'.

5.3 While comprehensive historical data on the asset is not available, we have access to six years of records. Despite some inconsistencies, this dataset provides a reasonable foundation for analysis. As a result, statistical methods to estimate background growth relationships could not be applied. Instead, we conducted a benchmarking exercise, supported by trip length and origin-destination (OD) analysis, to derive elasticity estimates. These are discussed in detail below.

FY26 Base year AADT estimates

5.4 The base year is the year on which long-term background forecast growth rates are applied to derive year-wise average annual daily traffic (AADT) estimates for forecast years. This is therefore an important aspect of our forecasting approach as traffic and ultimately revenue forecasts for future years are built on top of the base year traffic estimate. We have used FY26 as the base year for AADT estimates for the forecast years.

5.5 As described previously in Chapter 3, to establish the base year (FY26) traffic position, we utilised information from various sources – including from the Client and our context knowledge, to assess a reasonable demand on the corridor.

Methodology

5.6 The base traffic for FY26 has been estimated using 11 months of actual traffic data (April to February). Each toll plaza's seasonality correction factors were applied on the actual MADTs of Apr-25 to Feb-26 to obtain seasonally corrected estimates for FY26 traffic. An average of these estimates was considered to be the FY26 base traffic.

Seasonal Correction Factors

5.7 Traffic on any Asset varies on a month-on-month level. Such variations maybe due to monsoons (typically Jul to Sept) or due to festivals in the region. For e.g. It is observed that typically the truck traffic during the first half of the financial year (April-September) is generally lower than the annual average, mainly because of peak summer season

followed by monsoons affecting the freight movement patterns in large parts of the country in the July-September period. In addition to these there may be other seasonal variations specific to the Asset.

5.8 In order to normalise for these variations across the year to provide an AADT estimate, Seasonality Correction Factors (SCF) are used. SCFs are estimated to convert the monthly traffic numbers to an AADT level while accounting for seasonal variation due to local/national festivals, weather changes and/or temporary external impacts. These are typically estimated using historical data for each plaza and vehicle category over multiple years. An SCF >1 means that the traffic for the month is lower than the annual average and vice-versa.

5.9 The below tables present the average of FY23, FY24 and FY25 SCFs used to estimate the AADT for the four toll plazas.

Table 5.1: SCF factors for TP1 Kappalur

Vehicle Category	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.07	0.94	0.98	1.06	1.00	1.00	0.96	1.06	0.96	0.96	1.00	1.05
LCV	1.02	1.04	1.01	1.03	1.00	0.99	0.99	1.03	0.99	1.01	0.96	0.95
Bus	1.03	1.02	1.01	1.04	1.01	1.01	0.99	1.02	1.00	0.94	0.98	0.99
2A	1.00	0.99	1.08	0.99	0.99	0.97	1.03	1.05	0.96	1.02	0.99	0.97
3A	1.01	1.02	0.97	0.99	0.96	0.97	1.04	1.10	1.07	1.05	0.93	0.92
MAV	1.03	1.05	1.04	1.03	0.98	0.97	1.04	1.10	1.01	1.02	0.90	0.88

Table 5.2: SCF Factors for TP2 Etturvattam

Vehicle Category	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.07	0.89	0.99	1.12	1.03	1.03	0.97	1.07	0.94	0.90	1.00	1.07
LCV	1.02	1.03	1.00	1.02	1.02	1.01	1.02	1.05	0.99	0.99	0.95	0.93
Bus	1.04	1.01	1.04	1.08	1.03	1.01	0.99	1.01	0.95	0.89	0.98	0.99
2A	1.01	1.00	0.99	0.99	0.97	0.98	1.02	1.06	1.04	1.04	0.98	0.97
3A	1.01	1.00	0.97	1.03	0.98	0.99	1.02	1.07	1.04	1.02	0.96	0.93
MAV	1.08	1.07	1.04	1.04	1.01	1.00	1.06	1.05	0.99	0.99	0.89	0.84

Table 5.3: SCF Factors for TP3 Salaipudhur

Vehicle Category	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.05	0.88	0.98	1.10	1.02	1.03	0.98	1.09	0.93	0.90	1.04	1.08
LCV	1.02	1.01	1.01	1.03	1.01	1.00	1.04	1.06	0.98	0.98	0.94	0.93
Bus	1.05	1.00	1.06	1.10	1.04	1.01	0.97	1.01	0.94	0.88	0.98	1.00
2A	1.02	1.01	1.00	0.98	0.97	0.98	1.02	1.04	1.03	1.03	0.98	0.97
3A	0.99	1.04	0.98	1.00	0.99	0.99	1.05	1.08	1.03	1.03	0.95	0.92
MAV	1.12	1.12	1.02	1.01	0.97	0.94	1.06	1.04	1.01	1.03	0.92	0.86

Table 5.4: SCF Factors for TP4 Nanguneri

Vehicle Category	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.04	0.88	0.98	1.07	1.01	1.03	1.02	1.07	0.92	0.90	1.05	1.10
LCV	1.01	1.00	1.01	1.02	0.97	0.99	1.04	1.05	1.00	0.99	0.96	0.98
Bus	1.04	1.01	1.05	1.07	1.04	1.02	1.01	0.99	0.93	0.89	0.98	1.01
2A	1.02	1.02	1.01	0.98	0.93	0.96	1.02	1.03	1.02	1.04	1.00	1.00
3A	1.03	1.05	1.03	0.99	0.90	0.95	1.01	1.03	1.06	1.02	0.97	1.01
MAV	1.17	1.13	0.98	0.95	0.91	0.91	1.01	1.02	1.05	1.04	0.97	0.96

Source: Steer analysis of client shared traffic data

Adopted base estimates

Based on the above methodology and inputs, the adopted base for all toll plazas have been shown below:

Table 5.5: Adopted base estimates: TP1: Kappalur

Vehicle Category	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	20,236	22,657	22,571	11.5%
LCV	1,664	1,771	1,780	7.0%
Bus	3,266	3,136	3,144	(3.8%)
2A	1,358	1,351	1,358	(0.0%)
3A	541	571	577	6.6%
MAV	974	1,021	1,035	6.3%
OSV	2	2	2	
Total	**28,041**	**30,510**	**30,466**	**8.7%**
PCUs	**41,548**	**43,971**	**44,005**	**5.9%**

Source: Steer analysis; FY25 actual full year, FY26YTD includes 11 months of FY26, FY26A is adopted base for FY26

Table 5.6: Adopted base estimates: TP2: Etturvattam

Vehicle Category	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	9,174	10,273	10,218	11.4%
LCV	947	965	972	2.7%
Bus	1,261	1,360	1,363	8.1%
2A	837	790	793	(5.2%)
3A	348	352	355	2.0%
MAV	826	880	896	8.5%
OSV	2	3	3	
Total	**13,395**	**14,622**	**14,601**	**9.0%**

Vehicle Category	FY25	FY26YTD	FY26A	FY26A vs FY25
PCUs	**20,752**	**22,231**	**22,273**	**7.3%**

Source: Steer analysis; FY25 actual full year, FY26YTD includes 11 months of FY26, FY26A is adopted base for FY26

Table 5.7: Adopted base estimates: TP3: Salaipudhur

Vehicle Category	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	8,407	9,582	9,515	13.2%
LCV	829	873	879	6.1%
Bus	1,075	1,201	1,203	11.9%
2A	760	730	733	(3.6%)
3A	315	326	329	4.6%
MAV	680	720	735	8.1%
OSV	4	3	4	
Total	**12,070**	**13,435**	**13,398**	**11.0%**
PCUs	**18,431**	**20,124**	**20,145**	**9.3%**

Source: Steer analysis; FY25 actual full year, FY26YTD includes 11 months of FY26, FY26A is adopted base for FY26

Table 5.8: Adopted base estimates: TP4: Nanguneri

Vehicle Category	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	10,618	11,879	11,772	10.9%
LCV	780	797	799	2.5%
Bus	1,169	1,296	1,294	10.7%
2A	699	694	695	(0.5%)
3A	314	334	335	6.7%
MAV	593	723	729	22.9%
OSV	1	1	1	
Total	**14,173**	**15,724**	**15,625**	**10.2%**
PCUs	**20,352**	**22,509**	**22,427**	**10.2%**

Source: Steer analysis: Steer analysis; FY25 actual full year, FY26YTD includes 11 months of FY26, FY26A is adopted base for FY26

5.10 The above tables depict that the FY26A estimates over the full year FY25 AADT show a 5.9%, 7.3%, 9.3% and 10.2% PCU growth for TP1 (Table 5.5), TP2 (Table 5.6), TP3 (Table 5.7) and TP4 (Table 5.8) respectively. This is driven by passenger traffic on the Asset (CJV /Buses), as well as MAVs.

5.11 Considering only CJVs, their volume in FY26A is approximately ~10-12% above the FY25 AADT across all the four plazas. As previously discussed in Chapters 2 and 3, commercial traffic on the Asset is driven by the proximity to the urban centres of Madurai,

Thirumangalam, Tirunelveli and Kovilpatti (which are expected to continue driving consumption demand) and the tourist hub of Kanyakumari.

5.12 In terms of MAVs, the FY26A volumes are above the FY25 AADT by approximately 6%, 9%, 8% and 22% for TP1, TP2, TP3 and TP4 respectively. TP1 Kappalur is the nearest to the electronic and manufacturing hub of Madurai; TP2 is located close to India's first textile park in Virudhunagar; while trips at TP3 and TP4 are generated to/from the V.O.C Port in Tuticorin. MAV growth at TP3 (8%) is expected to be driven by the solar power plant in Gangakodian, to be constructed near Salaipudhur toll plaza[17]. These underlying economic factors have driven the growth of commercial vehicles on the Asset. Traffic on TP4 witnessed high growth on account of increased construction activity around Kanyakumari.

Estimation of background elasticities

Overview

5.13 For brownfield Asset, where sufficient historical traffic evolution is available, it is common practice to use regression model analysis to determine the relationship, expressed as elasticity, between traffic growth and key socioeconomic drivers. This relationship is then applied to assumptions of future socio-economic evolution to estimate future traffic growth.

5.14 As for the Asset under consideration, a consistent historical trend was not available. Therefore, we undertook a benchmark in order to estimate our forecast elasticities, Sources used included our understanding of the Asset, the elasticities used during the bid for TOT3 package by the client and the subsequent lender study that was undertaken by the Client. We have also undertaken a regional benchmarking against Asset having similar traffic profiles, which give us reasonable confidence the relationships proposed.

5.15 In terms of selection of growth drivers for vehicle types, in general we have assumed state GSDP as the key driving factor for the passenger traffic given this traffic is generally driven by the local economies of the cities and state containing the Asset. The heavier commercial vehicles generally ply long-distance, and the underlying growth is governed by the general economies of several states or nation as whole.

5.16 Given the nascent stage of India's logistics sector, characterized by a highly fragmented trucking industry (95% of operators owning fewer than five trucks) and low car ownership rates (30-35 per 1000 people), the forecast elasticities are projected to remain constant throughout the concession period. This assumption is grounded in historical trends and a long-term perspective on regional and national growth, suggesting market maturity is still several years away.

5.17 Table 5.9 presents the growth drivers identified to model the forecast background traffic growth rates.

[17] https://www.deccanchronicle.com/southern-states/tamil-nadu/tata-power-has-big-plans-for-gangaikondan-1824617

Table 5.9: Identified growth drivers to model traffic growth

Vehicle type	GSDP Tamil Nadu
Car	100%
LCV	100%
Bus	100%
2A	100%
3A	100%
MAV	100%

Source: Steer

5.18 Further to developing estimates for FY25 AADT, the Asset has operational history between FY22 and FY25, proving us three years of traffic growth on the Asset. The table below summarises the volume growth across each of the vehicle categories. For this comparison we have normalised the FY22 AADT for COVID19 by adopting seasonally corrected H2FY22 as the FY22 normalised (FY22N).

Table 5.10: Passenger and Commercial growth with normalised FY22 – MK TP1

	FY22N	FY24	FY25	FY26A	FY22N-26 CAGR
CJV	17,720	19,245	20,236	22,571	6.2%
LCV	1,528	1,563	1,664	1,780	3.9%
Bus	2,923	2,991	3,270	3,144	1.8%
2A	1,264	1,388	1,354	1,358	1.8%
3A	567	526	541	577	0.4%
MAV	871	911	974	1035	4.4%
OSV	2	5	2	2	
Total	**24,875**	**26,629**	**28,041**	**30,466**	**4.9%**
PCUs	**37,245**	**39,425**	**41,548**	**44,005**	**4.3%**
Passenger	20,643	22,236	23,502	25,715	5.3%
Commercial	4,232	4,393	4,539	4,748	2.9%

Source: Steer Analysis; Note; Passenger includes CJV and Bus traffic whereas Commercial includes 2A/3A/MAV traffic

Table 5.11: Passenger and Commercial growth with normalised FY22 – MK TP2

	FY22N	FY24	FY25	FY26A	FY22N-26 CAGR
CJV	7,286	8,446	9,174	10,218	8.8%
LCV	793	867	947	972	5.2%
Bus	980	1,119	1,261	1,363	8.6%
2A	811	923	837	793	(0.5%)
3A	315	341	348	355	3.0%
MAV	691	772	826	896	6.7%
OSV	3	6	2	3	

	FY22N	FY24	FY25	FY26A	FY22N-26 CAGR
Total	**10,879**	**12,474**	**13,395**	**14,601**	**7.6%**
PCUs	**17,157**	**19,548**	**20,753**	**22,273**	**6.7%**
Passenger	8,266	9,565	10,435	11,581	8.8%
Commercial	2,613	2,909	2,960	3,020	3.7%

Source: Steer Analysis; Note; Passenger includes CJV and Bus traffic whereas Commercial includes LCV/2A/3A/MAV traffic

Table 5.12: Passenger and Commercial growth with normalised FY22 – MK TP3

	FY22N	FY24	FY25	FY26A	FY22N-26 CAGR
CJV	6,863	7,788	8,407	9,515	8.5%
LCV	705	767	829	879	5.7%
Bus	816	967	1,075	1,203	10.2%
2A	711	814	760	733	0.8%
3A	283	314	315	329	3.9%
MAV	494	584	680	735	10.4%
OSV	2	6	4	4	
Total	**9,874**	**11,240**	**12,070**	**13,398**	**7.9%**
PCUs	**15,040**	**17,237**	**18,431**	**20,145**	**7.6%**
Passenger	7,679	8,755	9,482	10,718	8.7%
Commercial	2,195	2,485	2,587	2,680	5.1%

Source: Steer Analysis; Note; Passenger includes CJV and Bus traffic whereas Commercial includes 2A/3A/MAV traffic

Table 5.13: Passenger and Commercial growth with normalised FY22 – MK TP4

	FY22N	FY24	FY25	FY26A	FY22N-26 CAGR
CJV	8,776	10,129	10,618	11,772	7.6%
LCV	749	764	780	799	1.6%
Bus	1,062	1,175	1,169	1,294	5.1%
2A	650	723	699	695	1.7%
3A	351	359	314	335	(1.2%)
MAV	491	560	593	729	10.4%
OSV	3	2	1	1	
Total	**12,082**	**13,712**	**14,173**	**15,625**	**6.6%**
PCUs	**17,772**	**19,960**	**20,352**	**22,427**	**6.0%**
Passenger	9,838	11,304	11,787	13,065	7.4%
Commercial	2,244	2,408	2,386	2,560	3.3%

Source: Steer Analysis; Note; Passenger includes CJV and Bus traffic whereas Commercial includes 2A/3A/MAV traffic

5.19 The growth rates at a PCU level between FY22N and FY26A has been 4.3%, 6.7%, 7.6% and 6.0% at TP1, TP2, TP3 and TP4 respectively.

5.20 The sections below detail out the reasoning for selection of respective growth driver(s) for each vehicle category. We have looked at the last 3-4 years historical growth on the Asset across each vehicle category based on which we have arrived at the growth assumption of the Asset.

5.21 In recent historical traffic performance across national highway corridors, a notable trend has emerged: there is a discernible shift in axle preference towards 2As and MAVs, resulting in a dampening effect on the growth of 3As. This trend is mirrored in the Assets FY23 and FY24 performance as well, which has been discussed in detail in the subsequent sections. Because of these evolving axle preferences, it has been assumed that the relationship between 3As and GDP will be relatively muted, whereas 2As and MAVs are expected to grow more closely in line with the country's GDP.

Table 5.14: Elasticity recommendations for the Asset

Vehicle Category	Proposed	Growth Driver	Comments
CJV	TP1, 2 and 3: 1.1 TP4: 1.0	GSDP Tamil Nadu	Primarily inter-urban/local movements between Madurai, Tirunelveli, Virudhunagar, Sivakasi, Nagercoil/KK. Since Madurai has higher urban density, we grow TP1, 2 and 3 Kappalur at higher elasticity of 1.1 compared to 1.0 at TP4. The elasticity of 1.1 at TP1, 2, and 3 are tapered to 1.0 by FY30.
Mini LCV	TP1-4: 0.7	GSDP Tamil Nadu	Primarily inter-urban/local movements between Madurai, Tirunelveli, Virudhunagar, Sivakasi, Nagercoil/KK. Due to an increasing proportion of MLCVs being observed since historical TVCs, an elasticity of 0.7 has been considered.
Buses	TP1-4: 0.4	GSDP Tamil Nadu	Mix of public and private inter-city buses, with a higher share of public buses at TP1 Kappalur. Tamil Nadu has a high volume of mofussil and intercity buses serving public transport demand. As the cities and towns grow and become more urbanised, the buses are also expected to respond to the increasing demand however at a 0.4 relationship to GSDP. This is higher than low bus-volume regions in other parts of the country.
LCV	TP1-4: 0.5	GSDP Tamil Nadu	LCVs and 2As are the major goods vehicle types and are expected to have the highest growth amongst goods vehicle types. As discussed in Chapter 3, the trip lengths of LCV and 2A category (more than 50%) are predominantly short distance, confirming the understanding that the movements cater to regional demand. Considering the above observations, and our experience across other toll roads in the region, we believe that elasticities of 0.5 with respect to state GSDP are considered reasonable.
2A	TP1-4: 0.5	GSDP Tamil Nadu	

Vehicle Category	Proposed	Growth Driver	Comments
3A	TP1-4: 0.3	GSDP Tamil Nadu	3As and MAVs cater to both regional and long-distance movement of a wide range of consumption-based commodities. Most of the traffic is within 1000km and more than 85% of trips are within the State. Given TN is an industrialised state, and the region is particularly more developed and has consumption-driven traffic, we have considered elasticities of 0.3 for 3As at all toll plazas, 0.7 for MAVs at TP1 and 0.6 for MAVs at TP 2, 3 and 4
MAV	TP1: 0.7 TP2, 3 and 4: 0.6	GSDP Tamil Nadu	

Source: Steer Analysis

6 Forecast: Network overlays and forecasts

Introduction

6.1 Following the discussion on our forecast of background growth rates in the previous chapter, this chapter first covers the forecasting assumptions around base year AADT and potential network impacts on traffic growth on the Asset. Thereafter, we present our assumptions around toll segmentation, trip factors and evolution of toll rates for the forecast period which are used to forecast revenues as derived from forecast traffic. In the final section, this chapter summarises traffic growth rates for the forecast years.

Analysis of potential network/developmental impacts

6.2 This section details the impacts which we believe would affect traffic on the Asset during the concession period. As discussed in previous Chapters, to assess the impacts on the Asset, whether positive or negative, we have studied developments (alternate roads, feeder roads and regulatory) in the surrounding road network.

6 laning LOS improvement

6.3 As per the concession agreement as soon as the Asset hits 40,000 PCUs the Asset is eligible for capacity augmentation. The PCU level need to be maintained above the 40,000 levels for 3 consecutive years and 2 years will be earmarked for DPR preparation. After that a three-year period is factored in for construction, during which the Year 1 of construction toll rates will be maintained at 75% and will remain flat at 75%. After the construction is over the toll rates will be calculated as normal, as they should have been in that year.

6.4 The improvement in Level of Service (LOS) is observed exclusively at Toll Plazas TP1 and TP4. Capacity thresholds at these locations are projected to be exceeded in FY25 and FY39, respectively. Based on the forecast and the methodology outlined above, the LOS improvements are expected to take effect from FY33 for TP1 and FY47 for TP4.

6.5 A comparison of generalised journey costs (GJC) provides how different elements of cost and time affect traffic. This comparison was done for both light and heavy vehicles. Lower GJCs correspond to higher induced traffic. Based on Steer's studies and research in India, we have found that for every 1% reduction in the GJCs, the traffic increases by a factor of 0.3. We then applied the difference of GJCs to the elasticity of 0.3 to get net influence on the traffic.

6.6 The improvement in travel costs or GJC is translated into the impact on share of local + IAOI OD movements. Therefore, the GJC influence is applied on the corresponding shares of local traffic, which were extracted from OD data.

6.7 Table 6.1 and Table 6.2 show the extent of the LOS impact and the expected timelines of the impact on the Asset.

Table 6.1: Impact of 6 laning LOS improvement for TP1 Kappalur

Vehicle category	FY33
CJV	1.2%
LCV	1.0%
2A	1.1%
3A	0.9%
MAV	0.7%

Source: Steer analysis

Table 6.2: Impact of 6 laning LOS improvement for TP4 Nanguneri

Vehicle category	FY47
CJV	0.6%
LCV	0.3%
2A	0.6%
3A	0.6%
MAV	0.5%

Source: Steer analysis

Vizhinjam port traffic

6.8 With the Vizhinjam Port becoming operational, we expect it to positively influence goods movement in the region, especially along major highways. One clear sign of this could be a rise in commercial vehicle traffic at the MK4 toll plaza, as more trucks and freight vehicles use this route. This road connects Kerala and Tamil Nadu, making it an important link for cargo transport. The improved access and connections provided by the port are likely to boost trade and transport needs in the area, which in turn could lead to higher traffic on the plaza.

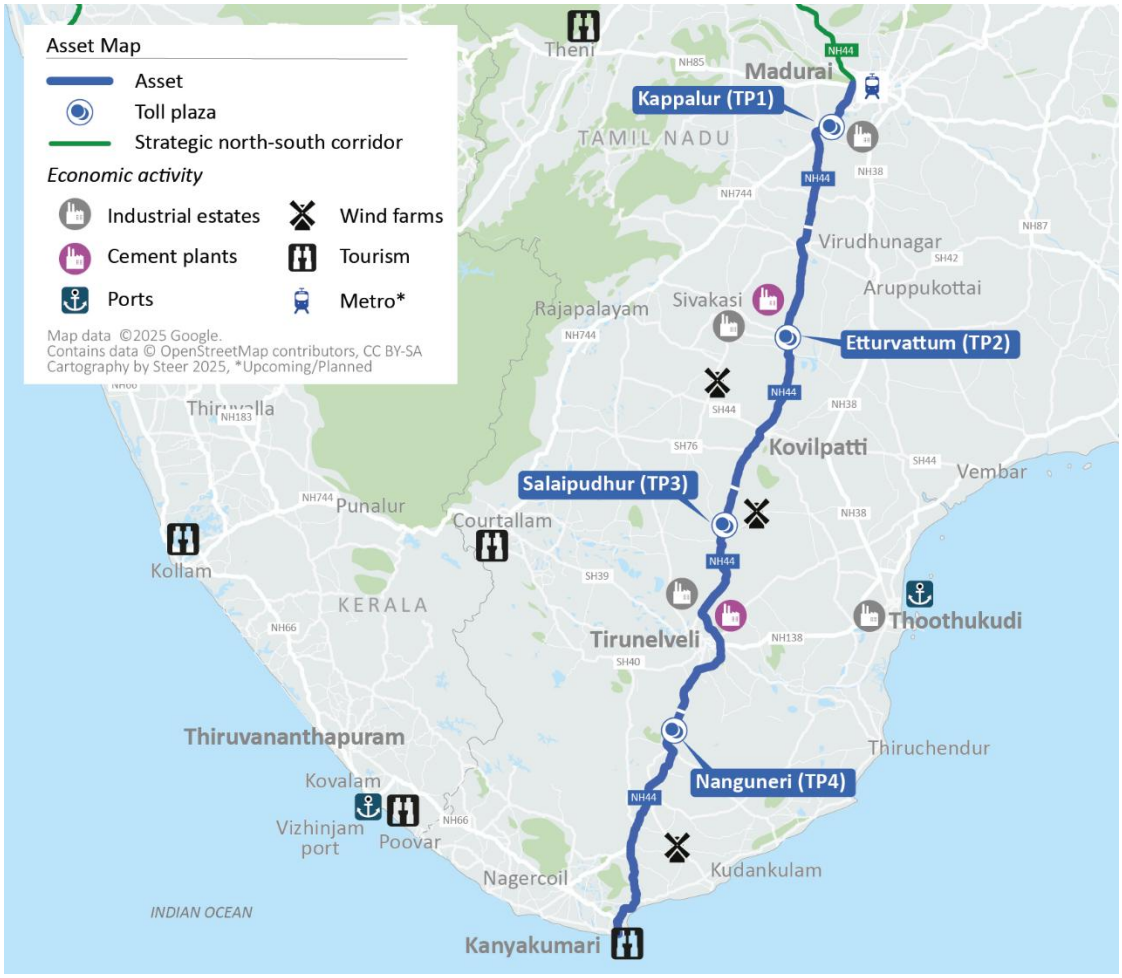
6.9 Table 6.3 shows the impact of the Vizhinjam port traffic at TP4 Nanguneri

Table 6.3 Impact of Vizhinjam port traffic for TP4 Nanguneri

Vehicle category	FY28	FY29 onwards
Staging	*20%*	*100%*
2A	0.4%	2.0%
3A	0.2%	1.0%
MAV	0.4%	2.0%

Source: Steer analysis

Figure 6.1: Vizhinjam port traffic



Source: Steer Cartography

Revenue forecasting assumptions

6.10 To forecast the revenues for a particular financial year, the traffic forecast for each vehicle type is converted into tickets sold, which is then multiplied with the corresponding toll rate, which grows over the years as defined in the Concession Agreement. While “trip factors” provide the conversion factor to the former, i.e. traffic (trips) to tickets sold, “toll segmentation” provides the latter i.e. the breakup of trips paying each ticket type. This section discusses assumptions related to trip factors, toll segmentation and toll rates for the forecast period.

Trip factors

6.11 Trip factors are used to calculate the revenue for the trips made on passes such as return, local personal, monthly passes. The trip factors assumed are based on the latest FY25 data available and listed in the table below:

Table 6.4: Trip factors for the forecast years for TP1 Kappalur

Vehicle category	CJV/ Mini LCV	LCV	Bus	2A	3A	MAV	OSV
Single	1	1	1	1	1	1	1

Vehicle category	CJV/ Mini LCV	LCV	Bus	2A	3A	MAV	OSV
Return	2	2	2	2	2	2	2
Monthly	50	45	45	45	45	45	45
Local Commercial	1	1	1	1	1	1	1
Local Personal	16	20	20	20	20	20	20
Exemptions	1	1	1	1	1	1	1

Source: Steer analysis of Client TMS data

Table 6.5: Trip factors for the forecast years for TP2 Etturvattam

Vehicle category	CJV/Mini LCV	LCV	Bus	2A	3A	MAV	OSV
Single	1	1	1	1	1	1	1
Return	2	2	2	2	2	2	2
Monthly	59	45	45	45	45	45	45
Local Commercial	1	1	1	1	1	1	1
Local Personal	17	20	20	20	20	20	20
Exemptions	1	1	1	1	1	1	1

Source: Steer analysis of Client TMS data

Table 6.6: Trip factors for the forecast years for TP3 Salaipudhur

Vehicle category	CJV/Mini LCV	LCV	Bus	2A	3A	MAV	OSV
Single	1	1	1	1	1	1	1
Return	2	2	2	2	2	2	2
Monthly	60	45	48	45	45	45	45
Local Commercial	1	1	1	1	1	1	1
Local Personal	20	20	20	20	20	20	20
Exemptions	1	1	1	1	1	1	1

Source: Steer analysis of Client TMS data

Table 6.7: Trip factors for the forecast years for TP4 Nanguneri

Vehicle category	CJV/Mini LCV	LCV	Bus	2A	3A	MAV	OSV
Single	1	1	1	1	1	1	1
Return	2	2	2	2	2	2	2
Monthly	45	45	45	45	45	45	45
Local Commercial	1	1	1	1	1	1	1
Local Personal	15	20	20	20	20	20	20
Exemptions	1	1	1	1	1	1	1

Source: Steer analysis of Client TMS data

Toll segmentation

6.12 The Ministry of Road Transport & Highways has finalized a compensation formula for existing toll concessionaires to offset revenue loss from the Annual Pass scheme for non-commercial vehicles.[18]

6.13 Across multiple assets, the share of annual pass trips has been rising on a monthly basis since August 5. A corresponding decline in other ticket categories including Single and Return journeys has been observed.

6.14 CJV Segmentation for FY26 has been developed using the pre annual pass segmentation till 14th August 2025, and post-annual pass segmentation from 15th August 2025 till 28th February 2026. The share of annual pass trips in March 2026 has been assumed to be the same as the share of annual pass trips in the last 10 days of February 2026.

6.15 The segmentation for CJVs in FY27 has been assumed to be the same as the estimated March 2026 segmentation as trends suggest that the share of annual pass trips have stabilised. In July 2025, the Madras High Court ruled that TNSTC buses on the Madurai–Kanyakumari route must pay toll dues and penalties. This led to a shift in how buses are segmented on the asset. Since the judgment came mid-FY26, segmentation for FY26 has been adjusted using actual data from April to February. The segmentation for March 2026 was assumed to be the same as the average of August 2025 to February 2026. From FY27 onwards, the average segmentation from August 2025 to February 2026 is considered as the stable baseline across all toll plazas.

6.16 For other vehicle categories we have analysed the historical TMS data split by ticket categories, to understand trends, as highlighted in Chapter 3. For the traffic and revenue forecast of other vehicle categories, FY26YTD (Apr- Feb) as discussed in the earlier sections, can be considered a normal period. Therefore, we believe the FY26YTD segmentation is representative of the travel patterns on the Asset and the same has been assumed for forecast years as well. This is presented below.

6.17 The table below provides the toll segmentation assumed for the period of forecast.

Table 6.8: Segmentation for forecast years, TP1 Kappalur

Ticket type	CJV FY26	CJV FY27	Mini LCV	Bus FY26	Bus FY27	LCV	2A	3A	MAV
Single	27%	20%	34%	7%	9%	39%	33%	55%	78%
Return	41%	35%	49%	36%	41%	49%	53%	35%	21%
Monthly	0%	0%	0%	10%	8%	0%	-	0%	-
Local Commercial	1%	1%	1%	30%	40%	4%	8%	5%	1%
Local Personal	3%	3%	4%	-	-	-	-	-	-
Exemptions	12%	12%	12%	16%	2%	8%	6%	5%	1%
Violations	0%	0%	0%	0%	0%	0%	0%	0%	0%
Annual Pass	15%	28%	-	-	-	-	-	-	-

Source: Steer analysis of Client TMS data

[18] Annual Pass

Table 6.9: Segmentation for forecast years, TP2 Etturvattam

Ticket type	CJV FY26	CJV FY27	Mini LCV	Bus FY26	Bus FY27	LCV	2A	3A	MAV
Single	38%	27%	48%	11%	13%	48%	37%	58%	60%
Return	35%	30%	44%	50%	50%	49%	59%	40%	36%
Monthly	0%	0%	0%	20%	23%	0%	0%	0%	-
Local commercial	1%	1%	1%	11%	14%	2%	4%	1%	3%
Local personal	3%	2%	3%	-	-	-	-	-	-
Exemptions	4%	4%	4%	7%	1%	1%	0%	1%	0%
Violations	0%	0%	0%	0%	-	0%	0%	0%	0%
Annual Pass	19%	35%	-	-	-	-	-	-	-

Source: Steer analysis of Client TMS data

Table 6.10: Segmentation for forecast years, TP3 Salaipudhur

Ticket type	CJV FY26	CJV FY27	Mini LCV	Bus FY26	Bus FY27	LCV	2A	3A	MAV
Single	36%	26%	39%	12%	13%	46%	33%	45%	61%
Return	38%	33%	49%	54%	54%	52%	63%	48%	37%
Monthly	0%	0%	0%	15%	17%	0%	0%	0%	-
Local commercial	1%	1%	1%	10%	14%	1%	3%	7%	2%
Local personal	1%	1%	1%	-	-	-	-	-	-
Exemptions	6%	7%	10%	10%	2%	1%	0%	0%	0%
Violations	0%	0%	0%	0%	0%	0%	0%	0%	0%
Annual Pass	18%	33%	-	-	-	-	-	-	-

Source: Steer analysis of Client TMS data

Table 6.11: Segmentation for forecast years, TP4 Nanguneri

Ticket type	CJV FY26	CJV FY27	Mini LCV	Bus FY26	Bus FY27	LCV	2A	3A	MAV
Single	26%	20%	30%	9%	10%	34%	24%	35%	41%
Return	50%	42%	60%	39%	38%	60%	72%	58%	57%
Monthly	-	-	-	9%	5%	-	0%	1%	0%
Local commercial	1%	1%	1%	33%	47%	3%	3%	5%	1%
Local personal	4%	3%	4%	-	-	-	-	-	-
Exemptions	3%	3%	4%	10%	0%	3%	0%	1%	0%
Violations	-	-	-	-	-	-	-	-	-
Annual Pass	16%	31%	-	-	-	-	-	-	-

Source: Steer analysis of Client TMS data

6.18 The Annual pass compensation is separately calculated using the formula prescribed by NHAI in the same circular. Following Table 6.12 presents the Annual pass compensation computed for all the 4 toll plazas.

Table 6.12: Annual pass compensation for CJVs (in Crore)

Toll Plaza	FY26	FY28	FY33	FY38	FY43	FY51
Kapallur	9.8	21.7	38.1	64.0	106.0	228.9
Etthurvatham	5.5	12.6	21.5	36.0	59.2	127.0
Salaipudhur	5.9	13.2	22.4	36.9	61.1	133.1
Nanguneri	5.6	13.2	22.3	37.7	62.3	135.1
Total	**26.8**	**60.7**	**104.3**	**174.5**	**288.6**	**624.1**

Source: Steer Analysis

Toll evolution

6.19 Based on the concession agreement and the gazetted toll notification, we understand that base toll rates increase every year (revision month is April) based on WPI-linked inflation. These are rounded up to the nearest five to estimate the final toll rate charged to users.

6.20 We have used actual toll rates from the FY26 toll notification and FY27 WPI to validate the modelling of future toll evolution. Increase in WPI was calculated based on the Client's WPI forecasts, as shown in the table below. These forecasts provided by the Client expect the Indian WPI to grow at an average of 4.2% between FY25-FY51. The WPI forecasts available from other independent forecasting agencies may vary from this assumption and could be lower or higher than that provided by the client.

Table 6.13: WPI growth forecast assumptions

Financial year	WPI growth (%)
FY26	2.57%
FY27	0.96%
FY28	5.0%
FY29	5.1%
FY30	4.9%
FY31	4.4%
FY32 onwards	4.1%

Source: Client inputs used for WPI FY28 onwards.

Revenue reconciliation

6.21 As part of validating the data provided by the Client, as well as our assumptions around toll calculations, we have reconciled the actual reported revenue on a monthly level for the Asset. To reconcile we have used the FY26YTD segmentation, FY26YTD AADT and compared it with the reported revenue for the year. The exercise was undertaken at an annual level.

6.22 The comparison, as shown in Table 6.14 below, depicts the modelled revenue vs the reported revenue difference, and the difference lies within 1%, this gives us the confidence in the assumptions around segmentation and trip factors for future forecast purposes.

Table 6.14: FY26YTD Revenue reconciliation summary (INR Lakhs)

Asset	Modelled	Actual	Difference (%)
	FY26YTD	FY26YTD	
TP1: Kappalur	19.3	19.5	0.9%
TP2: Etturvattam	12.7	12.8	1.0%
TP3: Salaipudhur	13.2	13.4	1.0%
TP4: Nanguneri	11.2	11.3	0.3%

Source: Steer comparison between modelled and reported revenue, FY26YTD (Apr'25 to Jan'26)

Traffic and Revenue forecasts

6.23 Based on the traffic and revenue-related forecast assumptions discussed above, we have modelled the traffic and revenue forecasts for the forecast period for the Asset. The table below presents the AADT/PCU and revenue forecast growth rates and CAGRs on this Asset. Further, Appendix B (Detailed forecasts) presents the AADT and revenues for the forecast period.

Table 6.15: Traffic forecast (With Impacts) for TP1 Kappalur

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	19,956	22,599	31,186	41,915	55,214	83,296
Mini LCV	2,615	2,874	3,574	4,403	5,349	7,148
Bus	3,144	3,320	3,764	4,246	4,749	5,613
LCV	1,780	1,905	2,250	2,614	3,006	3,702
2A	1,358	1,453	1,718	1,996	2,296	2,827
3A	577	601	666	729	793	899
MAV	1,035	1,137	1,424	1,754	2,131	2,848
OSV	2	3	3	4	5	6
AADT	**30,466**	**33,890**	**44,584**	**57,661**	**73,542**	**1,06,339**
PCUs	**44,005**	**48,328**	**61,436**	**77,137**	**95,854**	**1,33,728**

Source: Steer analysis

Table 6.16: Traffic growth CAGR (%) for TP1 Kappalur

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	6.4%	6.7%	6.1%	5.7%	5.9%
Mini LCV	4.8%	4.5%	4.3%	4.0%	4.1%

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
Bus	2.8%	2.5%	2.4%	2.3%	2.3%
LCV	3.4%	3.4%	3.0%	2.8%	3.0%
2A	3.4%	3.4%	3.0%	2.8%	3.0%
3A	2.1%	2.1%	1.8%	1.7%	1.8%
MAV	4.8%	4.6%	4.3%	4.0%	4.1%
OSV	4.8%	4.5%	4.3%	4.0%	4.1%
AADT	**5.5%**	**5.6%**	**5.3%**	**5.0%**	**5.1%**
PCUs	**4.8%**	**4.9%**	**4.7%**	**4.4%**	**4.5%**

Source: Steer analysis

Table 6.17: Revenue forecast (With Impacts) for TP1 Kappalur (INR Cr) including the Annual Pass Compensation Revenue for CJV

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	54.8	66.3	115.8	193.5	319.3	691.1
Mini LCV	7.1	8.4	13.3	20.3	30.8	59.2
Bus	23.0	30.2	43.2	60.9	85.0	143.9
LCV	8.6	9.9	14.7	21.3	30.4	53.9
2A	13.4	15.4	23.0	33.4	47.9	84.7
3A	6.8	7.7	10.7	14.6	19.8	32.3
MAV	19.6	23.2	36.7	56.3	85.5	163.9
OSV	0.1	0.1	0.1	0.2	0.2	0.5
Total Revenue	**133.5**	**161.2**	**257.5**	**400.5**	**619.0**	**1,229.4**

Source: Steer analysis

Table 6.18: Revenue growth CAGR (%) for TP1 Kappalur

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	9.9%	11.8%	10.8%	10.5%	10.7%
Mini LCV	8.7%	9.5%	8.9%	8.7%	8.8%
Bus	14.6%	7.4%	7.1%	6.9%	7.6%
LCV	7.1%	8.3%	7.6%	7.4%	7.6%
2A	7.3%	8.3%	7.7%	7.5%	7.7%
3A	6.1%	6.9%	6.4%	6.3%	6.4%
MAV	8.7%	9.6%	8.9%	8.7%	8.9%
OSV	8.8%	9.4%	9.0%	8.7%	8.8%
Total	**9.9%**	**9.8%**	**9.2%**	**9.1%**	**9.3%**

Source: Steer analysis

Table 6.19: Traffic forecast (With Impacts) for TP2 Etturvattam

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	8,530	9,660	13,169	17,699	23,315	35,173
Mini LCV	1,688	1,855	2,307	2,843	3,453	4,615
Bus	1,363	1,439	1,631	1,840	2,058	2,433
LCV	972	1,040	1,217	1,414	1,626	2,002
2A	793	849	993	1,154	1,327	1,634
3A	355	370	407	445	484	549
MAV	896	972	1,172	1,403	1,658	2,127
OSV	3	4	4	5	6	8
AADT	**14,601**	**16,189**	**20,901**	**26,803**	**33,928**	**48,541**
PCUs	**22,273**	**24,370**	**30,401**	**37,774**	**46,482**	**63,909**

Source: Steer analysis

Table 6.20: Traffic growth CAGR (%) TP2 Etturvattam

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	6.4%	6.4%	6.1%	5.7%	5.8%
Mini LCV	4.8%	4.5%	4.3%	4.0%	4.1%
Bus	2.8%	2.5%	2.4%	2.3%	2.3%
LCV	3.4%	3.2%	3.0%	2.8%	2.9%
2A	3.4%	3.2%	3.0%	2.8%	2.9%
3A	2.1%	1.9%	1.8%	1.7%	1.8%
MAV	4.1%	3.8%	3.7%	3.4%	3.5%
OSV	4.1%	3.8%	3.7%	3.4%	3.5%
AADT	**5.3%**	**5.2%**	**5.1%**	**4.8%**	**4.9%**
PCUs	**4.6%**	**4.5%**	**4.4%**	**4.2%**	**4.3%**

Source: Steer analysis

Table 6.21: Revenue forecast (with impacts) for TP2 Etturvattam (INR Cr)

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	27.1	33.1	56.8	94.7	156.3	336.2
Mini LCV	5.4	6.4	10.0	15.2	23.2	44.3
Bus	12.3	15.0	21.3	30.0	41.9	71.1
LCV	5.2	6.0	8.7	12.8	18.3	32.3
2A	8.6	9.9	14.6	21.2	30.4	53.6
3A	4.5	5.1	7.0	9.5	12.9	21.0
MAV	16.3	19.0	29.0	43.1	63.6	117.2
OSV	0.1	0.1	0.1	0.2	0.3	0.6

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
Total Revenue	**79.4**	**94.5**	**147.6**	**226.7**	**347.0**	**676.2**

Source: Steer analysis

Table 6.22: Revenue growth CAGR (%) for TP2 Etturvattam

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	10.6%	11.4%	10.7%	10.6%	10.6%
Mini LCV	9.2%	9.4%	8.8%	8.8%	8.8%
Bus	10.1%	7.4%	7.1%	6.9%	7.3%
LCV	7.8%	7.8%	7.8%	7.5%	7.6%
2A	7.6%	8.0%	7.7%	7.5%	7.6%
3A	6.1%	6.7%	6.4%	6.3%	6.4%
MAV	7.9%	8.8%	8.3%	8.1%	8.2%
OSV	8.1%	8.8%	8.3%	8.2%	8.2%
Total	**9.1%**	**9.3%**	**9.0%**	**8.9%**	**8.9%**

Source: Steer analysis

Table 6.23: Traffic forecast (With Impacts) for TP3 Salaipudhur

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	7,943	8,995	12,263	16,482	21,711	32,754
Mini LCV	1,572	1,728	2,149	2,647	3,216	4,298
Bus	1,203	1,270	1,440	1,625	1,817	2,148
LCV	879	940	1,100	1,278	1,470	1,810
2A	733	784	917	1,066	1,225	1,509
3A	329	343	377	413	449	510
MAV	735	797	961	1,150	1,359	1,744
OSV	4	4	5	6	7	9
AADT	**13,398**	**14,862**	**19,212**	**24,666**	**31,255**	**44,780**
PCUs	**20,145**	**22,054**	**27,556**	**34,293**	**42,261**	**58,236**

Source: Steer analysis

Table 6.24: Traffic growth CAGR (%) TP3 Salaipudhur

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	6.4%	6.4%	6.1%	5.7%	5.8%
Mini LCV	4.8%	4.5%	4.3%	4.0%	4.1%
Bus	2.8%	2.5%	2.4%	2.3%	2.3%
LCV	3.4%	3.2%	3.0%	2.8%	2.9%
2A	3.4%	3.2%	3.0%	2.8%	2.9%

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
3A	2.1%	1.9%	1.8%	1.7%	1.8%
MAV	4.1%	3.8%	3.7%	3.4%	3.5%
OSV	4.1%	3.8%	3.7%	3.4%	3.5%
AADT	**5.3%**	**5.3%**	**5.1%**	**4.8%**	**4.9%**
PCUs	**4.6%**	**4.6%**	**4.5%**	**4.3%**	**4.3%**

Source: Steer analysis

Table 6.25: Revenue forecast (with impacts) for TP3 Salaipudhur (INR Cr)

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	30.5	36.5	62.3	103.4	171.3	371.8
Mini LCV	5.9	7.0	10.9	16.6	25.4	48.7
Bus	12.8	15.8	22.5	31.7	44.3	75.2
LCV	5.6	6.6	9.7	13.9	20.2	35.5
2A	9.5	11.1	16.2	23.6	33.9	59.8
3A	4.8	5.4	7.5	10.2	13.9	22.6
MAV	16.3	19.2	29.0	43.4	64.0	117.9
OSV	0.1	0.1	0.2	0.3	0.4	0.7
Total Revenue	**85.7**	**101.6**	**158.3**	**243.1**	**373.2**	**732.2**

Source: Steer analysis

Table 6.26: Revenue growth CAGR (%) for TP3 Salaipudhur

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	9.4%	11.3%	10.7%	10.6%	10.5%
Mini LCV	8.4%	9.3%	8.8%	8.9%	8.8%
Bus	11.0%	7.4%	7.1%	6.9%	7.3%
LCV	8.1%	7.9%	7.6%	7.6%	7.6%
2A	7.6%	8.0%	7.7%	7.5%	7.6%
3A	6.0%	6.7%	6.4%	6.3%	6.4%
MAV	8.4%	8.7%	8.3%	8.1%	8.2%
OSV	8.3%	8.6%	8.4%	8.1%	8.2%
Total	**8.9%**	**9.3%**	**9.0%**	**9.0%**	**9.0%**

Source: Steer analysis

Table 6.27: Traffic forecast (With Impacts) for TP4 Nanguneri

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	10,048	11,480	15,631	21,009	27,675	42,004
Mini LCV	1,724	1,894	2,355	2,902	3,525	4,711

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
Bus	1,294	1,366	1,549	1,747	1,955	2,310
LCV	799	855	1,001	1,162	1,337	1,651
2A	695	747	888	1,031	1,186	1,470
3A	335	349	387	424	461	526
MAV	729	743	927	1,109	1,310	1,690
OSV	1	2	2	2	3	3
AADT	**15,625**	**17,436**	**22,739**	**29,387**	**37,451**	**54,365**
PCU's	**22,427**	**24,579**	**31,119**	**39,043**	**48,479**	**67,872**

Source: Steer analysis

Table 6.28: Traffic growth CAGR (%) for TP4 Nanguneri

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	6.9%	6.4%	6.1%	5.7%	5.9%
Mini LCV	4.8%	4.5%	4.3%	4.0%	4.1%
Bus	2.8%	2.5%	2.4%	2.3%	2.3%
LCV	3.4%	3.2%	3.0%	2.8%	2.9%
2A	3.7%	3.5%	3.0%	2.8%	3.0%
3A	2.2%	2.1%	1.8%	1.7%	1.8%
MAV	1.0%	4.5%	3.7%	3.4%	3.4%
OSV	4.1%	3.8%	3.7%	3.4%	3.5%
AADT	**5.6%**	**5.5%**	**5.3%**	**5.0%**	**5.1%**
PCUs	**4.7%**	**4.8%**	**4.6%**	**4.4%**	**4.5%**

Source: Steer analysis

Table 6.29: Revenue forecast (with impacts) for TP4 Nanguneri (INR Cr)

Vehicle Type	FY26	FY28	FY33	FY38	FY43	FY51
CJV	32.9	40.6	69.3	115.4	191.0	416.1
Mini LCV	5.5	6.6	10.4	15.9	24.2	46.4
Bus	11.3	13.8	19.6	27.6	38.5	65.2
LCV	4.4	5.0	7.4	10.7	15.5	27.4
2A	7.9	9.2	13.7	19.8	28.5	50.5
3A	4.2	4.8	6.7	9.1	12.4	20.2
MAV	13.8	15.2	23.8	35.6	52.4	97.0
OSV	0.0	0.0	0.1	0.1	0.1	0.3
Total Revenue	**80.0**	**95.2**	**150.9**	**234.1**	**362.6**	**723.2**

Source: Steer analysis

Table 6.30: Revenue growth CAGR (%) for TP4 Nanguneri

Vehicle Type	FY26-FY28	FY28-FY33	FY33-FY38	FY38-FY43	FY26-FY51
CJV	11.1%	11.3%	10.7%	10.6%	10.7%
Mini LCV	9.5%	9.3%	8.9%	8.8%	8.9%
Bus	10.5%	7.3%	7.1%	6.9%	7.3%
LCV	7.4%	8.0%	7.7%	7.6%	7.6%
2A	7.7%	8.3%	7.8%	7.5%	7.7%
3A	6.1%	6.9%	6.4%	6.4%	6.5%
MAV	4.8%	9.5%	8.4%	8.1%	8.1%
OSV	8.3%	8.7%	8.3%	8.1%	8.2%
Total Revenue	**9.1%**	**9.6%**	**9.2%**	**9.1%**	**9.2%**

Source: Steer analysis

6.24 As presented in the tables above, traffic CAGRs (PCUs) for the traffic forecast (with impacts) on the Asset over the concession period is ranging between 4-5% and corresponding revenue CAGR is around 9-10% over all the Asset.

6.25 This growth is majorly driven by:

- CJVs, as discussed in the historical section, this Asset has a dominant share of CJVs because the Asset lie on the urban corridor. It is expected to grow strongly with a presence of the well-established road network with stabilised travel patterns and the growth of the Buses and CJVs will be driven by the inter-urban relationships, and the presence of tourism hotspots present in the vicinity of the Asset.
- Goods vehicle, as per the forecasts, is interdependent on the growth of regional economy, which is based on the presence of Cement Industries, wind power farms, growth of the port city of Tuticorin, industrial estates (SIDCO) and the movement of Fast-Moving Consumer Goods (FMCG) and groceries on the Madurai-Kanyakumari corridor.

6.26 The peak in forecast PCUs for TP1 Kappalur in FY33 and TP4 Nanguneri in FY46 is due to the impact of 6 laning LOS improvement.

Target revenues and modification of concession period

6.27 As per the concession agreement, the target revenue for individual toll plazas should be as shown in the table below for the first calculation of target revenue and the second calculation of target revenue in March 2030 and March 2040 respectively. The traffic sampling will be undertaken for a continuous period of 7 days during anytime within 15 days prior to the date on the specified year, previous year and following year. The average thereof will be deemed as 'actual revenue.'

6.28 If the target revenue falls short or exceeds by 20% and 30% for extensions 1 and 2 respectively, the concession period shall be deemed to be modified using the laid-out conditions in the concession agreement. The table below presents the summary of the analysis.

Table 6.31: Target Revenues for Extension 1

Asset	Target Month	Target Revenue	Estimated Revenue			Average Revenue	Variation (%)
		Cr	2029	2030	2031		
TP1	Mar-30	12.2	15.3	12.7	13.27	13.8	13.0%
TP2	Mar-30	9.9	8.9	9.8	10.60	9.8	(1.4%)
TP3	Mar-30	9.8	9.3	10.3	11.17	10.3	4.2%
TP4	Mar-30	12.0	9.0	9.9	10.85	9.9	(17.2%)

Source: Steer analysis

Table 6.32: Target Revenues for Extension 2

Asset	Target Month	Target Revenue	Estimated Revenue			Average Revenue	Variation (%)
		Cr	2039	2040	2041		
TP1	Mar-40	22.8	37.5	41.0	44.5	41.0	79.9%
TP2	Mar-40	22.7	21.1	23.0	25.1	23.1	1.6%
TP3	Mar-40	22.7	22.1	24.3	26.4	24.3	6.8%
TP4	Mar-40	28.2	21.9	24.0	26.0	24.0	(15.0%)

Source: Steer analysis

6.29 We have used the average AADT forecast for target year, previous year and following year as a proxy for 'actual traffic.' We have forecast seasonality of March month to adjust for seasonal trends and arrive at March traffic from AADT traffic, which is then segmented according to the forecast toll segmentation and trip factors and multiplied with respective estimated toll rates to get to a monthly revenue collection.

6.30 As seen from the table above, the target revenue forecast for the TP1 and the estimated target revenue, difference lies above the threshold value of 30% at second target date. As per the concession agreement, for every 1% excess target revenue, the concession period shall be decreased by 1.5%, with a capping at 20%. Therefore, for the excess traffic on the toll plazas, the concession period, originally 30 years, is expected to be decreased by 6 years from FY51, potentially reducing the last date of concession to FY45 for TP1. For TP2-4 there is no change in concession period expected as the difference in estimated and target revenues lie within the threshold range as stipulated by the concession agreement.

Upside and Downside cases

Upside and Downside scenario assumptions

6.31 We have developed our base case scenario considering a balanced view on the risks associated with input assumptions around GDP growth and traffic growth elasticities. There is always a risk that the outturn values of these inputs will vary as compared to the assumptions taken due to exogenous impacts, e.g. GDP growth could be influenced both positively and negatively by the impact of monsoons, export-import balances, political changes etc.

6.32 Similarly, traffic growth elasticities could be influenced by increased efficiencies achieved by technology, large shifts in commodity prices globally, changes in local manufacturing practices. However, at this stage we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

6.33 To account for the possible variations in the growth drivers, we are also presenting an Upside (optimistic) and a Downside (pessimistic) scenario. These scenarios are defined by the following variations from the base assumptions, as described in Table 6.33:

Table 6.33: Summary of Macro-economic Assumptions for upside and downside cases

Input	Upside	Downside
Macro Assumptions		
GDP/GSDP	+1% every year	-1% every year
WPI	+1% every year	-1% every year
Elasticities	+ 10%	- 10%

Source: Steer analysis

6.34 Further, network developments are highly dependent on governmental directions, policies, legal and financial measure which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside (pessimistic) case. However, at this stage, we consider that the base case represents a central case scenario given the risks of variation of input assumptions

Impacts-Upside Case

6.35 The upside case impacts included in forecasts are summarised in below.

Table 6.34: Summary of impacts on the Assets

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact			
			TP1 Kappalur	TP2 Etturvattam	TP3 Salaipudhur	TP4 Nanguneri
6 laning LOS improvement	FY33 - TP1* FY47 - TP4	+25% of base case	CJV: 1.5% LCV: 1.2% 2A: 1.4% 3A: 1.1 % MAV: 0.9%	-	-	CJV: 0.8% LCV: 0.4% 2A: 0.8% 3A: 0.7% MAV: 0.6%
Vizinjam port traffic	FY28*- 20% FY29 – 100%		-	-	-	2A: 2.5% 3A: 1.3% MAV: 2.5%

Source: Steer analysis; * Same as the base case timeline;

Impacts-Downside Case

6.36 The downside case impacts included in forecasts are summarised in below.

Table 6.35: Summary of impacts on the Assets

Development	Year of impact	Change in impact w.r.t base case	Magnitude of impact			
			TP1 Kappalur	TP2 Etturvattam	TP3 Salaipudhur	TP4 Nanguneri
6 laning LOS improvement	FY33- TP1*, FY47 - TP4	-25% of base case	CJV: 0.9% LCV: 0.7% 2A: 0.8% 3A: 0.6 % MAV: 0.5%	-	-	CJV: 0.5% LCV: 0.2% 2A: 0.5% 3A: 0.4 % MAV: 0.4%
Vizinjam port traffic	FY28*- 20% FY29 – 100%		-	-	-	2A: 1.5% 3A: 0.8 % MAV: 1.5%

Source: Steer analysis; * Same as the base case timeline

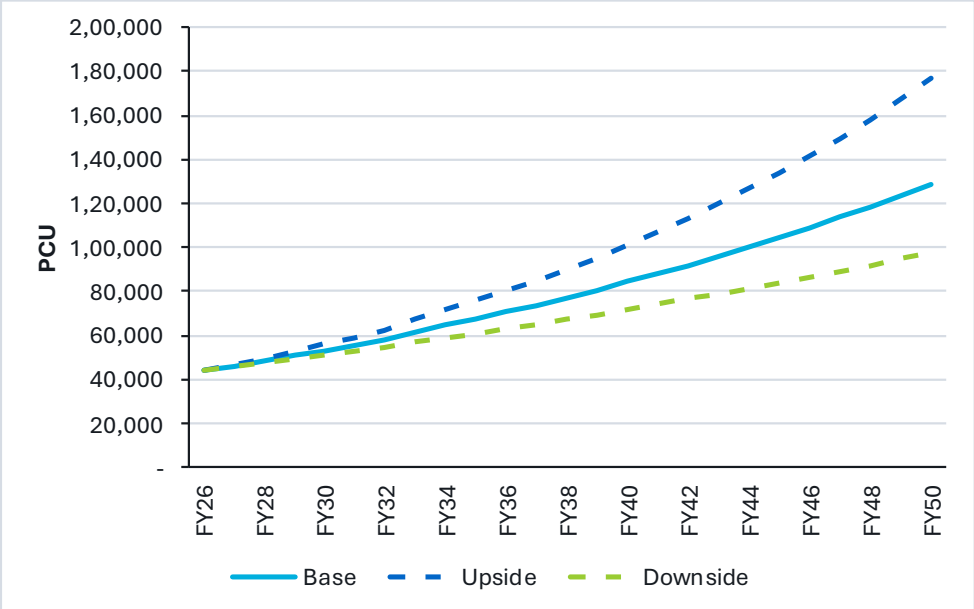
6.37 Based on the above assumptions for upside and downside scenarios, the following table summarizes the upside potential and downside risks associated with the PCU and the revenue for Kappalur, Etthurvatham, Salaipudhur and Nanguneri toll plazas at the end of the concession i.e. FY51.

Table 6.36: Upside potential and Downside PCU scenario – FY51

Toll Plaza	Upside Potential	Downside Risk
Kappalur	39.3%	(25.1%)
Etthurvatham	37.2%	(24.0%)
Salaipudhur	37.5%	(24.1%)
Nanguneri	39.4%	(25.2%)

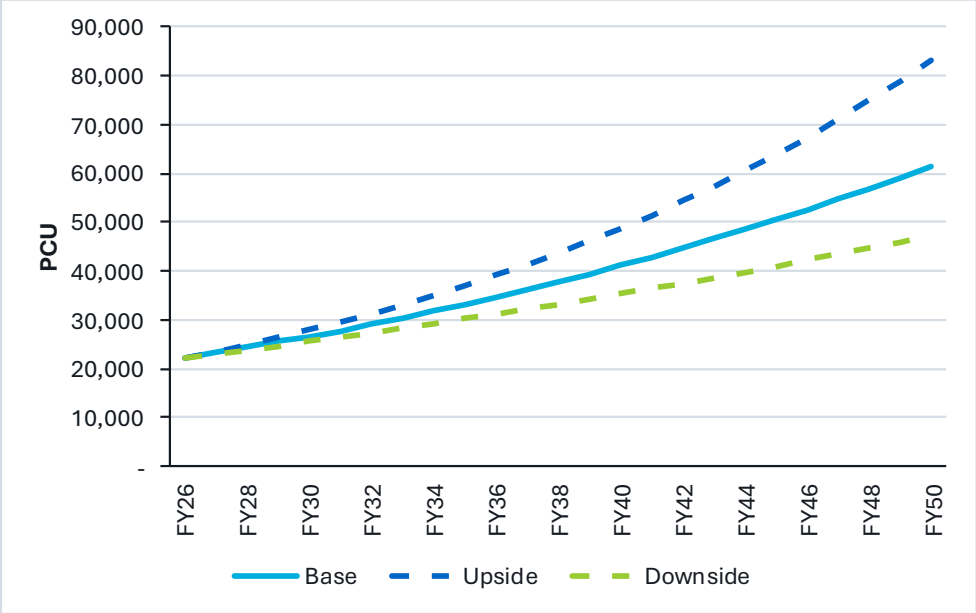
Source: Steer Analysis of client data

Figure 6.2: Long-term PCU forecasts for TP1 including upside and downside scenarios



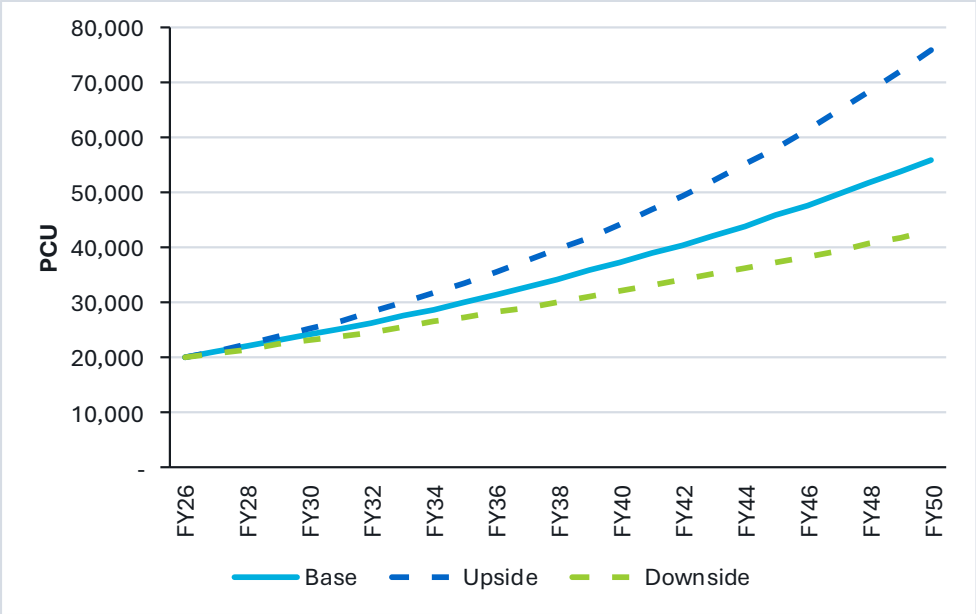
Source: Steer Analysis

Figure 6.3: Long-term PCU forecasts for TP2 including upside and downside scenarios



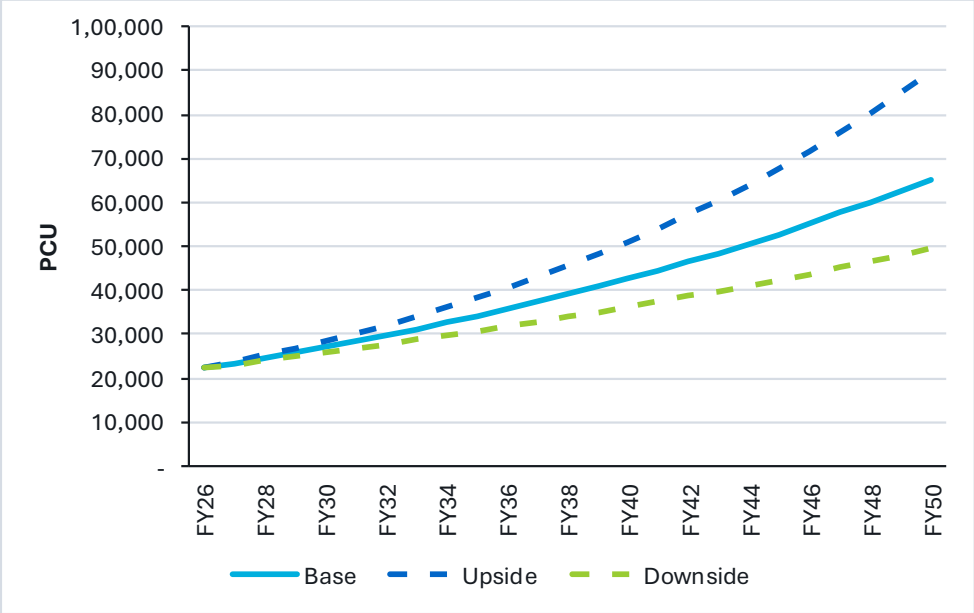
Source: Steer Analysis

Figure 6.4: Long-term PCU forecasts for TP3 including upside and downside scenarios



Source: Steer Analysis

Figure 6.5: Long-term PCU forecasts for TP4 including upside and downside scenarios



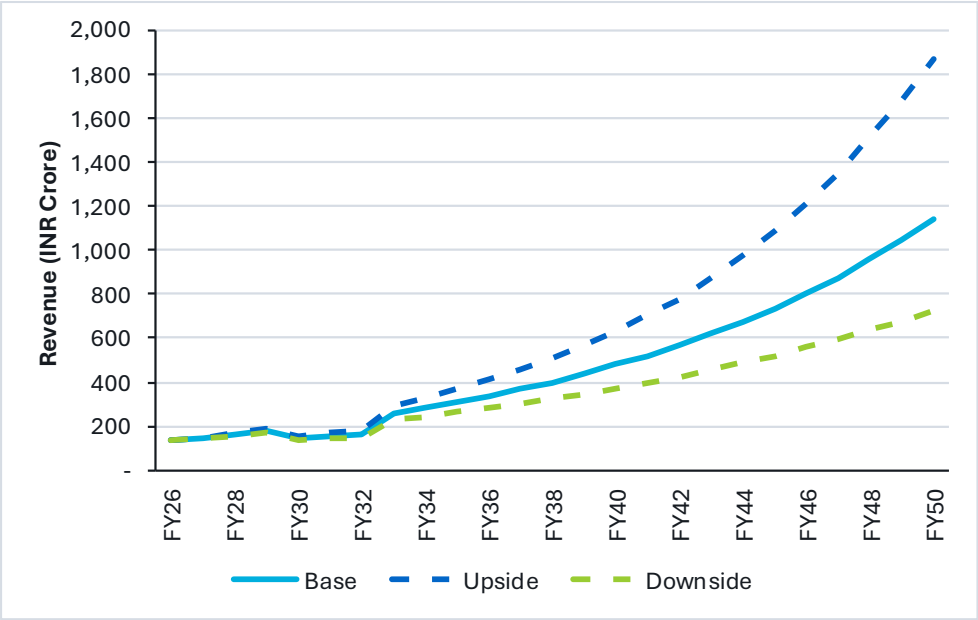
Source: Steer Analysis

Table 6.37: Upside potential and Downside Revenue scenario – FY51

Toll Plaza	Upside Potential	Downside Risk
Kappalur	68.8%	(37.6%)
Etthurvatham	65.8%	(36.7%)
Salaipudhur	66.1%	(36.6%)
Nanguneri	68.7%	(50.4%)

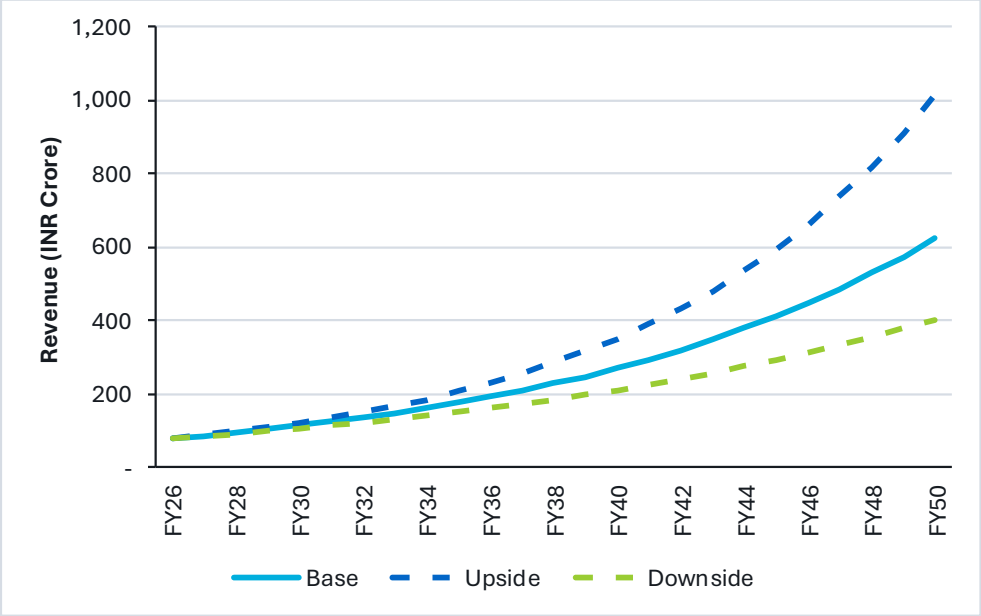
Source: Steer Analysis

Figure: 6.6: Long-term revenue forecasts for TP1 including upside and downside scenarios



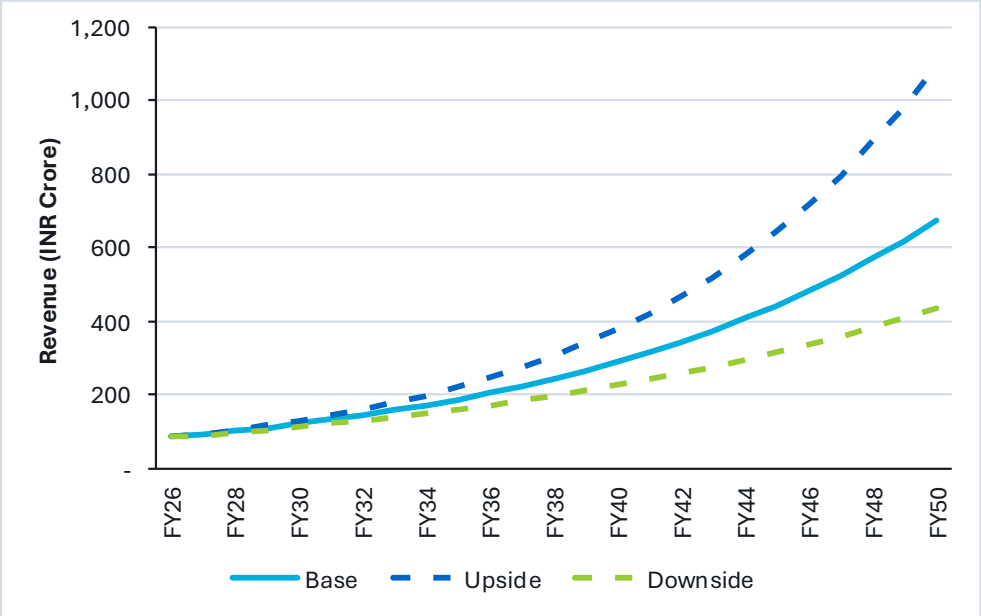
Source: Steer Analysis

Figure: 6.7: Long-term revenue forecasts for TP2 including upside and downside scenarios



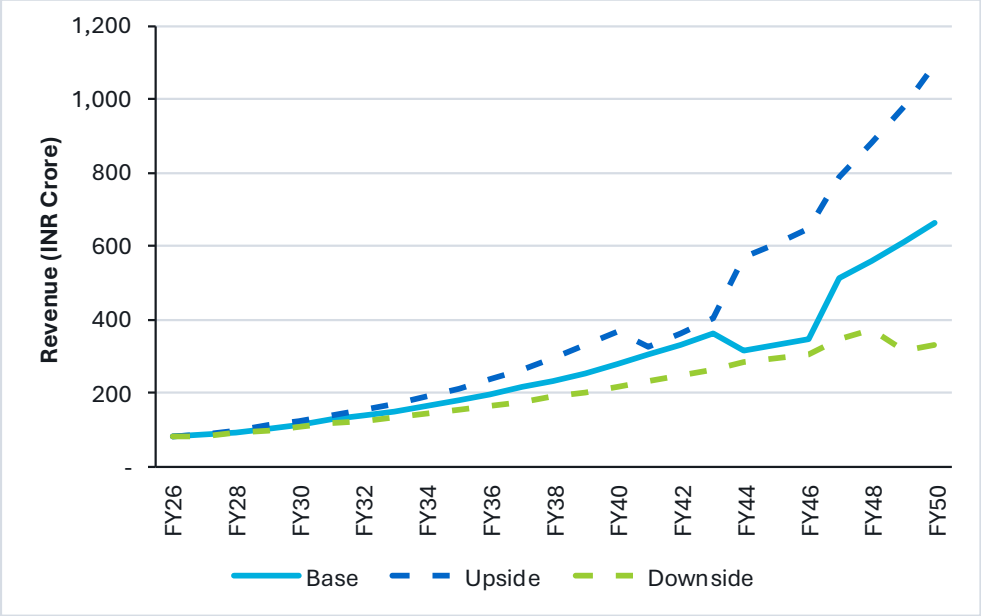
Source: Steer Analysis

Figure 6.8: Long-term revenue forecasts for TP3 including upside and downside scenarios



Source: Steer Analysis

Figure 6.9: Long-term revenue forecasts for TP4 including upside and downside scenarios



Source: Steer Analysis

6.38 Revenue projections exhibit variability in both the upside and downside cases, driven by fluctuations in macro-economic factors such as WPI, GDP/GSDP, elasticities and the network impacts.

Summary outlook

6.39 Passenger traffic on the Asset is largely inter-urban driven by business, tourism and leisure travel between the cities of Madurai, Tirunelveli, Nagercoil, Thiruvananthapuram, Kanyakumari and towns in the southern Tamil Nadu (TN) region.

6.40 Goods traffic serve the regional industries of wind power and cement, apart from consumption-based movements feeding demand from urban areas. While wind farms are concentrated in the Tirunelveli and Kanyakumari regions, two large operational cement plants are located on the Asset between Virudhunagar and Tirunelveli.

6.41 The Chennai-Kanykumari section of the East Coast Industrial Corridor is planned with nodes in Madurai and Tuticorin and expected to directly support growth in the region and traffic on the Asset.

6.42 Located in the urbanised and industrialised state of TN, the four-lane Asset highway is part of a well-established road network with stable travel patterns and potential for steady growth.

6.43 Consequent to the expected steady growth on the Asset, TP1 Kappalur and TP4 Nanguneri closer to the cities of Madurai and Tirunelveli are expected to cross capacity for four-lane roads during the concession period.

6.44 With six-lane upgrades for these sections by FY33 and FY48 respectively, the Asset is expected to offer additional capacity and therefore see an improvement in level of service, leading to a considerable additional travel demand.

6.45 Upgrade of the feeder section between Nagercoil/Kanyakumari and Thiruvananthapuram of the NH 66 highway is expected to again lead to improved levels of service for inter-

urban travel and induce more car trips. Upgrade and tolling of the alternate NH 744 highway may lead to a small negative diversion impact for heavy vehicles currently using the Asset.

6.46 Our findings and estimates in this report are based on multiple factors; our understanding from the site visit, analysis of primary data available both from surveys and the toll management system (both historical and current), macroeconomic assumptions prescribed by Client, feedback from Client meetings and secondary publicly available data. However, we perceive that there can be risks associated with assumptions and the forecasts which are covered in Upside and Downside Forecast section of the report above.

6.47 Overall, we see a positive outlook for the Asset given the well-established road network, which is driven by inter-urban business, leisure and tourism travel in cars and buses, along with the industrial development of cement and electronic items which will drive the growth of goods vehicle on the Asset.

Appendices

B Top 10 OD Pairs

Further to the OD analysis presented in Chapter 3 this appendix presents the top 10 OD pairs at each toll plaza. Please see this data for both CJVs and MAVs and OSVs combined below.

TP1 Kappalur

Table A.1: CJV, Bus and Mini Bus top 10 OD pair shares at TP1 Kappalur

	OD Pair	Share
1.	Madurai-Tirumangalam	9.6%
2.	Madurai-Tirunelveli	7.0%
3.	Madurai-Tenkasi	6.6%
4.	Madurai-Virudunagar	4.0%
5.	Madurai-Sivakasi	4.0%
6.	Madurai-Kanyakumari	3.1%
7.	Madurai-Rajapalayam	2.6%
8.	Madurai-Kappalur	2.4%
9.	Madurai-Manapad	1.9%
10.	Madurai-Nagercoil	1.8%

Source: Steer analysis of OD data

Table A.2: MAV and OSV top 10 OD pair shares at TP1 Kappalur

	OD Pair	Share
1.	Madurai-Tirunelveli	4.4%
2.	Madurai-Sivakasi	2.7%
3.	Madurai-Tirumangalam	2.0%
4.	Madurai-Kanyakumari	2.0%
5.	Madurai-Tenkasi	2.0%
6.	Tirunelveli-Tiruchirappalli	1.9%
7.	Tirunelveli-Chennai	1.9%
8.	Madurai-Thiruvananthapuram	1.7%
9.	Madurai-Manapad	1.4%
10.	Madurai-Rajapalayam	1.3%

Source: Steer analysis of OD data

TP2 Etturvattam

Table A.3: CJV, Bus and Mini Bus top 10 OD pair shares at TP2 Etturvattam

	OD Pair	Share
1.	Madurai-Tirunelveli	19%
2.	Madurai-Kovilpatti	7%
3.	Tirunelveli-Chennai	6%
4.	Madurai-Kanyakumari	6%
5.	Tirunelveli-Coimbatore	5%
6.	Madurai-Sattur	4%
7.	Chennai-Kanyakumari	4%
8.	Virudunagar-Sattur	3%
9.	Tirunelveli-Tiruchirappalli	2%
10.	Virudunagar-Kovilpatti	2%

Source: Steer analysis of OD data

Table A.4: MAV and OSV top 10 OD pair shares at TP2 Etturvattam

	OD Pair	Share
1.	Madurai-Tirunelveli	8%
2.	Dindigul-Tenkasi	5%
3.	Tirunelveli-Chennai	4%
4.	Dindigul-Kanyakumari	4%
5.	Tirunelveli-Dindigul	3%
6.	Tirunelveli-Tiruppur	2%
7.	Kovilpatti-Dindigul	2%
8.	Chennai-Kanyakumari	2%
9.	Madurai-Thiruvananthapuram	2%
10.	Madurai-Kanyakumari	2%

Source: Steer analysis of OD data

TP3 Salaipudhur

Table A.5: CJV, Bus and Mini Bus top 10 OD pair shares at TP3 Salaipudhur

	OD Pair	Share
1.	Madurai-Tirunelveli	0.8%
2.	Kovilpatti-Tirunelveli	0.8%
3.	Kovilpatti-Kayathar	0.7%
4.	Madurai-Nagercoil	0.7%
5.	Tirunelveli-Chennai	0.7%
6.	Madurai-Kanyakumari	0.7%
7.	Chennai-Nagercoil	0.7%
8.	Kovilpatti-Thoothukkudi	0.7%
9.	Chennai-Kanyakumari	0.6%
10.	Tirunelveli-Coimbatore	0.6%

Source: Steer analysis of OD data

Table A.6: MAV and OSV top 10 OD pair shares at TP3 Salaipudhur

	OD Pair	Share
1.	Madurai-Nagercoil	1.0%
2.	Madurai-Tirunelveli	0.9%
3.	Tirunelveli-Chennai	0.9%
4.	Kovilpatti-Tirunelveli	0.9%
5.	Kovilpatti-Nagercoil	0.9%
6.	Madurai-Kanyakumari	0.8%
7.	Sattur-Nagercoil	0.8%
8.	Sattur-Tirunelveli	0.8%
9.	Madurai-Thoothukkudi	0.8%
10.	Kovilpatti-Kayathar	0.7%

Source: Steer analysis of OD data

TP4 Nanguneri

Table A.7: CJV, Bus and Mini Bus top 10 OD pair shares at TP4 Nanguneri

	OD Pair	Share
1.	Tirunelveli-Nagercoil	12.9%
2.	Madurai-Nagercoil	9.0%
3.	Tirunelveli-Kanyakumari	4.2%
4.	Kovilpatti-Nagercoil	2.8%
5.	Chennai-Nagercoil	2.5%
6.	Madurai-Kanyakumari	2.3%
7.	Chennai-Kanyakumari	2.2%
8.	Tirunelveli-Vallioor	1.9%
9.	Tirunelveli-Chettikulam	1.5%
10.	Salem-Nagercoil	1.2%

Source: Steer analysis of OD data

Table A.8: MAV and OSV top 10 OD pair shares at TP4 Nanguneri

	OD Pair	Share
1.	Tirunelveli-Nagercoil	4.8%
2.	Madurai-Nagercoil	3.3%
3.	Tirunelveli-Kanyakumari	3.2%
4.	Madurai-Kanyakumari	2.7%
5.	Chennai-Kanyakumari	2.6%
6.	Virudunagar-Nagercoil	2.1%
7.	Tirunelveli-Kovalam	1.9%
8.	Kovilpatti-Nagercoil	1.8%
9.	Tirunelveli-Vadakankulam	1.7%
10.	Madurai-Kovalam	1.7%

Source: Steer analysis of OD data

C Detailed forecasts

Further to the summary of forecasts presented in Chapter 6, this appendix presents detailed forecasts.

Traffic forecasts

This section presents the detailed traffic forecasts for the forecast period until FY51, year of expected close of the concession. The following two tables show the AADT and traffic growth, respectively.

Table C.1: Traffic Forecast (with impacts) over horizon years at TP1 Kappalur

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY27	21,098	2,742	3,231	1,842	1,405	589	1,085	31,994	45,978
FY28	22,599	2,874	3,320	1,905	1,453	601	1,137	33,890	48,328
FY29	24,121	3,006	3,407	1,968	1,501	612	1,189	35,808	50,699
FY30	25,656	3,140	3,494	2,031	1,549	624	1,242	37,739	53,080
FY31	27,260	3,278	3,581	2,094	1,597	636	1,297	39,745	55,545
FY32	28,953	3,420	3,670	2,159	1,647	648	1,353	41,853	58,122
FY33	31,186	3,574	3,764	2,250	1,718	666	1,424	44,584	61,436
FY34	33,150	3,731	3,859	2,321	1,772	678	1,487	47,002	64,363
FY35	35,204	3,893	3,955	2,393	1,827	691	1,551	49,517	67,396
FY36	37,349	4,059	4,051	2,466	1,883	704	1,617	52,132	70,535
FY37	39,585	4,229	4,148	2,539	1,939	716	1,685	54,846	73,782
FY38	41,915	4,403	4,246	2,614	1,996	729	1,754	57,661	77,137
FY39	44,337	4,582	4,344	2,690	2,054	742	1,825	60,577	80,598
FY40	46,874	4,765	4,443	2,767	2,113	754	1,898	63,619	84,197
FY41	49,530	4,954	4,544	2,845	2,173	767	1,974	66,791	87,936
FY42	52,309	5,149	4,646	2,925	2,234	780	2,051	70,098	91,821
FY43	55,214	5,349	4,749	3,006	2,296	793	2,131	73,542	95,854
FY44	58,248	5,555	4,854	3,089	2,359	806	2,213	77,128	1,00,040
FY45	61,417	5,766	4,959	3,173	2,423	819	2,297	80,860	1,04,382
FY46	64,724	5,983	5,066	3,258	2,488	833	2,384	84,741	1,08,885

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY47	68,171	6,206	5,174	3,345	2,554	846	2,473	88,775	1,13,552
FY48	71,764	6,435	5,283	3,433	2,622	859	2,564	92,966	1,18,386
FY49	75,506	6,670	5,393	3,522	2,690	873	2,657	97,317	1,23,392
FY50	79,400	6,911	5,505	3,613	2,759	886	2,753	1,01,833	1,28,573
FY51	83,296	7,148	5,613	3,702	2,827	899	2,848	1,06,339	1,33,728

Source: Steer analysis

Table C.2: Forecasts (with impacts) for AADT growth rates (%) at TP1 Kappalur

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY27	5.7%	4.9%	2.8%	3.5%	3.5%	2.1%	4.9%	5.0%	4.5%
FY28	7.1%	4.8%	2.7%	3.4%	3.4%	2.1%	4.8%	5.9%	5.1%
FY29	6.7%	4.6%	2.6%	3.3%	3.3%	2.0%	4.6%	5.7%	4.9%
FY30	6.4%	4.5%	2.5%	3.2%	3.2%	1.9%	4.5%	5.4%	4.7%
FY31	6.3%	4.4%	2.5%	3.1%	3.1%	1.9%	4.4%	5.3%	4.6%
FY32	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	4.3%	5.3%	4.6%
FY33	7.7%	4.5%	2.6%	4.2%	4.3%	2.8%	5.2%	6.5%	5.7%
FY34	6.3%	4.4%	2.5%	3.2%	3.2%	1.9%	4.4%	5.4%	4.8%
FY35	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	4.3%	5.4%	4.7%
FY36	6.1%	4.3%	2.4%	3.0%	3.0%	1.8%	4.3%	5.3%	4.7%
FY37	6.0%	4.2%	2.4%	3.0%	3.0%	1.8%	4.2%	5.2%	4.6%
FY38	5.9%	4.1%	2.4%	2.9%	2.9%	1.8%	4.1%	5.1%	4.5%
FY39	5.8%	4.0%	2.3%	2.9%	2.9%	1.7%	4.0%	5.1%	4.5%
FY40	5.7%	4.0%	2.3%	2.9%	2.9%	1.7%	4.0%	5.0%	4.5%
FY41	5.7%	4.0%	2.3%	2.8%	2.8%	1.7%	4.0%	5.0%	4.4%
FY42	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.9%	5.0%	4.4%
FY43	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.9%	4.9%	4.4%
FY44	5.5%	3.8%	2.2%	2.7%	2.7%	1.6%	3.8%	4.9%	4.4%
FY45	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.8%	4.8%	4.3%
FY46	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.8%	4.8%	4.3%
FY47	5.3%	3.7%	2.1%	2.7%	2.7%	1.6%	3.7%	4.8%	4.3%
FY48	5.3%	3.7%	2.1%	2.6%	2.6%	1.6%	3.7%	4.7%	4.3%
FY49	5.2%	3.6%	2.1%	2.6%	2.6%	1.6%	3.6%	4.7%	4.2%
FY50	5.2%	3.6%	2.1%	2.6%	2.6%	1.5%	3.6%	4.6%	4.2%

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY51	4.9%	3.4%	2.0%	2.5%	2.5%	1.5%	3.4%	4.4%	4.0%

Source: Steer analysis

Table C.3: Traffic Forecast (with impacts) over horizon years at TP2 Etturvattam

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY27	9,018	1,770	1,400	1,006	821	362	933	15,316	23,240
FY28	9,660	1,855	1,439	1,040	849	370	972	16,189	24,370
FY29	10,310	1,941	1,477	1,075	877	377	1,010	17,071	25,510
FY30	10,966	2,027	1,514	1,109	905	384	1,049	17,959	26,653
FY31	11,652	2,116	1,552	1,144	933	392	1,088	18,881	27,834
FY32	12,376	2,208	1,591	1,179	962	399	1,129	19,848	29,066
FY33	13,169	2,307	1,631	1,217	993	407	1,172	20,901	30,401
FY34	13,998	2,409	1,673	1,255	1,024	414	1,216	21,995	31,782
FY35	14,866	2,513	1,714	1,294	1,056	422	1,262	23,132	33,209
FY36	15,771	2,621	1,756	1,334	1,088	430	1,308	24,312	34,683
FY37	16,716	2,730	1,798	1,374	1,121	437	1,355	25,536	36,205
FY38	17,699	2,843	1,840	1,414	1,154	445	1,403	26,803	37,774
FY39	18,722	2,958	1,883	1,455	1,187	453	1,451	28,114	39,391
FY40	19,794	3,076	1,926	1,496	1,221	461	1,501	29,481	41,068
FY41	20,915	3,198	1,969	1,539	1,256	468	1,552	30,904	42,808
FY42	22,088	3,324	2,014	1,582	1,291	476	1,604	32,386	44,612
FY43	23,315	3,453	2,058	1,626	1,327	484	1,658	33,928	46,482
FY44	24,597	3,586	2,104	1,671	1,363	492	1,712	35,531	48,419
FY45	25,935	3,723	2,149	1,716	1,400	500	1,768	37,198	50,425
FY46	27,331	3,863	2,196	1,762	1,438	508	1,825	38,930	52,503
FY47	28,787	4,007	2,242	1,809	1,476	517	1,884	40,729	54,652
FY48	30,304	4,155	2,290	1,857	1,515	525	1,943	42,596	56,875
FY49	31,884	4,307	2,337	1,905	1,555	533	2,004	44,532	59,173
FY50	33,528	4,462	2,386	1,954	1,595	541	2,066	46,540	61,548
FY51	35,173	4,615	2,433	2,002	1,634	549	2,127	48,541	63,909

Source: Steer analysis

Table C.4: Forecasts (with impacts) for AADT growth rates (%) at TP2 Etturvattam

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY27	5.7%	4.9%	2.8%	3.5%	3.5%	2.1%	4.2%	4.9%	4.3%
FY28	7.1%	4.8%	2.7%	3.4%	3.4%	2.1%	4.1%	5.7%	4.9%
FY29	6.7%	4.6%	2.6%	3.3%	3.3%	2.0%	4.0%	5.5%	4.7%
FY30	6.4%	4.5%	2.5%	3.2%	3.2%	1.9%	3.8%	5.2%	4.5%
FY31	6.3%	4.4%	2.5%	3.1%	3.1%	1.9%	3.8%	5.1%	4.4%
FY32	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	3.7%	5.1%	4.4%
FY33	6.4%	4.5%	2.6%	3.2%	3.2%	1.9%	3.8%	5.3%	4.6%
FY34	6.3%	4.4%	2.5%	3.2%	3.2%	1.9%	3.8%	5.2%	4.5%
FY35	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	3.7%	5.2%	4.5%
FY36	6.1%	4.3%	2.4%	3.0%	3.0%	1.8%	3.7%	5.1%	4.4%
FY37	6.0%	4.2%	2.4%	3.0%	3.0%	1.8%	3.6%	5.0%	4.4%
FY38	5.9%	4.1%	2.4%	2.9%	2.9%	1.8%	3.5%	5.0%	4.3%
FY39	5.8%	4.0%	2.3%	2.9%	2.9%	1.7%	3.5%	4.9%	4.3%
FY40	5.7%	4.0%	2.3%	2.9%	2.9%	1.7%	3.4%	4.9%	4.3%
FY41	5.7%	4.0%	2.3%	2.8%	2.8%	1.7%	3.4%	4.8%	4.2%
FY42	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.4%	4.8%	4.2%
FY43	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.3%	4.8%	4.2%
FY44	5.5%	3.8%	2.2%	2.7%	2.7%	1.6%	3.3%	4.7%	4.2%
FY45	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.3%	4.7%	4.1%
FY46	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.2%	4.7%	4.1%
FY47	5.3%	3.7%	2.1%	2.7%	2.7%	1.6%	3.2%	4.6%	4.1%
FY48	5.3%	3.7%	2.1%	2.6%	2.6%	1.6%	3.2%	4.6%	4.1%
FY49	5.2%	3.6%	2.1%	2.6%	2.6%	1.6%	3.1%	4.5%	4.0%
FY50	5.2%	3.6%	2.1%	2.6%	2.6%	1.5%	3.1%	4.5%	4.0%
FY51	4.9%	3.4%	2.0%	2.5%	2.5%	1.5%	2.9%	4.3%	3.8%

Source: Steer analysis

Table C.5: Traffic Forecast(with impacts) over horizon years at TP3 Salaipudhur

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY27	8,398	1,649	1,236	909	758	336	765	14,056	21,024
FY28	8,995	1,728	1,270	940	784	343	797	14,862	22,054
FY29	9,601	1,807	1,304	972	810	350	828	15,676	23,093

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY30	10,212	1,888	1,337	1,002	836	357	860	16,496	24,136
FY31	10,850	1,971	1,370	1,034	862	363	892	17,347	25,213
FY32	11,524	2,056	1,404	1,066	889	370	925	18,240	26,338
FY33	12,263	2,149	1,440	1,100	917	377	961	19,212	27,556
FY34	13,035	2,243	1,477	1,135	946	384	997	20,223	28,817
FY35	13,843	2,341	1,513	1,170	975	392	1,034	21,273	30,120
FY36	14,686	2,440	1,550	1,205	1,005	399	1,072	22,364	31,468
FY37	15,566	2,543	1,587	1,242	1,035	406	1,111	23,495	32,859
FY38	16,482	2,647	1,625	1,278	1,066	413	1,150	24,666	34,293
FY39	17,434	2,754	1,662	1,315	1,096	420	1,190	25,878	35,771
FY40	18,432	2,865	1,700	1,353	1,128	427	1,231	27,142	37,306
FY41	19,476	2,978	1,739	1,391	1,160	435	1,273	28,458	38,898
FY42	20,569	3,095	1,778	1,430	1,192	442	1,315	29,828	40,549
FY43	21,711	3,216	1,817	1,470	1,225	449	1,359	31,255	42,261
FY44	22,905	3,339	1,857	1,510	1,259	457	1,404	32,738	44,035
FY45	24,151	3,467	1,898	1,551	1,293	464	1,450	34,281	45,873
FY46	25,451	3,597	1,938	1,593	1,328	472	1,497	35,883	47,776
FY47	26,806	3,731	1,980	1,635	1,364	479	1,545	37,548	49,746
FY48	28,219	3,869	2,021	1,678	1,400	487	1,593	39,276	51,784
FY49	29,690	4,010	2,064	1,722	1,436	495	1,643	41,068	53,892
FY50	31,222	4,155	2,106	1,767	1,473	502	1,694	42,927	56,070
FY51	32,754	4,298	2,148	1,810	1,509	510	1,744	44,780	58,236

Source: Steer analysis

Table C.6: Forecasts (with impacts) for AADT growth rates (%) at TP3 Salaipudhur

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY27	5.7%	4.9%	2.8%	3.5%	3.5%	2.1%	4.2%	4.9%	4.4%
FY28	7.1%	4.8%	2.7%	3.4%	3.4%	2.1%	4.1%	5.7%	4.9%
FY29	6.7%	4.6%	2.6%	3.3%	3.3%	2.0%	4.0%	5.5%	4.7%
FY30	6.4%	4.5%	2.5%	3.2%	3.2%	1.9%	3.8%	5.2%	4.5%
FY31	6.3%	4.4%	2.5%	3.1%	3.1%	1.9%	3.8%	5.2%	4.5%
FY32	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	3.7%	5.1%	4.5%

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY33	6.4%	4.5%	2.6%	3.2%	3.2%	1.9%	3.8%	5.3%	4.6%
FY34	6.3%	4.4%	2.5%	3.2%	3.2%	1.9%	3.8%	5.3%	4.6%
FY35	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	3.7%	5.2%	4.5%
FY36	6.1%	4.3%	2.4%	3.0%	3.0%	1.8%	3.7%	5.1%	4.5%
FY37	6.0%	4.2%	2.4%	3.0%	3.0%	1.8%	3.6%	5.1%	4.4%
FY38	5.9%	4.1%	2.4%	2.9%	2.9%	1.8%	3.5%	5.0%	4.4%
FY39	5.8%	4.0%	2.3%	2.9%	2.9%	1.7%	3.5%	4.9%	4.3%
FY40	5.7%	4.0%	2.3%	2.9%	2.9%	1.7%	3.4%	4.9%	4.3%
FY41	5.7%	4.0%	2.3%	2.8%	2.8%	1.7%	3.4%	4.8%	4.3%
FY42	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.4%	4.8%	4.2%
FY43	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.3%	4.8%	4.2%
FY44	5.5%	3.8%	2.2%	2.7%	2.7%	1.6%	3.3%	4.7%	4.2%
FY45	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.3%	4.7%	4.2%
FY46	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.2%	4.7%	4.1%
FY47	5.3%	3.7%	2.1%	2.7%	2.7%	1.6%	3.2%	4.6%	4.1%
FY48	5.3%	3.7%	2.1%	2.6%	2.6%	1.6%	3.2%	4.6%	4.1%
FY49	5.2%	3.6%	2.1%	2.6%	2.6%	1.6%	3.1%	4.6%	4.1%
FY50	5.2%	3.6%	2.1%	2.6%	2.6%	1.5%	3.1%	4.5%	4.0%
FY51	4.9%	3.4%	2.0%	2.5%	2.5%	1.5%	2.9%	4.3%	3.9%

Source: Steer analysis

Table C.7: Traffic Forecast (with impacts) over horizon years at TP4 Nanguneri

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY27	10,745	1,807	1,330	827	719	342	698	16,470	23,348
FY28	11,480	1,894	1,366	855	747	349	743	17,436	24,579
FY29	12,238	1,981	1,402	884	784	359	799	18,449	25,905
FY30	13,017	2,070	1,438	912	809	366	829	19,442	27,120
FY31	13,831	2,160	1,474	940	834	373	860	20,474	28,378
FY32	14,690	2,254	1,510	969	860	380	892	21,558	29,692
FY33	15,631	2,355	1,549	1,001	888	387	927	22,739	31,119
FY34	16,616	2,459	1,588	1,032	916	394	962	23,969	32,597
FY35	17,645	2,566	1,628	1,064	944	402	997	25,248	34,128

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY36	18,720	2,675	1,667	1,096	973	409	1,034	26,577	35,713
FY37	19,841	2,787	1,707	1,129	1,002	416	1,071	27,956	37,351
FY38	21,009	2,902	1,747	1,162	1,031	424	1,109	29,387	39,043
FY39	22,223	3,020	1,788	1,196	1,061	431	1,147	30,868	40,789
FY40	23,495	3,140	1,829	1,230	1,092	439	1,187	32,413	42,604
FY41	24,826	3,265	1,870	1,265	1,122	446	1,227	34,024	44,489
FY42	26,219	3,393	1,912	1,301	1,154	454	1,268	35,703	46,446
FY43	27,675	3,525	1,955	1,337	1,186	461	1,310	37,451	48,479
FY44	29,196	3,661	1,997	1,373	1,219	469	1,354	39,271	50,588
FY45	30,784	3,800	2,041	1,411	1,252	476	1,398	41,165	52,775
FY46	32,441	3,943	2,085	1,449	1,285	484	1,443	43,134	55,042
FY47	34,377	4,090	2,129	1,492	1,328	495	1,497	45,411	57,665
FY48	36,189	4,241	2,174	1,531	1,363	502	1,544	47,548	60,112
FY49	38,075	4,396	2,220	1,571	1,399	510	1,592	49,767	62,644
FY50	40,039	4,555	2,265	1,612	1,435	518	1,642	52,069	65,264
FY51	42,004	4,711	2,310	1,651	1,470	526	1,690	54,365	67,872

Source: Steer analysis

Table C.8: Traffic Forecasts (with impacts) for AADT growth rates (%) at TP4 Nanguneri

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY27	6.9%	4.9%	2.8%	3.5%	3.5%	2.1%	(4.2%)	5.4%	4.1%
FY28	6.8%	4.8%	2.7%	3.4%	3.8%	2.3%	6.4%	5.9%	5.3%
FY29	6.6%	4.6%	2.6%	3.3%	4.9%	2.8%	7.5%	5.8%	5.4%
FY30	6.4%	4.5%	2.5%	3.2%	3.2%	1.9%	3.8%	5.4%	4.7%
FY31	6.3%	4.4%	2.5%	3.1%	3.1%	1.9%	3.8%	5.3%	4.6%
FY32	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	3.7%	5.3%	4.6%
FY33	6.4%	4.5%	2.6%	3.2%	3.2%	1.9%	3.8%	5.5%	4.8%
FY34	6.3%	4.4%	2.5%	3.2%	3.2%	1.9%	3.8%	5.4%	4.8%
FY35	6.2%	4.3%	2.5%	3.1%	3.1%	1.9%	3.7%	5.3%	4.7%
FY36	6.1%	4.3%	2.4%	3.0%	3.0%	1.8%	3.7%	5.3%	4.6%
FY37	6.0%	4.2%	2.4%	3.0%	3.0%	1.8%	3.6%	5.2%	4.6%
FY38	5.9%	4.1%	2.4%	2.9%	2.9%	1.8%	3.5%	5.1%	4.5%

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	AADT	PCUs
FY39	5.8%	4.0%	2.3%	2.9%	2.9%	1.7%	3.5%	5.0%	4.5%
FY40	5.7%	4.0%	2.3%	2.9%	2.9%	1.7%	3.4%	5.0%	4.4%
FY41	5.7%	4.0%	2.3%	2.8%	2.8%	1.7%	3.4%	5.0%	4.4%
FY42	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.4%	4.9%	4.4%
FY43	5.6%	3.9%	2.2%	2.8%	2.8%	1.7%	3.3%	4.9%	4.4%
FY44	5.5%	3.8%	2.2%	2.7%	2.7%	1.6%	3.3%	4.9%	4.3%
FY45	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.3%	4.8%	4.3%
FY46	5.4%	3.8%	2.2%	2.7%	2.7%	1.6%	3.2%	4.8%	4.3%
FY47	6.0%	3.7%	2.1%	3.0%	3.3%	2.2%	3.7%	5.3%	4.8%
FY48	5.3%	3.7%	2.1%	2.6%	2.6%	1.6%	3.2%	4.7%	4.2%
FY49	5.2%	3.6%	2.1%	2.6%	2.6%	1.6%	3.1%	4.7%	4.2%
FY50	5.2%	3.6%	2.1%	2.6%	2.6%	1.5%	3.1%	4.6%	4.2%
FY51	4.9%	3.4%	2.0%	2.5%	2.5%	1.5%	2.9%	4.4%	4.0%

Source: Steer analysis

Revenue Forecasts

Table C.9: Revenue Forecasts (with impacts) for horizon years (INR Crores) including annual pass compensation at TP1 Kappalur

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	OSV	Total
FY27	58.6	7.6	27.9	9.1	14.2	7.1	21.1	0.1	145.8
FY28	66.3	8.4	30.2	9.9	15.4	7.7	23.2	0.1	161.2
FY29	75.3	9.3	32.6	10.6	16.7	8.2	25.4	0.1	178.2
FY30	63.6	7.7	26.5	8.7	13.7	6.6	21.0	0.1	147.8
FY31	67.6	8.1	27.2	8.9	14.1	6.7	21.9	0.1	154.6
FY32	72.0	8.5	27.9	9.2	14.6	6.9	23.0	0.1	162.0
FY33	115.8	13.3	43.2	14.7	23.0	10.7	36.7	0.1	257.5
FY34	129.6	14.5	46.1	15.8	24.7	11.4	39.9	0.1	282.1
FY35	142.8	15.7	49.4	17.0	26.7	12.1	43.5	0.1	307.3
FY36	158.7	17.2	53.2	18.3	28.9	13.0	47.6	0.1	337.1
FY37	176.9	18.8	56.8	19.8	31.0	13.7	51.8	0.1	368.9
FY38	193.5	20.3	60.9	21.3	33.4	14.6	56.3	0.2	400.5
FY39	214.8	22.1	65.2	22.9	35.9	15.6	61.1	0.2	437.7
FY40	240.1	24.3	69.5	24.6	38.6	16.6	66.7	0.2	480.5
FY41	262.0	26.2	74.1	26.4	41.5	17.5	72.5	0.2	520.3
FY42	288.7	28.3	79.7	28.3	44.6	18.7	78.5	0.2	567.0

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	OSV	Total
FY43	319.3	30.8	85.0	30.4	47.9	19.8	85.5	0.2	619.0
FY44	353.1	33.6	91.0	32.9	51.6	21.2	92.9	0.3	676.5
FY45	389.4	36.5	97.0	35.2	55.3	22.4	100.8	0.3	736.9
FY46	432.7	39.8	103.8	38.0	59.4	23.8	109.2	0.3	807.1
FY47	473.7	42.9	111.0	40.5	63.9	25.3	118.7	0.3	876.2
FY48	521.4	46.6	118.7	43.6	68.7	27.0	129.1	0.4	955.5
FY49	575.5	50.7	126.4	46.9	73.5	28.6	139.4	0.4	1,041.4
FY50	635.1	55.0	135.2	50.3	79.0	30.4	151.4	0.4	1,136.9
FY51	691.1	59.2	143.9	53.9	84.7	32.3	163.9	0.5	1,229.4

Source: Steer analysis

Table C.10: Revenue Forecasts (with impacts) for horizon years (INR Crores) including annual pass compensation at TP2 Etturvattam

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	OSV	Total
FY27	29.4	5.8	13.9	5.5	9.1	4.7	17.4	0.1	85.8
FY28	33.1	6.4	15.0	6.0	9.9	5.1	19.0	0.1	94.5
FY29	37.0	7.0	16.1	6.4	10.8	5.4	20.7	0.1	103.4
FY30	41.1	7.6	17.3	7.0	11.6	5.7	22.7	0.1	113.2
FY31	45.2	8.2	18.6	7.5	12.6	6.2	24.6	0.1	123.0
FY32	50.2	9.0	20.0	8.1	13.6	6.5	26.7	0.1	134.3
FY33	56.8	10.0	21.3	8.7	14.6	7.0	29.0	0.1	147.6
FY34	62.7	10.8	22.9	9.4	15.7	7.4	31.3	0.1	160.4
FY35	69.0	11.7	24.5	10.2	16.9	7.9	34.0	0.2	174.4
FY36	77.7	12.9	26.3	11.0	18.3	8.4	36.9	0.2	191.7
FY37	84.9	13.9	28.0	11.8	19.6	8.9	39.8	0.2	207.2
FY38	94.7	15.2	30.0	12.8	21.2	9.5	43.1	0.2	226.7
FY39	103.7	16.5	32.1	13.6	22.7	10.1	46.7	0.2	245.7
FY40	115.3	18.0	34.5	14.7	24.5	10.8	50.6	0.2	268.7
FY41	127.8	19.6	36.7	15.9	26.3	11.4	54.5	0.3	292.4
FY42	141.5	21.4	39.2	17.0	28.2	12.1	58.9	0.3	318.7
FY43	156.3	23.2	41.9	18.3	30.4	12.9	63.6	0.3	347.0
FY44	172.8	25.3	45.0	19.7	32.7	13.8	69.0	0.3	378.4
FY45	189.4	27.3	47.9	21.1	35.0	14.6	74.4	0.3	410.1
FY46	207.8	29.5	51.2	22.6	37.6	15.5	80.2	0.4	444.7
FY47	228.3	31.9	54.7	24.3	40.4	16.5	86.6	0.4	483.2

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	OSV	Total
FY48	254.1	35.0	58.6	26.2	43.5	17.6	93.7	0.4	529.2
FY49	277.1	37.6	62.4	28.0	46.5	18.6	101.0	0.5	571.6
FY50	305.9	40.9	66.7	30.2	50.1	19.8	108.8	0.5	622.8
FY51	336.2	44.3	71.1	32.3	53.6	21.0	117.2	0.6	676.2

Source: Steer analysis

Table C.11: Revenue Forecasts(with impacts) for horizon years (INR Crores)at TP3 Salaipudhur

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	OSV	Total
FY27	32.0	6.3	14.6	6.1	10.2	5.0	17.5	0.1	91.8
FY28	36.5	7.0	15.8	6.6	11.1	5.4	19.2	0.1	101.6
FY29	40.7	7.7	17.0	7.1	12.0	5.8	20.8	0.1	111.1
FY30	45.9	8.5	18.3	7.7	13.0	6.2	22.7	0.1	122.4
FY31	50.5	9.2	19.6	8.3	14.0	6.6	24.7	0.2	133.1
FY32	55.7	9.9	21.0	9.0	15.1	7.0	26.8	0.2	144.8
FY33	62.3	10.9	22.5	9.7	16.2	7.5	29.0	0.2	158.3
FY34	68.7	11.8	24.2	10.4	17.5	8.0	31.4	0.2	172.2
FY35	76.5	12.9	25.8	11.3	18.9	8.5	34.1	0.2	188.2
FY36	85.7	14.2	27.8	12.1	20.4	9.0	37.1	0.2	206.5
FY37	94.7	15.4	29.6	13.0	21.9	9.6	40.1	0.2	224.5
FY38	103.4	16.6	31.7	13.9	23.6	10.2	43.4	0.3	243.1
FY39	114.4	18.1	33.9	15.0	25.4	10.9	46.8	0.3	264.8
FY40	128.5	19.9	36.3	16.2	27.3	11.6	50.8	0.3	291.0
FY41	141.7	21.6	38.7	17.3	29.3	12.3	54.9	0.3	316.2
FY42	155.6	23.4	41.5	18.7	31.5	13.1	59.3	0.4	343.4
FY43	171.3	25.4	44.3	20.2	33.9	13.9	64.0	0.4	373.2
FY44	190.1	27.6	47.5	21.7	36.5	14.8	69.4	0.4	408.2
FY45	207.7	29.8	50.7	23.2	39.1	15.7	74.8	0.5	441.4
FY46	229.6	32.4	54.1	24.9	42.0	16.7	80.6	0.5	480.8
FY47	254.0	35.3	57.8	26.8	45.0	17.7	87.0	0.5	524.2
FY48	280.0	38.3	61.9	28.9	48.5	18.9	94.2	0.6	571.3
FY49	307.2	41.4	66.0	30.9	52.0	20.0	101.4	0.6	619.7
FY50	340.3	45.2	70.4	33.1	55.7	21.3	109.5	0.7	676.1
FY51	371.8	48.7	75.2	35.5	59.8	22.6	117.9	0.7	732.2

Source: Steer analysis

Table C.12: Revenue Forecasts(with impacts) for horizon years (INR Crores)at TP4 Nanguneri

Year	CJV	Mini LCV	Buses	LCV	2A	3A	MAV	OSV	Total
FY27	35.8	6.0	12.7	4.6	8.4	4.5	13.6	0.0	85.6
FY28	40.6	6.6	13.8	5.0	9.2	4.8	15.2	0.0	95.2
FY29	45.1	7.3	14.8	5.5	10.1	5.2	17.1	0.0	104.9
FY30	50.6	7.9	15.9	5.9	10.9	5.5	18.6	0.0	115.4
FY31	56.4	8.8	17.0	6.4	11.8	5.9	20.3	0.1	126.5
FY32	62.4	9.6	18.4	6.9	12.7	6.3	22.0	0.1	138.2
FY33	69.3	10.4	19.6	7.4	13.7	6.7	23.8	0.1	150.9
FY34	76.9	11.4	21.0	8.0	14.7	7.1	25.8	0.1	164.9
FY35	85.2	12.3	22.5	8.6	15.9	7.6	28.0	0.1	180.0
FY36	95.0	13.5	24.1	9.3	17.2	8.0	30.4	0.1	197.6
FY37	105.1	14.6	25.7	10.0	18.4	8.5	32.8	0.1	215.3
FY38	115.4	15.9	27.6	10.7	19.8	9.1	35.6	0.1	234.1
FY39	128.1	17.3	29.5	11.6	21.3	9.7	38.4	0.1	256.0
FY40	143.2	19.0	31.6	12.5	23.0	10.3	41.7	0.1	281.4
FY41	156.8	20.4	33.6	13.4	24.6	10.9	44.9	0.1	304.9
FY42	172.8	22.2	36.0	14.4	26.4	11.6	48.6	0.1	332.2
FY43	191.0	24.2	38.5	15.5	28.5	12.4	52.4	0.1	362.6
FY44	175.3	19.6	31.0	12.5	23.0	9.9	42.7	0.1	314.2
FY45	186.8	20.3	31.6	12.8	23.6	10.0	44.0	0.1	329.3
FY46	200.9	21.1	32.3	13.1	24.2	10.2	45.4	0.1	347.3
FY47	282.7	33.4	50.1	20.6	38.1	15.9	71.7	0.2	512.6
FY48	312.6	36.4	53.8	22.2	41.0	16.9	77.6	0.2	560.7
FY49	344.4	39.6	57.3	23.7	43.9	17.9	83.5	0.2	610.6
FY50	379.4	42.8	61.2	25.6	47.1	19.0	90.1	0.2	665.5
FY51	416.1	46.4	65.2	27.4	50.5	20.2	97.0	0.3	723.2

Source: Steer analysis

Control Information

Prepared by

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002,
India
+91 124 441 8650
www.steergroup.com

Prepared for

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1,
Sector 16, Noida- 201301 (UP, India)

Steer project/proposal number

23741311

Client contract/project number

Transit 11

Author/originator

Vineet Karlapalem

Reviewer/approver

Vaibhav Gupta

Other contributors

Shipra Bhatia, Ayushman Rai, Harshit Garg, Samridha Kalaiyan

Distribution

Client: Cube Highways Steer:

Version control/issue number

Date

April 2026

steergroup.com

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence for NAM Expressway Limited

Cube Highways Fund Advisors Private Limited
Our ref: 23741311
Client ref: Transit 11

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence for NAM Expressway Limited

Prepared by:	Prepared for:
Steer Suite No. S3, Vatika Business Centre, Vatika Triangle, MG Road, Gurgaon, Haryana, 122002, India	Cube Highways Fund Advisors Private Limited 1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1, Sector 16, Noida-201301 (UP, India)
+91 124 441 8650	Client ref: Transit 11
www.steergroup.com	Our ref: 23741311

Steer has prepared this material for Cube Highways Fund Advisors Private Limited. This material may only be used within the context and scope for which Steer has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer shall be deemed to confirm their agreement to indemnify Steer for all loss or damage resulting therefrom. Steer has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

steer

Contents

Disclaimer		**i**
Glossary Items		**iii**
1	**Introduction**	**1**
	The assignment	1
	Our approach	2
	Contents of this Report	3
2	**The Asset**	**5**
	Introduction	5
	Strategic network	5
	Concession and tolling details	7
	Economic activities	8
	Alternate routes	10
3	**Traffic description**	**1**
	Introduction	1
	Historical Trends	2
	Data collection and validation	12
	Key findings of the TVC data analysis	13
	Key findings of origin-destination analysis	16
	Conclusions	27
4	**Socio-economic context**	**29**
	Introduction	29
	Population growth	29
	Economic Indicators	30
	Economic growth	33
	Forecasts for growth drivers	37
5	**FY26 base year AADT and traffic growth analysis**	**39**
	Introduction	39
	FY26 Base year AADT estimates	39
	Estimation of background elasticities	42
	Forecasts for background elasticities	47
6	**Forecast: Network overlays and forecasts**	**49**
	Introduction	49
	Analysis of network/developmental impacts	49
	Revenue forecasting assumptions	57
	Traffic and Revenue forecasts	61
	Upside and Downside cases	65
	Summary outlook	70

Figures

Figure 2.1: Asset location in India context 5
Figure 2.2: Asset context 6
Figure 2.3: Typical cross section of the Asset and toll plaza (Clockwise) 8
Figure 3.1: Ticket-segmentation for CJV at TP1 8
Figure 3.2: Ticket-segmentation for MAV at TP1 9
Figure 3.3: Ticket-segmentation for CJV at TP2 9
Figure 3.4: Ticket-segmentation for MAV at TP2 10
Figure 3.5: Ticket-segmentation for CJV at TP3 10
Figure 3.6: Ticket-segmentation for MAV at TP3 11
Figure 3.7: WADT at TP1, TP2 and TP3 13
Figure 3.8: Comparison between TVC and TMS daily traffic data on TP1 (2026) 14
Figure 3.9: Comparison between TVC and TMS daily traffic data on TP2 (2025) 14
Figure 3.10: Comparison between TVC and TMS daily traffic on TP3 (2026) 15
Figure 3.11 Comparison between vehicle shares from TVC and TMS WADTs 15
Figure 3.12: Zonal influence at TP1 18
Figure 3.13: Zonal influence at TP2 (2025) 18
Figure 3.14: Zonal influence at TP3 19
Figure 3.15 Internal-external distribution at TP1 19
Figure 3.16: Internal-external distribution at TP2 (2025) 20
Figure 3.17: Internal-external distribution at TP3 21
Figure 3.18: Commodity distribution at TP1 (Total) 23
Figure 3.19: Commodity distribution at TP2 (Total) 24
Figure 3.20: Commodity distribution at TP3 (Total) 25
Figure 3.21: Trip length distribution TP1 26
Figure 3.22: Trip length distribution TP2 (2025) 26
Figure 3.23: Trip length distribution TP3 27
Figure 4.1: Annual growth – Index of Industrial Production 31
Figure 4.2: Total number of registered motor vehicles in India (per 1000 population) 32
Figure 4.3: Per Capita Income 32
Figure 4.4: YoY growth in expenditure components of GDP 33
Figure 4.5: Month on Month IIP performance 34
Figure 4.6: Industrial components of GVA 35
Figure 4.7: Evolution of Andhra Pradesh’s state GDP and national GDP 35
Figure 4.8: Sectoral contribution to Andhra Pradesh GSDP (FY24) 36
Figure 4.9: Sectoral contribution to Telangana GSDP (FY24) 37
Figure 4.10: GDP-GSDP forecast 38
Figure 5.1: Relationship between CJV traffic and AP-Telangana GSDP 43
Figure 5.2: Relationship between LCV and AP-Telangana GSDP 44
Figure 5.3: Relationship between Bus traffic and AP-Telangana GSDP 45

Figure 5.4: Relationship between 2A and India GDP 46
Figure 5.5: Relationship between 3A combined traffic and India's GDP 46
Figure 5.6: Relationship between MAV combined traffic and India's GDP 47
Figure 6.1: Alternate routes and Asset route shown against the regional network context 50
Figure 6.2: Impact due to Nagpur Vijayawada Expressway 52
Figure 6.3: Impact due to RRR 54
Figure 6.4: Impact of Amaravati Induced Demand 56
Figure 6.5: Long-term PCU forecasts for Madugulappalli including upside and downside scenarios 68
Figure 6.6: Long-term Revenue forecasts for Madugulappalli including upside and downside scenarios 68
Figure 6.7: Long-term PCU forecasts for Tummalacheruvu including upside and downside scenarios 69
Figure 6.8: Long-term Revenue forecasts for Tummalacheruvu including upside and downside scenarios 69
Figure 6.9: Long-term PCU forecasts for Elchuru including upside and downside scenarios 70
Figure 6.10: Long-term Revenue forecasts for Elchuru including upside and downside scenarios 70

Tables

Table 1.1: Scope of work and sources of data 1
Table 2.1: Summary of concession 7
Table 2.2: Single toll rates on NAMEPL (INR) – FY26 7
Table 3.1: PCU Factors 1
Table 3.2: Historical evolution in AADT by vehicle class at TP1 Madgulapally 2
Table 3.3: Historical evolution in Tollable AADT by vehicle class at TP1 Madgulapally 3
Table 3.4: Historical evolution in AADT by vehicle class at TP2 Tummalacheru 3
Table 3.5: Historical evolution in Tollable AADT by vehicle class at TP2 Tummalacheruvu 4
Table 3.6: Historical evolution in AADT by vehicle class at TP3 Elchuru 5
Table 3.7: Historical evolution in Tollable AADT by vehicle class at TP3 Elchuru 5
Table 3.8: Historical revenue evolution (in INR Crores) and AADC (in INR Lakhs) for the Asset 6
Table 3.9: Typical ticket types sold at plazas 7
Table 3.10: Ticket-segmentation for LCV, Bus, 2A, 3A and OSV Categories at TP1 11
Table 3.11: Ticket-segmentation for LCV, Bus, 2A, 3A and OSV Categories at TP2 12
Table 3.12: Ticket-segmentation for LCV, Bus, 2A, 3A and OSV Categories at TP3 12
Table 3.13: Data collection schedule 13
Table 3.14: Difference in vehicle counts when combined 16
Table 3.15: Sample rates for OD data 17
Table 3.16: Zone aggregations for zonal influence analysis 17
Table 3.17: Aggregate commodity categories 22
Table 4.1: CAGR of population in India 30
Table 4.2: Population Growth in India (2012 – 2024) 30
Table 5.1: SCF for TP1 Madgulapally 40

Table 5.2: SCF for TP2 Tummalacheruvu	40
Table 5.3: SCF for TP3 Elchuru	40
Table 5.4: Adopted AADT, TP1 Madgulapally	41
Table 5.5: Adopted AADT, TP2 Tummalacheruvu	41
Table 5.6: Adopted AADT, TP3 Elchuru	41
Table 5.7: Identified growth drivers to model traffic growth	43
Table 5.8: Derived elasticities from regression analysis and assumed forecast elasticities for background growth	48
Table 6.1: Impact due to greenfield Surat-Chennai expressway (Solapur/West)	51
Table 6.2: Impact due to Nagpur Vijayawada Expressway	52
Table 6.3: Impact due to RRR	55
Table 6.4: Impact due to Amaravati Induced Demand	57
Table 6.5: WPI growth forecast assumptions	58
Table 6.6: Toll segmentation for the forecast years for TP-1	58
Table 6.7: Toll segmentation for the forecast years for TP-2	58
Table 6.8: Toll segmentation for the forecast years for TP-3	59
Table 6.9: Trip factors for the forecast years at TP 1	59
Table 6.10: Trip factors for the forecast years at TP 2	59
Table 6.11: Trip factors for the forecast years at TP 3	60
Table 6.12: FY26 Revenue reconciliation summary (INR Lakhs)	60
Table 6.13: Traffic forecasts (with impacts) AADT forecast for TP-1 Madgulapally	61
Table 6.14: Traffic forecasts (with impacts) traffic CAGR (%) for TP-1 Madgulapally	61
Table 6.15: Revenue forecast (INR crores) for TP-1 Madgulapally	61
Table 6.16: Revenue forecast CAGR (%) for TP-1 Madgulapally	62
Table 6.17: Traffic forecasts (with impacts) AADT forecast for TP-2 Tummalacheruvu	62
Table 6.18: Traffic forecasts (with impacts) traffic CAGR (%) for TP-2 Tummalacheruvu	62
Table 6.19: Revenue forecast (INR crores) for TP-2 Tummalacheruvu	63
Table 6.20: Revenue forecast CAGR (%) for TP-2 Tummalacheruvu	63
Table 6.21: Traffic forecasts (with impacts) AADT forecast for TP-3 Elchuru	63
Table 6.22: Traffic forecasts (with impacts) traffic CAGR (%) for TP-3 Elchuru	64
Table 6.23: Revenue forecast (INR crores) for TP-3 Elchuru	64
Table 6.24: Revenue forecast CAGR (%) for TP-3 Elchuru	64
Table 6.25: Summary of Macro-economic Assumptions for upside and downside cases	65
Table 6.26: Summary of impacts on the Assets	66
Table 6.27: Summary of impacts on the Assets	66
Table 6.28: Percentage Difference Upside and Downside Case Forecasts vs. Base Case Forecasts - FY40	67

Appendices

A Detailed Forecasts

B	**Top OD Pairs**
C	**Data Collection Exercise**

Disclaimer

This report has been produced for the sole benefit of Cube Highways Pvt. Ltd ("the Client"). The report may only be relied upon by Approved Addressees in accordance with the terms of our engagement letter. This Report (the "Report") is confidential and disclosed only for information purposes, and it may not be relied upon by any party other than the Client or a Party to a Reliance Letter, and Steer: a) makes no warranty, expressed or implied, with respect to the use of any information or methods disclosed in this Report; and b) assumes no liability with respect to the use of any information or methods disclosed in this document. Any such party by its acceptance or use of this Report releases Steer from any liability for direct, indirect, consequential, or special loss or damage whether arising in contract, warranty, express or implied, tort or otherwise.

The Report is based on standard professional efforts, and information available to us at the time the review took place and is subject to time and budget constraints of the Report's scope of work. This Report, information and statements contained herein, are all based on third party data provided to us, or sourced by us, and Steer has not sought to establish the reliability of the data, except as specifically stated in the Report. Steer bears no responsibility for the results of any actions taken on the basis of third-party data. Certain forward-looking statements in the Report are estimates based on interpretations or assessments of information available at the time of writing. The Report is thus to be viewed as an assessment that is time-relevant, specifically referring to conditions at the time of the review. Steer undertakes no obligation to update the Report for any reason. While the estimates contained in the Report are not precise forecasts, they do represent, in our view a reasonable expectation of the future, based on information we have been provided with or sourced. However, the estimates necessarily rely on numerous assumptions and judgements, and circumstances may occur over the timeframe of the project that go counter to these assumptions and judgements and that affect the project's realized revenues. Actual events may differ from those assumed, and events are subject to change. Therefore, Steer makes or provides no warranty, whether implied or otherwise, as to the accuracy of forward-looking information presented. Further, it is important to note that forecasts presented represent long term growth profiles; the results for individual time periods may vary from forecasted values.

Traffic Consultant developed the relationships in the models used to produce the forecasts for the projects based on data available through February 2026. This report does not consider variations in traffic performance due to changing macro and force majeure events such (but not limited to) as global wars, economic uncertainty (high inflation, global recession), and changes in the regulatory environment. The situation remains dynamic and is subject to significant change in the short and medium term. In this challenging context, Traffic Consultant has produced base forecasts with a view on a possible scenario for the traffic forecasts. However, it is important to note that this is only one view, and there continues to remain uncertainty as to the short-term, intermediate or prolonged effects of and responses to such macro-economic/force majeure events. As a result, no assurance can be provided by Traffic Consultant that the scenarios and assumptions Traffic Consultant has identified will prove to be accurate. Given the uncertainty inherent in this scenario, Traffic Consultant advises that all readers of the Report consider the Report in the context of their own assessment of the impact of such events.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE ISSUE OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES.

Glossary Items

Acronym	Meaning
2A/ Truck	2 Axle/ Truck
3A	3 Axle
AADT	Annual Average Daily Traffic
BOT	Build Operate Transfer
CAGR	Compound Annual Growth Rate
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DPR	Detailed Project Report
ETC	Electronic Toll Collection, also referred to as FASTag
FY	Financial Year
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HAM	Hybrid Annuity Model
HCM/ EME	Heavy Commercial Vehicles/ Earth Moving Machinery
IE reports	Independent Engineers' reports
INR	Indian Rupees
km	Kilometer
LCV/ LGV	Light Commercial Vehicles/ Light Goods Vehicle
LMV	Light motor vehicles
MADT	Monthly average daily traffic
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NSDP	National State Domestic Production
OD	Origin Destination
OSV	Oversized vehicles
PCU	Passenger Car Unit; it is a measure of standard vehicle unit to convert all vehicle classes to a single unit by using PCU factors to compute total traffic on an Asset.
Q1	Quarter 1 of financial year, from April to June
Q2	Quarter 2 of financial year, from July to September
Q3	Quarter 3 of financial year, from October to December
Q4	Quarter 4 of financial year, from January to March

Acronym	Meaning
RNP	Registered Number Plate
SCF	Seasonality Correction Factor
SH	State Highway
T&R	Traffic and Revenue
TMS	Traffic Management System
TVC	Traffic Volume Count
WADT	Weekly average daily traffic
YTD	Year to Date

1 Introduction

The assignment

1.1 The Cube Highways Fund Advisors Private Limited (the "Client") has commissioned Steer Davies Gleave India Private Limited ("Steer") for a traffic due diligence to be carried out on Narketpally-Addanki-Medarametla Expressway Ltd. (or 'NAMEL', hereafter called 'Asset'). This report forms part of the annual fair market valuation (FMV) undertaken as part of the "Transit 11 project". This report presents an update of the traffic and revenue forecasts based on actual traffic data available up to February 2026 and latest macro-economic assumptions.

1.2 The Asset consists of a single stretch of toll road with three toll plazas. For the purpose of this report, we hereafter call the toll plazas present on the Asset as TP1, TP2 and TP3 respectively as:

- TP1 – Madgulapally
- TP2 – Thummalacheruvu
- TP3 – Elchuru

1.3 Our scope of work for the traffic and revenue forecasting process includes:

Table 1.1: Scope of work and sources of data

Scope of work	Data source
• Review of historical Traffic Management System (TMS) data, Vendor reports and documents	• Provided by client for the period between Oct'20 and Mar '26, with FY26 base AADT and forecasts considering data up to Feb'26
• Historical analysis and forecasts for baseline growth, including; — Background growth, and — Seasonality trends	• Historical data provided by the Client and benchmarking using plazas in the vicinity or of similar nature of the Asset has been done wherever sufficient data was unavailable.
• Validation of revenue reported in FY26YTD	• TMS data provided by Client • Revenue reconciliation using toll plaza traffic and ticket type data to calculate revenue and reconciling it with toll plaza reported revenue
• Origin Destination (OD) analysis to understand growth drivers: — Zonal influence and Top OD pairs — Commodity distribution — Trip length distribution	• Origin Destination (OD) surveys undertaken by Steer in 2026. The latest surveys were undertaken in 2026 on TP1 and TP3. Additional surveys were conducted in 2025 at TP2 Thummalacheruvu only.

Scope of work	Data source
• Analysis of upcoming network improvements and other developments, that may have future impacts on traffic	• Secondary research and our in-house experience of working in the vicinity of the Asset. Impact analysis conducted by Steer based on Generalised Journey Cost spreadsheet-based analysis
• Historical revenue analysis and forecasts for revenue estimation, including — Toll segmentation and trip factors, — Overloading shares	• Calculated from historical data provided by Client
• Final traffic growth forecasts including baseline growth rates and potential future impacts	• Elasticity based base growth and potential impacts from secondary research and Steer's in-house experience of working in the vicinity of the Asset
• Toll revenue estimation for the entire concession, including toll evolution	• Toll evolution based on latest toll notification published by the Government of Telangana – Roads and Buildings Department and latest actual Wholesale Price Index (WPI) trends as shared by the Client. • Assumptions of WPI forecasts and future tolling length changes provided by Client • Revenues estimated as a product of traffic forecasts and toll evolution

Our approach

1.4 Our approach follows well-established practices for forecasting ongoing traffic growth on an existing/brownfield Asset. The analysis focused on two sets of issues, namely:

1. Understanding the traffic that is currently using the Asset; and
2. Identifying how and why that traffic is likely to change in the future.

1.5 To understand the current traffic on the Asset, we have analysed traffic data from multiple independent sources:

- Client-provided secondary data, including:
  - TMS data starting March 2014 to February 2026. The historical traffic and revenue presented in Chapter 3 considers information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.
  - Concession agreement and toll notifications for FY25 and FY26
  - Previous studies related to traffic and revenue
  - Steer-commissioned OD surveys on TP1 and TP3 on 13th February 2026 and 18th February 2026 respectively. Previously surveys were conducted on TP2 on 22nd January 2025 on the Asset.
  - Steer-commissioned three-day TVC survey between 14th – 19th February 2026 on TP1 and TP3 . Previously conducted surveys between 23rd January and 25th January 2025 on TP2.

- We undertook revenue reconciliation for FY26YTD, by building up revenue from the traffic reported by the toll plaza and subsequently matched it to the reported revenue for FY26YTD using the prevailing toll rates and reported segmentation/toll-frequencies for FY26YTD, this is a key part of our analysis to validate the segmentation/toll-frequency assumptions and the Annual Average Daily Traffic (AADT) reported for each of the toll plaza.

1.6 The estimation of future traffic demand on the Asset was undertaken through:

- Estimating FY26 base year position by applying seasonality correction factors (SCFs) on the 11 months of actual traffic data available (April to February).
- Secondary research to understand plans for new developments and progress of ongoing developments on the Asset.
- Steer independent primary surveys and site visits to validate our network and contextual understanding.
- Developing a bespoke growth model for each Asset/plaza/toll class to forecast year-on-year traffic growth from FY26 to the end of concession period.
- Investigating the elasticity of historical traffic growth compared to state (GSDP) and national (GDP) growth. Where historical data is limited, we have benchmarked the Asset against our Steer knowledge base (e.g., similar Asset types in the same state or on the same corridor), to derive appropriate elasticities.
- Applying our elasticities to independent GDP forecasts as provided by Client.
- Identifying and analysing the potential impacts of any relevant changes to the competitive position of each Asset – these include impacts of changes to road network including expressways and opening of competitive modes of travel.
- Identifying and analysing any other potential impacts to traffic and revenue on each Asset – these include axle load norms, axle shift for heavy goods, FASTag implementation.
- Considering changes in trends of segmentation over time and making suggestions for changes in exemptions in the future.
- Preparing traffic and revenue forecast for the Asset for the complete length of concession. The analysis here includes the specific impacts of network, or other exogenous factors specific to the Asset. We have developed a set of forecasting assumptions for three scenarios: a base case and upside and downside scenarios.

Contents of this Report

1.7 The report has been divided into six chapters, including Chapter 1 providing an introduction:

- Chapter 1 introduces the methodology and approach to undertake the traffic and revenue due diligence;
- Chapter 2 describes the key characteristics of the Asset and its surrounding road network, primarily based on site visits;
- Chapter 3 summarises the current and historical traffic on the Asset, including results from the TMS, TVC and OD analysis;
- Chapter 4 presents the socio-economic context of the corridor and region/state containing the Asset, along with our approach and results on estimating background traffic demand growth;

- Chapter 5 presents our baseline year forecast and summarises our results on estimating background traffic demand growth; and
- Chapter 6 summarises our assessment of network impacts and presents concession traffic and revenue forecasts for the Asset along with the assumptions for upside and downside cases

2 The Asset

Introduction

2.1 This chapter provides a description of the Asset, based on both primary data (from site visits), and our understanding of the region and network surrounding the Asset. We cover the strategic network context, followed by key economic activities and network developments around the Asset.

Strategic network

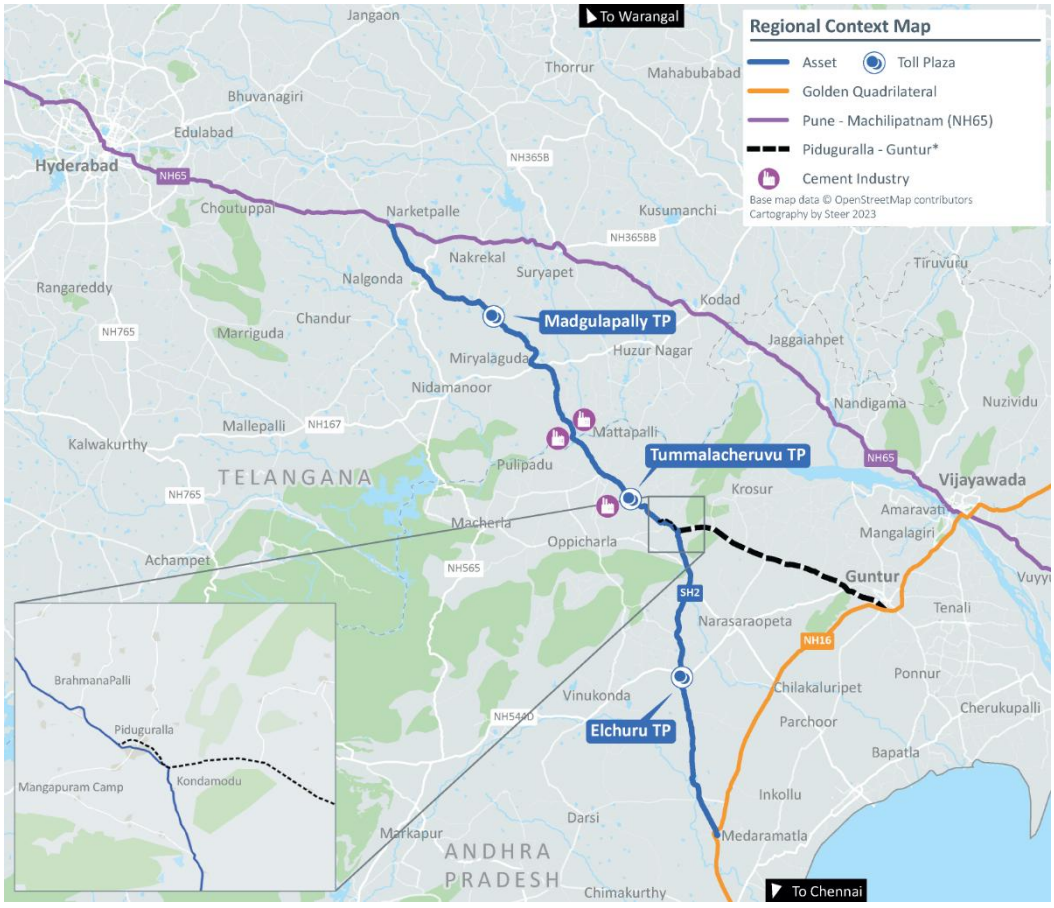
2.2 The Asset is an interstate route connecting southeastern Telangana with northern Andhra Pradesh. It connects the towns of Narketpally (Nalagonda district, Telangana) and Medarametla (Bapatla district, Andhra Pradesh). Figure 2.1 below shows the regional road network in which the Asset is located.

Figure 2.1: Asset location in India context

Source: Steer cartography using OpenStreetMap data

2.3 The Asset is a 212.5-km four-lane toll road which forms a part of the state highway SH-2 (New SH36 in Andhra Pradesh (AP)). There are three toll plazas, namely, Madgulapally (also spelled as "Madugulapally") (TP1), Tummalacheruvu (also spelled as "Thummalacheruvu") (TP2), and Elchuru (TP3) in the increasing order of their distance from Hyderabad. Figure 2.2 below provides a closer view of the Asset in the context of its immediate surroundings.

Figure 2.2: Asset context



Source: Steer cartography

2.4 The Asset caters to three different types of movements, by virtue of its strategic location on various corridors:

Long-distance

- NH44-SH2-NH16 long-distance corridor connecting North India (including Delhi, Haryana, Punjab, and Uttarakhand) with Chennai
- NH65-SH2-NH16 long-distance corridor connecting Mumbai with Chennai
- NH52-SH2-NH16 long distance corridor connecting Gujarat and Rajasthan with Chennai

Medium distance

- SH2-NH16 medium-distance corridor connecting Chennai/Hyderabad, and cement production sites
- SH2: Medium-distance corridor connecting Hyderabad with Vijayawada and Guntur.

Short distance

- SH2: Short-distance trips between Hyderabad and Rest of Telangana/Andhra Pradesh.

Concession and tolling details

2.5 The toll plazas have been operational since April 2014 (FY15), and the Client took over operations in FY19. The concession period runs until FY40. Table 2.2 below summarises key aspects of the concession.

Table 2.1: Summary of concession

	Particulars
State	Andhra Pradesh - Telangana
Highway and lane configuration	SH2 four-lane
Toll plazas	• TP1: Madgulapally (Madugulapally) • TP2: Tummalacheruvu (Thummalacheruvu) • TP3: Elchuru
Length (km) as per concession agreement, applicable	• TP1: 70.61Km • TP2: 63.88Km* • TP3: 69.32Km
Commencement of operations	TP1, TP2 & TP3: April 2014
Implementation of FASTag	TP1: August 2021, TP2 & TP3: October 2021
Operated by Client since	October 2018 (FY19)
Concession period	21 years
Last year of concession	FY40

Source: Concession agreement, FY25 toll notification; *excluding 5.79Km of net bypass length

2.6 Tolls on the Asset are collected for the following vehicle categories with rates as shown in Table 2.2 below. The toll plazas have dedicated ETC/FASTag lanes for electronic tolling.

2.7 Table 2.2 below presents the Single toll rate charged at the toll plazas. Apart from single tickets, the typical NHAI ticket categories like return, monthly, local personal and local commercial passes are also available on the Asset. Tolls are revised every alternate year on this Asset.

Table 2.2: Single toll rates on NAMEPL (INR) – FY26

Type of Vehicle	TP1	TP2	TP3
CJV	77	77	76
LCV/ Minibus	154	153	152
Bus/Truck	309	307	303
3A/MAV	772	767	759

Type of Vehicle	TP1	TP2	TP3
HCM/EME/OSV	772	767	759

Source: Government of Telangana Roads and Buildings Department Revision of User Fee Rate

2.8 Steer conducted a site visit to the Assets to oversee ongoing traffic surveys and gain a comprehensive understanding of the adjacent transportation network. Figure 2.3 below illustrates the Assets' toll plazas as observed during the site visit, accompanied by a visual representation of the Assets' road infrastructure. The pictures displayed clockwise show TP2, TP3, TP1 and the Asset's road infrastructure.

Figure 2.3: Typical cross section of the Asset and toll plaza (Clockwise)

Source: Steer site visit

Economic activities

2.9 The Asset is located between Hyderabad and Vijayawada-Guntur region and Chennai region on the other side. Chennai, Hyderabad, and the Guntur–Vijayawada region are key economic centres in southern India, each with distinct industrial strengths.

2.10 Chennai has strategically cultivated a strong economic profile, moving beyond traditional perceptions to become a prime business destination in India. Its long-term industrial policy has fostered a significant economic powerhouse, particularly in the state of Tamil Nadu. The city benefits from a well-educated workforce, making it a major outsourcing hub for international banks and insurers, and has seen substantial growth in its electronics manufacturing sector. This robust development has also led to a relatively affluent population, making it a key testing ground for fast-moving consumer goods.

Chennai is also a major automobile manufacturing hub and excels in software services, hardware production, financial services, and port-based trade[1]. Guntur and Vijayawada, in Andhra Pradesh, are known for agriculture-driven commerce—especially chili exports—and have strong industrial bases in textiles, cement, and tobacco processing[2]. Hyderabad has emerged as a global centre for IT and pharmaceuticals, housing tech giants like Microsoft and Google, along with major pharma players such as Dr. Reddy's Laboratories and Aurobindo Pharma[3].

2.11 According to the Telangana Socio Economic Outlook 2024[4], the state is ranked 12th in country if terms of population, and 11th in terms of its area. Owing to various initiatives taken by the State government, the state's economy has shown steady growth since inception, which is expected to continue with news around the state and its neighbour (Andhra Pradesh) both anticipating extensive investment in healthcare, port infrastructure, last mile connectivity and private employment.

2.12 Amaravati, the planned capital of Andhra Pradesh, is witnessing renewed development momentum with the launch of a ₹65,000 crore capital city project aimed at transforming the region into a modern administrative and civic hub. The initiative includes the construction of the Legislative Assembly and High Court within 24 months, along with the Secretariat and other infrastructure in phased timelines. This revival, driven by the state government's renewed focus, aims to build a "people's capital" with robust amenities in housing, education, healthcare, and transport[5].

2.13 The Asset is characterised by cement factories situated along its alignment, in proximity to TP2 facilitating movement in both directions; towards Hyderabad, and towards Chennai/Guntur. Since their establishment, the India Cements plant and the Penna Cements plant supply cement for construction projects in the region, with the Asset providing critical access to nearby consumption centres such as Hyderabad, Piduguralla, Nalgonda, Addanki, Guntur as well as the demand generated by Krishnapatnam port in the south[6]. Additionally, in 2024, Shree Cement Limited, a prominent Indian cement manufacturer, commenced operations at its newly established integrated cement plant in Dachepalli village, Guntur district, Andhra Pradesh. This facility, completed six months ahead of its projected timeline with an investment exceeding Rs 2,500 crore, possesses an annual cement production capacity of 3 million tons[7].

2.14 Paddy farming is extensively laid out along the Asset route, predominantly found closer to TP1. The agricultural movement observed on the Asset majorly consists of rice being transported from rice mills on the Asset, from where they're moved to areas in Nalgonda,

---

[1] **Chennai: open the door to India's markets**

[2] **Brief Industrial Profile of Guntur District**

[3] **Telangana: An act to follow - IndBiz | Economic Diplomacy Division | IndBiz | Economic Diplomacy Division**

[4] **tgdps.telangana.gov.in/seo-2024.pdf**

[5] **Andhra kicks off Rs 65,000 cr Amaravati capital city project, PM invited for ground-breaking event**

[6] Source: Steer Site visit in 2025 and earlier

[7] **Shree Cement inaugurates new plant in Guntur, to generate 2,000 jobs**

Miryalguda, Piduguralla, Guntur, etc. Apart from agriculture-linked traffic, the Asset also observes a significant share of manufacturing movement which includes automobiles from North India destined to Chennai/Krishnapatnam port, e-commerce products, and electronic appliances[8].

Alternate routes

2.15 Further to the previous section on the strategic network context of the Asset, this section provides details on alternate routes that have been considered in our network analysis.

2.16 The main competitor for long-distance traffic on the Asset is the under-construction 1,271 km four-six lane access-controlled Surat- Solapur- Chennai Expressway. The Indian government is rapidly progressing on the Surat-Solapur-Chennai (SCE) expressway project, which will pass through Nasik, Ahmednagar, Solapur, Kalaburgi, Kurnool, Kadappa, and Tirupati. The Surat-Solapur section will be a new greenfield alignment, while the rest will involve upgrading existing two-lane roads to four lanes. The upcoming expressway once operational[9] is expected to reduce the travel time between Surat and Chennai resulting in diversion of some long-distance traffic from the Asset.

2.17 The Hyderabad Regional Ring Road is a 330+ km long planned highway that will be outside the existing Outer Ring Road (ORR) that will connect various towns and growth centres around Hyderabad as a bypass route for through traffic crossing the region on long-distance routes. The RRR will enable long-distance vehicles to access southern regions without entering Hyderabad, saving time and avoiding congestion. It will allow traffic to enter the Asset from the north via the Pragnapur-Chottupal route, whereby traffic on NH44 will get direct access to Narketpalle without experiencing congestion along dense urban networks around Hyderabad. The Hyderabad Regional Ring Road (RRR) is currently under development[10] and is expected to benefit the Asset once completed and operational.

2.18 The existing 217 km segment between Hyderabad and Nandyal (NH167k) is being upgraded to a 4-lane section. This project is broken into three phases, with the middle section being a greenfield upgrade. Once completed, this segment will most likely provide vehicles starting in Hyderabad or north of it with alternative route to Chennai via Kurnool-Kadapa route. The incorporation of this impact has been taken alongside the impact of the HORR, the details of which are provided in Chapter 6 below.

2.19 Under the Bharatmala Pariyojna Project, the National Highways Authority of India (NHAI) is undertaking the development of the 457-kilometer Nagpur – Vijayawada Expressway as an Economic Corridor[11]. This project encompasses the widening of existing alignments and the creation of a new greenfield section connecting Warangal and Vijayawada in the state of Andhra Pradesh.

2.20 The above-mentioned network developments and their impacts have been discussed in detail in Chapter 6 of the report.

---

[8] As understood during Steer's Site Visit in 2025 and earlier

[9] **Surat Chennai Expressway- Key Features, Route Map, and Cost**

[10] **Telangana sets ball rolling on Regional Ring Road**

[11] **NHAI.GOV.IN**

3 Traffic description

Introduction

3.1 This chapter outlines the current traffic and revenue trends on the Asset basis TMS traffic data provided by the Client, and analyses of origin-destination (OD) survey data as well as TVC traffic count data as collected by Steer commissioned surveys as part of this study.

3.2 Traffic demand data is generally collected and analysed to understand the volume and vehicle composition of demand currently using the Asset, while OD data is used to obtain a better understanding of travel patterns, trip lengths, trip purposes and areas of influence in the vicinity of the Asset, as also the commodities being moved by goods vehicles. This analysis, combined with our understanding of the Asset (based on our site visits), enables us to identify the key drivers of demand on the Asset.

3.3 Actual toll plaza data is used as the basis from which the current/base year Monthly Average Daily Traffic (MADT) is established. This data is typically provided by the Client and independently analysed and validated by us using Traffic Volume Count (TVC) information.

3.4 The below sections present historical traffic and revenue information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.

PCU factor assumption

3.5 The PCU values have been taken from 'IRC 64:1990- Guidelines for Capacity of Roads in Rural Areas'[12]. For MAVs, based on the discussion with the Client, we have referred to the rigid and trailer splits in the TVC counts for calculating the effective PCU for MAVs. For rigid trailer trucks we have assumed a PCU factor of 3, whereas for trailer trucks we have assumed a PCU factor of 4.5, as defined in IRC 64:1990[12]. The PCU factors used in our analyses are presented in Table 3.1 below.

Table 3.1: PCU Factors

Vehicle Category	PCU Factor
CJV	1.0
Mini LCV	1.0
LCV	1.5
Bus	3.0

[12] IRC 064: Guidelines for Capacity of Roads in Rural Areas

Vehicle Category	PCU Factor
2A	3.0
3A	3.0
MAV*	3.3
OSV	4.5

Source: Steer analysis, * Rigid-Trailer PCU

Historical Trends

3.6 Between FY18-FY26, all three toll plazas on the Asset have observed robust traffic growth. This growth, primarily driven by CJVs, MAVs, and 2As, can be attributed to two key factors: heightened construction activity fuelled by capital expenditure (CAPEX) in Telangana[13] and Andhra Pradesh[14], leading to increased truck traffic; and a rise in passenger traffic across all three plazas due to the Asset's strategic location between developing urban centres such as the Hyderabad and Guntur/Vijayawada regions. The Asset observed decline in traffic volumes in FY21 due to the Impact of the COVID-19 Pandemic. However, recovery of traffic post FY21 was strong and has sustained since then, further adding to the robust growth observed on the Asset over the same period (FY18-26).

3.7 Additionally, we observe flat to marginal decline in LCV and 3A volumes on the Asset over the same period, which can be attributed to shifting axle preferences amongst long-distance commercial transporters - a trend we have consistently observed on multiple Assets across the country, and not unique to this asset

3.8 Table 3.2 and Table 3.3 below show the historical variation in total and tollable traffic volume at the Madgupally toll plaza (TP1).

Table 3.2: Historical evolution in AADT by vehicle class at TP1 Madgulapally

Vehicle Type	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY18-26
CJV	4,184	4,451	4,997	5,582	5,756	6,378	6,858	7,464	8,194	8.8%
LCV	692	749	613	593	623	605	616	633	674	(0.3%)
Bus	720	750	734	452	576	727	740	790	853	2.1%
2A	548	614	727	747	816	960	1,077	1,215	1,334	11.8%
3A	732	720	672	607	590	614	617	646	662	(1.2%)
MAV	1,086	1,265	1,319	1,212	1,374	1,572	1,647	1,784	2,139	8.8%
Total	**7,961**	**8,548**	**9,062**	**9,192**	**9,735**	**10,856**	**11,555**	**12,530**	**13,856**	**7.2%**
PCU	**14,801**	**15,996**	**16,662**	**15,884**	**17,165**	**19,369**	**20,512**	**22,246**	**24,804**	**6.7%**

[13] Telangana scores 190 percent rise in capital expenditure in 2023-24 H1-Telangana Today

[14] Andhra Pradesh posts highest Capex increase among states for FY-26 | Vijayawada News - The Times of India

Source: Steer analysis of Client data, FY26 AADT represents the full year actual (April to March) .

Table 3.3: Historical evolution in Tollable AADT by vehicle class at TP1 Madgulapally

Vehicle Type	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY18-26
CJV	3,442	3,594	4,117	4,785	4,946	5,513	5,914	6,436	7,115	9.5%
LCV	684	731	603	583	621	601	611	628	668	(0.3%)
Bus	719	744	709	424	575	727	740	790	853	2.2%
2A	542	603	717	726	813	959	1,075	1,212	1,332	11.9%
3A	725	708	661	591	590	614	614	642	661	(1.1%)
MAV	1,082	1,258	1,309	1,186	1,371	1,570	1,645	1,781	2,135	8.9%
Total	**7,195**	**7,638**	**8,117**	**8,295**	**8,916**	**9,984**	**10,598**	**11,490**	**12,704**	**7.4%**
PCU	**13,992**	**15,001**	**15,597**	**14,791**	**16,330**	**18,489**	**19,539**	**21,180**	**23,513**	**6.8%**

Source: Steer analysis of Client data, FY26 AADT represents the full year actual (April to March) .

3.9 As can be seen in Table 3.2 above, TP1 has witnessed a PCU CAGR of 6.7% from FY18-26. This growth is primarily driven by growth in CJVs, 2As, and MAVs.

3.10 In FY26, CJVs constituted approximately 60% of the total traffic at TP1, followed by 3A+MAVs in total traffic (AADT), which represented approximately 19% of the traffic during the same period. The substantial volume of CJVs is primarily attributed to passenger movement from Guntur to Hyderabad and Dachepalli for purposes including employment, healthcare, and education. As seen in Table 3.2 above, CJVs have grown at a CAGR of 8.8% between FY18-26 indicating the increase of use of the Asset as a means of commute between key hubs such as Guntur, Chennai, Ongole and Hyderabad.

3.11 From FY18 to FY26, MAV and 2A volumes at TP1 grew at CAGR 8.8% and CAGR 11.8% respectively. A significant portion of the commercial traffic on TP1 comprises manufactured goods, including automobile components and electronics, moving between Chennai-Hyderabad and between North India and the industrial hubs of near Chennai.

3.12 MAVs observed at TP1 also include those carrying cement from local cement plants between TP1 and TP2 and are destined for Hyderabad (and beyond). 2-Axle and MAV growth is further aided by a shift in preference from 3A trucks to MAVs and 2As, a trend observed at an Asset as well as national level due to the alternatives providing better economic value in goods transportation.

Table 3.4: Historical evolution in AADT by vehicle class at TP2 Tummalacheru

Vehicle Type	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY18-26
CJV	3,708	3,965	4,303	4,962	5,184	5,484	6,044	6,438	7,067	8.4%
LCV	571	609	525	506	536	547	582	615	646	1.6%
Bus	634	686	674	309	517	685	724	739	782	2.7%
2A	639	693	724	755	848	952	1,072	1,191	1,312	9.4%

Vehicle Type	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY18-26
3A	999	992	812	786	767	730	712	680	690	(4.5%)
MAV	1,972	2,260	1,899	1,855	2,073	2,334	2,494	2,528	2,786	4.4%
Total	**8,522**	**9,207**	**8,937**	**9,172**	**9,925**	**10,731**	**11,630**	**12,191**	**13,284**	**5.7%**
PCU	**17,880**	**19,440**	**17,979**	**17,384**	**19,216**	**21,098**	**22,660**	**23,522**	**25,571**	**4.6%**

Source: Steer analysis of Client data, FY26 AADT represents the full year actual (April to March).

Table 3.5: Historical evolution in Tollable AADT by vehicle class at TP2 Tummalacheruvu

Vehicle Type	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY18-26
CJV	3,291	3,459	3,775	4,478	4,681	5,015	5,564	5,926	6,526	8.9%
LCV	562	596	510	503	528	532	568	600	633	1.5%
Bus	630	679	651	306	513	681	721	735	779	2.7%
2A	634	689	718	752	844	946	1,067	1,184	1,308	9.5%
3A	995	990	806	785	766	730	711	679	690	(4.5%)
MAV	1,970	2,258	1,894	1,853	2,070	2,331	2,492	2,526	2,782	4.4%
Total	**8,081**	**8,671**	**8,353**	**8,677**	**9,402**	**10,235**	**11,123**	**11,651**	**12,718**	**5.8%**
PCU	**17,403**	**18,869**	**17,307**	**16,868**	**18,664**	**20,566**	**22,126**	**22,945**	**24,976**	**4.6%**

Source: Steer analysis of Client data, FY26 AADT represents the full year actual (April to March).

3.13 TP2 achieved a PCU CAGR of 4.6% between FY18 and FY26, with CJV and 2A being key contributors to overall traffic growth at TP2. Growth in 2A and MAV traffic at TP2 is also due to construction material demand (particularly, cement) in and around Hyderabad, Chennai, and the Guntur/Vijaywada wider region, leading to increased truck traffic, alongside passenger growth directed towards Chennai and Hyderabad.

3.14 In FY20, TP2 observed decline in traffic due to the ban on sand mining near the Krishna River[15], which previously formed a significant portion of the Asset's truck traffic. Since the ban, and stricter enforcement to curb illegal mining and movement of sand between Andhra Pradesh and Telangana, sand as a commodity observed on the Asset has diminished. Several Roads and Transport Authority (RTA) checkpoints are also stationed between TP1 and TP2 to prevent sand transit.

3.15 Despite the impact of the FY20 sand mining ban on commercial traffic growth on the Asset, TP2 continues to observe the highest truck volumes among the three toll plazas on the Asset, primarily due to its proximity to major existing cement manufacturing facilities, including India Cements and Penna Cements, and the development of new cement plants in Hyderabad and near Guntur[16]. The regional industrial profile and continued capacity augmentation through new developments have collectively driven strong growth of

[15] Govt. bans sandmining - The Hindu

[16] Shree Cement inaugurates three MTPA plant in Andhra Pradesh - The Economic Times

commercial traffic on the Asset and at particularly at TP2, where MAVs have grown at a CAGR 4.4% between FY18 to FY26.

3.16 Table 3.6 and Table 3.7 below present the historical variation in traffic volume at the TP3:

Table 3.6: Historical evolution in AADT by vehicle class at TP3 Elchuru

Vehicle Type	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY18-26
CJV	1,576	1,771	1,978	2,469	2,518	2,857	3,101	3,330	3,689	11.2%
LCV	354	384	354	341	362	394	415	452	511	4.7%
Bus	282	322	319	145	241	342	385	395	442	5.8%
2A	443	494	534	575	649	755	821	931	1,029	11.1%
3A	689	723	633	551	562	587	569	570	615	(1.4%)
MAV	1,496	1,639	1,532	1,407	1,501	1,718	1,803	1,912	2,175	4.8%
Total	**4,840**	**5,333**	**5,352**	**5,487**	**5,833**	**6,654**	**7,093**	**7,590**	**8,462**	**7.2%**
PCU	**11,279**	**12,366**	**12,016**	**11,430**	**12,364**	**14,162**	**14,991**	**15,997**	**17,883**	**5.9%**

Source: Steer analysis of Client data, FY26 AADT represents the full year actual (April to March).

Table 3.7: Historical evolution in Tollable AADT by vehicle class at TP3 Elchuru

Vehicle Type	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY18-26
CJV	1,452	1,639	1,843	2,361	2,394	3,252	2,964	3,183	3,525	11.7%
LCV	344	369	341	332	360	467	412	449	509	5.0%
Bus	275	315	314	127	233	390	358	368	415	5.3%
2A	439	489	529	555	644	893	816	925	1,027	11.2%
3A	674	718	628	536	559	698	566	567	613	(1.2%)
MAV	1,494	1,637	1,530	1,388	1,499	2,046	1,801	1,909	2,173	4.8%
Total	**4,679**	**5,167**	**5,186**	**5,299**	**5,690**	**7,747**	**6,917**	**7,402**	**8,261**	**7.4%**
PCU	**11,056**	**12,153**	**11,810**	**11,087**	**12,182**	**16,638**	**14,737**	**15,728**	**17,612**	**6.0%**

Source: Steer analysis of Client data, FY26 AADT represents the full year actual (April to March).

3.17 When compared to TP1 and TP2, TP3 has historically observed lower traffic volumes. This is because a major portion of traffic originating from Hyderabad is bound for Guntur and appears only on TP1 and TP2; this is evidenced by our OD survey analysis outputs at TP1 and TP2 (refer to Appendix B) and based on our site visit observations. The Guntur bound traffic does not appear on TP3, as it diverts after appearing on TP2 from Pidgurulla via SH21 to reach Guntur, leading to relatively lower volumes that cross TP3 on their way further south.

3.18 TP3 saw volumes declines for commercial vehicles in FY20 because of the sand-mining prohibition, and again in FY21 due to the impact of the COVID-19 pandemic – similar to

trends observed at TP1 and TP2. In FY22, traffic at TP3 rebounded as construction activity in the region recovered. Between FY18 and FY26, PCU grew by CAGR 5.9%.

3.19 3A volumes at all three plazas on the Asset have declined over the period FY18-26. This reduction in 3A volumes can be attributed to transporters increasingly opting for 2A and MAV vehicles in place of 3As. MAVs offer a greater tonnage capacity, enhancing their cost-effectiveness for freight transport, while growth in 2A vehicle volumes reflect a rising preference for these vehicles, driven by favourable adjustments in legal permissible loads and their suitability for e-commerce-related freight, particularly for high-value, low-volume goods transported over medium to long distances. This trend aligns with insights gained from discussions with various transporters and OEMs nationwide, who are increasingly favouring 2A and MAV vehicles for commodity movement due to their superior unit economics.

Historical Revenue

3.20 Table 3.8 below presents the reported historical revenue of the Asset.

Table 3.8: Historical revenue evolution (in INR Crores) and AADC (in INR Lakhs) for the Asset

Asset	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR FY18-26
Revenue (INR Crore)	158.3	186.8	180.6	144.5	198.1	254.4	268.9	301.2	347.8	10.3%
AADC (in lakhs)	43.4	51.2	49.9	41.8	54.3	69.7	73.5	82.5	95.3	
AADC Growth (%)	-	18.0%	(2.5%)	(16.2%)	29.9%	28.4%	5.5%	12.3%	14.5%	-

Source: Steer analysis of Client data, FY26 AADT represents the full year actual (April to March).

3.21 With increase in traffic across plazas and vehicle categories, the Asset recorded an average daily collection of INR 95 lakh in FY26, compared to INR 83 lakh in FY25. Overall, the revenue of the Asset grew at CAGR 10.3% between FY18 and FY26.

3.22 Every alternate year observes a greater jump in revenue than the year-on-year increases due to the tolling regime followed on the Asset, wherein toll rates on the Asset are revised once every two years.

Toll Frequencies

3.23 Toll frequency or segmentation is typically the share of each ticket category recorded for a particular vehicle type. This is based on the toll policy which forms a part of the concession agreement. Each vehicle category has different segmentation. As a part of historical analysis, we calculate the toll frequency for each vehicle category from the monthly data shared by the Client. The most common ticket categories observed on a typical National Highway concession are: Single, Return, Monthly, Local and Exempt. Given the local nature of traffic, some toll plazas offer custom made local passes to attract the local commuters to opt for these category passes instead of evading toll.

3.24 Understanding the toll frequency gives insights into the nature of traffic. CJVs generally have higher shares of return passes or local monthly passes because they travel for short to medium distances, while heavy trucks mostly have single tickets since they travel long

distance. However, this distribution varies from asset to asset or even toll plaza to toll plaza. An asset catering to short distance local traffic generally observes high share of return or other local monthly passes while another that caters more to strategic long-distance traffic generally observes high share of single ticket traffic.

3.25 Since the Asset is a state highway that runs between AP and TL states, the "Daily Pass" ticket is the equivalent of a "Return Journey" ticket charged at national highways. This ticket allows users to make more than two trips (within a 24-hour period) at the price of 1.5x of a Single Journey ticket and is thus different from the NHAI "Return" ticket which only permits a user to make two trips within the same time. The data collection and compilation on the Asset is done in such a way that all users who purchase a Daily Pass ticket but make more than two trips per day are classified as "Return 2". This category generates no additional revenue and was processed similarly to the "Return" ticket in our analysis. In this context, Table 3.9 below shows the different types of tickets being sold at all three plazas on the Asset, including the wider definition of the "Return" ticket.

Table 3.9: Typical ticket types sold at plazas

Category	Description
Single	Allows the vehicle to cross the toll plaza once
Return	Allows the vehicle to cross the plaza twice (or more than twice) in a day at discounted rates.
Monthly Pass	Discounted ticket for all road users issued at toll plaza who intend to undertake multiple single trips using the toll plaza. 50 trips are allowed on a discounted rate to be used within 30 days of issue.
Local Personal	Discounted single entry pass only for private cars of residents within 20km radius of toll plaza
Local Commercial	50% discount on single trips for commercial vehicles registered in the local district. This pass allows single entry only
Exemptions	Officially exempted vehicles like ambulance, police cars, key political personnel etc

3.26 On the Asset, a user can buy the ticket for crossing all three plazas at one plaza, via cash. However, since FASTag was implemented on the Asset (starting August 2021 on TP1, and 26th October 2021 on TP2 and TP3) there was a change in how these ticket categories were being recorded via these two modes of payment.

3.27 Generally, shares of single/return/monthly tickets tend to stabilise within 2-3 years of Asset operations. Only in the cases where trip patterns are expected to change significantly due to urban expansion is where we expect these shares to change over the period or due to some external events impacting the trip patterns. During the calendar year 2021, for instance, two key events impacted the traffic patterns throughout the country: the COVID-19 pandemic, and FASTag implementation.

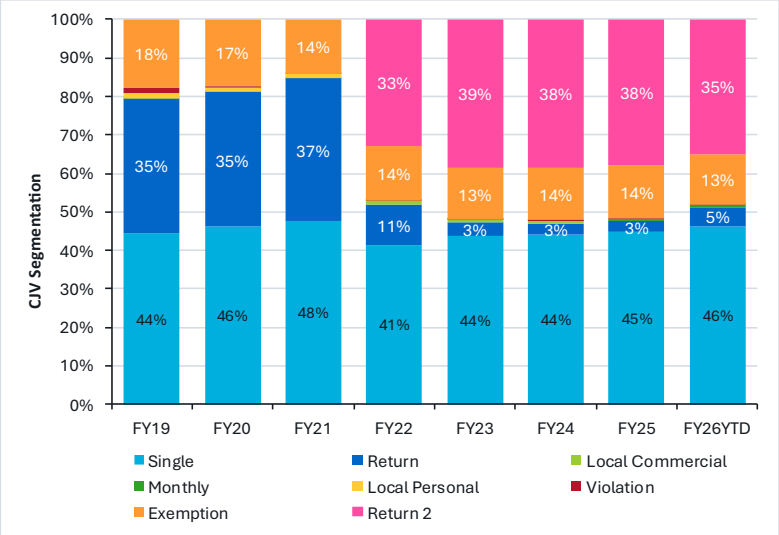
Share of traffic by payment type

3.28 As the Asset is a part of State highway which is under Andhra Pradesh Roads Development Corporation, FASTag is not mandatory on the Asset and separate lanes are provided for FASTag users. Across all three toll plazas, the Asset has 92-95% ETC penetration rate as of FY26YTD, with the remaining share of transactions still being

facilitated via cash. This is because the Asset is a state-highway which does not mandate the use of FASTag for all vehicles.

3.29 Figure 3.1 through Figure 3.6 below show the toll segmentation for the historical years at all the toll plazas for CJVs and MAVs.

Figure 3.1: Ticket-segmentation for CJV at TP1



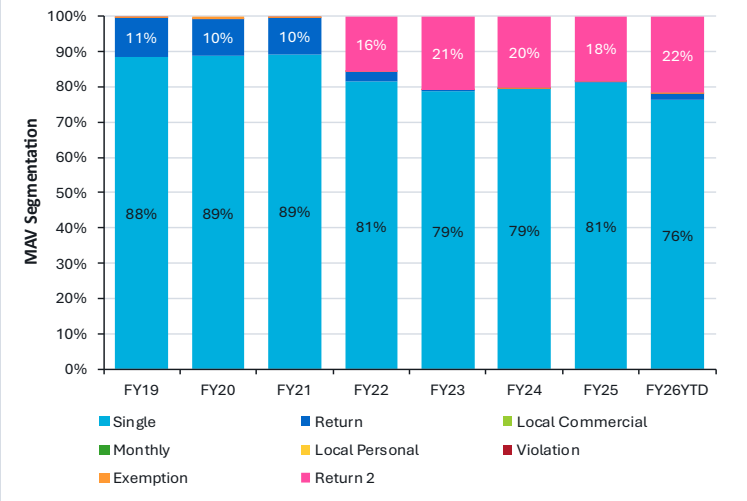
Source: Steer analysis of Client data, FY26YTD includes data till Feb'26.

3.30 From Figure 3.1 above, we see that ticket segmentation trends for CJVs at TP1 have stabilised post FY23. The ticket segmentation for CJVs in FY26YTD is characterised by a high share of Single and Return (including the "Return 2") tickets at approximately 46% and 40% (respectively). The high share of return tickets is dominated by a large share of short distance trips observed on the Asset at TP1 for CJVs[17]. A modest share of 13% of CJV trips at TP1 were Exemptions as of FY26YTD – stable since FY21 but lower than observed in FY19.

3.31 As shown in Figure 3.2 below, most MAVs crossing TP1 purchase single journey tickets (76% in FY26YTD) and the remainder (22%) purchase return tickets. This pattern is supported by the results of the OD analysis, which reveal a large share of long-distance travel and a corresponding share of short/medium distance traffic to locations such as Nalgonda, Miryalguda, and Pidugurulla, among others (see Figure 3.21).

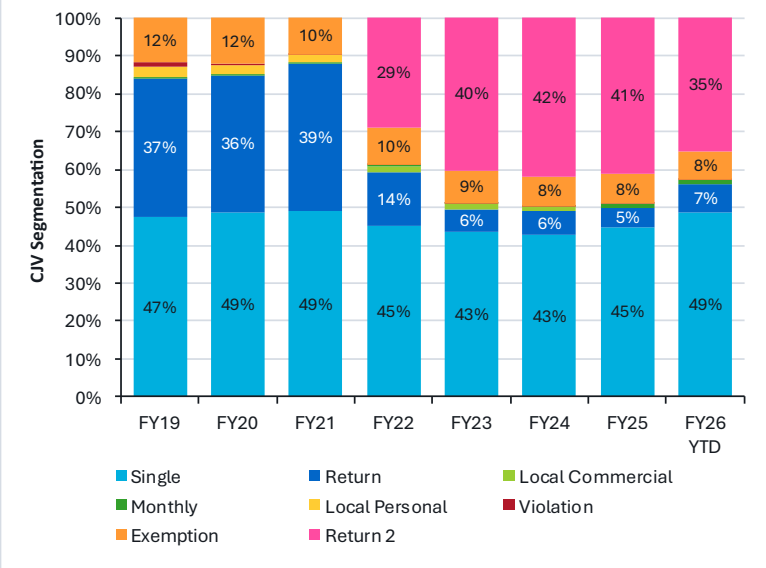
[17] Source: Steer Analysis of Origin-Destination Survey Data

Figure 3.2: Ticket-segmentation for MAV at TP1



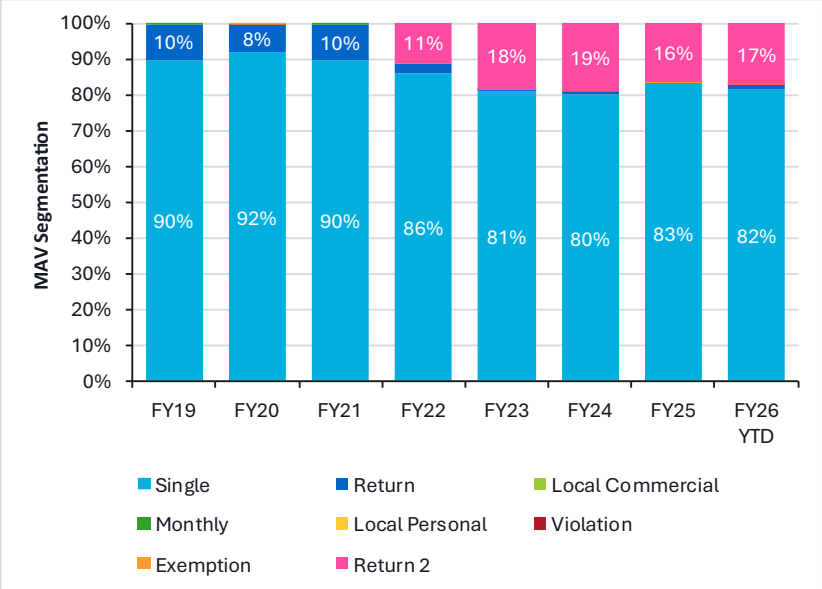
Source: Steer analysis of Client data, FY26YTD includes data till Feb'26.

Figure 3.3: Ticket-segmentation for CJV at TP2



Source: Steer analysis of Client data, FY26YTD includes data till Feb'26.

Figure 3.4: Ticket-segmentation for MAV at TP2

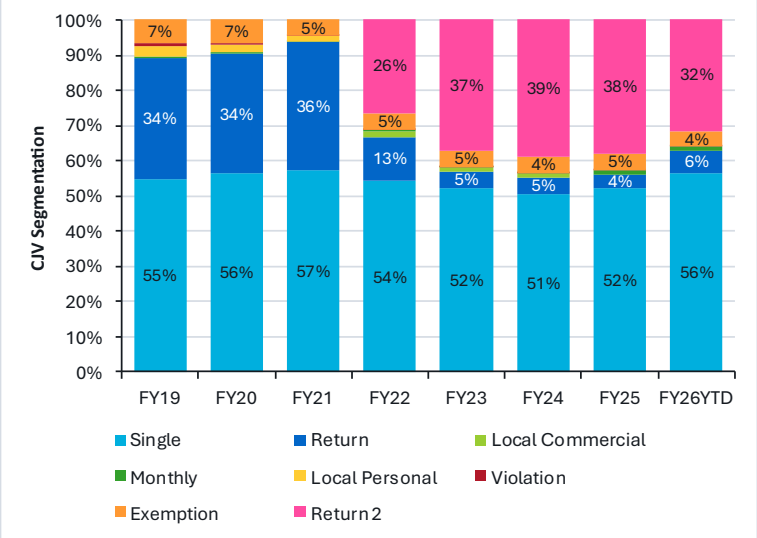


Source: Steer analysis of Client data, FY26YTD includes data till Feb'26.

3.32 As seen in Figure 3.3 above, CJVs on TP2 exhibit similar travel patterns as those at TP1. The share of CJV Exemptions at TP2 has reduced from 12% in FY19 to 8% as of FY26YTD. CJVs are characterised by an almost equal split between Single and Return Journey tickets. As mentioned before, the high share of return tickets is an indication of CJVs primarily making short distance trips[17], wherein 50% of CJVs are making trips shorter than 300 kms. Some of the commonly travelled hubs include Guntur, Hyderabad, Mirayalguda, Nalgonda and Dachepalli.

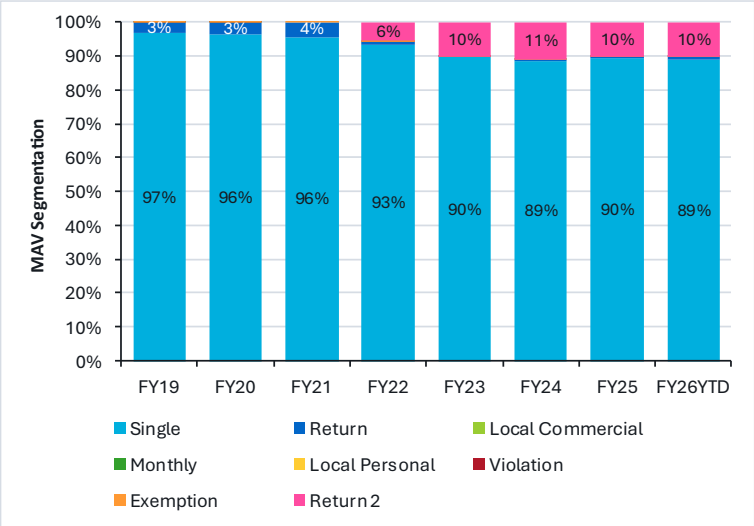
3.33 Most MAVs (83% in FY25) pay for single trips on TP2, with the balance purchasing return tickets. This pattern is corroborated by the results of the OD analysis, which reveal a substantial share of long-distance travel between hubs such as Chennai, Hyderabad, Mumbai, Delhi and Khammam, verifying the ticket segmentation trends determined from the Client's historical data (see Figure 3.22).

Figure 3.5: Ticket-segmentation for CJV at TP3



Source: Steer analysis of Client data, FY26YTD includes data till Feb'26.

Figure 3.6: Ticket-segmentation for MAV at TP3



Source: Steer analysis of Client data, FY26YTD includes data till Feb'26.

3.34 On TP3, as of FY25, around 52% of CJV users paid for single tickets and approx. 41% bought return tickets. These shares have remained relatively steady over the years indicating that travel patterns of CJVs at TP3 appear to have stabilised by now.

3.35 For MAVs at TP3, the share of single tickets is the highest among all three toll plazas on the Asset, as most of the MAV traffic on this plaza is through-traffic travelling from Hyderabad city to Ongole, Nellore, and onwards to Chennai. Because of the long-haul travel pattern of MAVs on this plaza, the single journey ticket share is relatively high for MAVs, ranging between 82% and 90%, as of FY25YTD.

3.36 Table 3.10, Table 3.11 and Table 3.12 below depicts the FY26YTD segmentation for LCV, Bus, 2A, 3A and OSV category for TP1, TP2 and TP3 respectively.

Table 3.10: Ticket-segmentation for LCV, Bus, 2A, 3A and OSV Categories at TP1

Ticket Type	CJV/MLCV	LCV	Bus	2A	3A	MAV
Single	46%	71%	34%	78%	84%	76%
Return	5%	2%	9%	2%	1%	2%
Local commercial	-	-	-	-	-	-
Monthly	0%	1%	29%	-	-	-
Local personal	-	-	-	-	-	-
Violation	0%	0%	0%	0%	0%	0%
Exemption	13%	1%	0%	0%	0%	0%
Return 2	35%	25%	27%	20%	14%	22%

Source: Steer analysis of Client data, FY26YTD includes data till Feb'26

Table 3.11: Ticket-segmentation for LCV, Bus, 2A, 3A and OSV Categories at TP2

Ticket Type	CJV/MLCV	LCV	Bus	2A	3A	MAV
Single	49%	74%	38%	78%	84%	82%
Return	7%	2%	3%	2%	2%	1%
Local commercial	-	-	-	-	-	-
Monthly	1%	0%	30%	0%	1%	-
Local personal	-	-	-	-	-	-
Violation	0%	0%	0%	0%	0%	0%
Exemption	8%	2%	0%	0%	0%	0%
Return 2	35%	22%	28%	19%	13%	17%

Source: Steer analysis of Client data, FY26YTD includes data till Feb'26

Table 3.12: Ticket-segmentation for LCV, Bus, 2A, 3A and OSV Categories at TP3

Ticket Type	CJV/MLCV	LCV	Bus	2A	3A	MAV
Single	56%	84%	42%	88%	84%	89%
Return	6%	1%	2%	2%	3%	1%
Local commercial	-	-	-	-	-	-
Monthly	1%	-	21%	-	-	-
Local personal	-	-	-	-	-	-
Violation	0%	0%	0%	0%	0%	0%
Exemption	4%	0%	6%	0%	0%	0%
Return 2	32%	14%	28%	10%	12%	10%

Source: Steer analysis of Client data, FY26YTD includes data till Feb'26

Data collection and validation

Overview

3.37 As mentioned previously, to validate and inform various inputs used in our earlier forecasting, we undertook OD data collection on the Asset in this study, comprising the surveys listed in Table 3.13 below. While TVC surveys were commissioned by Steer by contracting a third party in the study, OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas, which Steer also commissioned with a third party. TVC data is comprehensive; where collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting. OD surveys were conducted for TP2 in 2025.

Table 3.13: Data collection schedule

TP	3-day videography-based TVC			1-day OD survey
	Start date	End date	Time (hrs)	Survey Date
TP1	14th February 2026	16th February 2026	0000-2359	13th February 2026
TP2	22nd January 2025	24th January 2025	0000-2359	22nd January 2025
TP3	17th February 2026	19th February 2026	0000-2359	18th February 2026

Source: Steer analysis

3.38 In our experience, traffic on national highways shows variation across the week due to the economic activities surrounding each road. To derive a representative TVC count considering daily variation, three-day to seven-day traffic counts are generally recommended, and hence, to fully understand the impact of this weekly fluctuation on the Asset, we collected three-day counts at the toll plaza.

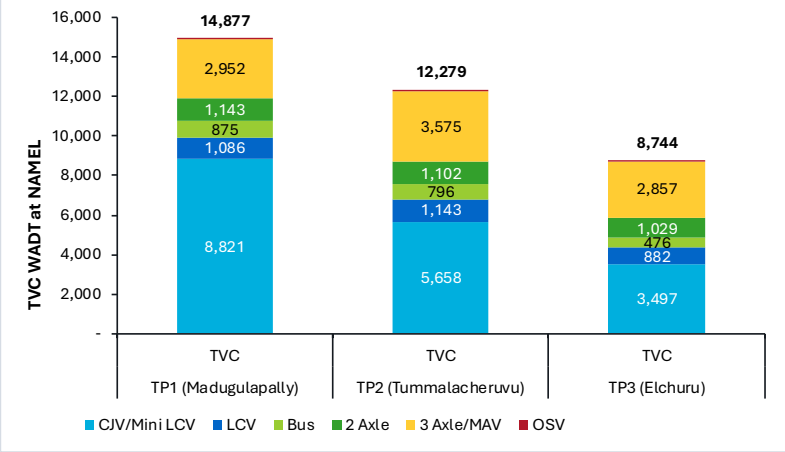
Key findings of the TVC data analysis

WADT estimates

3.39 Taking an average of the three-day TVC counts (22rd Jan – 24th Jan 2025 for TP2, 14th Feb – 16th Feb 2026 for TP1 and 17th Feb – 19th Feb 2026 TP3), we obtained estimates of weekly average daily traffic (WADT) by vehicle category for each of the three toll plazas on the Asset. This WADT excludes non-tollable vehicles such as tractors, two-wheelers, bullock-carts, etc., but includes officially exempt vehicles such as police cars, ambulances, emergency response vehicles, government vehicles and other vehicle types officially allowed as 'exempted' under the concession agreement.

3.40 As shown in Figure 3.7 below, at TP1 and TP2, CJVs accounted for the largest share of all vehicles crossing the plazas, followed by MAVs and LCVs. In the case of TP3, both CJVs and MAVs accounted for almost equal shares of total traffic (between 2,500-2,600 vehicles each). As discussed previously, this difference in volumes between TP1, TP2, and TP3 is due to the Pidugurulla diversion that connects Hyderabad and Vijayawada-Guntur region through the Asset, and the cement plants near TP2.

Figure 3.7: WADT at TP1, TP2 and TP3



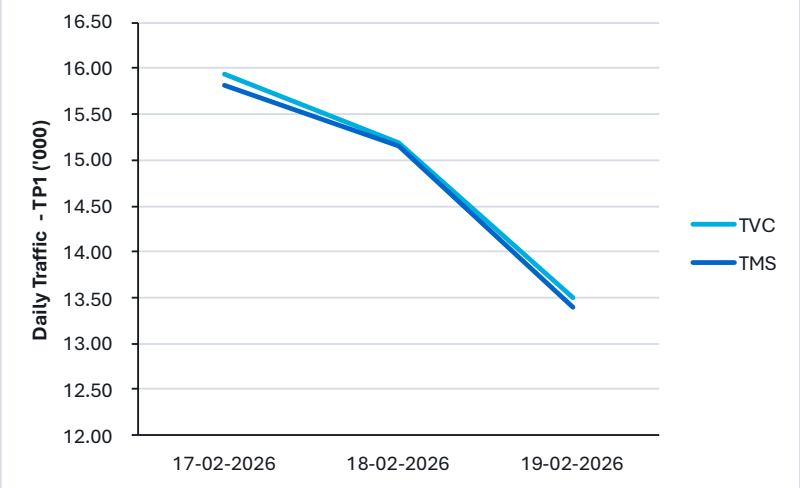
Source: Steer analysis of Steer-commissioned TVC data. TP2 TVC count reflects latest TVC count done in Jan 2025 and TP1 and TP3 counts reflect TVC counts done in Feb 2026.

TVC v/s TMS analysis

3.41 As we use the TMS data to estimate the base year AADT, we have used our TVC data to validate the TMS data on those particular days, as supplied by the Client.

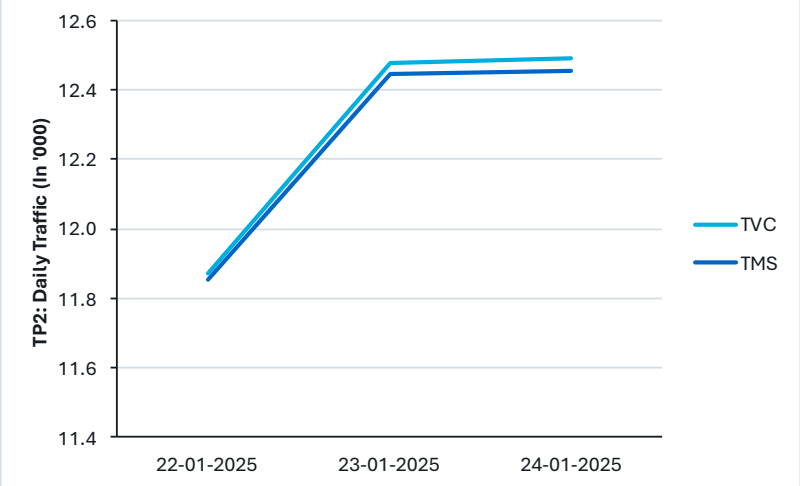
3.42 Figure 3.8, Figure 3.9 and Figure 3.10 below shows the comparison between daily volumes in tollable traffic derived from TVC and TMS data for all three toll plazas. This shows a good fit at the aggregate level at all the plazas with an absolute delta of 0.1% on TP2, and 0.5% on TP2 and TP3.

Figure 3.8: Comparison between TVC and TMS daily traffic data on TP1 (2026)



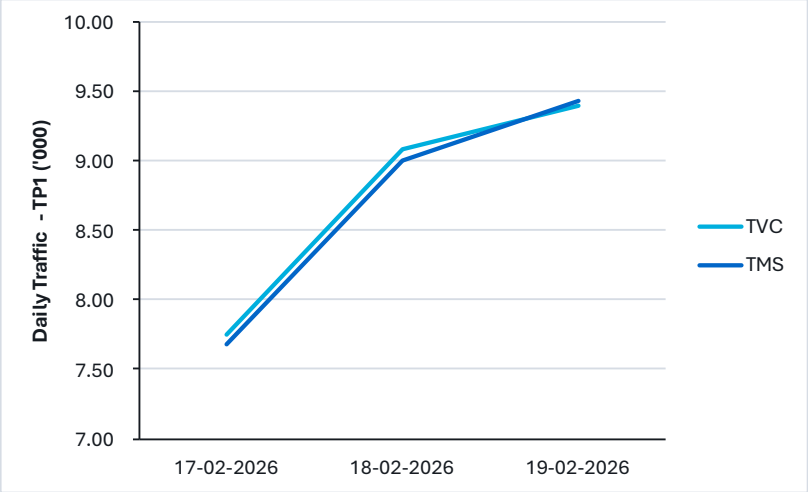
Source: Steer analysis of Steer-commissioned TVC and Client TMS data

Figure 3.9: Comparison between TVC and TMS daily traffic data on TP2 (2025)



Source: Steer analysis of TVC and client TMS data

Figure 3.10: Comparison between TVC and TMS daily traffic on TP3 (2026)

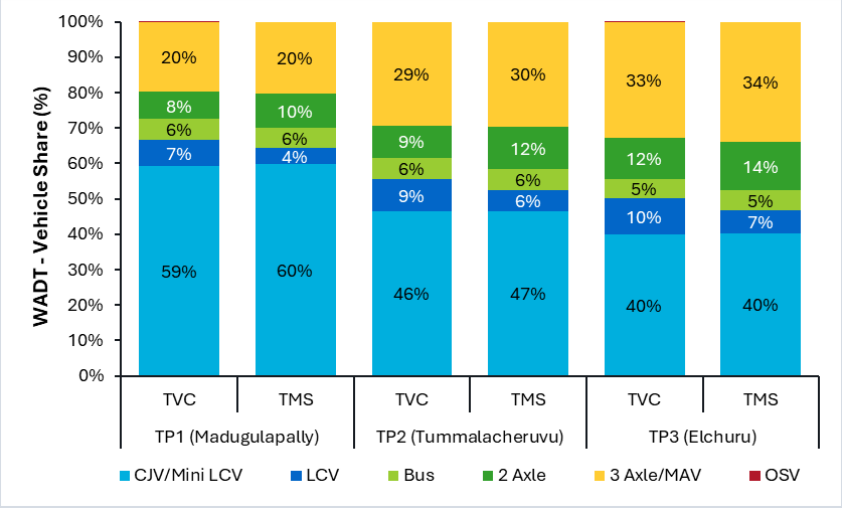


Source: Steer analysis of TVC and client TMS data

3.43 Figure 3.11 below compares the share of traffic by vehicle type at each toll plaza, as recorded between the TVC and TMS data. At aggregated levels (aggregated in such a way due to common misclassification between these groups), there is minimal variation between the TVC and TMS count data. In all cases, the TVC and TMS vehicle shares differ from each other by a small margin - between 0-1.0%.

3.44 There is common misclassification between the LCV and 2A categories, and therefore, these have been combined in our analysis. Apart from classification issues, differences can be attributed to reporting system for exempted vehicles at the toll plazas, along with the technical differences between the two independent traffic counting systems.

Figure 3.11 Comparison between vehicle shares from TVC and TMS WADTs



Source: Steer analysis of TVC and client TMS data

Table 3.14: Difference in vehicle counts when combined

Vehicle type	TP1 (2026)			TP2 (2025)			TP3 (2026)		
	TVC	TMS	TMS vs TVC (%)	TVC	TMS	TMS vs TVC (%)	TVC	TMS	TMS vs TVC (%)
CJV+LCV+ 2A+Bus	11,924	11,795	**1.1%**	8,698	8,614	**1%**	5,885	5,750	**2.3%**
3A+MAV+OSV	2,950	2,990	**(1.3%)**	3,581	3,638	**(1.6%)**	2,859	2,952	**(3.1%)**
Total	**14,874**	**14,785**	**0.6%**	**12,279**	**12,252**	**0.1%**	**8,744**	**8,702**	**0.5%**

Source: Steer analysis of TVC and client TMS data; TP2 TVC counts reflect updated 2025 counts whereas TP1 and TP3 counts reflect 2026 TVC counts

3.45 Given an overall match in the traffic volumes, TVC-TMS analysis gives us the confidence that the base year traffic calculated using the Client data forms a reliable base year traffic estimate. We therefore consider the Client TMS data to estimate the base year AADT.

Key findings of origin-destination analysis

Overview

3.46 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Asset. The OD analysis presented here is based on data collected on behalf of the Client in February 2026 for TP1 and TP3 and based on latest data collected in January 2025 for TP2.

3.47 We have analysed the regional drivers of demand based on the following OD analyses on the data as provided by the Client:

- Zonal influence
- Commodity distribution
- Top OD pairs
- Trip length distribution

3.48 While top OD pairs and zonal influence help us understand ‘where’ people and goods travel, the commodity distribution sheds light on ‘which’ goods are transported. Trip length distribution analysis further indicates ‘how far’ vehicles and people travel. This set of analyses is generally used to estimate the key drivers of traffic and aids the making of informed forecasting assumptions around traffic demand elasticities, growth drivers and exogenous impacts.

Sample rates

3.49 Sample rates help understand the reliability of OD data. They are calculated by dividing OD samples by the TVC counts observed on the same date for each vehicle category at the toll plaza. Table 3.15 below presents the sample rates for goods and passenger category at the toll plaza. We believe that the sample rates of the OD data are reasonable for the analysis required.

Table 3.15: Sample rates for OD data

Vehicle Category	TP1 (2026)	TP2 (2025)	TP3 (2026)
Passenger (CJV+Bus)	15%	47%	33%
Goods (LCV+2A+3A+MAV)	70%	54%	73%

Source: Steer analysis of OD data

Zone categories

3.50 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones, and influenced by various towns, cities, states and regions in the vicinity of the Asset, we have aggregated zonal data as described in the Table 3.16 below. The methodology behind this aggregation of zones may vary as per the characteristics displayed by the different Assets being studied.

Table 3.16: Zone aggregations for zonal influence analysis

Aggregate Zone	Description
Local	Local zones are those that fall on or very close to the Asset.
Immediate area of influence (IAOI)	IAOI zones are the locations which generate traffic and lie within approximately 75-150 km distance from the Asset.
Rest of Telangana	Rest of the cities/Districts in Telangana other than Local/IAOI
Rest of Andhra Pradesh	Rest of the cities/Districts in Andhra Pradesh other than Local/IAOI
Rest of South India	Tamil Nadu, Karnataka, Kerala, Puducherry
West India	Maharashtra, Gujarat, Rajasthan
North India	Jammu & Kashmir, Punjab, Himachal Pradesh, Haryana, Delhi, Uttar Pradesh, Uttarakhand
Central India	Madhya Pradesh, Chhattisgarh
East & Northeast India	Bhar, Jharkhand, Odisha, West Bengal, Northeast Indian states
Outside India	Nepal, Bhutan

Source: Steer analysis

Zonal influence

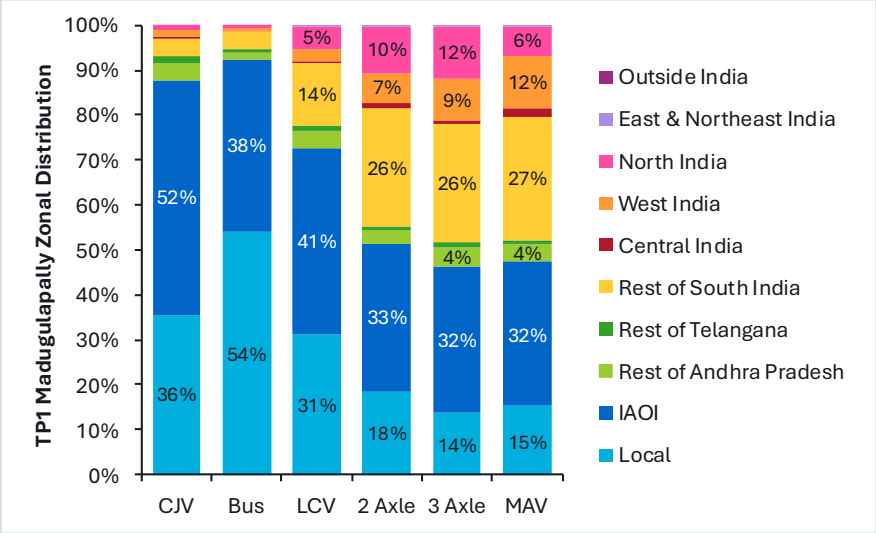
3.51 The zonal influence is the contribution of a zone or the zonal aggregation to trips by a vehicle type. This section presents the zonal influence at each toll plaza of the Asset, aggregated based on zonal aggregation listed in Table 3.16 above. Please note that zonal influence is analysed on trip ends and not trips.

3.52 Figure 3.12, Figure 3.13 and Figure 3.14 below present the zonal influence by vehicle type at all three toll plazas on the Asset. At all the three toll plazas, the zone category with the highest influence is IAOI, across the vehicle categories.

3.53 At TP1, we see that unlike the other two plazas, local trips also have major influence, especially among CJV and Bus. This is because the TP1 (Madgulapally) is located near the major urban agglomeration of Hyderabad. The CJV traffic on the corridor caters to the local demand connecting key towns of Nalgonda, Miryalguda, Guntur, Pidugurlla, and others. Among the goods vehicles we see the Rest of South India accounts for a high share, with influence on MAV trips at 23 - 34% of all MAV trips crossing the plaza. This is

because the Asset is a major access road to Chennai, which is a major port and manufacturing hub. 6 - 12% of MAV traffic is also influenced by West India. North India also shows significant influence – at 10% and 12% respectively for 2As and 3As observed at TP1.

Figure 3.12: Zonal influence at TP1

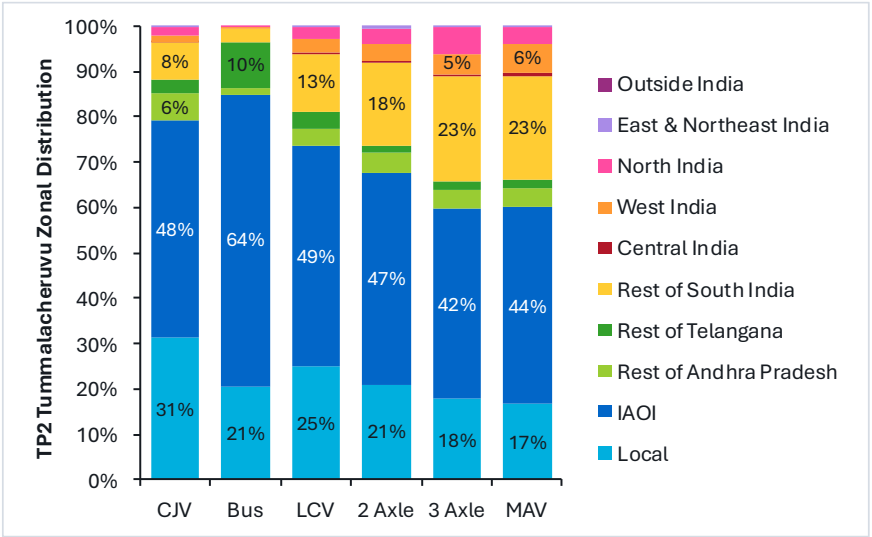


Source: Steer analysis of OD data

3.54 LCVs and 2A trucks serve a relatively more local market, connecting the industrial nodes on the Assets and regions of Pidgurulla, Addanki, and Miryalguda, the same is also validated through the high zonal influence of the state in these categories.

3.55 At TP2, both IAOI and Rest of Andhra Pradesh have a high influence. This is because the toll plaza is located near several cement plants, which generate significant truck volumes appearing on the Asset. These cement plants cater to demand from both distant centres like Chennai, as well as centres in rest of the state like Guntur. 4% of the MAV traffic is influenced by the Rest of Andhra Pradesh, whereas the Rest of South India shows an influence of 23% on all MAV trips observed at TP2.

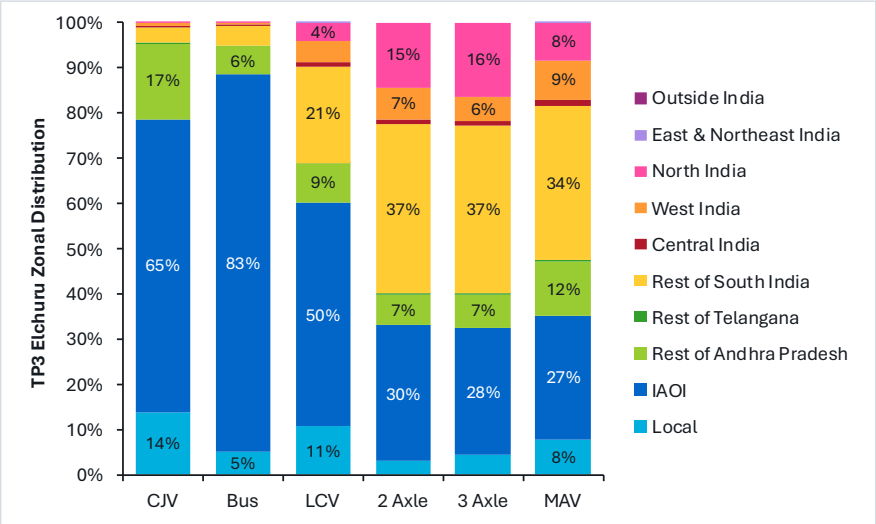
Figure 3.13: Zonal influence at TP2 (2025)



Source: Steer analysis of OD data

3.56 The zonal distribution at TP3 is somewhat similar to that of TP1. The Rest of South India influence ranges from 33 - 37% among goods vehicles, which is primarily dominated by Tamil Nadu, with trips going towards Chennai. The Rest of Andhra Pradesh's influence on MAV trips at TP3 is at 12%.

Figure 3.14: Zonal influence at TP3

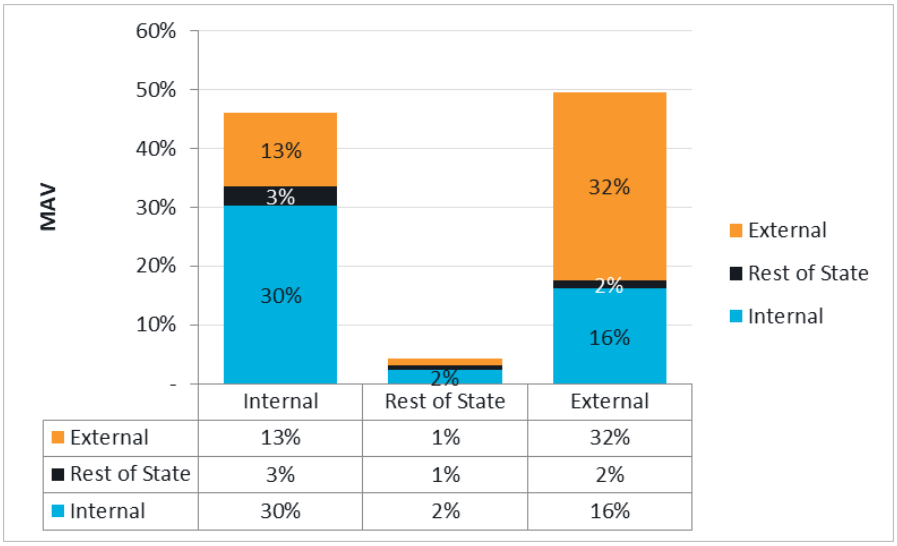


Source: Steer analysis of OD data

Internal-External analysis

3.57 Internal-External analysis helps in identifying the trips which have both the origin and destination on or near the Asset i.e., local/IAOI zones (Internal-Internal or I-I), any one end on the Asset (Internal-External or I-E), or neither end on the Asset i.e., through trips (External-External or E-E). RoS here represents areas within the state (Telangana and Andhra Pradesh for the Asset under consideration) which are neither local nor IAOI. 'Internal' zones are those that were analysed as 'local' and 'IAOI' in the zonal influence analysis, i.e., lying on the Asset, while 'External' zones are areas lying outside the state.

Figure 3.15 Internal-external distribution at TP1

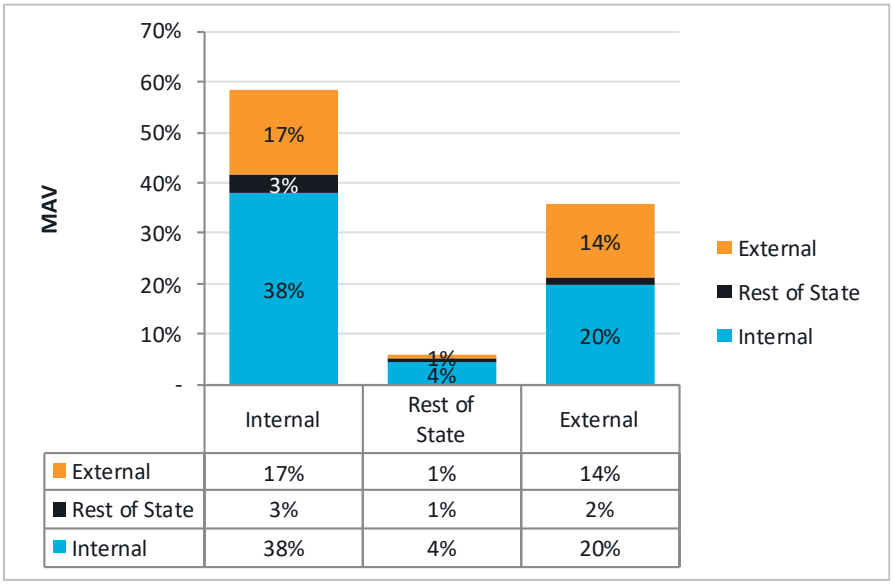


	Internal	Rest of State	External
External	13%	1%	32%
Rest of State	3%	1%	2%
Internal	30%	2%	16%

Source: Steer analysis of OD data

3.58 Figure 3.15, Figure 3.16 and Figure 3.17 show the distribution of trips based on these categories specifically for MAV. Understandably, these reflect the observations made in the zonal influence analyses presented earlier, at a higher level of aggregation, but at a trip level.

Figure 3.16: Internal-external distribution at TP2 (2025)



	Internal	Rest of State	External
External	17%	1%	14%
Rest of State	3%	1%	2%
Internal	38%	4%	20%

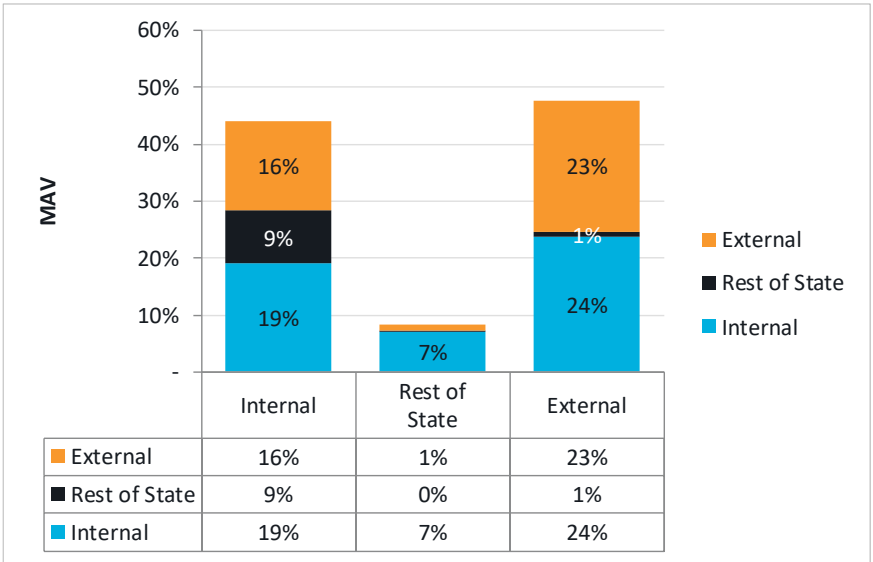
Source: Steer analysis of OD data

3.59 At TP1, we see that the external zone influenced trips form a majority, ~64% of MAV trips have at least one end lying in a zone External to the Asset. We also see that the highest share is of E-E trips (32%). This confirms our assertion that the Asset is a major route for through-trips, connecting areas in both the north and west of the country with the southeastern regions like coastal Andhra Pradesh and Tamil Nadu.

3.60 TP2 sees the highest share of MAV trips between internal zones, i.e., I-I (38%). This is because these MAVs are largely influenced by the presence of several cement production units in the vicinity which supply to consumption centres like Hyderabad, Guntur etc. which are located within the “Internal” zones to the Asset.

3.61 At TP3 as well we see that the largest proportion of trips are influenced by External zones (~65%) among the MAVs. This reiterates that the Asset serves as a major route for through-traffic which travels long distances.

Figure 3.17: Internal-external distribution at TP3



	Internal	Rest of State	External
External	16%	1%	23%
Rest of State	9%	0%	1%
Internal	19%	7%	24%

Source: Steer analysis of Client OD data

Commodity distribution

3.62 We have grouped various commodities into aggregate categories for ease of interpretation, as shown in Table 3.17 below. The charts in the following sub-section present information in terms of these aggregate commodity categories.

Table 3.17: Aggregate commodity categories

Commodity Description	Code	Combined codes used for charts
Agriculture Products / Cash crops (Wheat, Rice, Sugar cane,Maize etc.)	AGR	AGR
Cattle Food / Live Stock (sheep, ghoat, cow,cattle food etc)	LIV	
Perishable Items (Fruits, vegetables)	PER	GRO
Animal Products/Dairy/Eggs/Fish/Meat/Animals	DFM	
Groceries / Food items (Soap, Salt, Sugar, Pulses, Spices, Biscuits, bread,cool drinks, beer etc.)	GRO	
Fly ash	FAS	CNS
Sand	SND	
Bricks	BRC	
Granite	GRN	
Stone (kota stone, Aggregate stone etc.)	STN	
Ceramic	CRM	
Petroleum Products (Oil, LPG, CNG, etc.)	PET	PET
Chemicals / Fertilizers (Acids,Fertilizers etc.)	CHM	
Electrical/Manufacturing items (Electronic items, Medicine, Leather, Wine, Rubber/ Tyre, Plastics, Cloth, Paper etc.)	MAN	MAN
Machinery / Spare parts	MAC	
Raw Wood,Cork & Wood Products, Furn	WUD	
Subadul wood	SBW	
Automobiles (Finished products, auto parts, Car/bike manufacturing)	AUT	AUT
Parcel and Courier including Delhivery, Amzon, flipkart etc	PAR	MSC
Miscellaneous (House hold items, any other commodties different then mentioned in list etc.)	MSC	
Container	CTR	
Passengers	PAS	
Scrap	SCR	
Coal	COAL	MET
Mining Minerals (Gypsum, Cobalt etc.)	MIN	
Basic / Fabricated Metals (Iron, Steel / Metal)	MET	
Empty	EMT	EMT
Cement	CMT	CMT

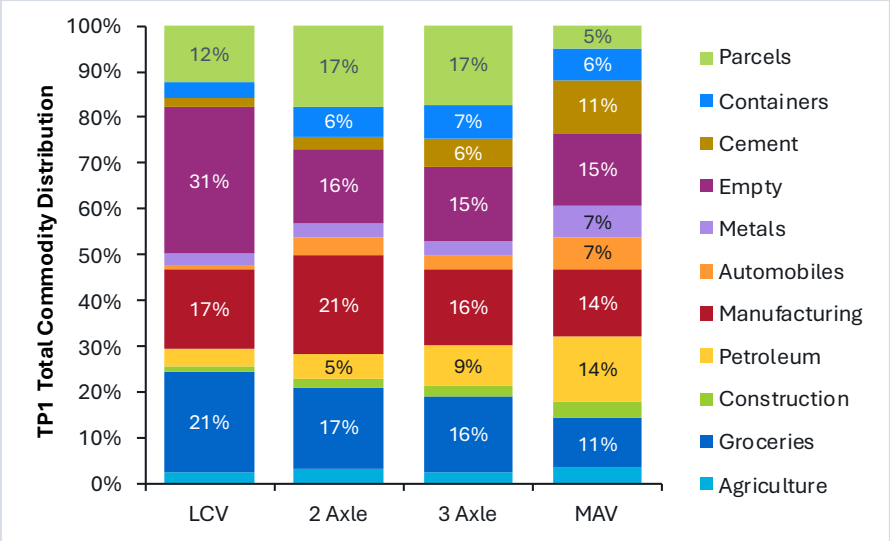
Source: Steer analysis

3.63 Figure 3.18, Figure 3.19 and Figure 3.20 below present the commodity distribution for goods vehicles at the three toll plazas.

3.64 At TP1, manufactured goods, specifically machine parts and electrical items, constituted the primary commodity transported by all goods vehicle categories. For Multi-Axle Vehicles (MAVs), this was followed by cement (11%), and equally by automobiles, and metals(7%).

3.65 Looking at the commodity distribution on TP1 by direction, we observe that only 7% of MAVs carry cement towards Addanki as compared to 18% carrying the same towards Nalgonda. This difference is attributable to the presence of cement plants located in the area between TP1 and TP2. Thus, the trucks carrying cement from the plants to areas such as Hyderabad appear at TP1 travelling towards Nalgonda.

Figure 3.18: Commodity distribution at TP1 (Total)



Source: Steer analysis of OD data

3.66 As also observed during our site visits, we see that manufactured products, agricultural and grocery items make up the top two aggregate categories at TP1. manufactured products and miscellaneous products form the top two categories at TP3. Groceries also find a consistently high share in the commodity distribution across the three toll plazas, especially at TP2 (ranging between 17% to 35% across vehicle categories).

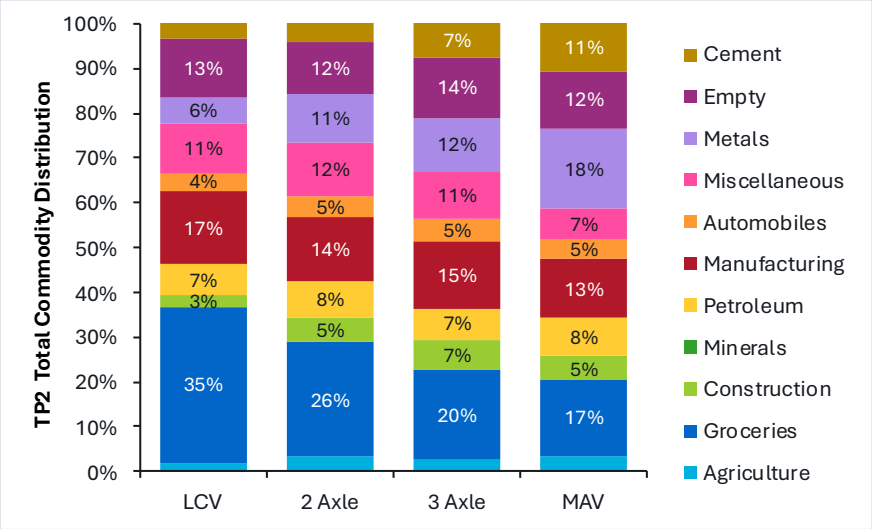
3.67 The high share of manufactured products can be attributed to the presence of automobile parts manufacturing units in Sriperumbudur and other industries that have been setup in Telangana and AP. Presence of several warehouses for logistics companies and e-commerce ventures also increase the share of manufactured goods/miscellaneous categories.

3.68 Cement shows a 11-14% share for MAVs across the three toll plazas on the Asset. Most of these cement carrying trucks originate in the areas surrounding TP2 which forms a local cement manufacturing cluster near the Asset. The robust demand for cement and

associated construction materials in Andhra Pradesh and Telangana is a direct result of the region's development initiatives and extensive infrastructure development[18][19].

3.69 At TP2 the key differences are a higher share of cement carrying MAVs going towards Addanki (16% compared to 5% towards Nalgonda) while metals show a reverse directionality (25% towards Nalgonda against 12% towards Addanki).

Figure 3.19: Commodity distribution at TP2 (Total)



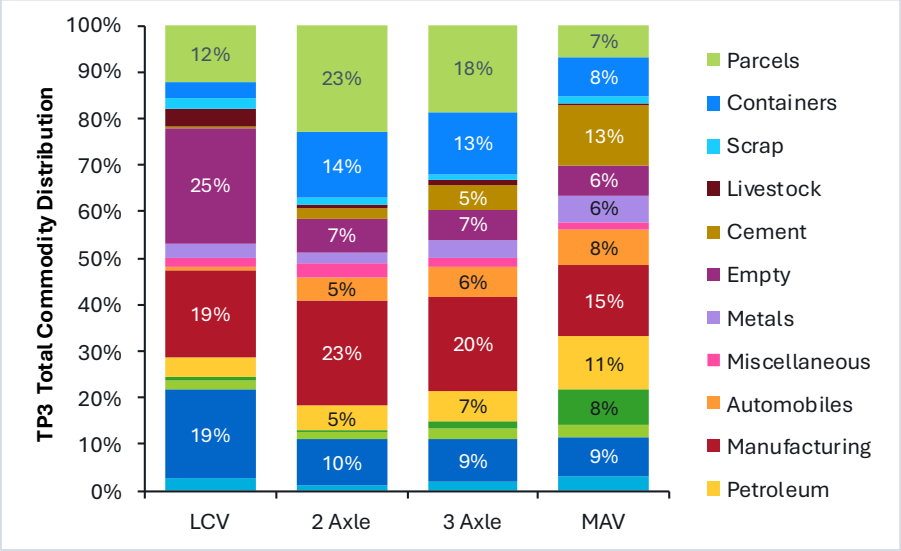
Source: Steer analysis of OD data

3.70 A similar trend in differences exists at TP3, with mining materials accounting for higher share of total commodities that travel towards Nalgonda, and cement accounting for a higher share of total commodities travelling towards Chennai.

[18] Andhra Pradesh posts highest Capex increase among states for FY-26 | Vijayawada News - Times of India

[19] Telangana Budget 2025-26 Highlights: Rs 3.04 lakh crore outlay, mega master plan 2050 for industrial growth - India News | The Financial Express

Figure 3.20: Commodity distribution at TP3 (Total)



Source: Steer analysis of OD data

Trip length analysis

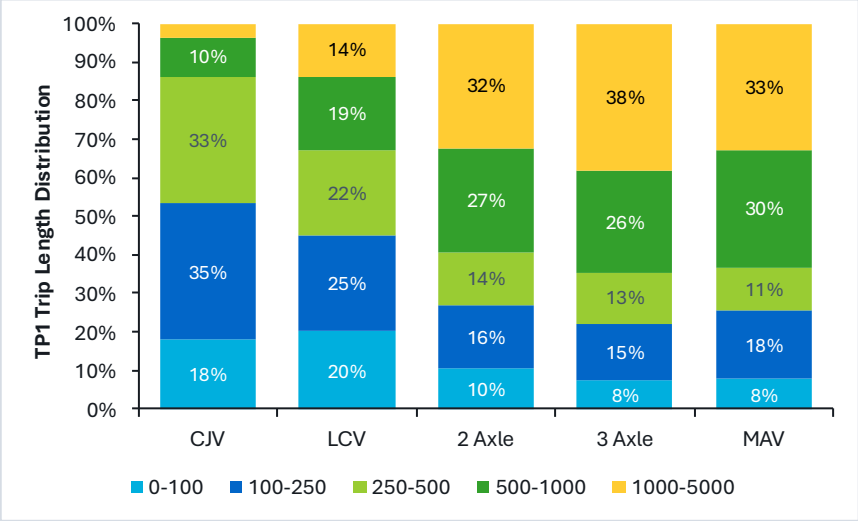
3.71 Trip-length distribution provides the distance-based trip profile of each vehicle category observed at each of the toll plazas on the Asset. This analysis aids in validating our assumptions on the share of macro-economic drivers for forecasting background traffic growth on the Asset, our analysis outputs from the zonal influence analysis, as well as the toll segmentation analysis outputs from our historical traffic data analyses. The trip distances were derived as driving distances from Google Distance Matrix Tool[20] based on zonal coordinates for OD pairs. For the ease of interpretation, we have categorised distances into 5 groups:

- Local (0-100km)
- Short-distance (100-250 km)
- Medium-distance (250-500 km)
- Long-distance (500-1000 km) and
- Very-long-distance (1,000 – 5,000 km)

3.72 As presented in Figure 3.21, Figure 3.22 and Figure 3.23 below, for LCVs, the largest share of trips at TP1 and TP2 are local or short-distance (35-45%). Whereas the largest share of TP3 LCV trips is of long-distance (500-1000km).

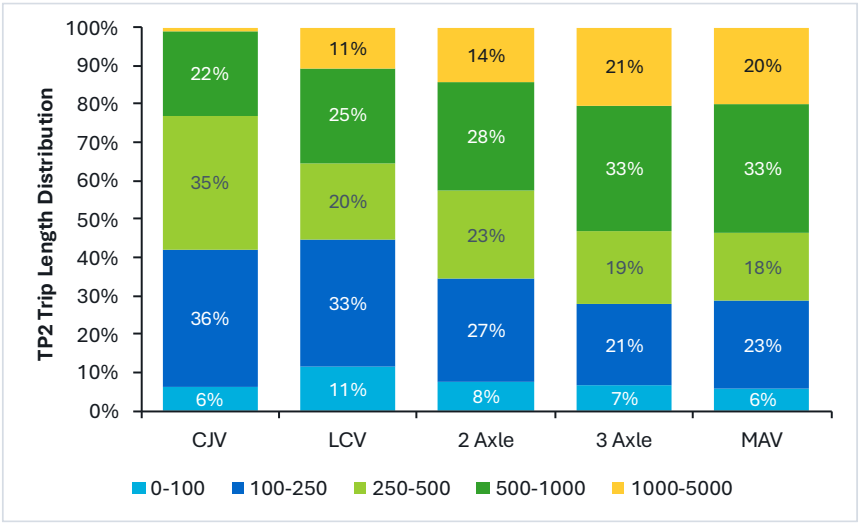
[20] Google Distance API is a tool that is available on a chargeable basis from Google Maps Platform. Link: https://developers.google.com/maps/documentation/distance-matrix/start. Travel distance and time information for driving under various scenarios can be extracted using macro-enabled Excel, R, etc.

Figure 3.21: Trip length distribution TP1



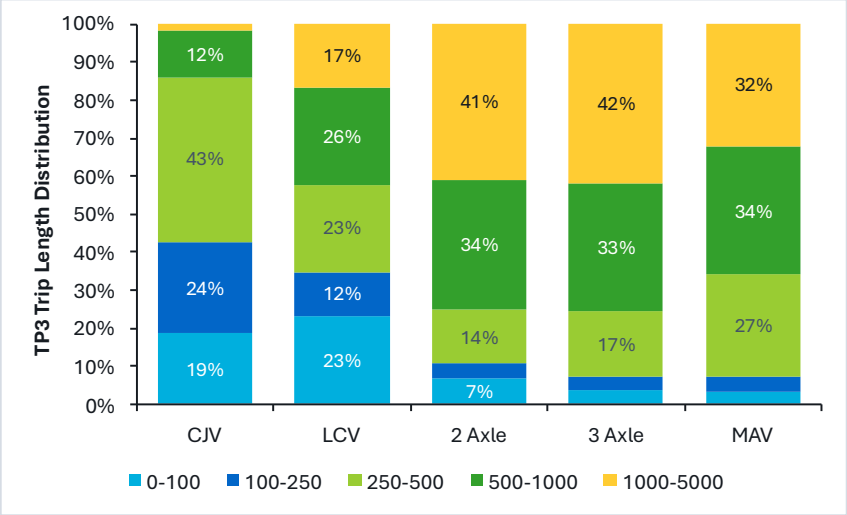
Source: Steer analysis of OD data

Figure 3.22: Trip length distribution TP2 (2025)



Source: Steer analysis of OD data

Figure 3.23: Trip length distribution TP3



Source: Steer analysis of OD data

3.73 Long-distance movement is observed at all three toll plazas, with MAVs accounting for a considerable share of trucks travelling over 500 km. Trips on TP1 and TP3 have a higher proportion of very long-distance (>1000km) trips. While TP2 also exhibits a significant proportion of long-distance Multi-Axle Vehicle (MAV) trips, this share is lower than at TP1 and TP3. This can be attributed to the influence of the Guntur/Vijayawada region, as well as the proximity of cement plants, which serve as frequent origins or destinations for trucks utilizing the Asset.

Conclusions

3.74 In summary, CJVs account for the largest share of traffic across all three toll plazas on the Asset, with TP1 and TP2 exhibiting the highest shares, while TP3 share of CJVs are similar to its share of MAVs. MAVs on the Asset account for significant share of total traffic observed at each of the three plazas as well ranging from 15% of total traffic at TP1 to 25% of total traffic at TP3.

3.75 Historically across the period FY18-FY26 the toll plazas have grown by the following PCU CAGRs; TP1 at 6.7%, TP2 at 4.6% and TP3 at 5.9%. These strong growth trends can be attributed to regional industrial activities (primarily driven by the cement industry in proximity of the Asset) and strong urban-rural linkages supported by this corridor.

3.76 Ticket segmentation reveals that for CJVs, return tickets form a significant share, reflecting patterns of commuter and short-haul regional travel. For MAVs, single tickets are clearly dominant, making up nearly 70-75% of tickets issued, consistent with their use for long-distance goods movement.

3.77 TVC and TMS data correlation shows high system reliability, with variation within acceptable margins, reaffirming confidence in the tolling infrastructure and its capacity to capture accurate traffic volumes.

3.78 OD analysis indicates that TP1 and TP2 see a higher proportion of regional and short-distance trips by CJVs, highlighting their utility for local commuting. In contrast, TP3 has a higher incidence of long-distance freight, especially from Rest of South India and Central India, prominently carried by MAVs.

3.79 Manufactured products, cement, and agricultural goods emerge as the key commodities transported via the Asset, with cement particularly significant at TP2 and TP3 due to the Assets proximity to cement clusters as discussed in Chapter 2. The trip length analysis supports this—while LCVs show a larger share of sub-500 km trips, MAVs at all three toll plazas consistently dominate in the 500 km+ trip segment.

4 Socio-economic context

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the roads are in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions in the region where the Asset is located and the country. These include:

- Changes in factors such as population, economic growth (regional and national) and industrial production; and
- Other local factors such as strategic port growth, and growth in local industries near the Asset.

4.2 In turn, the change in the relative competitive position of the Asset (and thus of the traffic capture they can achieve) is a function of the relative costs, and benefits offered by the Asset to that of other competing roads. These costs and benefits can be in terms of actual monetary costs, time savings, or via other less tangible but important aspects suggest as the Asset's safety features and offered reliability in travel times.

4.3 In this chapter, we assess and present trends in the above socio-economic growth drivers that we believe influence the background traffic growth of the Asset. This includes an analysis of regional economic data trends relative to nationwide benchmarks. For the impact of competing roads (existing or planned) on the Asset, Chapter 6 presents a more detailed view on how we believe traffic growth on the Asset may be affected.

Population growth

4.4 For this study, we have analysed the key socioeconomic drivers of the background traffic demand in the states of Telangana and Andhra Pradesh, given that the Asset is located within, and is influenced by wider regional economic factors in both these states.

National level

4.5 The total population in India has grown at a CAGR of 1.5% between 2000 and 2015, decreasing over the years, as shown in Table 4.1 below. The World Bank forecasts this growth to decrease to 0.6% CAGR by the 2030-45 period[21].

[21] World Bank Data on Health Nutrition and Population

Table 4.1: CAGR of population in India

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
1970 - 1985	2.3%	1.9%	3.8%
1985 - 2000	2.0%	1.7%	2.9%
2000 - 2015	1.5%	1.0%	2.6%
2015 – 2030*	1.0%	0.3%	2.3%
2030 – 2045*	0.6%	-0.3%	1.9%

Source: World Bank Data on Health Nutrition and Population Statistics, *forecast population growth

State Level

4.6 Table 4.2 below shows the evolution of population in Andhra Pradesh and Telangana compared to that of the country. As Table 4.2 shows, the populations of both Andhra Pradesh and Telangana have grown at a slower pace, compared to that of India. As of FY24, Andhra Pradesh holds a 3.8% share in India's population, while Telangana has a 2.7% share.

Table 4.2: Population Growth in India (2012 – 2024)

State	2012 Population (m)	2024 Population (m)	CAGR (2012 – 2024)
Andhra Pradesh	49.3	53.2	**0.7%**
Telangana	35.7	38.2	**0.6%**
India	1,210	1,395	**1.2%**

Source: Ministry of Statistics and Program Implementation estimates

4.7 Due to the complexities of the patterns in which urbanisation takes place, and the very dynamic nature of local population migration (which are very difficult to forecast with accuracy), we do not use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide socio-economic context of population growth in the region where the Asset is located.

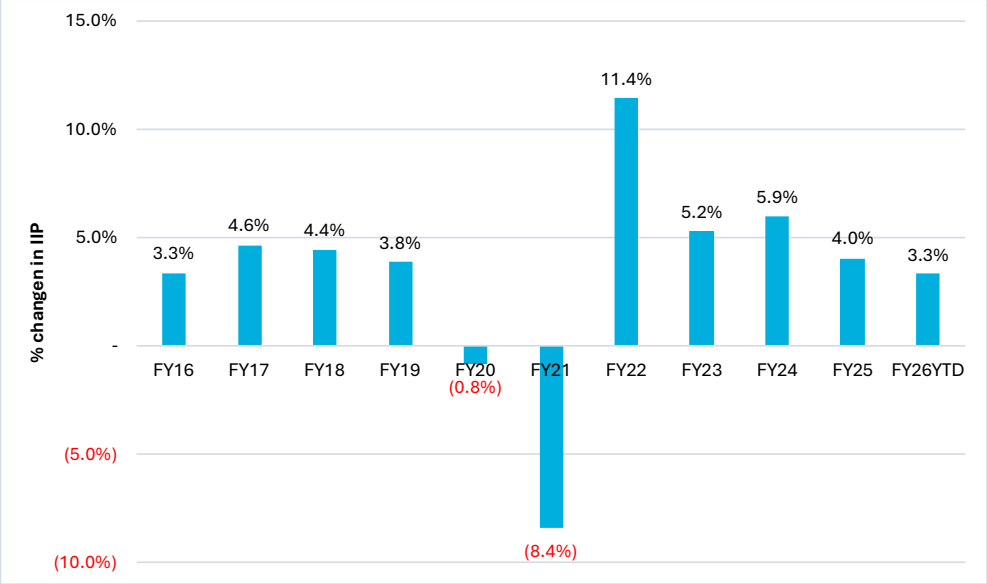
Economic Indicators

Industrial Production

4.1 The Index of Industrial Production (IIP) is a composite indicator that measures the short-term changes in the volume of production for a basket of industrial products. The IIP data tracks the manufacturing activity in different sectors of an economy, with mining, manufacturing, and electricity being the three broad sectors constituting the IIP.

4.2 The figure below shows that at an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20. In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. Post the immediate recovery in FY22, IIP growth has since stabilised, with FY25 recording 4%, and FY26YTD (till February 2026) recording 3.3% growth over FY25.

Figure 4.1: Annual growth – Index of Industrial Production



Source: Ministry of Statistics and Program Implementation (MoSPI)

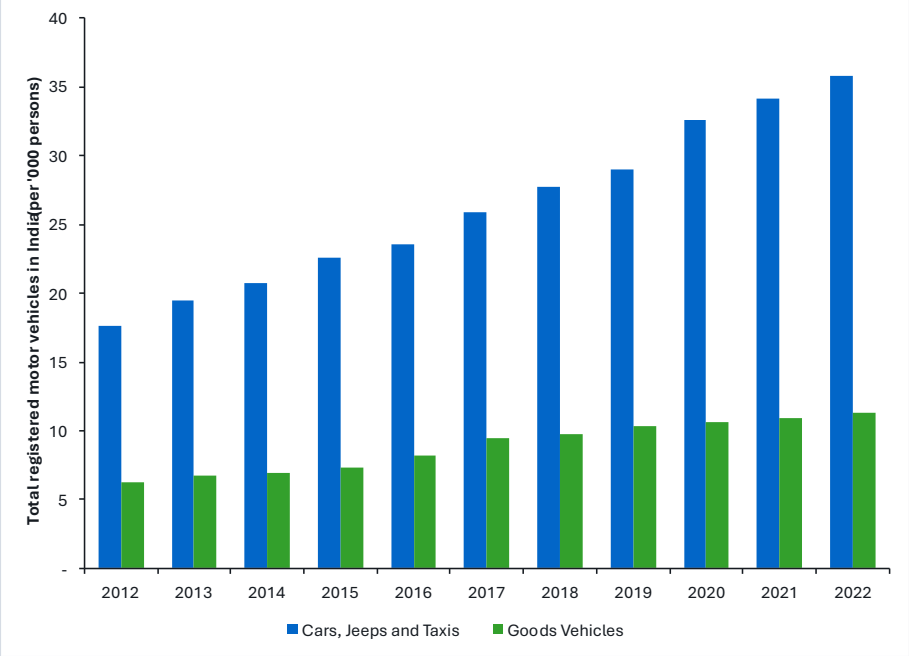
4.3 Since state-level IIP data is not as readily available as national level IIP, we have presented national IIP here to indicate nationwide activity in key industrial sectors like power, manufacturing, and mining, all of which influence long-distance commercial movements across the nation. We, however, do not use it to forecast future travel demand growth since long-term forecasts for IIP is not available through official sources such as MOSPI, RBI or through multilateral organisations like WB, or the IMF.

Vehicle ownership

4.4 The gap in car ownership between India and developed nations remains substantial – with 36 cars/jeeps/taxis and 11 commercial vehicles per thousand people, as of FY22 (the latest year for which official data is available). However, with increasing per capita income levels, a booming economy and the subsequent increase in demand for mobility, the number of registered vehicles has been on a gradual upward trend

4.5 Overall, India still stands at a very nascent stage in the vehicle saturation curve, offering huge potential for growth going forward. Between FY12 and FY22, the CAGR for CJV and goods' vehicles registered in India was 8.6% and 7.3% respectively

Figure 4.2: Total number of registered motor vehicles in India (per 1000 population)

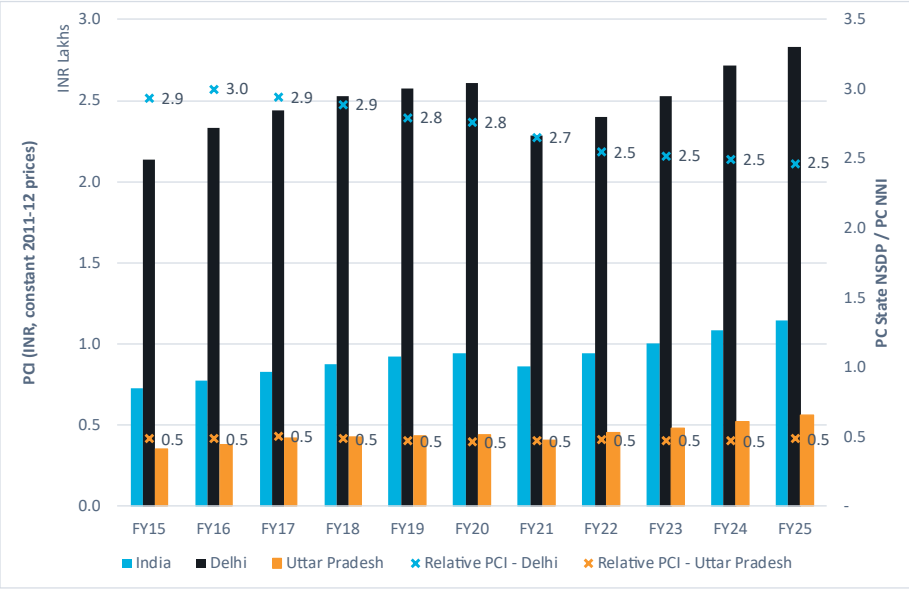


Source: Ministry of Road Transport and Highways (MoRTH)

Per Capita Income (PCI)

4.6 As per the latest data from MOSPI and as can be referred to in Figure 4.3, in FY25, Telangana's per capita income at current prices was ₹1,92,128, while Andhra Pradesh's was ₹ 1,41,609. In comparison, India's per capita income for the same period stood at ₹1,14,710. This indicates that Telangana's per capita income was approximately 67.5% higher than the national average, and Andhra Pradesh's was about 23.4% higher. These figures highlight the relatively stronger economic performance of both states compared to the national average, and their robust regional economic profiles.

Figure 4.3: Per Capita Income



Source: Steer Analysis of Ministry of Statistics and Program Implementation (MoSPI) Data

4.7 Given the difficulty in obtaining up-to-date district level PCI data for different states in India, we have not presented district level PCI data as part of our analysis above. Though per capita income is a statistically robust metric to base background traffic growth on, the unavailability of long-term forecasts of PCI precludes its use in forecasting future traffic growth. We therefore do not use PCI as a growth driver in our background traffic growth forecasts.

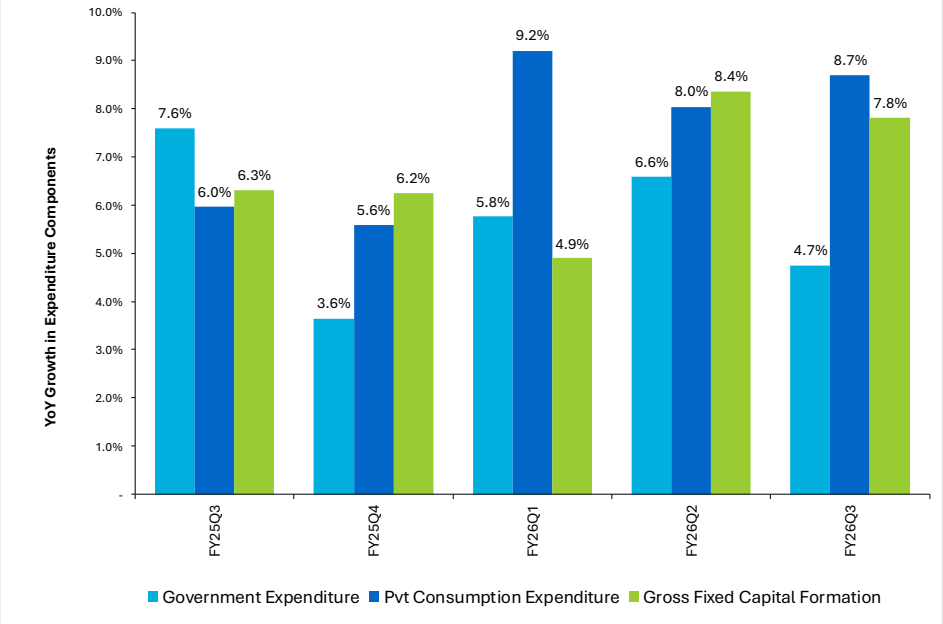
Economic growth

India's Performance

4.8 Despite a slowdown in the economy during H1FY25, the Indian economy has observed strong growth each quarter since FY25Q2, with the latest published estimates for FY26Q3 GDP at 7.8% over FY25Q3. This performance has been driven by strong growth in investment and consumption expenditures and higher consumer optimism for the year ahead [22]

4.9 The figure below, we present quarterly Y-o-Y growth in three major components of GDP – government expenditures, consumption expenditures, and business investment (gross fixed capital expenditure) over the past year (FY25Q3-FY26Q3).

Figure 4.4: YoY growth in expenditure components of GDP



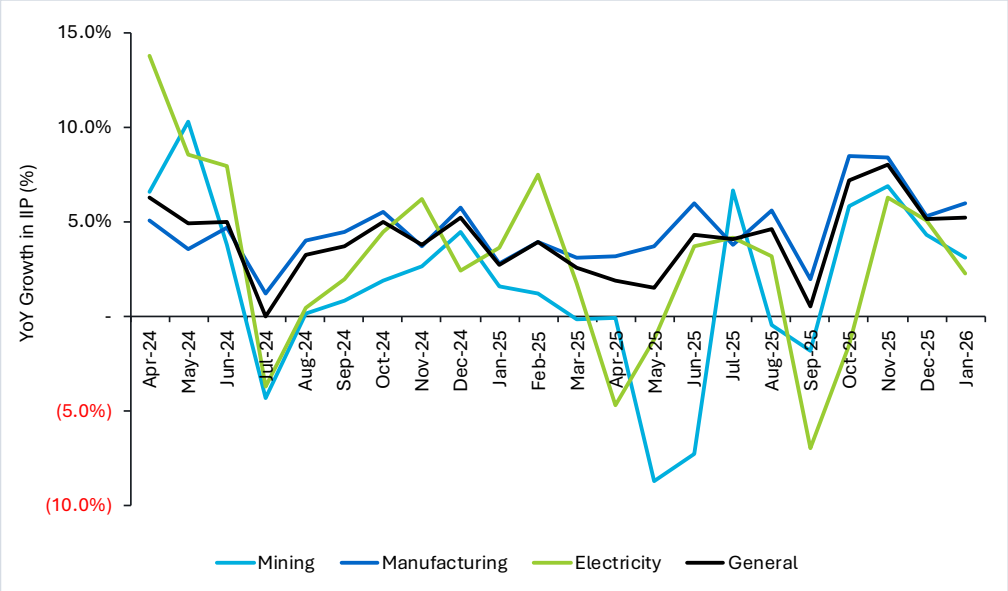
Source: Steer Analysis of MOSPI Data

4.10 While consumption and investment expenditures have continued to show consistent growth over the past two quarters, government expenditures observed a marginal decline in FY25Q4. In FY26Q1, government expenditures rebounded, recording 5.8% growth over FY25Q1 levels.

[22] Press Note on New Series of GDP Estimates

4.11 Performance across different types of industrial activities (such as Mining, Manufacturing, and Power Generation) directly impact freight movement and commercial traffic volume growth across the country, including on the Asset. In the figure below, we present growth trends in IIP – a measure that tracks the performance of the economy across these activities. As of FY26YTD (Apr'25-Feb '26), the Manufacturing sector continues to perform strongly, recording positive y-o-y growth since FY25Q3. While industrial activity across the two other sectors (i.e., Power Generation and Mining) dropped between May and Jun/Jul '25, they have since rebounded and show signs of continued growth going forward.

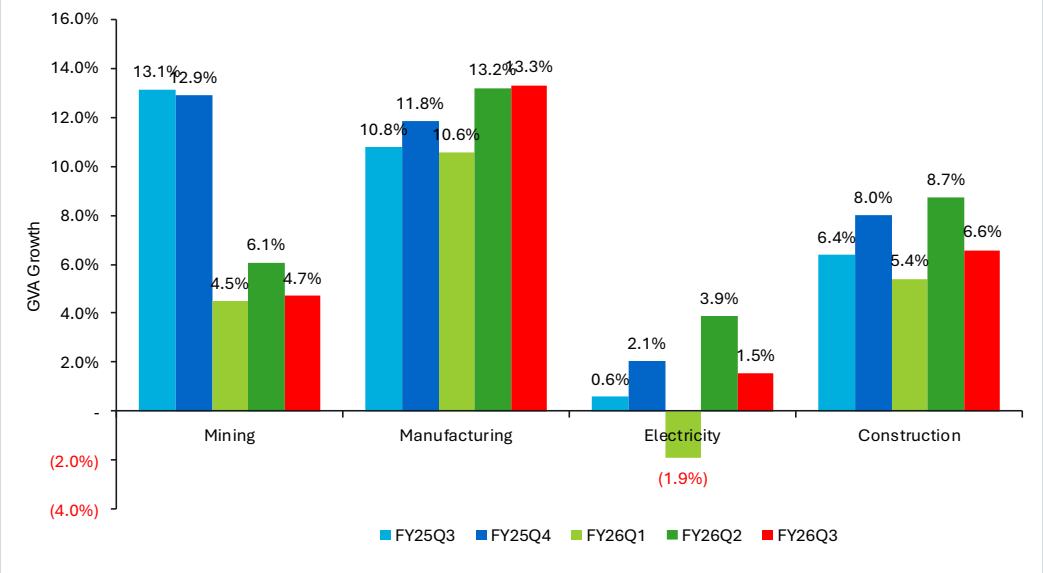
Figure 4.5: Month on Month IIP performance



Source: Steer Analysis of MOSPI Data

4.12 In addition to monthly trends in IIP, the figure below presents y-o-y growth of quarterly GVA in four industrial sectors - Mining (& Quarrying), Manufacturing, Electricity (and other Utilities), and Construction. While the Mining and Power sectors observed decline and muted growth in FY26Q1, the Manufacturing and Construction sectors experienced strong growth. While overall economic growth has remained resilient as of FY26YTD, performance across industries have varied, impacting economic growth across different regions and on the Asset as well.

Figure 4.6: Industrial components of GVA

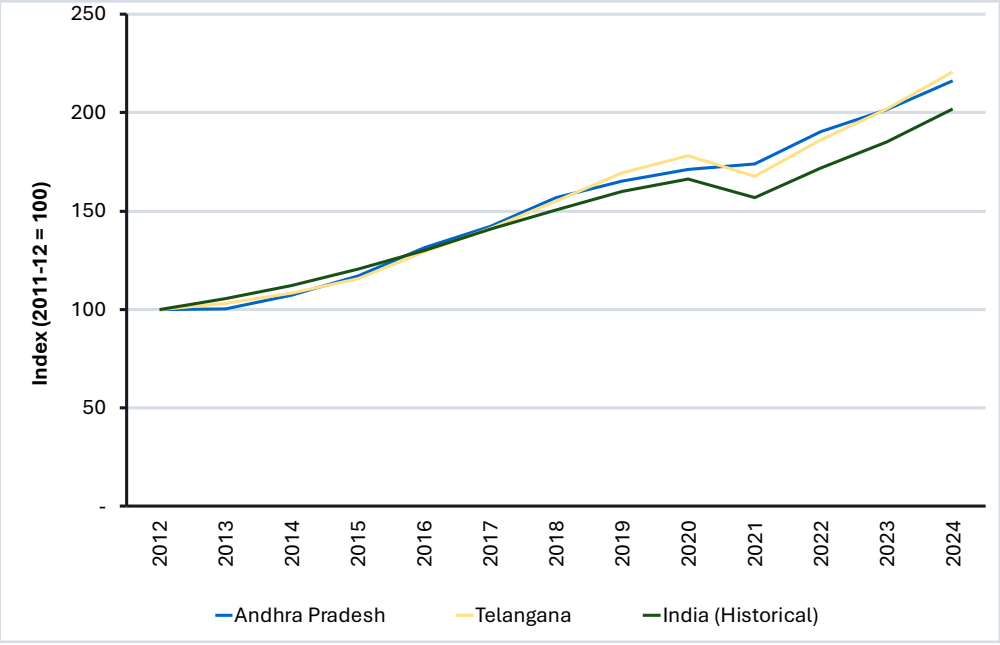


Source: Steer Analysis of MOSPI Data

GDP and GSDP Growth

4.13 The Indian economy has grown at a CAGR of 5.9% during FY12-24, aided by a strong growth in the services/tertiary sector. The economic performance of Andhra Pradesh and Telangana was weaker than the national average till FY15. However, as can be seen in Figure 4.7 below, GSDP growth of Andhra Pradesh and Telangana have outpaced national GDP growth since FY17. In FY19, Andhra Pradesh and Telangana showcased an impressive growth of 11.0% and 10.5% respectively, compared to 6.6% growth in GDP in the same period. Both the states contributed close to 4.7% and 4.5% each to the national GDP in FY24, highlighting their vital role as contributors to the country's total GDP.

Figure 4.7: Evolution of Andhra Pradesh's state GDP and national GDP



Source: Ministry of Statistics and Program Implementation (MoSPI); The years on the x-axis correspond to financial years (e.g., 2012 represents FY 2011-12).

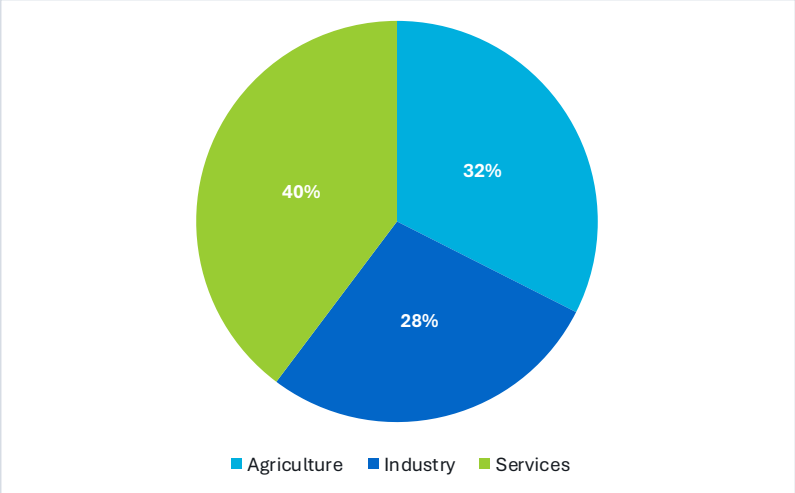
Economic activity in the state

Andhra Pradesh

4.14 As seen in Figure 4.8 below, in terms of sectoral contribution to the state GSDP, the tertiary sector (40%) has the highest share followed by the primary (32%) and secondary (28%) in FY24. As per the Socio-Economic Survey 2024–25, the Gross State Domestic Product (GSDP) of Andhra Pradesh at current prices is estimated at ₹16.06 lakh crore for the year 2024–25, reflecting a robust growth rate of 12.94% over the previous year. This expansion has been driven by balanced growth across agriculture (₹5.19 lakh crore, 15.86% growth), industry (₹3.41 lakh crore, 6.71% growth), and services (₹6.11 lakh crore, 11.70% growth). The state's per capita income for 2024–25 is projected at ₹2,68,653, significantly higher than the national average of ₹2,00,162, indicating improving living standards[23].

4.15 Andhra Pradesh has experienced rapid industrialization with the onset of major industries such as oil, petrochemical, construction (cement) and minerals sector. The state houses several cement plants such as Ramco Cements Limited, Ultratech Cement Limited, Zuari Cement Limited and Dalmia Cement (Bharat) Ltd. The state also has one of the major ports of India in the city of Visakhapatnam and two private ports in Krishnapatnam and Gangavaram. The city Vishakhapatnam also serves as a major industrial centre of the eastern coast, with several public sector undertakings (PSUs) set up. These include the Vishakhapatnam steel plant run by Rashtriya Ispat Nigam Limited (RINL), an oil refinery owned by Hindustan Petroleum, Hindustan Shipyards, as well as several defence industries as Vishakhapatnam serves as a major base for the Indian Navy.

Figure 4.8: Sectoral contribution to Andhra Pradesh GSDP (FY24)



Source: Steer Analysis of Ministry of Statistics and Program Implementation (MoSPI) Data

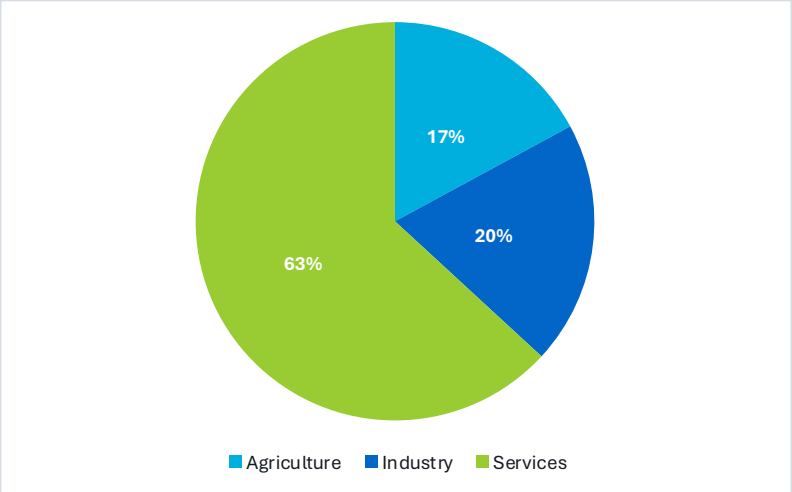
[23] AP Finance

Telangana

4.16 The state of Telangana was formed in June 2014 post the split of erstwhile Andhra Pradesh. The earlier capital city of the united state, Hyderabad, is now part of Telangana. The capital city of Hyderabad is considered a hub for information technology and pharmaceutical sectors. As seen in Figure 4.9 below, in terms of sectoral contribution to the state GSDP, the contribution of the services sector is highest (~63%) as of FY24.

4.17 In 2023–24, Telangana's Gross State Domestic Product (GSDP) at current prices was estimated at ₹14.64 lakh crore, marking an impressive growth of 11.9% over the previous year—outpacing the national growth rate of 9.1%. This growth was primarily driven by the Services sector, which contributed a significant 63% to the state's GSVA, followed by the Industrial sector at 20%, and the Agriculture and Allied sector at 17%. Key growth drivers included information technology, trade, transport, communication, and financial services, highlighting Telangana's shift toward a dynamic, service-oriented economy underpinned by proactive governance and infrastructure development.[24]

Figure 4.9: Sectoral contribution to Telangana GSDP (FY24)



Source: Steer Analysis of Ministry of Statistics and Program Implementation (MoSPI) Data

Forecasts for growth drivers

4.18 In the following section we describe our assumptions in relation to forecasts of the key macro-economic drivers of traffic growth.

National GDP

4.19 After the last period of economic slowdown in FY11-12, the country experienced an economic downturn again in late FY19 with FY20 having reported a GDP growth of 4% (relative to an average growth rate of 7% per year between FY13 and FY19). India's GDP growth declined as domestic investment and consumption demand were already under stress because of the liquidity crunch before COVID-19. Other factors that contributed to the economic slowdown included reduced growth rates in automobile sales and production, liquidity crunch in credit markets and rising number of Non-Performing

[24] tgdps.telangana.gov.in/seo-2024.pdf

Assets (NPAs) within the banking sector, as well as lower manufacturing production and lower rural consumption.[25]

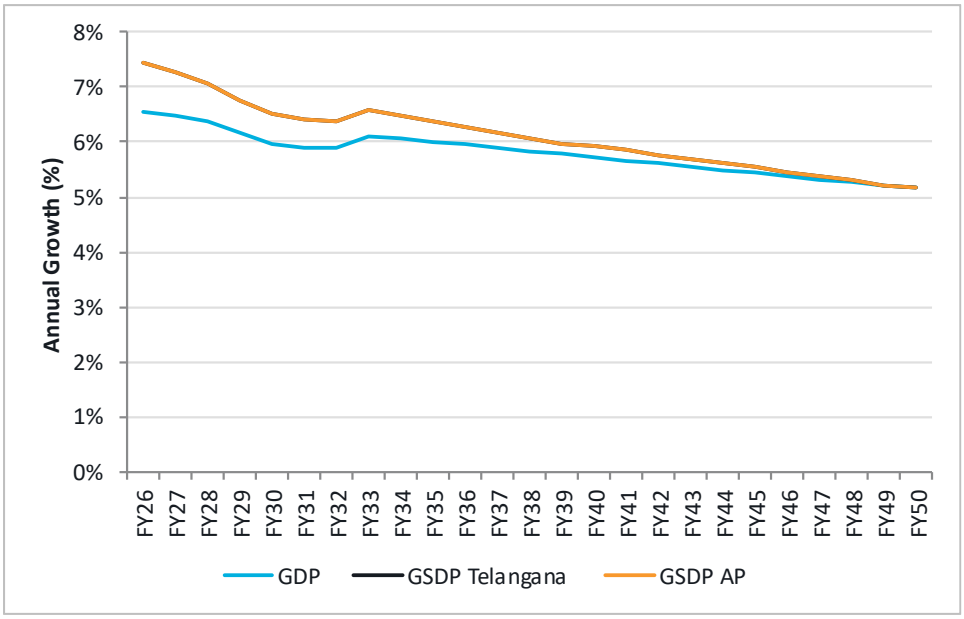
4.20 The COVID-19 outbreak had a significant impact on the Indian economy during the first two quarters of FY21 as government mandated lockdowns across the country effectively stalled economic activity and growth. The growth momentum eventually picked up in Q3 of FY21, with a sharp rebound in the economy in FY22 (GDP recorded 9.7% growth over FY21) and has since observed a consistent growth of 7.6% in FY23, 9.2% in FY24.

4.21 Figure 4.10 below shows Client-provided GDP projections for India. The forecast provided expects national GDP to grow at 6.5% between FY26-FY28 and gradually tapering down to 5.2% by FY50. The India GDP growth forecast is broadly in line with other independent forecasts available from reliable sources such as IMF, World Bank and RBI in the medium term.

4.22 Based on client projections, the Gross State Domestic Product (GSDP) in both Andhra Pradesh and Telangana is expected to outpace the national growth rate in the near to medium term. However, over the long term, we anticipate their GSDP growth will gradually align with the national average as their economies and industrial systems mature and additional growth potential diminishes.

4.23 Figure 4.10 shows the forecast growth lines for GSDP of Telangana and Andhra Pradesh with the national GDP.

Figure 4.10: GDP-GSDP forecast



Source: GDP and GSDP forecast provided by Client

[25] **Data | India's GDP was on a downward slope even before COVID-19 wreaked havoc - The Hindu** (September 2020)

5 FY26 base year AADT and traffic growth analysis

Introduction

5.1 In this section, we present our approach, assumptions, and estimates for base year AADT and background traffic growth for each vehicle category on the Asset.

5.2 Traffic growth is commonly related to a variety of macro-economic and industry- or commodity-specific factors (hereafter referred to as 'traffic growth drivers'). These growth drivers are typically identified from the results of the OD data analysis and the site visits that help us appreciate the nature of traffic movement – 'what' travels 'where' and 'why'.

As part of this study, we undertook regression analyses to estimate background growth relationships between traffic and the underlying growth drivers. However, our results indicated that estimating statistically robust elasticity coefficients was not possible with the given data. We therefore undertook a detailed benchmarking exercise, coupled with trip length and OD data analyses to estimate the background growth elasticities. These are discussed in detail below.

FY26 Base year AADT estimates

5.3 The base year is the year on which long-term background forecast growth rates are applied to derive year-wise average annual daily traffic (AADT) estimates for forecast years. This is therefore an important aspect of our forecasting approach as traffic and ultimately revenue forecasts for future years are built on top of the base year traffic estimate. We have used FY26 as the base year for AADT estimates for the forecast years.

5.4 As described previously in Chapter 3, to establish the base year (FY26) traffic position, we utilised information from various sources – including from the Client, and our contextual knowledge, to assess a reasonable estimate of current demand on the corridor.

Methodology

5.5 The base traffic for FY26 has been estimated using 11 months of actual traffic data (April to February). Each toll plaza's seasonality correction factors were applied on the actual MADTs of Apr-25 to Feb-26 to obtain seasonally corrected estimates for FY26 traffic. An average of these estimates was considered to be the FY26 base traffic.

Seasonality Correction factors

5.6 Traffic on any Asset varies on a month-on-month level. Such variations maybe due to monsoons (typically Jul to Sept) or due to festivals in the region. E.g. we observe truck

traffic during the first half of the financial year (April-September) is generally lower than the annual average, mainly because of the peak summer season followed by monsoons that affect freight movement patterns in large parts of the country in the July-September period. In addition to these, there may be other seasonal variations specific to the Asset.

5.7 To normalize for these types of variations across the year to provide an AADT estimate, Seasonality Correction Factors (SCF) are used. SCFs are estimated to convert the monthly traffic numbers to an AADT level while accounting for seasonal variation due to local/national festivals, weather changes and/or temporary external impacts. These are typically estimated using historical data for each plaza, by vehicle category, and over multiple years. An SCF >1 means that the traffic for the month is lower than the annual average and vice-versa.

5.8 Table 5.1 below presents the average of FY24 and FY25 SCF used to estimate the AADT for the Asset.

Table 5.1: SCF for TP1 Madgulapally

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.07	0.91	1.00	1.16	0.97	1.11	0.98	1.06	0.99	0.90	0.94	1.00
LCV	1.03	1.01	0.99	1.05	1.03	1.00	0.92	1.03	1.02	1.05	0.93	0.96
Bus	1.05	0.92	1.00	1.03	0.99	1.03	0.97	1.03	1.03	0.96	1.00	1.01
2A	1.08	1.10	1.07	1.08	1.04	0.98	0.97	1.03	0.97	0.98	0.87	0.90
3A	1.04	1.03	1.01	1.02	0.98	0.96	1.02	1.03	1.02	1.04	0.93	0.94
MAV	1.02	1.08	1.03	1.03	1.00	0.99	0.96	1.05	0.99	1.02	0.90	0.96

Source: Steer analysis based on Client TMS data

Table 5.2: SCF for TP2 Tummalacheruvu

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.06	0.89	1.03	1.18	0.98	1.11	0.97	1.07	0.99	0.87	0.96	0.98
LCV	1.05	1.06	1.01	1.06	1.06	1.03	0.92	1.01	0.98	1.01	0.93	0.92
Bus	1.04	0.93	1.02	1.03	0.98	1.02	0.97	1.01	1.02	0.97	1.04	0.99
2A	1.07	1.10	1.07	1.09	1.05	1.00	0.96	1.04	0.96	0.96	0.87	0.89
3A	1.01	1.02	0.97	1.01	1.00	0.98	1.00	1.06	0.98	1.03	0.96	0.99
MAV	1.03	1.08	1.06	1.04	0.99	0.97	0.99	1.04	0.99	1.01	0.90	0.93

Source: Steer analysis based on Client TMS data

Table 5.3: SCF for TP3 Elchuru

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	1.08	0.87	1.00	1.14	0.96	1.12	1.00	1.07	0.99	0.87	1.01	1.01
LCV	1.06	1.03	0.99	1.02	1.03	1.02	0.97	1.03	1.00	1.03	0.93	0.92
Bus	1.07	1.00	1.06	1.04	0.97	1.05	0.98	1.01	1.00	0.98	1.00	0.89
2A	1.08	1.08	1.05	1.07	1.03	0.97	0.98	1.08	0.99	0.96	0.88	0.89
3A	1.00	0.98	0.98	1.01	1.00	0.99	0.99	1.08	1.03	1.02	0.94	0.99
MAV	1.03	1.08	1.06	1.03	0.97	0.96	0.97	1.06	1.05	1.03	0.89	0.92

Source: Steer analysis based on Client TMS data

Adopted base estimates

5.9 Based on the above methodology and inputs, the adopted base for all the three toll plazas has been shown below.

Table 5.4: Adopted AADT, TP1 Madgulapally

Vehicle category	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	7,464	8,190	8,276	10.9%
LCV	633	669	672	6.2%
Bus	790	849	845	7.0%
2A	1,215	1,319	1,334	9.9%
3A	646	660	664	2.8%
MAV	1,784	2,106	2,102	17.8%
Total	**12,530**	**13,793**	**13,894**	**10.9%**
PCUs	**22,250**	**24,629**	**24,751**	**11.2%**

Steer analysis: FY25 actual full year, FY26YTD includes 11 months (Apr-Feb) of FY25 and FY26, FY26A is estimated base for FY26

Table 5.5: Adopted AADT, TP2 Tummalacheruvu

Vehicle category	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	6,438	7,073	7,144	11.0%
LCV	615	641	647	5.1%
Bus	739	780	778	5.3%
2A	1,191	1,292	1,308	9.8%
3A	680	686	683	0.5%
MAV	2,528	2,746	2,765	9.4%
Total	**12,191**	**13,218**	**13,324**	**9.3%**
PCUs	**23,531**	**25,370**	**25,545**	**8.6%**

Steer analysis: FY25 actual full year, FY26YTD includes 11 months (Apr-Feb) of FY25 and FY26, FY26A is estimated base for FY26

Table 5.6: Adopted AADT, TP3 Elchuru

Vehicle category	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	3,330	3,685	3,698	11.0%
LCV	452	505	508	12.3%
Bus	395	440	443	12.0%
2A	931	1,015	1,027	10.4%
3A	570	611	608	6.5%

Vehicle category	FY25	FY26YTD	FY26A	FY26A vs FY25
MAV	1,912	2,144	2,166	13.3%
Total	**7,590**	**8,401**	**8,449**	**11.3%**
PCUs	**15,828**	**17,517**	**17,638**	**11.4%**

Steer analysis: FY25 actual full year, FY26YTD includes 11 months (Apr-Feb) of FY25 and FY26, FY26A is estimated base for FY26

5.10 From the above tables we observe that all three TPs exhibit similar trends at a PCU level when comparing FY26A values with FY25 AADT. Positive growth at a PCU level is expected on all three toll plazas with the highest at TP3 (11.4%), followed by TP1 (11.2%) and TP2 (8.6%). The growth is expected to be driven primarily by an increase in CJVs, 2As, and MAVs due to growth in inter-city personal travel between the urban centres along the Asset alignment, Hyderabad and Guntur/Vijayawada regions, as well as construction activity linked commercial transportation of cement from the cement clusters near the Asset to surrounding nearby consumption centres as well as destinations further away.

5.11 On TP1, MAV growth is significantly influenced by its strategic connectivity for freight traffic between the key economic centres of Hyderabad and Chennai. A substantial portion of this commercial traffic involves the transportation of manufactured goods, including automobile components moving between North India and Chennai. Furthermore, cement truck movement towards Hyderabad contributes to the growth in commercial traffic at TP1 as well. The growth of 2A and MAV traffic on TP2 is driven by increasing consumption demand from regions such as Guntur, Chennai, and Hyderabad. TP3, despite having lower MAV volume, experiences growth driven by robust long-distance commercial traffic (specifically between North India and Chennai). This was further aided by truck volumes transporting construction materials from northern cement clusters along the Asset to consumption centers in Ongole, Nellore, Chennai, and other parts of South India.

5.12 2A growth has been robust at all three plazas. While 3A volumes have declined on TP2 and TP3, TP1 has observed growth, owing to higher volume of construction/mining-related traffic traveling towards Nalgonda.

Estimation of background elasticities

5.13 Elasticities, in the case of traffic growth, are the relationships between traffic growth and the growth in growth drivers of traffic. Multiplied with forecasts of growth drivers like GDP or GSDP, they provide the forecasts of background traffic growth rates.

5.14 In terms of selecting growth drivers for different vehicle types, we have assumed state GSDP as the key growth driver for the CJVs and Buses given that this type of traffic is generally driven by local economic activity in cities and the state containing the Asset.

5.15 For the heavier commercial vehicles such as 2As, 3As, and MAVs (that generally ply long-distance routes), we assume national GDP as the key growth driver of traffic as growth in these types of commercial vehicles is influenced by nationwide economic cycles and inter-state market dynamics that are better captured by GDP growth trends of a much larger geographic extent than the immediate state(s) within which the Asset is located.

5.16 Table 5.7 below presents the growth drivers identified to model the forecast background traffic growth rates.

Table 5.7: Identified growth drivers to model traffic growth

Vehicle type	GDP India	GSDP AP	GSDP Telangana
Car		50% (All plazas)	50% (All plazas)
LCV		50% (All plazas)	50% (All plazas)
Bus		50% (All plazas)	50% (All plazas)
2A	100% (All plazas)		
3A	100% (All plazas)		
MAV	100% (All plazas)		

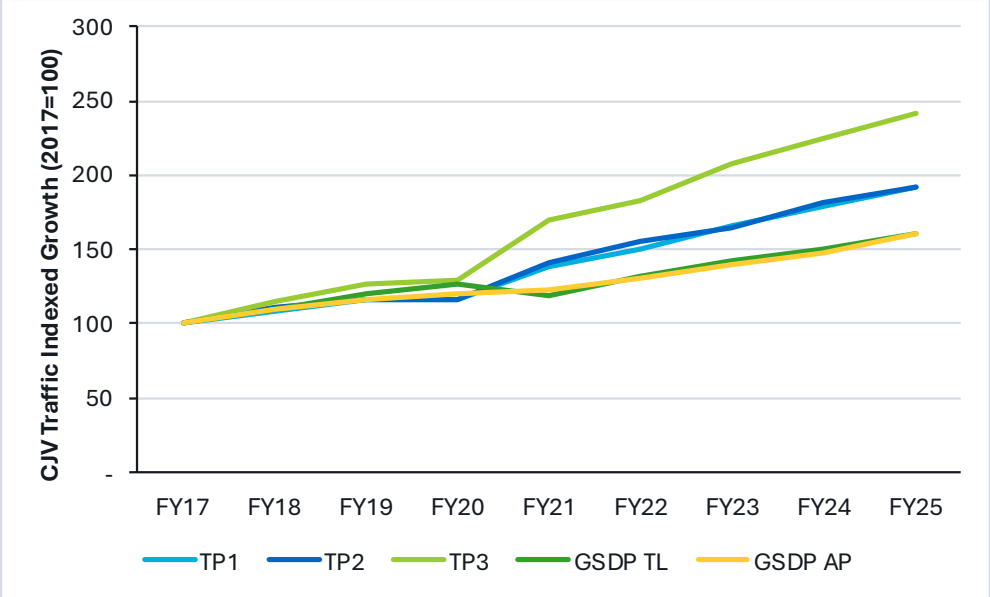
Source: Steer analysis of OD data

5.17 The recent historical period of tolling has had significant variations in traffic growth between years for certain vehicle types, impacts due to the effect of COVID-19 pandemic and the ban on illegal sandmining[15], especially for commercial vehicles. Therefore, only a few unaffected years were available for the regression analysis. This is one of the reasons for differences between the derived and assumed elasticities.

CJV

5.18 We see from the OD data that the CJVs on the Asset primarily cater to regional movements between Hyderabad, Guntur, Ongole and other towns lying on or near the Asset. We have therefore taken average GSDP growth rate between AP and Telangana to be the growth driver to model the growth of CJV traffic. Figure 5.1 below shows the relationship between indexed values of CJV traffic and AP and Telangana GSDP.

Figure 5.1: Relationship between CJV traffic and AP-Telangana GSDP



Source: Steer analysis of Client TMS data and publicly available GDP/GSDP data

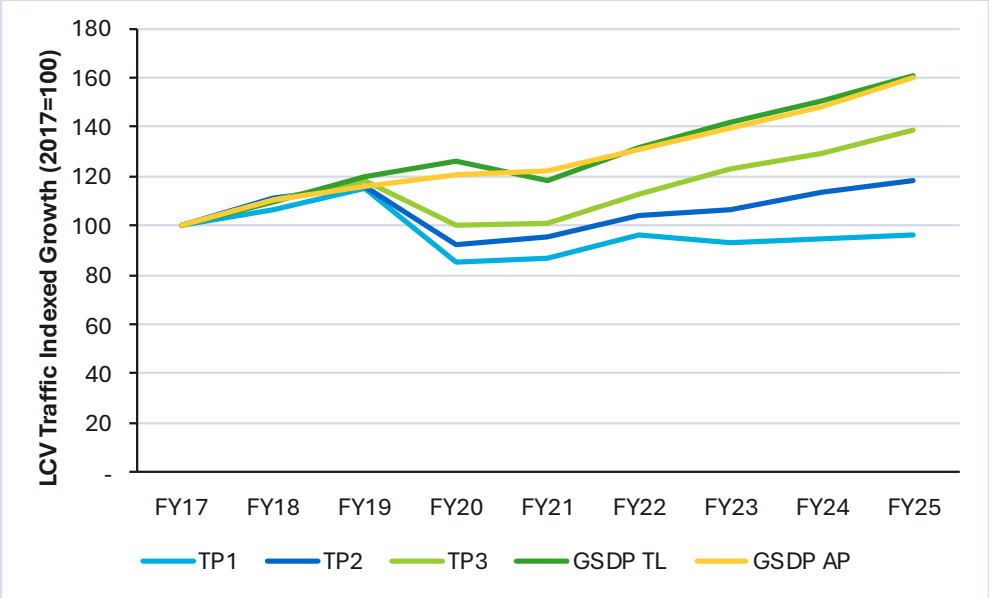
5.19 Generally, we would expect that in fast-growing economies with relatively low car ownership levels, car traffic growth rates are often in line with or slightly higher than growth in GSDP/GDP (i.e., suggesting elasticities at or just above 1.0). Further, there is an expected increase in car ownership proportion of overall population as the economy grows. This assumption is very contextual and subject to change as there are changes in economic policies of government and overall economic stability nationally and globally.

5.20 Historically, the CJV traffic on the Asset has shown strong growth throughout with the FY18-FY25 period showing over 10% CAGR in the category. The regression analysis suggests that between FY17 and FY25 traffic has grown with a background growth elasticity of approximately 1.5 (TP1), 1.5 (TP2) and 2.03 (TP3) with respect to GSDP of Telangana and Andhra Pradesh. Taking note of the positive outlook for passenger traffic on the Asset, driven by improved connectivity for business and leisure trips, and a benchmark toll road in the region, we have assumed a forecast background elasticity of 1.1 for CJVs on all plazas going forward.

LCV

5.21 In comparison to heavier commercial vehicles such as 3As and MAVs, LCVs have more regional movements within the state (i.e., AP and Telangana in this case) as seen in the OD data analyses above. More than 55% and up to approx. 80% of LCVs have trip ends in either Andhra Pradesh or Telangana. We have therefore taken GSDP of AP-Telangana to be the growth driver to model growth of LCV traffic on the Asset. Figure 5.2 below shows the relationship between indexed values of LCV traffic and AP-Telangana GSDP.

Figure 5.2: Relationship between LCV and AP-Telangana GSDP



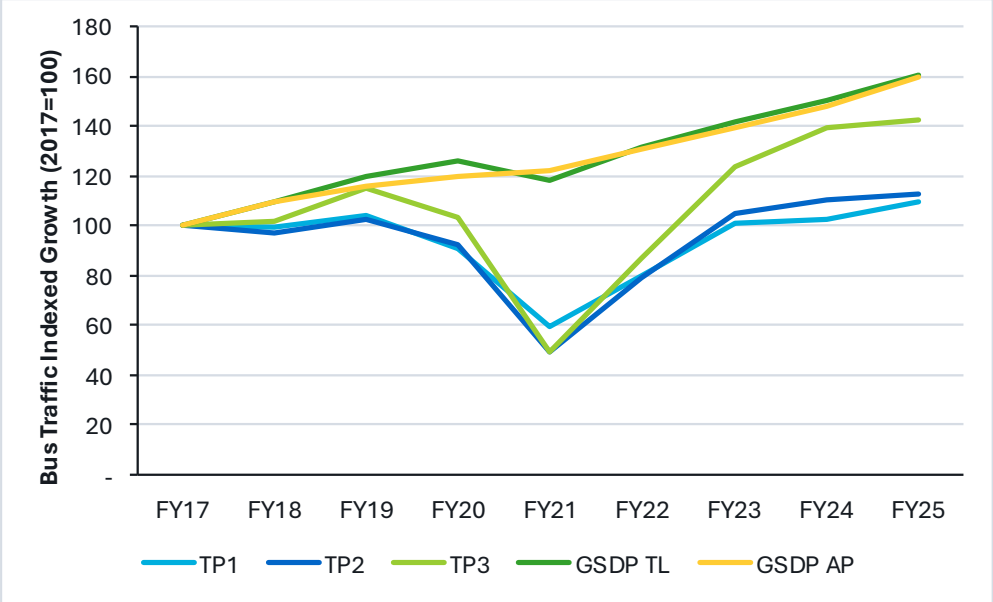
Source: Steer analysis of Client TMS data and publicly available GDP/GSDP data

5.22 Regression analysis suggests that when observing growth between FY17 and FY25, LCV showed an elasticity of 1.37 (TP1), 1.39 (TP2) and 1.39 (TP3) with respect to GSDP AP-Telangana.

Bus

5.23 Figure 5.3 shows the relationship between indexed values of bus traffic and AP-Telangana GSDP.

Figure 5.3: Relationship between Bus traffic and AP-Telangana GSDP



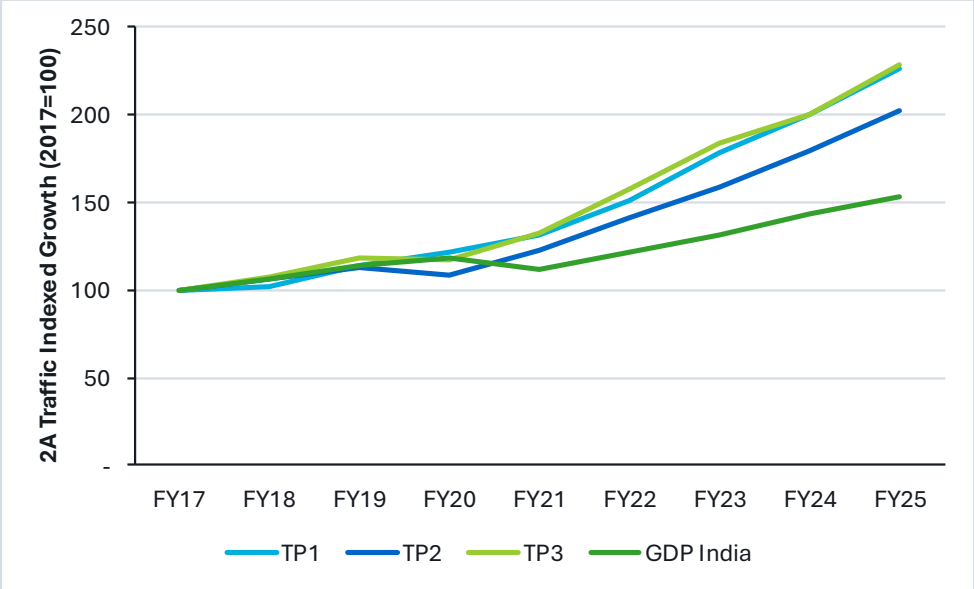
Source: Steer analysis of Client TMS data and publicly available GDP/GSDP data

5.24 Bus growth tends to be largely supply-driven in many parts of the country, with new buses being bought and deployed by the government at intervals of time. Based on our experience across the country, buses on inter-urban corridors in South India show moderate elasticities of 0.4 to 0.6. Despite a sharp drop in FY21 due to COVID-19, the regression results show elasticities in the range of 0.2 on the Asset. Based on the regression results and considering benchmarks, we have therefore assumed an elasticity of 0.4 at TP1 and 0.6 at TP2 and TP3, with respect to GSDP of AP-Telangana in our model.

2A

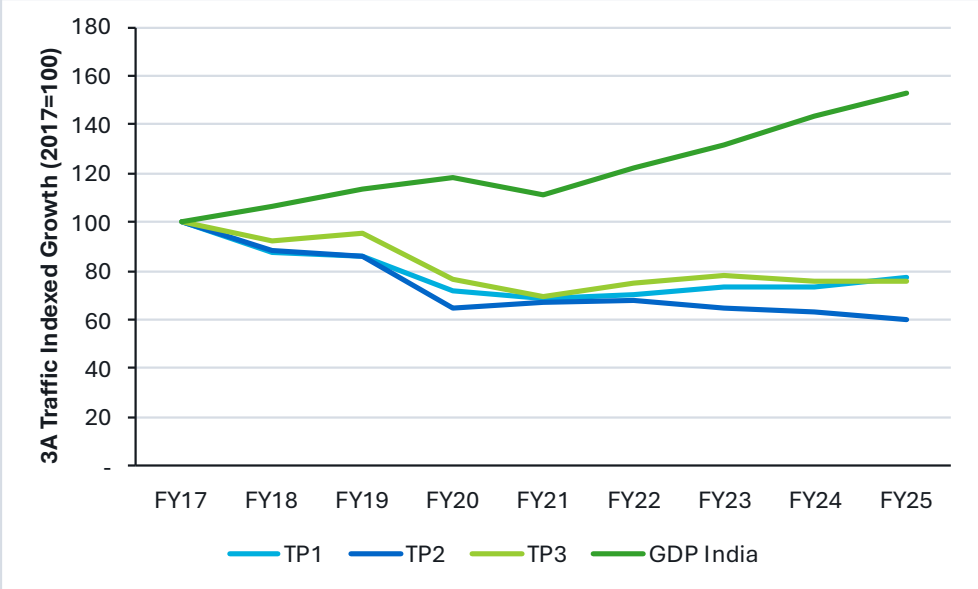
5.25 2A, 3A and MAV trucks have more national or long-distance movements covering several states. Given that manufacturing-related commodities tend to take prominence in their commodity distribution, traffic growth in commercial vehicles are dependent on industry demand-supply ecosystems spread across the country. We have therefore taken GDP as the key growth driver to model the traffic growth in 2As. Figure 5.4, Figure 5.5 and Figure 5.6 show the relationship between indexed values of 2A, 3A and MAV traffic respectively and India's GDP.

Figure 5.4: Relationship between 2A and India GDP



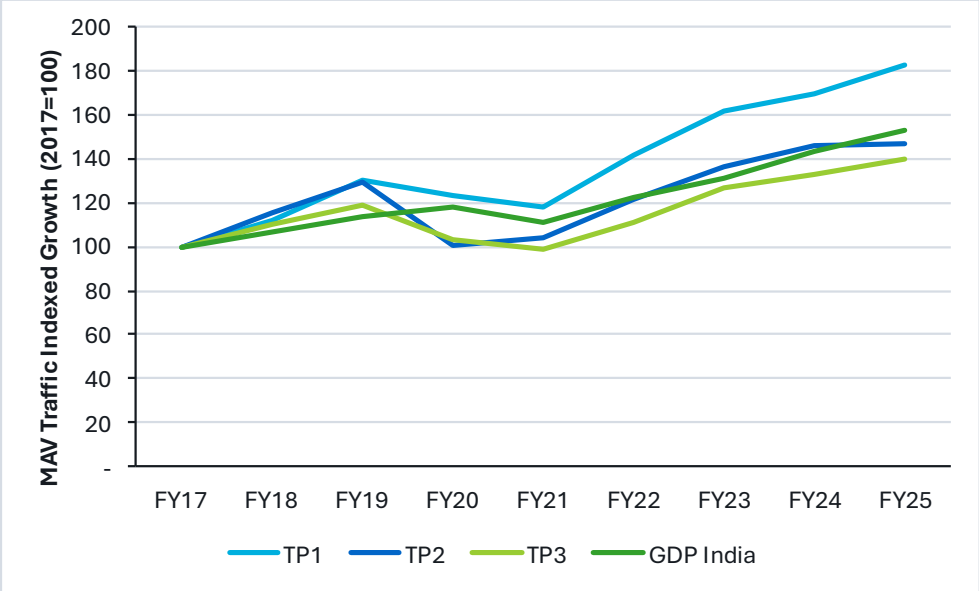
Source: Steer analysis of Client TMS data and publicly available GDP/GSDP data

Figure 5.5: Relationship between 3A combined traffic and India's GDP



Source: Steer analysis of Client TMS data and publicly available GDP/GSDP data

Figure 5.6: Relationship between MAV combined traffic and India's GDP



Source: Steer analysis of Client TMS data and publicly available GDP/GSDP data

5.26 Regression analysis suggests that when observing growth between FY17 and FY25, LCV showed an elasticity of 2.15 (TP1), 1.78 (TP2) and 2.11 (TP3) with respect to GSDP AP-Telangana. However, in our model we have assumed an elasticity of 0.80 going forward for 2A Trucks.

5.27 Historically, though 3A+MAV combined traffic experienced declines in FY21, they have exhibited strong growth since FY22. Analysis of historical data shows strong MAV growth on the Asset contrasting with flat or negative 3A traffic in recent years. We project slower 3A growth than MAVs due to an ongoing shift of 3-axle traffic towards MAVs, as discussed in paragraph 3.7. This preference for MAVs in long-distance transport is driven by their greater load capacity, leading to economies of scale and reduced costs. However, 3A trucks are not expected to disappear entirely, as specific goods or transport needs will likely continue to favour them.

5.28 Based on the above points, as well as the indicative results obtained from the regression analyses, we have assumed elasticities of 0.20 and 0.90 for 3A and MAV trucks (respectively), with respect to India GDP growth.

Forecasts for background elasticities

5.29 Table 5.8 below presents a summary of the results of the regression analysis carried out on the historical toll plaza data and the macroeconomic (GDP/GDSP) growth, along with the assumed forecast elasticities for background traffic growth.

Table 5.8: Derived elasticities from regression analysis and assumed forecast elasticities for background growth

Vehicle type	Growth driver	History		Forecast	
		Derived elasticity	Years considered	Assumed forecast elasticity	Evolution of elasticity
TP1 Madgulapally					
CJV	GSDP AP-Telangana	1.50	FY17 to FY25	1.10	Reducing from 1.1 to 1.0 FY30 onwards
LCV	GSDP AP-Telangana	1.37		0.30	No change
Bus	GSDP AP-Telangana	0.22		0.40	No change
2A	GDP	2.15		0.80	No change
3A	GDP	N/A*		0.20	No change
MAV	GDP	1.43		0.90	No change
TP2 Tummalacheruvu					
CJV	GSDP AP-Telangana	1.50	FY17 to FY25	1.10	Reducing from 1.1 to 1.0 FY30 onwards
LCV*	GSDP AP-Telangana	1.39		0.30	No change
Bus	GSDP AP-Telangana	0.42		0.40	No change
2A	GDP	1.78		0.80	No change
3A	GDP	N/A*		0.20	No change
MAV	GDP	0.93		0.90	No change
TP3 Elchuru					
CJV	GSDP AP-Telangana	2.03	FY17 to FY25	1.10	Reducing from 1.1 to 1.0 FY30 onwards
LCV	GSDP AP-Telangana	1.39		0.30	No change
Bus	GSDP AP-Telangana	0.93		0.40	No change
2A	GDP	2.11		0.80	No change
3A	GDP	N/A*		0.20	No change
MAV	GDP	0.86		0.90	No change

Source: Steer analysis of Client data; * regression results for 3A regression analyses yielded invalid results

6 Forecast: Network overlays and forecasts

Introduction

6.1 Following the discussion on our forecast of background growth rates in the previous chapter, this chapter first covers the forecasting assumptions around the base year AADT. Thereafter, we present our assumptions around potential network impacts on traffic growth, Asset toll segmentation, trip factors and evolution of toll rates for the forecast period which are used to forecast revenues as derived from forecast traffic. In the final section, this chapter summarises traffic growth rates for the forecast years.

Analysis of network/developmental impacts

6.2 This section details the network-related, or other developmental impacts which we believe would affect traffic growth on the Asset during the concession period. To assess these types of impacts on the Asset, whether positive or negative, we have reviewed existing and planned network-related developments (e.g., alternate roads, feeder roads) as well as other commercial developments in the Asset's vicinity and surrounding road network. Figure 6.1 below shows the road network surrounding the Asset.

Figure 6.1: Alternate routes and Asset route shown against the regional network context

Source: Steer analysis and cartography

Impact of Surat-Solapur-Chennai Expressway

6.3 The Surat-Solapur-Chennai expressway is progressing in its development (**refer to paragraph 2.16**). This expressway, once completed, will pass through 6 major states, including Gujarat, Maharashtra, Karnataka, Andhra Pradesh, Telangana and Tamil Nadu.

6.4 Two sections; Surat-Ahmednagar, and Akkalkot-Mahbubnagar, are planned as greenfield alignments, while the rest of the corridor includes brownfield upgrades of existing national highways. The impact of this network development has been split into two separate impacts in our analysis, based on in-scope markets for long-distance traffic currently observed on the Asset. This distinction is done on the following basis on the Traffic destined to Chennai, originating from areas in Solapur and west of Solapur.

6.5 **For in-scope market (Solapur/west to Chennai),** the proposed upgrades of Solapur bypass on NH50, along with the upgrade of Solapur-Kurnool-Kadapa-Tirupati-Chennai sections of the proposed expressway will improve the route's overall attractiveness for traffic generating from Solapur/west and Chennai/nearby regions.

6.6 No official information is available to definitively say when this project will be completed. However, different sources suggest the project may be completed by the mid of 2026 i.e., FY27Q2. We believe a more realistic timeline for its completion is FY28 given the size and complexity of this project.

6.7 Based on our GJC-based diversion analysis, we estimate a negative diversion on the Asset route once the expressway will be completed and opened to the public, as summarised by Table 6.1 below.

Table 6.1: Impact due to greenfield Surat-Chennai expressway (Solapur/West)

Vehicle type	FY28	FY29 onwards
Staging	*25%*	*100%*
TP1		
CJV	(0.1%)	(0.3%)
LCV	(1.2%)	(4.7%)
2A	(1.2%)	(4.8%)
3A	(1.5%)	(6.0%)
MAV	(1.8%)	(7.3%)
TP2		
CJV	(0.1%)	(0.4%)
LCV	(1.2%)	(4.9%)
2A	(1.2%)	(4.8%)
3A	(1.5%)	(5.9%)
MAV	(1.4%)	(5.5%)
TP3		
CJV	(0.2%)	(0.7%)
LCV	(1.5%)	(6.2%)
2A	(1.5%)	(6.2%)
3A	(1.7%)	(6.6%)
MAV	(1.8%)	(7.1%)

Source: Steer analysis of OD data, client TMS data and publicly available information

Impact of Nagpur Vijayawada Expressway

6.8 As discussed in Chapter 2, the 457 km long Nagpur – Vijayawada Expressway is being developed by National Highways Authority of India (NHAI) under the Bharatmala Pariyojana Project. While unofficial external sources suggest operationalization by FY29, the project's considerable scale and complexity lead us to incorporate a more conservative estimate. Accordingly, we have assumed project completion by FY30.

6.9 The proposed alignment of the same is shown in Figure 6.2 below.

Figure 6.2: Impact due to Nagpur Vijayawada Expressway

Source: Steer analysis and cartography

6.10 The establishment of the proposed Nagpur-Vijayawada expressway will introduce a new competitive route for north-south (NH-44) traffic generated from Nagpur and North and South of the Asset on NH-16 currently part of the Asset's long-distance demand. We believe, the development of this expressway is anticipated to negatively impact the Asset's traffic. Based on our GJC-based diversion analysis, we have estimated a negative diversion on the Asset route, summarised by the Table 6.2 below.

Table 6.2: Impact due to Nagpur Vijayawada Expressway

Vehicle type	FY30	FY31 onwards
Staging	***50%***	***100%***
	TP1	
CJV	(0.1%)	(0.1%)
LCV	(0.5%)	(1.0%)
2A	(6.8%)	(13.6%)

Vehicle type	FY30	FY31 onwards
Staging	***50%***	***100%***
3A	(3.9%)	(7.7%)
MAV	(5.3%)	(10.6%)
TP2		
CJV	(0.1%)	(0.1%)
LCV	(0.5%)	(1.1%)
2A	(6.9%)	(13.9%)
3A	(3.8%)	(7.5%)
MAV	(4.0%)	(8.1%)
TP3		
CJV	(0.1%)	(0.3%)
LCV	(0.7%)	(1.4%)
2A	(8.8%)	(17.7%)
3A	(4.2%)	(8.4%)
MAV	(5.2%)	(10.3%)

Source: Steer analysis of OD data, client TMS data and publicly available information

Impact of Hyderabad Regional Ring Road

6.11 The Hyderabad Regional Ring Road (RRR), a planned 330+ km highway situated outside the existing Outer Ring Road (ORR), aims to streamline long-distance traffic flow around Hyderabad. By connecting key towns and growth centres, it will serve as a crucial bypass, allowing vehicles to access southern regions efficiently, thereby reducing travel time and alleviating congestion.

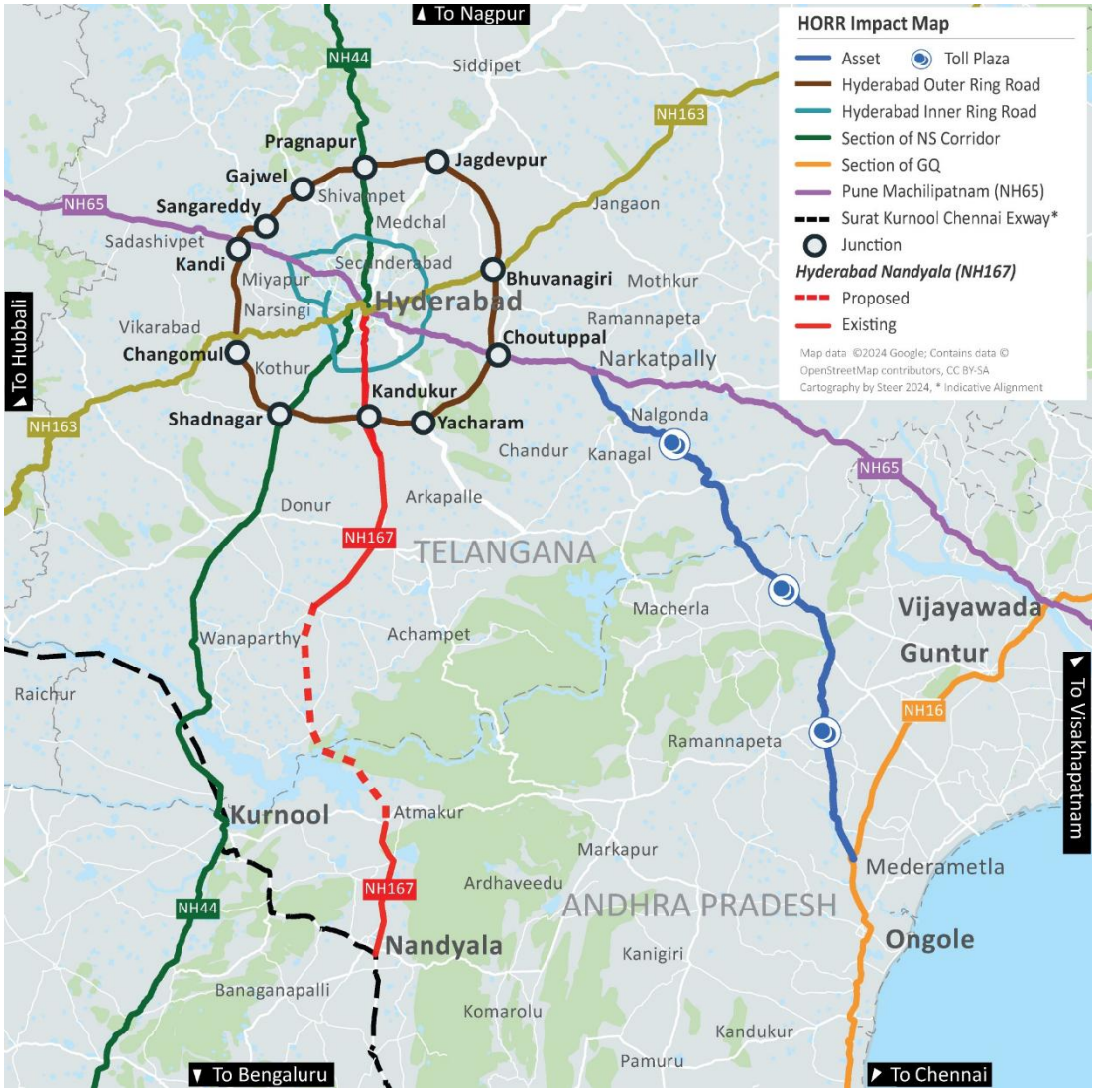
6.12 This expressway is projected to be developed in two parts, as follows:

- The northern section, which is around 164 km long and will connect Sangareddy, Narsapur, Toopran, Gajwel, Yadadri, Pragnapur, Bhongir, and Choutuppal.
- The southern half will connect Choutuppal, Ibrahimpatnam, Kandukur, Amangal, Chevella, Shankarpally, and Sangareddy.

6.13 As per the latest updates, the northern section of the Hyderabad Regional Ring Road has received environmental clearance and is presently in the bidding stage, while the Detailed Project Report for the southern section is under preparation[26]. The project is being carried out under a PPP model. The proposed alignment of the same is shown in Figure 6.3 below.

[26] Rs 34,367 Crore Hyderabad Regional Ring Road: Northern Section Gets Environmental Clearance; DPR For Southern Stretch In Progress

Figure 6.3: Impact due to RRR



Source: Steer analysis and cartography

6.14 We expect the RRR will positively impact traffic growth on the Asset from FY31 onwards (i.e., post it's assumed completion date). This can be explained as follows:

1. For this development, the in-scope traffic includes traffic moving from Hyderabad/North and Chennai/south which are currently using the Asset. This proportion represents traffic that is originating north of Hyderabad and is bound to regions between Chennai and Ongole.
2. Assuming some traffic shifts to the Nagpur–Vijayawada Expressway upon its expected FY29 completion, we anticipate a portion to return to the Asset by FY31 once the RRR is operational. That traffic will choose either to remain on the Nagpur–Vijayawada Expressway, or to use the RRR up to Chottupal, rejoin the Asset, and continue south toward Ongole.
3. Since the RRR will provide improved LoS on this route (i.e., enabling vehicles to avoid entering Hyderabad to access the NAM Asset), we believe an incremental proportion of 2As, 3As, and MAVs (~2.5%) will return to the Asset post the completion of the RRR.

6.15 Based on our GJC-based diversion analysis, we estimated a positive diversion on the Asset route, summarised by the Table 6.3 below.

Table 6.3: Impact due to RRR

Vehicle type	FY31	FY33 onwards
Staging	*80%*	*100%*
	TP1	
2A	3.0%	3.8%
3A	1.5%	1.9%
MAV	2.0%	2.5%
	TP2	
2A	3.1%	3.8%
3A	1.5%	1.8%
MAV	1.5%	1.9%
	TP3	
2A	3.9%	4.9%
3A	1.6%	2.1%
MAV	2.0%	2.4%

Source: Steer analysis of OD data, client TMS data and publicly available information

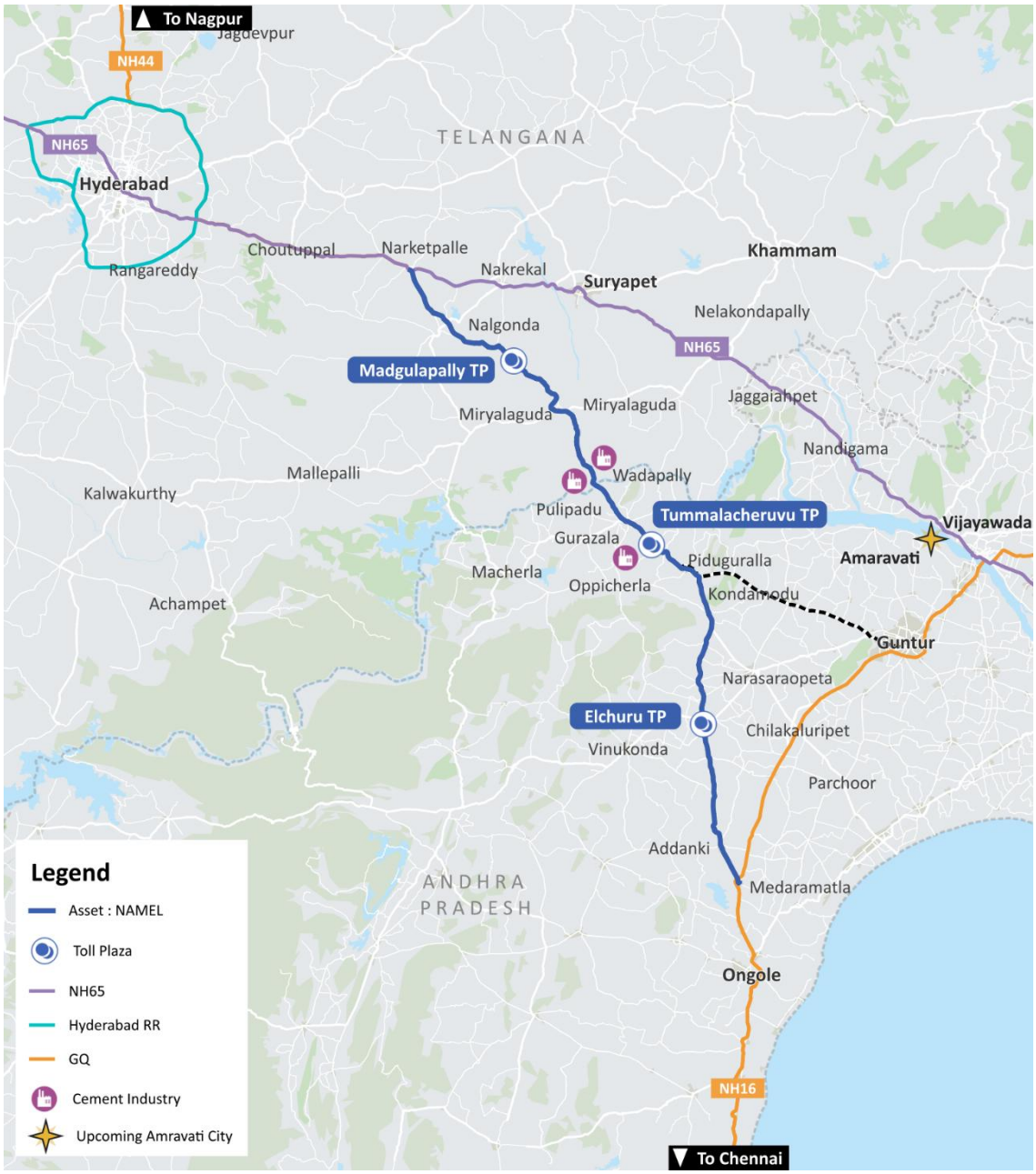
6.16 Additionally, the upgradation of the NH167K is also underway. NHAI is also developing Kalvakurthi to Karivena greenfield section. The existing 2-lane sections between Hyderabad to Kalvakuthi and Atmakur-Nandyal will be upgraded to 4-lane configuration, which includes a greenfield upgrade of the middle section of the development near Krishna River (close to Boravelle). Our current study does not factor in the NH167K development due to the unavailability of detailed information regarding its alignment and anticipated completion date. While this new route could influence traffic on the Asset and potentially serve as an alternative for traffic heading south from north of Hyderabad, any such impact is considered to overlap with the effects of the Nagpur–Vijayawada Expressway, which we have already accounted for in our forecasts.

Impact of Amaravati-Led Induced Demand

6.17 Following the Andhra Pradesh-Telangana state division, Amaravati is being established as the new administrative capital of Andhra Pradesh. The city's master plan includes a 217 sq km urban area with state-of-the-art infrastructure such as broad arterial roads, dedicated zones for governance, education, and finance, and smart city features like underground utility corridors and high-speed public transport. The government has relaunched construction with a massive ₹43,000 crore investment, targeting key projects including the High Court, Secretariat, Assembly, and residences for government officials. The city is also expected to host economic hubs to attract industries and global investors, supported by a land pooling model that integrates local farmers into the development

process. Amaravati aims to become a global capital city with sustainable urban planning and robust economic infrastructure.[27]

Figure 6.4: Impact of Amaravati Induced Demand



Source: Steer analysis and cartography

6.18 The development of the city is projected to influence the Asset in the following ways:

- Proximity to cement clusters suggests that these clusters will likely serve the construction needs of the developing city, a factor relevant to the Asset, particularly TP2.

[27] Amaravati Capital City Project revived: CM Chandrababu Naidu's global vision greenfield capital city's construction relaunched - India Today

- Upon completion, the city is expected to generate increased travel demand, which will positively impact traffic volumes on the Asset.

6.19 Based on our analysis, we estimated a positive impact on the Asset route, summarised by the Table 6.4 below.

Table 6.4: Impact due to Amaravati Induced Demand

Vehicle type	FY28	FY29 onwards
Staging	*80%*	*100%*
	TP1	
CJV	1.5%	1.9%
2A	1.4%	1.8%
MAV	1.8%	2.2%
	TP2	
CJV	1.7%	2.2%
2A	1.5%	1.8%
MAV	4.1%	5.1%
	TP3	
CJV	3.9%	4.8%
2A	1.9%	2.3%
MAV	1.7%	2.2%

Source: Steer analysis of OD data, client TMS data and publicly available information

Revenue forecasting assumptions

6.20 To forecast the revenues for a particular financial year, the traffic forecast for each vehicle type is converted into tickets sold, which is then multiplied with the corresponding toll rate, which grows over the years as defined in the Concession Agreement. While "trip factors" provide the conversion factor to the former, i.e., traffic (trips) to tickets sold, "toll segmentation" provides the latter i.e., the breakup of trips paying each ticket type. This section discusses assumptions related to trip factors, toll segmentation and toll rates for the forecast period.

Toll evolution

6.21 Based on the concession agreement and the gazetted toll notification, we understand that base toll rates increase every two years (revision month is March) based on WPI-linked inflation. These are rounded up to the nearest five decimals to estimate the final toll rate charged to users.

6.22 We have used actual toll rates from the FY26 toll notifications and FY27 WPI to validate the modelling of future toll evolution of the Asset (and its individual toll plazas). WPI-linked toll growth was calculated based on the Client's WPI forecasts, as shown in the Table 6.5 below. These forecasts provided by the Client expect the Indian WPI to grow at an average of 4.2% between FY25-FY51. The WPI forecasts available from other independent forecasting agencies may vary from this assumption and could be lower or higher than that provided by the client.

Table 6.5: WPI growth forecast assumptions

Financial year	WPI growth (%)
FY26	2.57%
FY27	0.96%
FY28	5.0%
FY29	5.1%
FY30	4.9%
FY31	4.4%
FY32 onwards	4.1%

Source: FY27 onwards WPI print as per client inputs

Toll segmentation and trip factors

6.23 We have analysed the historical TMS data split by ticket categories, to understand toll segmentation trends, as presented in Chapter 3. As per the historical analysis we observed that the ticket segmentation of the Asset had progressively stabilised over FY22-FY25YTD period after two external events resulted in large variations prior to FY22 i.e., the COVID-19 pandemic and FASTag implementation. Therefore, the FY25YTD ticket segmentation provide us with a stable toll segmentation which can be used for forecasting purposes.

6.24 For the traffic and revenue forecast, we assume that the ticket segmentation observed in FY26 YTD—specifically April 2025 to February 2026 —provides a reasonable assumption for long-term average segmentation. Our future toll segmentation profiles by vehicle type and across all three toll plazas on the Asset are presented in Table 6.6 through Table 6.8 below.

Table 6.6: Toll segmentation for the forecast years for TP-1

Ticket Type	CJV/MLCV	LCV	Bus	2A	3A	MAV
Single	46%	71%	34%	78%	84%	76%
Return	5%	2%	9%	2%	1%	2%
Local commercial	0%	0%	0%	0%	0%	0%
Monthly	0%	1%	29%	0%	0%	0%
Local personal	0%	0%	0%	0%	0%	0%
Violation	0%	0%	0%	0%	0%	0%
Exemption	13%	1%	0%	0%	0%	0%
Return 2	35%	25%	27%	20%	14%	22%

Source: Steer analysis of Client TMS data

Table 6.7: Toll segmentation for the forecast years for TP-2

Ticket Type	CJV/MLCV	LCV	Bus	2A	3A	MAV
Single	49%	74%	38%	78%	84%	82%

Ticket Type	CJV/MLCV	LCV	Bus	2A	3A	MAV
Return	7%	2%	3%	2%	2%	1%
Local commercial	0%	0%	0%	0%	0%	0%
Monthly	1%	0%	30%	0%	1%	0%
Local personal	0%	0%	0%	0%	0%	0%
Violation	0%	0%	0%	0%	0%	0%
Exemption	8%	2%	0%	0%	0%	0%
Return 2	35%	22%	28%	19%	13%	17%

Source: Steer analysis of Client TMS data

Table 6.8: Toll segmentation for the forecast years for TP-3

Ticket Type	CJV/MLCV	LCV	Bus	2A	3A	MAV
Single	56%	84%	42%	88%	84%	89%
Return	6%	1%	2%	2%	3%	1%
Local commercial	0%	0%	0%	0%	0%	0%
Monthly	1%	0%	21%	0%	0%	0%
Local personal	0%	0%	0%	0%	0%	0%
Violation	0%	0%	0%	0%	0%	0%
Exemption	4%	0%	6%	0%	0%	0%
Return 2	32%	14%	28%	10%	12%	10%

Source: Steer analysis of Client TMS data

6.25 Trip factors are used to calculate the revenue for the trips made on passes such as return, local personal, monthly passes. The trip factors assumed are based on the latest FY25YTD data available and listed in the Table 6.9, Table 6.10 and Table 6.11 below:

Table 6.9: Trip factors for the forecast years at TP 1

	CJV/MLCV	LCV	Bus	2A	3A	MAV
Single	1	1	1	1	1	1
Return	2	248	6	5	2	4
Monthly	49	65	182	51	45	45
Local commercial	22	1	1	1	1	1
Local personal	45	45	45	45	45	45
Return 2	2	2	2	2	2	2

Source: Steer analysis of Client TMS data

Table 6.10: Trip factors for the forecast years at TP 2

	CJV/MLCV	LCV	Bus	2A	3A	MAV
Single	1	1	1	1	1	1
Return	1	10	2	2	3	4

	CJV/MLCV	LCV	Bus	2A	3A	MAV
Monthly	89	97	86	103	110	45
Local commercial	29	1	1	1	1	1
Local personal	45	45	45	45	45	45
Return 2	2	2	2	2	2	2

Source: Steer analysis of Client TMS data

Table 6.11: Trip factors for the forecast years at TP 3

	CJV/MLCV	LCV	Bus	2A	3A	MAV
Single	1	1	1	1	1	1
Return	2	21	2	4	6	5
Monthly	59	108	45	45	49	45
Local commercial	25	1	1	1	1	1
Local personal	45	45	45	45	45	45
Return 2	2	2	2	2	2	2

Source: Steer analysis of Client TMS data

6.26 Please note that the category Exemptions as reported in the TMS data includes local cars that are exempt from paying on this Asset. This assumes that further changes in toll categories, unless specific discounts are offered, are unlikely. For trips through ETC, especially the return trips, the trip factors input into the model calculations is 2.

Revenue reconciliation

6.27 As part of validating the data provided by the Client, as well as our assumptions around toll calculations, we have reconciled the actual reported revenue on a monthly level for the Asset. To reconcile we have used the FY26YTD segmentation, FY26YTD ADT and compared it with the reported revenue for the year. The exercise was undertaken at an annual level. The comparison, as shown in Table 6.12 below, depicts the modelled revenue vs the reported revenue difference, and the difference lies within 2%, this gives us the confidence in the assumptions around segmentation and trip factors for future forecast purposes.

Table 6.12: FY26 Revenue reconciliation summary (INR Lakhs)

Asset	Modelled	Actual	Difference (%)
	FY26YTD	FY26YTD	
TP1	28.4	28.1	1.0%
TP2	33.2	33.1	0.4%
TP3	25.6	25.6	0.1%

Source: Steer comparison between FY26YTD modelled and reported revenue excluding buses;

Traffic and Revenue forecasts

6.28 Based on the traffic and revenue-related forecast assumptions discussed above, we have modelled the traffic and revenue forecasts for the concession length of the Asset. The tables below present the AADT/PCU and revenue forecast growth rates and CAGRs on this Asset. Further, Appendix A presents the detailed AADT and revenue forecasts for the Asset over the full concession period.

Table 6.13: Traffic forecasts (with impacts) AADT forecast for TP-1 Madgulapally

Vehicle Type	FY26	FY28	FY30	FY32	FY35	FY40
CJV	7,419	8,700	9,911	11,213	13,537	18,189
Mini LCV	858	907	956	1,006	1,086	1,225
Bus	845	894	943	991	1,071	1,207
LCV	672	689	683	701	735	793
2A	1,334	1,479	1,464	1,551	1,788	2,246
3A	664	671	628	629	652	691
MAV	2,102	2,352	2,346	2,520	2,955	3,817
AADT	**13,894**	**15,692**	**16,931**	**18,611**	**21,824**	**28,169**
PCU's	**24,751**	**27,534**	**28,739**	**31,100**	**36,010**	**45,635**

Source: Steer analysis

Table 6.14: Traffic forecasts (with impacts) traffic CAGR (%) for TP-1 Madgulapally

Vehicle Type	FY26-FY30	FY30-FY32	FY32-FY35	FY35-FY40	FY26-FY40
CJV	7.5%	6.4%	6.5%	6.1%	6.6%
Mini LCV	2.8%	2.6%	2.6%	2.4%	2.6%
Bus	2.8%	2.6%	2.6%	2.4%	2.6%
LCV	0.4%	1.3%	1.6%	1.5%	1.2%
2A	2.3%	2.9%	4.8%	4.7%	3.8%
3A	(1.4%)	0.1%	1.2%	1.2%	0.3%
MAV	2.8%	3.6%	5.5%	5.3%	4.4%
AADT	**5.1%**	**4.8%**	**5.5%**	**5.2%**	**5.2%**
PCU's	**3.8%**	**4.0%**	**5.0%**	**4.9%**	**4.5%**

Source: Steer analysis

Table 6.15: Revenue forecast (INR crores) for TP-1 Madgulapally

Vehicle Type	FY26	FY28	FY30	FY32	FY35	FY40
CJV	16.2	20.0	25.0	31.0	43.9	69.5
Mini LCV	1.9	2.1	2.4	2.8	3.5	4.7
Bus	6.4	7.1	8.3	9.5	12.0	16.0

Vehicle Type	FY26	FY28	FY30	FY32	FY35	FY40
LCV	3.4	3.7	4.0	4.5	5.6	7.1
2A	14.1	16.3	17.8	20.7	27.9	41.4
3A	17.9	18.9	19.6	21.5	26.1	32.6
MAV	55.2	64.7	71.1	83.8	115.1	175.1
Total	**115.0**	**132.9**	**148.1**	**173.8**	**234.1**	**346.3**

Source: Steer analysis

Table 6.16: Revenue forecast CAGR (%) for TP-1 Madgulapally

Vehicle Type	FY26-FY30	FY30-FY32	FY32-FY35	FY35-FY40	FY26-FY40
CJV	11.4%	11.4%	12.3%	9.6%	11.0%
Mini LCV	6.5%	7.4%	8.2%	5.9%	6.8%
Bus	6.5%	7.5%	8.1%	5.9%	6.8%
LCV	4.1%	6.2%	7.1%	4.9%	5.3%
2A	6.1%	7.9%	10.5%	8.2%	8.0%
3A	2.2%	4.8%	6.7%	4.5%	4.4%
MAV	6.5%	8.6%	11.2%	8.8%	8.6%
Total	**6.5%**	**8.3%**	**10.4%**	**8.1%**	**8.2%**

Source: Steer analysis

Table 6.17: Traffic forecasts (with impacts) AADT forecast for TP-2 Tummalacheruvu

Vehicle Type	FY26	FY28	FY30	FY32	FY35	FY40
CJV	6,403	7,526	8,574	9,699	11,710	15,735
Mini LCV	740	794	848	903	994	1,154
Bus	778	846	915	986	1,106	1,323
LCV	647	662	655	672	706	761
2A	1,308	1,450	1,432	1,516	1,747	2,195
3A	683	691	649	650	674	714
MAV	2,765	3,179	3,290	3,566	4,030	5,205
AADT	**13,324**	**15,147**	**16,362**	**17,993**	**20,966**	**27,087**
PCU's	**25,545**	**28,762**	**30,247**	**32,837**	**37,641**	**47,904**

Source: Steer analysis

Table 6.18: Traffic forecasts (with impacts) traffic CAGR (%) for TP-2 Tummalacheruvu

Vehicle Type	FY26-FY30	FY30-FY32	FY32-FY35	FY35-FY40	FY26-FY40
CJV	7.6%	6.4%	6.5%	6.1%	6.6%
Mini LCV	3.4%	3.2%	3.2%	3.0%	3.2%

Vehicle Type	FY26-FY30	FY30-FY32	FY32-FY35	FY35-FY40	FY26-FY40
Bus	4.1%	3.8%	3.9%	3.7%	3.9%
LCV	0.3%	1.3%	1.6%	1.5%	1.2%
2A	2.3%	2.9%	4.8%	4.7%	3.8%
3A	(1.3%)	0.1%	1.2%	1.2%	0.3%
MAV	4.4%	4.1%	4.2%	5.3%	4.6%
AADT	**5.3%**	**4.9%**	**5.2%**	**5.3%**	**5.2%**
PCU's	**4.3%**	**4.2%**	**4.7%**	**4.9%**	**4.6%**

Source: Steer analysis

Table 6.19: Revenue forecast (INR crores) for TP-2 Tummalacheruvu

Vehicle Type	FY26	FY28	FY30	FY32	FY35	FY40
CJV	14.9	17.8	22.6	28.0	39.7	62.6
Mini LCV	1.7	1.9	2.2	2.6	3.4	4.6
Bus	6.2	6.9	8.2	9.7	12.8	18.0
LCV	3.3	3.4	3.8	4.2	5.2	6.6
2A	13.8	15.6	17.1	19.9	26.9	39.8
3A	18.2	18.8	19.6	21.5	26.1	32.6
MAV	73.4	86.4	99.0	117.9	156.0	237.5
Total	**131.4**	**150.8**	**172.5**	**203.9**	**270.1**	**401.7**

Source: Steer analysis

Table 6.20: Revenue forecast CAGR (%) for TP-2 Tummalacheruvu

Vehicle Type	FY26-FY30	FY30-FY32	FY32-FY35	FY35-FY40	FY26-FY40
CJV	11.0%	11.3%	12.3%	9.5%	10.8%
Mini LCV	6.7%	8.0%	8.9%	6.4%	7.3%
Bus	7.5%	8.8%	9.5%	7.1%	8.0%
LCV	3.6%	6.3%	7.1%	4.9%	5.2%
2A	5.5%	7.8%	10.6%	8.1%	7.9%
3A	1.9%	4.9%	6.7%	4.5%	4.3%
MAV	7.8%	9.1%	9.8%	8.8%	8.7%
Total	**7.1%**	**8.7%**	**9.8%**	**8.3%**	**8.3%**

Source: Steer analysis

Table 6.21: Traffic forecasts (with impacts) AADT forecast for TP-3 Elchuru

Vehicle Type	FY26	FY28	FY30	FY32	FY35	FY40
CJV	2,882	3,455	3,943	4,458	5,382	7,232
Mini LCV	816	888	960	1,035	1,160	1,388

Vehicle Type	FY26	FY28	FY30	FY32	FY35	FY40
Bus	443	481	520	561	629	753
LCV	508	518	507	519	545	587
2A	1,027	1,139	1,090	1,142	1,316	1,653
3A	608	613	570	569	590	625
MAV	2,166	2,424	2,426	2,609	3,060	3,953
AADT	**8,449**	**9,518**	**10,017**	**10,893**	**12,682**	**16,191**
PCU's	**17,840**	**19,820**	**20,212**	**21,697**	**25,063**	**31,638**

Source: Steer analysis

Table 6.22: Traffic forecasts (with impacts) traffic CAGR (%) for TP-3 Elchuru

Vehicle Type	FY26-FY30	FY30-FY32	FY32-FY35	FY35-FY40	FY26-FY40
CJV	8.2%	6.3%	6.5%	6.1%	6.8%
Mini LCV	4.1%	3.8%	3.9%	3.7%	3.9%
Bus	4.1%	3.8%	3.9%	3.7%	3.9%
LCV	(0.1%)	1.2%	1.6%	1.5%	1.0%
2A	1.5%	2.3%	4.8%	4.7%	3.5%
3A	(1.6%)	(0.1%)	1.2%	1.2%	0.2%
MAV	2.9%	3.7%	5.5%	5.3%	4.4%
AADT	**4.3%**	**4.3%**	**5.2%**	**5.0%**	**4.8%**
PCU's	**3.2%**	**3.6%**	**4.9%**	**4.8%**	**4.2%**

Source: Steer analysis

Table 6.23: Revenue forecast (INR crores) for TP-3 Elchuru

Vehicle Type	FY26	FY28	FY30	FY32	FY35	FY40
CJV	6.9	8.6	10.9	13.5	19.1	30.1
Mini LCV	2.0	2.2	2.6	3.1	4.1	5.8
Bus	3.5	3.9	4.7	5.6	7.3	10.3
LCV	2.7	2.8	3.1	3.4	4.2	5.4
2A	10.9	12.5	13.3	15.3	20.7	30.7
3A	15.8	16.4	17.0	18.7	22.7	28.3
MAV	58.1	66.8	74.6	88.1	121.0	184.2
Total	**99.9**	**113.2**	**126.2**	**147.7**	**199.1**	**294.7**

Source: Steer analysis

Table 6.24: Revenue forecast CAGR (%) for TP-3 Elchuru

Vehicle Type	FY26-FY30	FY30-FY32	FY32-FY35	FY35-FY40	FY25-FY40
CJV	11.9%	11.3%	12.3%	9.5%	11.1%

Vehicle Type	FY26-FY30	FY30-FY32	FY32-FY35	FY35-FY40	FY25-FY40
Mini LCV	7.8%	8.7%	9.6%	7.0%	8.0%
Bus	7.8%	8.8%	9.5%	7.1%	8.1%
LCV	3.4%	6.2%	7.1%	4.9%	5.1%
2A	5.1%	7.2%	10.6%	8.1%	7.6%
3A	1.8%	4.7%	6.7%	4.5%	4.2%
MAV	6.5%	8.7%	11.2%	8.8%	8.6%
Total	**6.0%**	**8.2%**	**10.5%**	**8.2%**	**8.0%**

Source: Steer analysis

Upside and Downside cases

Upside and Downside scenario assumptions

6.29 We have developed our base case scenario considering a balanced view on the risks associated with input assumptions around GDP growth and traffic growth elasticities. There is always a risk that the outturn values of these inputs will vary as compared to the assumptions taken due to exogenous impacts, e.g. GDP growth could be influenced both positively and negatively by the impact of monsoons, export-import balances, political changes etc.

6.30 Similarly, traffic growth elasticities could be influenced by increased efficiencies achieved by technology, large shifts in commodity prices globally, changes in local manufacturing practices. However, at this stage we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

6.31 To account for the possible variations in the growth drivers, we are also presenting an Upside (optimistic) and a Downside (pessimistic) scenario. These scenarios are defined by the following variations from the base assumptions:

Table 6.25: Summary of Macro-economic Assumptions for upside and downside cases

Input	Upside	Downside
Macro Assumptions		
GDP/GSDP	+1% every year	-1% every year
WPI	+1% every year	-1% every year
Elasticities	+ 10%	- 10%

Source: Steer analysis

6.32 Further, network developments are highly dependent on governmental directions, policies, legal and financial measure which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside (pessimistic) case. However, at this stage, we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

Impacts-Upside Case

6.33 The upside case impacts included in forecasts are summarised in Table 6.26 below.

Table 6.26: Summary of impacts on the Assets

	Year of Impact		Magnitude of impact		
			TP1 Madgullapally	TP2 Tummalacheruvu	TP3 Elchuru
Surat Chennai Expressway	FY28 (25%), FY30 (100%)	+25% of base case	CJV: (0.2%) LCV: (3.5%) 2A: (3.6%) 3A: (4.5%) MAV: (5.5%)	CJV: (0.3%) LCV: (3.6%) 2A: (3.6%) 3A: (4.4%) MAV: (4.1%)	CJV: (0.6%) LCV: (4.6%) 2A: (4.6%) 3A: (5.0%) MAV: (5.3%)
Hyderabad Ring Road	FY31 (80%), FY32 (100%)		2A: 4.7% 3A: 2.4% MAV: 3.1%	2A: 4.8% 3A: 2.3% MAV: 2.4%	2A: 6.1% 3A: 2.6% MAV: 3.1%
Nagpur-Vijayawada expressway	FY30 (50%), FY31 (100%)		CJV: (0.1%) LCV: (0.8%) 2A: (10.2%) 3A: (5.8%) MAV: (8.0%)	CJV: (0.1%) LCV: (0.8%) 2A: (10.4%) 3A: (5.6%) MAV: (6.1%)	CJV: (0.2%) LCV: (1.0%) 2A: (13.2%) 3A: (6.4%) MAV: (7.7%)
Amaravati Induced Demand	FY28 (80%), FY29 (100%)		CJV: 2.3% 2A: 2.2% MAV: 2.8%	CJV: 2.7% 2A: 2.3% MAV: 6.4%	CJV: 5.9% 2A: 2.9% MAV: 2.7%

Source: Steer

Impacts-Downside Case

6.34 The upside case impacts included in forecasts are summarised in Table 6.27 below.

Table 6.27: Summary of impacts on the Assets

	Year of Impact		Magnitude of impact		
			TP1 Madgullapally	TP2 Tummalacheruvu	TP3 Elchuru
Surat Chennai Expressway	FY28 (80%), FY29 (100%)	-25% of base case	CJV: (0.4%) LCV: (5.8%) 2A: (5.9%) 3A: (7.6%) MAV: (9.1%)	CJV: (0.5%) LCV: (6.1%) 2A: (6.1%) 3A: (7.3%) MAV: (6.9%)	CJV: (0.9%) LCV: (7.7%) 2A: (7.7%) 3A: (8.3%) MAV: (8.8%)
Hyderabad Ring Road	FY31 (80%), FY32 (100%)		2A: 2.8% 3A: 1.4% MAV: 1.9%	2A: 2.9% 3A: 1.4% MAV: 1.4%	2A: 3.7% 3A: 1.5% MAV: 1.8%

	Year of Impact		Magnitude of impact		
			TP1 Madgullapally	TP2 Tummalacheruvu	TP3 Elchuru
Nagpur-Vijayawada expressway	FY30 (50%), FY31 (100%)		CJV: (0.2%) LCV: (1.3%) 2A: (17.0%) 3A: (9.7%) MAV: (13.3%)	CJV: (0.2%) LCV: (1.3%) 2A: (17.3%) 3A: (9.4%) MAV: (10.1%)	CJV: (0.4%) LCV: (1.7%) 2A: (22.1%) 3A: (10.6%) MAV: (12.9%)
Amaravati Induced Demand	FY28 (80%), FY29 (100%)		CJV: 1.4% 2A: 1.3% MAV: 1.7%	CJV: 1.7% 2A: 1.4% MAV: 3.9%	CJV: 3.7% 2A: 1.8% MAV: 1.7%

Source: Steer

Upside and Downside Case Forecasts

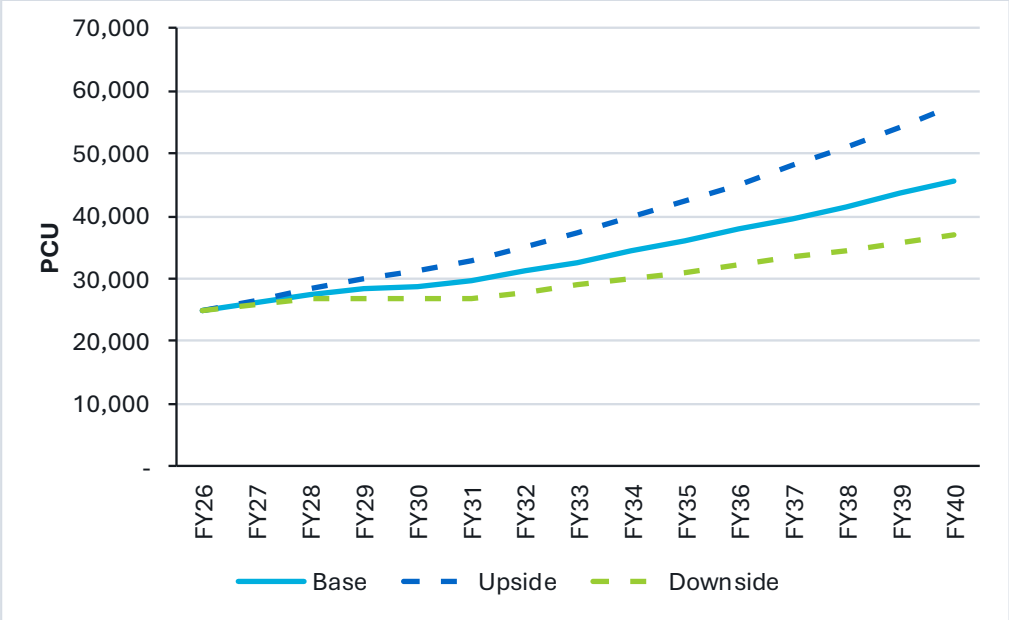
6.35 Table 6.28 below presents the difference between the Upside and Downside Case forecasts relative to the Base Case forecasts in FY40 (i.e., the concession end year) for all three Asset toll plazas. **Error! Reference source not found.** through **Error! Reference source not found.** below plot the Upside and Downside Case forecasts relative to the Base Case forecasts for each Asset toll plaza over the full concession period (FY26-FY40).

Table 6.28: Percentage Difference Upside and Downside Case Forecasts vs. Base Case Forecasts - FY40

Case	Measure	TP1 Madugulapally	TP2 Thummalacheruvu	TP3 Elchuru
Upside Case	Traffic (PCU)	26.5%	26.5%	28.2%
Downside Case		(19.1%)	(19.1%)	(20.2%)
Upside Case	Revenue	43.0%	42.3%	44.5%
Downside Case		(28.5%)	(28.2%)	(29.4%)

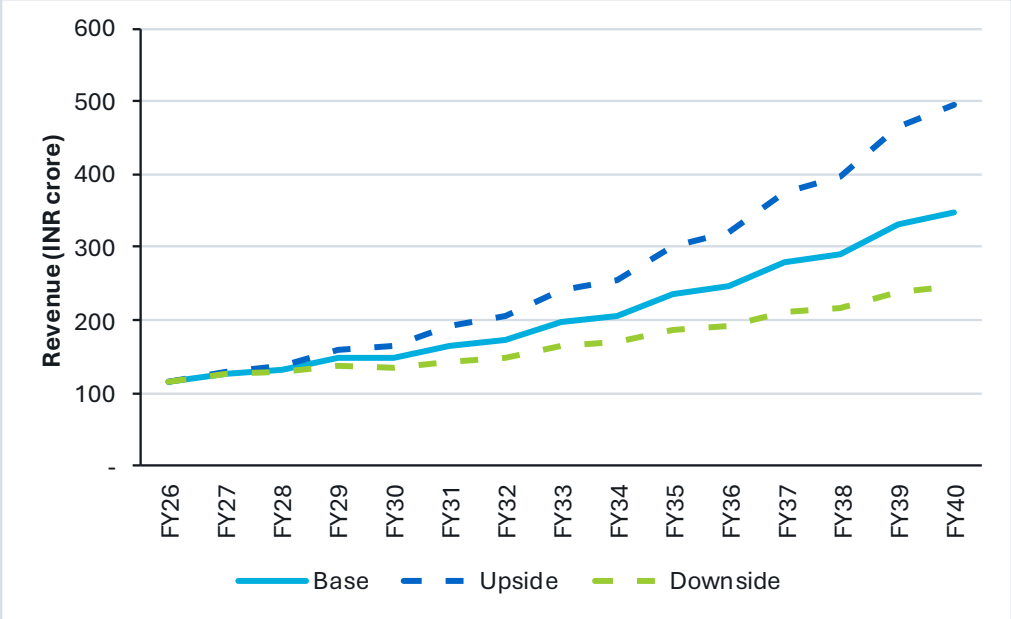
Source: Steer Analysis

Figure 6.5: Long-term PCU forecasts for Madugulappalli including upside and downside scenarios



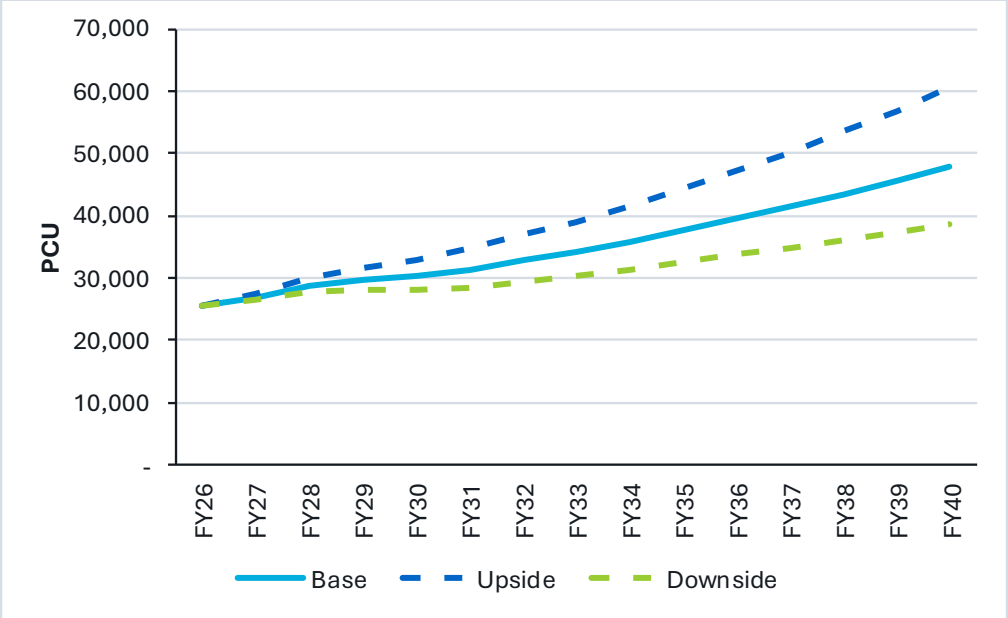
Source: Steer Analysis

Figure 6.6: Long-term Revenue forecasts for Madugulappalli including upside and downside scenarios



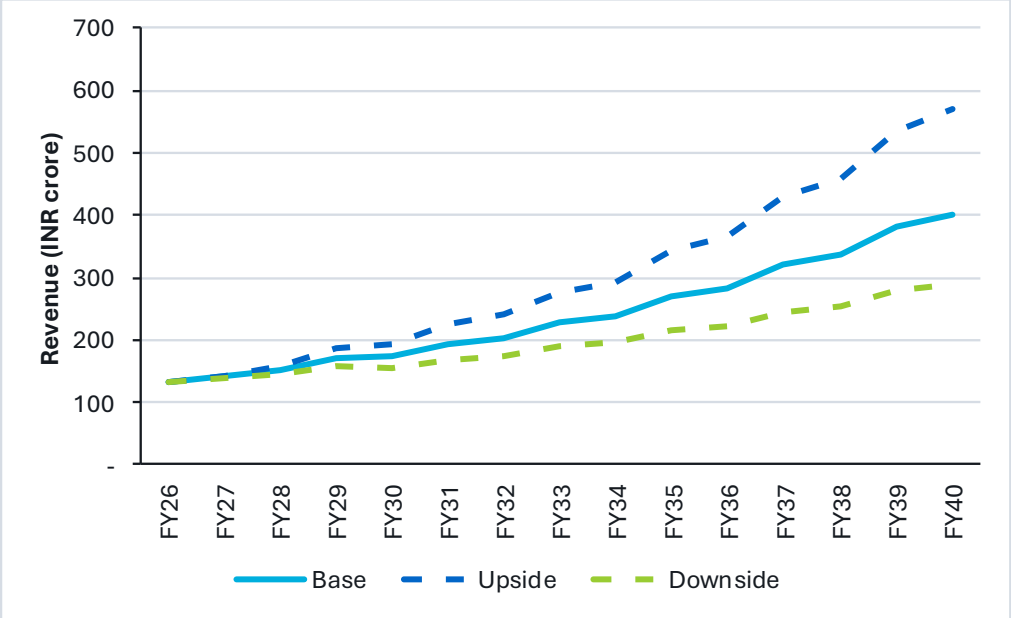
Source: Steer Analysis

Figure 6.7: Long-term PCU forecasts for Tummalacheruvu including upside and downside scenarios



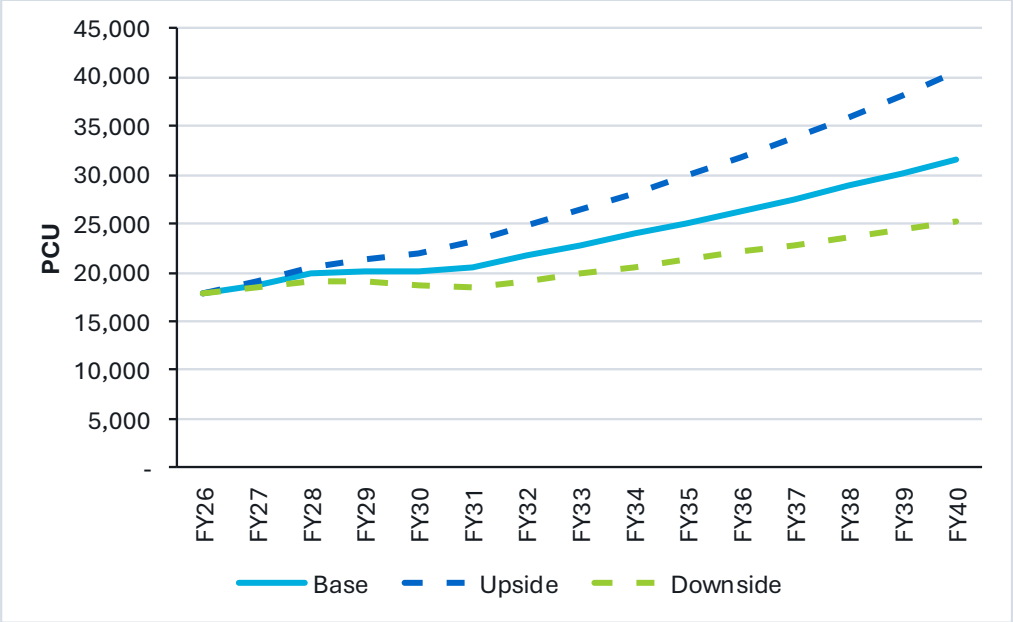
Source: Steer Analysis

Figure 6.8: Long-term Revenue forecasts for Tummalacheruvu including upside and downside scenarios



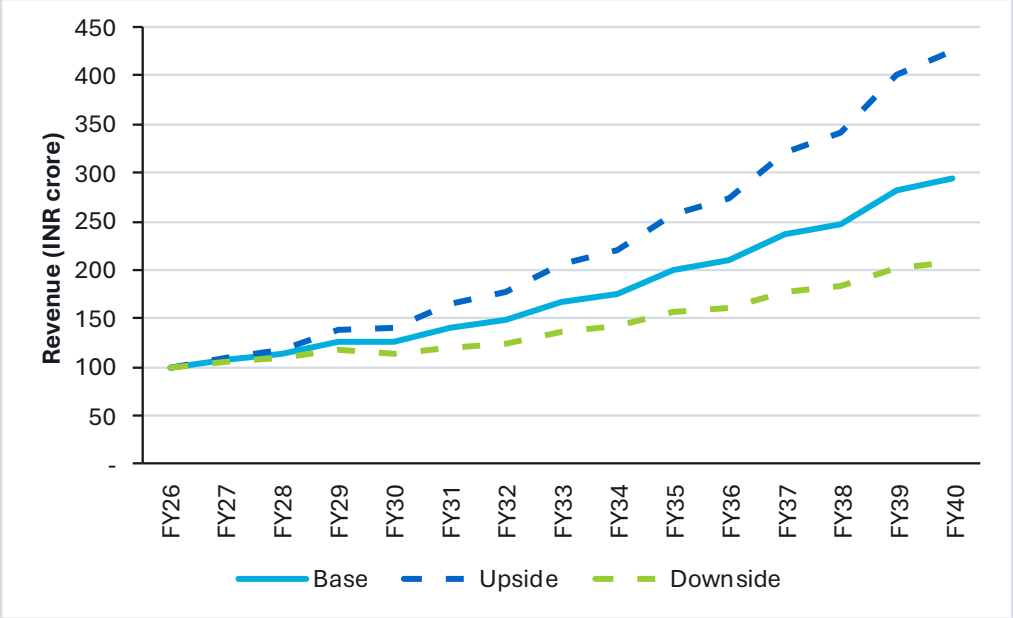
Source: Steer Analysis

Figure 6.9: Long-term PCU forecasts for Elchuru including upside and downside scenarios



Source: Steer Analysis

Figure 6.10: Long-term Revenue forecasts for Elchuru including upside and downside scenarios



Source: Steer Analysis

Summary outlook

6.36 Overall, passenger traffic on the Asset has a mix of regional movement between Hyderabad, Chennai, Ongole and other urban/semi-urban locations lying along the Asset alignment. Goods traffic on the Asset are driven by regional industries such as cement clusters near the Asset as well as manufacturing plants further away (such as automotive manufacturers in Tamil Nadu). There is also significant short to medium-distance movement of trucks carrying agricultural goods such as rice, chillis and tobacco.

6.37 The states of Andhra Pradesh and Telangana have both shown great focus on enhancing their respective industrial sectors while also establishing themselves as key IT hubs to foster a favourable environment for start-ups and tech-driven businesses (as observed in Hyderabad in Telangana, and as is intended for the city of Amravati in Andhra Pradesh). Several other investments in sectors like textiles, petrochemicals and food processing have also been made to boost economic growth in these states.

6.38 The two states have also invested heavily in strategic infrastructure development aimed at boosting trade and commerce by improving connectivity via roads and ports[28][29][30]. All these events are expected to positively influence traffic growth on the Asset going forward.

6.39 The impacts considered while forecasting include the onset of the Surat-Solapur-Chennai expressway, the Nagpur-Vijayawada expressway, combined net impact of the Hyderabad Regional Ring Road in conjunction with the NH167k upgrade between Hyderabad and Nandyal, and finally, the demand induced by Amaravati super city development in AP.

6.40 The forecasts overall translate to stable PCU growth rate CAGRs of 4.5%, 4.6% and 4.2% per year at TP1, TP2 and TP3 (respectively) between FY26 and FY40, and we expect these growth rates to sustain over the long-term after considering all network related impacts in and around the Asset's surrounding road network. Hence, reflecting the robustness of the underlying growth drivers of travel demand on the Asset.

[28] **Centre to take up road infra projects worth Rs 2 lakh crore in Telangana over 3-4 years: Nitin Gadkari - The Economic Times**

[29] **https://indiashippingnews.com/andhra-pradesh-govt-with-apmb-investing-in-construction-of-four-new-ports/**

[30] **Rs 76,000-crore highway projects underway in Andhra Pradesh**

Appendices

A Detailed forecasts

A.1 Further to the summary of forecasts presented in Chapter 6, this appendix presents detailed forecasts.

Traffic forecasts

A.2 This section presents the detailed traffic forecasts for the forecast period until FY40. The following two tables show the traffic growth rates and AADT, respectively.

Table A.1: Forecasts for final (background+impacts) AADT at TP1 Madgulapally

Vehicle Type	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total	PCUs
FY27	7,990	883	870	685	1,404	672	2,224	14,727	26,078
FY28	8,700	907	894	689	1,479	671	2,352	15,692	27,534
FY29	9,310	932	919	675	1,502	648	2,358	16,345	28,245
FY30	9,911	956	943	683	1,464	628	2,346	16,931	28,739
FY31	10,540	981	967	690	1,469	619	2,379	17,645	29,571
FY32	11,213	1,006	991	701	1,551	629	2,520	18,611	31,100
FY33	11,951	1,032	1,018	712	1,627	637	2,658	19,636	32,670
FY34	12,725	1,059	1,044	724	1,706	645	2,804	20,707	34,306
FY35	13,537	1,086	1,071	735	1,788	652	2,955	21,824	36,010
FY36	14,386	1,113	1,097	747	1,873	660	3,113	22,991	37,786
FY37	15,275	1,141	1,125	759	1,961	668	3,278	24,207	39,634
FY38	16,203	1,169	1,152	770	2,053	676	3,451	25,473	41,556
FY39	17,172	1,197	1,179	782	2,148	684	3,630	26,791	43,553
FY40	18,189	1,225	1,207	793	2,246	691	3,817	28,169	45,635

Source: Steer analysis

Table A.2: Forecasts for final (background+impacts) growth rates (%) at TP1 Madgulapally

VehicLe Type	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total	PCUs
FY27	7.7%	2.9%	2.9%	1.8%	5.2%	1.3%	5.8%	6.0%	5.4%
FY28	8.9%	2.8%	2.8%	0.6%	5.4%	(0.3%)	5.7%	6.5%	5.6%
FY29	7.0%	2.7%	2.7%	(1.9%)	1.6%	(3.4%)	0.3%	4.2%	2.6%
FY30	6.4%	2.6%	2.6%	1.1%	(2.6%)	(3.0%)	(0.5%)	3.6%	1.8%
FY31	6.4%	2.6%	2.6%	1.1%	0.3%	(1.5%)	1.4%	4.2%	2.9%
FY32	6.4%	2.6%	2.6%	1.6%	5.6%	1.6%	5.9%	5.5%	5.2%

VehicLe Type	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total	PCUs
FY33	6.6%	2.6%	2.6%	1.6%	4.9%	1.2%	5.5%	5.5%	5.0%
FY34	6.5%	2.6%	2.6%	1.6%	4.8%	1.2%	5.5%	5.5%	5.0%
FY35	6.4%	2.5%	2.5%	1.6%	4.8%	1.2%	5.4%	5.4%	5.0%
FY36	6.3%	2.5%	2.5%	1.6%	4.8%	1.2%	5.4%	5.3%	4.9%
FY37	6.2%	2.5%	2.5%	1.5%	4.7%	1.2%	5.3%	5.3%	4.9%
FY38	6.1%	2.4%	2.4%	1.5%	4.7%	1.2%	5.3%	5.2%	4.8%
FY39	6.0%	2.4%	2.4%	1.5%	4.6%	1.2%	5.2%	5.2%	4.8%
FY40	5.9%	2.4%	2.4%	1.5%	4.6%	1.1%	5.2%	5.1%	4.8%

Source: Steer analysis

Table A.3 : Forecasts for final (background+impacts) AADT at TP2 Tummalacheruvu

Vehicle Type	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total	PCUs
FY27	6,896	767	812	658	1,376	692	2,926	14,128	26,946
FY28	7,526	794	846	662	1,450	691	3,179	15,147	28,762
FY29	8,056	821	880	648	1,472	668	3,254	15,798	29,646
FY30	8,574	848	915	655	1,432	649	3,290	16,362	30,247
FY31	9,118	875	950	662	1,435	640	3,373	17,052	31,191
FY32	9,699	903	986	672	1,516	650	3,566	17,993	32,837
FY33	10,338	933	1,025	683	1,590	658	3,625	18,853	34,079
FY34	11,008	963	1,065	694	1,667	666	3,823	19,887	35,824
FY35	11,710	994	1,106	706	1,747	674	4,030	20,966	37,641
FY36	12,445	1,025	1,148	717	1,830	682	4,245	22,091	39,534
FY37	13,214	1,056	1,190	728	1,917	690	4,470	23,265	41,505
FY38	14,017	1,088	1,234	739	2,006	698	4,705	24,487	43,554
FY39	14,855	1,121	1,278	750	2,099	706	4,950	25,758	45,684
FY40	15,735	1,154	1,323	761	2,195	714	5,205	27,087	47,904

Source: Steer analysis

Table A.4 : Forecasts for final (background+impacts) growth rates (%) at TP2 Tummalacheruvu

Vehicle Type	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total	PCUs
FY27	7.7%	3.6%	4.4%	1.8%	5.2%	1.3%	5.8%	6.0%	5.5%
FY28	9.1%	3.5%	4.2%	0.5%	5.4%	(0.2%)	8.6%	7.2%	6.7%
FY29	7.0%	3.4%	4.0%	(2.1%)	1.5%	(3.3%)	2.4%	4.3%	3.1%
FY30	6.4%	3.3%	3.9%	1.1%	(2.7%)	(2.8%)	1.1%	3.6%	2.0%
FY31	6.3%	3.2%	3.9%	1.0%	0.2%	(1.4%)	2.5%	4.2%	3.1%
FY32	6.4%	3.2%	3.8%	1.6%	5.6%	1.6%	5.7%	5.5%	5.3%
FY33	6.6%	3.3%	4.0%	1.6%	4.9%	1.2%	1.6%	4.8%	3.8%
FY34	6.5%	3.2%	3.9%	1.6%	4.8%	1.2%	5.5%	5.5%	5.1%
FY35	6.4%	3.2%	3.8%	1.6%	4.8%	1.2%	5.4%	5.4%	5.1%
FY36	6.3%	3.1%	3.8%	1.6%	4.8%	1.2%	5.4%	5.4%	5.0%
FY37	6.2%	3.1%	3.7%	1.5%	4.7%	1.2%	5.3%	5.3%	5.0%
FY38	6.1%	3.0%	3.6%	1.5%	4.7%	1.2%	5.3%	5.3%	4.9%
FY39	6.0%	3.0%	3.6%	1.5%	4.6%	1.2%	5.2%	5.2%	4.9%
FY40	5.9%	3.0%	3.6%	1.5%	4.6%	1.1%	5.2%	5.2%	4.9%

Source: Steer analysis

Table A.5 : Forecasts for final (background+impacts) AADT at TP3 Elchuru

Vehicle Type	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total	PCUs
FY27	3,104	852	462	517	1,080	616	2,292	8,923	18,770
FY28	3,455	888	481	518	1,139	613	2,424	9,518	19,820
FY29	3,707	924	501	502	1,146	590	2,434	9,804	20,127
FY30	3,943	960	520	507	1,090	570	2,426	10,017	20,212
FY31	4,191	997	541	511	1,077	560	2,464	10,340	20,618
FY32	4,458	1,035	561	519	1,142	569	2,609	10,893	21,697
FY33	4,752	1,076	583	528	1,197	576	2,753	11,465	22,774
FY34	5,060	1,118	606	536	1,256	583	2,903	12,061	23,895
FY35	5,382	1,160	629	545	1,316	590	3,060	12,682	25,063
FY36	5,720	1,204	653	553	1,378	597	3,224	13,329	26,278
FY37	6,073	1,249	677	562	1,443	604	3,395	14,003	27,541
FY38	6,443	1,294	702	570	1,511	611	3,573	14,704	28,855
FY39	6,828	1,341	727	579	1,581	618	3,759	15,432	30,219
FY40	7,232	1,388	753	587	1,653	625	3,953	16,191	31,638

Source: Steer analysis

Table A.6 : Forecasts for final (background+impacts) growth rates (%) at TP3 Elchuru

Vehicle Type	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total	PCUs
FY27	7.7%	4.4%	4.4%	1.8%	5.2%	1.3%	5.8%	5.6%	5.2%
FY28	11.3%	4.2%	4.2%	0.2%	5.4%	(0.4%)	5.7%	6.7%	5.6%
FY29	7.3%	4.0%	4.0%	(3.1%)	0.6%	(3.9%)	0.4%	3.0%	1.5%
FY30	6.4%	3.9%	3.9%	0.9%	(4.8%)	(3.4%)	(0.3%)	2.2%	0.4%
FY31	6.3%	3.9%	3.9%	0.9%	(1.2%)	(1.8%)	1.6%	3.2%	2.0%
FY32	6.4%	3.8%	3.8%	1.6%	6.0%	1.7%	5.9%	5.3%	5.2%
FY33	6.6%	4.0%	4.0%	1.6%	4.9%	1.2%	5.5%	5.2%	5.0%
FY34	6.5%	3.9%	3.9%	1.6%	4.8%	1.2%	5.5%	5.2%	4.9%
FY35	6.4%	3.8%	3.8%	1.6%	4.8%	1.2%	5.4%	5.2%	4.9%
FY36	6.3%	3.8%	3.8%	1.6%	4.8%	1.2%	5.4%	5.1%	4.8%
FY37	6.2%	3.7%	3.7%	1.5%	4.7%	1.2%	5.3%	5.1%	4.8%
FY38	6.1%	3.6%	3.6%	1.5%	4.7%	1.2%	5.3%	5.0%	4.8%
FY39	6.0%	3.6%	3.6%	1.5%	4.6%	1.2%	5.2%	5.0%	4.7%
FY40	5.9%	3.6%	3.6%	1.5%	4.6%	1.1%	5.2%	4.9%	4.7%

Source: Steer analysis

Revenue forecasts

A.3 The following table presents the year-wise annual revenue forecasts for the forecast period until FY40.

Table A.7: Forecasts for annual revenue for TP1, INR crores

Vehicle Type	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	18.3	2.0	6.9	3.6	15.4	18.9	61.0	126.3
FY28	20.0	2.1	7.1	3.7	16.3	18.9	64.7	132.9
FY29	23.5	2.4	8.0	4.0	18.3	20.1	71.5	147.7
FY30	25.0	2.4	8.3	4.0	17.8	19.6	71.1	148.1
FY31	29.1	2.7	9.3	4.4	19.6	21.1	78.9	165.0
FY32	31.0	2.8	9.5	4.5	20.7	21.5	83.8	173.8
FY33	35.9	3.1	10.6	5.0	23.5	23.5	95.5	196.9
FY34	38.2	3.2	10.8	5.1	24.6	23.8	100.7	206.3
FY35	43.9	3.5	12.0	5.6	27.9	26.1	115.1	234.1
FY36	46.8	3.6	12.4	5.7	29.3	26.5	121.6	245.8
FY37	53.8	4.0	13.7	6.2	33.2	29.0	138.4	278.3
FY38	57.0	4.1	14.1	6.3	34.8	29.3	145.6	291.2
FY39	65.4	4.6	15.6	7.0	39.5	32.1	166.1	330.2
FY40	69.5	4.7	16.0	7.1	41.4	32.6	175.1	346.3

Source: Steer analysis

Table A.8: Forecasts for annual revenue for TP2, INR crores

Vehicle Type	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	16.3	1.8	6.6	3.4	14.8	18.8	79.3	140.9
FY28	17.8	1.9	6.9	3.4	15.6	18.8	86.4	150.8
FY29	21.2	2.2	7.9	3.7	17.6	20.1	97.9	170.7
FY30	22.6	2.2	8.2	3.8	17.1	19.6	99.0	172.5
FY31	26.2	2.5	9.4	4.2	18.8	21.1	111.2	193.4
FY32	28.0	2.6	9.7	4.2	19.9	21.5	117.9	203.9
FY33	32.2	2.9	11.0	4.7	22.6	23.6	129.6	226.5
FY34	34.3	3.0	11.4	4.7	23.7	23.8	136.6	237.6
FY35	39.7	3.4	12.8	5.2	26.9	26.1	156.0	270.1
FY36	42.3	3.5	13.3	5.3	28.3	26.5	164.8	284.0
FY37	48.4	3.9	14.9	5.8	32.0	29.0	187.6	321.6
FY38	51.4	4.0	15.5	5.9	33.4	29.4	197.5	337.0
FY39	58.9	4.4	17.4	6.5	37.9	32.2	225.2	382.6
FY40	62.6	4.6	18.0	6.6	39.8	32.6	237.5	401.7

Source: Steer analysis

Table A.9: Forecasts for annual revenue for TP3, INR crores

Vehicle Type	CJV	Mini LCV	Bus	LCV	2A	3A	MAV	Total
FY27	7.7	2.1	3.7	2.8	11.8	16.4	63.0	107.6
FY28	8.6	2.2	3.9	2.8	12.5	16.4	66.8	113.2
FY29	10.2	2.5	4.5	3.0	14.0	17.6	74.9	126.8
FY30	10.9	2.6	4.7	3.1	13.3	17.0	74.6	126.2
FY31	12.6	3.0	5.3	3.4	14.4	18.3	83.0	140.1
FY32	13.5	3.1	5.6	3.4	15.3	18.7	88.1	147.7
FY33	15.5	3.5	6.2	3.8	17.4	20.4	100.5	167.4
FY34	16.5	3.6	6.5	3.8	18.2	20.7	106.0	175.4
FY35	19.1	4.1	7.3	4.2	20.7	22.7	121.0	199.1
FY36	20.3	4.3	7.6	4.3	21.8	23.0	127.9	209.1
FY37	23.3	4.8	8.5	4.7	24.6	25.1	145.6	236.6
FY38	24.7	5.0	8.8	4.8	25.8	25.4	153.2	247.7
FY39	28.3	5.6	9.9	5.3	29.2	27.9	174.7	280.9
FY40	30.1	5.8	10.3	5.4	30.7	28.3	184.2	294.7

B Top OD Pairs

B.1 Further to the OD analysis presented in Chapter 3 this appendix presents the top 10 OD pairs at each toll plaza. Please see this data for both CJVs and MAVs and OSVs combined below.

TP1

Table B.1: CJV and Bus top 10 OD pair shares at TP1

	OD Pair	Share
1.	Tipararthi-Nalgonda-Narketpalle - Mirayalguda	25.8%
2.	Hyderabad City - Mirayalguda	19.8%
3.	Guntur - Hyderabad City	10.6%
4.	Ongole - Hyderabad City	4.3%
5.	Chennai City - Hyderabad City	4.1%
6.	Krishnapatnam port - Hyderabad City	2.1%
7.	Bapatla-Chirala - Hyderabad City	2.1%
8.	Guntur - Tipararthi-Nalgonda-Narketpalle	2.0%
9.	Vijayawada South City - Hyderabad City	1.8%
10.	Guttikonda-Janapadu-Pidiguralla-Anupalem - Hyderabad City	1.5%

Source: Steer analysis of OD data

Table B.2: MAV and OSV top 10 OD pair shares at TP1

	OD Pair	Share
1.	Chennai City - Hyderabad City	18.3%
2.	NCT of Delhi - Chennai City	9.0%
3.	Hyderabad City - Mirayalguda	7.4%
4.	Rest of Gujarat - Chennai City	3.9%
5.	Tipararthi-Nalgonda-Narketpalle - Mirayalguda	3.9%
6.	Guntur - Hyderabad City	3.1%
7.	Krishnapatnam port - Hyderabad City	2.7%
8.	Mumbai City - Chennai City	2.7%
9.	Dachepalli - Hyderabad City	2.2%
10.	Rest of Rajasthan - Chennai City	2.1%

Source: Steer analysis of OD data

TP2

Table B.3: CJV top 10 OD pair shares at TP2

	OD Pair	Share
1.	Guntur -Hyderabad City	7.5%
2.	Guntur -Mirayalguda	6.9%
3.	Chennai City-Hyderabad City	5.2%
4.	Ongole -Hyderabad City	4.4%
5.	Guntur -Tipararthi-Nalgonda-Narketpalle	3.8%
6.	Guttikonda-Janapadu-Pidiguralla-Anupalem -Hyderabad City	3.1%
7.	Vijayawada South City-Hyderabad City	3.0%
8.	Guttikonda-Janapadu-Pidiguralla-Anupalem -Mirayalguda	2.7%
9.	Guntur -Dachepalli	2.7%
10.	Guttikonda-Janapadu-Pidiguralla-Anupalem -Dachepalli	2.7%

Source: Steer analysis of OD data

Table B.4: MAV and OSV top 10 OD pair shares at TP2

	OD Pair	Share
1.	Chennai City-Hyderabad City	19.7%
2.	Guntur -Hyderabad City	5.4%
3.	NCT of Delhi-Chennai City	3.9%
4.	Guntur -Mirayalguda	3.6%
5.	Ongole -Hyderabad City	2.2%
6.	Guttikonda-Janapadu-Pidiguralla-Anupalem -Mirayalguda	2.2%
7.	Guntur -Tipararthi-Nalgonda-Narketpalle	2.1%
8.	Mumbai City-Chennai City	1.8%
9.	Chennai City-Tipararthi-Nalgonda-Narketpalle	1.8%
10.	Vijayawada South City-Hyderabad City	1.7%

Source: Steer analysis of OD data

TP3

Table B.5: CJV top 10 OD pair shares at TP3

	OD Pair	Share
1.	Narasaraopet - Ongole	18.2%
2.	Ongole - Hyderabad City	11.2%
3.	Krishnapatnam port - Hyderabad City	10.9%
4.	Narasaraopet - Addanki-Singatakonda	10.4%
5.	Chennai City - Hyderabad City	6.2%
6.	Chittoor - Hyderabad City	2.9%
7.	Addanki-Singatakonda - Hyderabad City	2.9%
8.	Guntur - Ongole	2.4%
9.	Narasaraopet - Krishnapatnam port	2.4%
10.	Kandukur-Tangutur - Hyderabad City	2.4%

Source: Steer analysis of OD data

Table B.6: MAV and OSV top 10 OD pair shares at TP3

	OD Pair	Share
1.	Chennai City - Hyderabad City	24.1%
2.	NCT of Delhi - Chennai City	12.8%
3.	Krishnapatnam port - Hyderabad City	6.4%
4.	Dachepalli - Krishnapatnam port	2.9%
5.	Rest of Gujarat - Chennai City	2.8%
6.	Dachepalli - Chennai City	2.7%
7.	Chittoor - Hyderabad City	2.2%
8.	Centre Maharashtra - Chennai City	2.2%
9.	Haryana - Chennai City	2.1%
10.	Ongole - Hyderabad City	2.1%

Source: Steer analysis of OD data

C Data Collection Exercise

C.1 In order to validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

3-day TVC counts

Table C.1: TVC counts at TP1

Date	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
17-02-2026	8,067	1,161	1,222	965	1,261	708	2,548	2	15,934
18-02-2026	7,868	810	1,192	824	1,261	703	2,536	2	15,196
19-02-2026	7,785	771	843	835	907	531	1,819	-	13,491

Source: Steer analysis of TVC data

Table C.2: TVC counts at TP2

Date	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
22-01-2025	4,230	1,163	1,092	793	1,119	653	2,817	3	11,870
23-01-2025	4,357	1,486	1,232	794	1,066	664	2,867	10	12,476
24-01-2025	4,525	1,213	1,104	801	1,120	678	3,047	3	12,491

Source: Steer analysis of TVC data

Table C.3: TVC counts at TP3

Date	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
17-02-2026	2,134	720	785	467	962	595	2,081	-	7,744
18-02-2026	2,964	768	924	457	1,005	603	2,361	7	9,089
19-02-2026	3,078	827	938	505	1,120	667	2,263	-	9,398

Source: Steer analysis of TVC data

TVC vs TMS comparison

Table C.4: TVC and TMS WADT

Toll Plaza	Source	CJV+ Mini LCV	LCV	Bus	2 Axle	3 Axle+ MAV	OSV	Total
TP1	TVC	8,821	1,086	875	1,143	2,948	1	14,874
	TMS	8,863	639	840	1,453	2,990	-	14,785
TP2	TVC	5,658	1,143	796	1,102	3,575	5	12,279
	TMS	5,749	694	748	1,423	3,638	-	12,252
TP3	TVC	3,497	882	476	1,029	2,857	2	8,744
	TMS	3,510	567	478	1,195	2,952	-	8,702

Source: Steer analysis of TVC data

Zone list

Table C.5: Zones selected for OD analysis

Zone No	Zone name	State
1	Rest of India	Andaman & Nicobar Island
2	Y.s.r.	Andhra Pradesh
3	East Godavari	Andhra Pradesh
4	Machilipatnam-Diviseema-Vuyyuru	Andhra Pradesh
5	Chittoor	Andhra Pradesh
6	Tummapudi	Andhra Pradesh
7	Puttavalipalem-Santhamaguluru	Andhra Pradesh
8	West Godavari	Andhra Pradesh
9	Gudivada	Andhra Pradesh
10	Kopparam	Andhra Pradesh
11	Karumanchi	Andhra Pradesh
12	Dachepalle-Pulipadu	Andhra Pradesh
13	Guntur	Andhra Pradesh
14	Chimakurthy	Andhra Pradesh
15	Nekarikallu-Reddypalem	Andhra Pradesh
16	Madarametla	Andhra Pradesh
17	Kurnool	Andhra Pradesh
18	Sattenapalle	Andhra Pradesh
19	Mattapalli	Andhra Pradesh
20	Ponnur-Cherukupalli	Andhra Pradesh
21	Vizianagaram	Andhra Pradesh

Zone No	Zone name	State
22	Guttikonda-Janapadu-Pidiguralla-Anupalem	Andhra Pradesh
23	Amaravati	Andhra Pradesh
24	Narasaraopet	Andhra Pradesh
25	Bellamkonda	Andhra Pradesh
26	Vijayawada South City	Andhra Pradesh
27	Brahmanapalli-Karalapadu	Andhra Pradesh
28	Rajahmundry City	Andhra Pradesh
29	Nuzvid	Andhra Pradesh
30	Ongole	Andhra Pradesh
31	Kandukur-Tangutur	Andhra Pradesh
32	Anantapur	Andhra Pradesh
33	Maddipadu-Rachavaripalem	Andhra Pradesh
34	Kanigiri	Andhra Pradesh
35	Tenali	Andhra Pradesh
36	Vinukonda	Andhra Pradesh
37	Addanki-Singatakonda	Andhra Pradesh
38	Chilakaluripet	Andhra Pradesh
39	Sri Potti Sriramulu Nellore	Andhra Pradesh
40	Darsi	Andhra Pradesh
41	Nandigama-Jaggaiahpet	Andhra Pradesh
42	Visakhapatnam Port	Andhra Pradesh
43	Parchoor-Inkollu	Andhra Pradesh
44	Macherla	Andhra Pradesh
45	Krosur	Andhra Pradesh
46	Rompicharla	Andhra Pradesh
47	Elchuru	Andhra Pradesh
48	Vijayawada North City	Andhra Pradesh
49	Pinnelli	Andhra Pradesh
50	Bapatla-Chirala	Andhra Pradesh
51	Makkenavaripalem	Andhra Pradesh
52	Giddalur-Markapur	Andhra Pradesh
53	Oppicharla	Andhra Pradesh
54	Srikakulam	Andhra Pradesh
55	Mangalagiri	Andhra Pradesh
56	**Dachepalli**	Andhra Pradesh

Zone No	Zone name	State
57	Krishnapatnam port	Andhra Pradesh
58	Amaravati (Andhra Pradesh)	Andhra Pradesh
59	Bhutan	Bhutan
60	Bihar	Bihar
61	Chandigarh	Chandigarh
62	Chhattisgarh	Chhattisgarh
63	Dadara & Nagar Havelli	Dadara & Nagar Havelli
64	Daman & Diu	Daman & Diu
65	Kandla Port or Mundra Port	Gujarat
66	Rest of Gujarat	Gujarat
67	Haryana	Haryana
68	Himachal Pradesh	Himachal Pradesh
69	Jammu & Kashmir	Jammu & Kashmir
70	Jharkhand	Jharkhand
71	Bangalore City	Karnataka
72	**Mysuru**	Karnataka
73	Rest of Karnataka	Karnataka
74	North Kerala	Kerala
75	Rest of South Kerala	Kerala
76	Kochi Port	Kerala
77	Thiruvananthapuram	Kerala
78	Madhya Pradesh	Madhya Pradesh
79	Pune	Maharashtra
80	Rest of East Maharashtra	Maharashtra
81	Mumbai City	Maharashtra
82	SW Maharashtra	Maharashtra
83	Centre Maharashtra	Maharashtra
84	NW Maharashtra	Maharashtra
85	Nagpur City	Maharashtra
86	North East India	Mizoram, Assam, Guwahati, Nagaland, Meghalaya, etc
87	NCT of Delhi	NCT of Delhi
88	Nepal	Nepal
89	Rest of Odisha	Odisha
90	Paradip Port	Odisha

Zone No	Zone name	State
91	Rourkela City	Odisha
92	Puducherry	Puducherry
93	Punjab	Punjab
94	Jodhpur City	Rajasthan
95	Jaipur City	Rajasthan
96	Rest of Rajasthan	Rajasthan
97	Coimbatore City	Tamil Nadu
98	Chennai City	Tamil Nadu
99	Salem	Tamil Nadu
100	Rest of Tamil Naidu	Tamil Nadu
101	Mallepalli-Nidamanoor	Telangana
102	Adilabad	Telangana
103	Wazirabad-Miryalaguda	Telangana
104	Kothagudem City	Telangana
105	Nizamabad	Telangana
106	Chityala-Bhongir	Telangana
107	Khammam City	Telangana
108	Hyderabad City	Telangana
109	Warangal	Telangana
110	Tipararthi-Nalgonda-Narketpalle	Telangana
111	Kodad-HuzurNagar-Mattapalli	Telangana
112	Suryapet-Nakrekal	Telangana
113	Karimnagar	Telangana
114	Medak	Telangana
115	Rangareddy	Telangana
116	Rest of Khammam	Telangana
117	Mahbubnagar	Telangana
118	Marrigudem-Indugula	Telangana
119	Mirayalguda	Telangana
120	Rest of West Uttar Pradesh	Uttar Pradesh
121	Rest of East Uttar Pradesh	Uttar Pradesh
122	Uttarakhand	Uttarakhand
123	Kolkata City	West Bengal
124	Rest of West Bengal	West Bengal
125	Kharagpur	West Bengal

Source: Steer analysis

Control Information

Prepared by

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002, India
+91 124 441 8650
www.steergroup.com

Prepared for

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1,
Sector 16, Noida- 201301 (UP, India)

Steer project/proposal number

Our ref: 23741311

Client contract/project number

Client ref: Transit 11

Author/originator

Vineet Karlapalem

Reviewer/approver

Vaibhav Gupta

Other contributors

Shipra Bhatia, Samridha Kalaiyan, Ayushman Rai, Harshit Garg

Distribution

Client: Steer:

Version control/issue number

Date

April 2026

steergroup.com

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence Nelamangala Devihalli Expressway Private Limited

Cube Highways Fund Advisors Private Limited Fund Advisors Private Limited
Our ref: 23741311

steer

Final Report
April 2026

Project Transit: Traffic Due Diligence Nelamangala Devihalli Expressway Private Limited

Prepared by:	Prepared for:
Steer Suite No. S3, Vatika Business Centre, Vatika Triangle, MG Road, Gurgaon, Haryana, 122002, India	Cube Highways Fund Advisors Private Limited 1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1, Sector 16, Noida- 201301 (UP, India)
+91 124 441 8650	Client ref: Transit 11
www.steergroup.com	Our ref: 23741311

Steer has prepared this material for Cube Highways Fund Advisors Private Limited. This material may only be used within the context and scope for which Steer has prepared it and may not be relied upon in part or whole by any third party or be used for any other purpose. Any person choosing to use any part of this material without the express and written permission of Steer shall be deemed to confirm their agreement to indemnify Steer for all loss or damage resulting therefrom. Steer has prepared this material using professional practices and procedures using information available to it at the time and as such any new information could alter the validity of the results and conclusions made.

steer

Contents

Disclaimer		**i**
Glossary Items		**iii**
1	**Introduction**	**1**
	The assignment	1
	Our approach	2
	Contents of this report	3
2	**The Asset**	**5**
	Introduction	5
	Strategic network	5
	Concession and tolling details	7
	Key economic activities	8
	Key Network Developments	8
3	**Traffic Description**	**10**
	Introduction	10
	Historical trends	11
	Key findings of the TVC data analysis	19
	Key findings of origin-destination analysis	21
	Conclusions	29
4	**Socio-economic context and traffic growth**	**31**
	Introduction	31
	Population growth	31
	Economic Indicators	32
	Economic growth	34
	Forecasts for growth drivers	38
5	**FY26 Base year AADT and Traffic growth Analysis**	**41**
	Introduction	41
	FY26 Base year AADT estimates	41
	Estimation of background elasticities	44
	Forecasts for background elasticities	47
6	**Forecasts: Network overlays and forecasts**	**48**
	Introduction	48
	Analysis of potential network/developmental impacts	48
	Revenue forecasting assumptions	51
	Traffic and Revenue forecasts	55
	Upside and Downside cases	58
	Summary outlook	62

Figures

Figure 2-1: Asset location in the regional road network 5
Figure 2-2: Asset context 6
Figure 2-3: Typical cross section of the Asset and toll plaza 7
Figure 3-1: Ticket-segmentation for CJV, TP1 Doddakarenahalli 16
Figure 3-2: Ticket-segmentation for MAV, TP1 Doddakarenahalli 16
Figure 3-3: Ticket-segmentation for CJV, TP2 Karabylu 17
Figure 3-4: Ticket Segmentation for MAV, TP2 Karabylu 17
Figure 3-5: TVC WADT 19
Figure 3-6: Comparison between TVC and TMS daily traffic data on TP1 Doddakarenahalli 20
Figure 3-7: Comparison between TVC and TMS daily traffic data on TP2 Karabylu 20
Figure 3-8 Comparison between vehicle shares from TVC and TMS WADTs 21
Figure 3-9: Zonal influence, TP1 Doddakarenahalli 23
Figure 3-10: Zonal influence, TP2 Karabylu 24
Figure 3-11: Internal-external distribution, TP1 Doddakarenahalli 25
Figure 3-12 Internal-external distribution, TP2 Karabylu 25
Figure 3-13: Commodity distribution, TP1 Doddakarenahalli (Total) 27
Figure 3-14: Commodity distribution, TP2 Karabylu 27
Figure 3-15: Trip length distribution, TP1 Doddakarenahalli 28
Figure 3-16: Trip length distribution, TP2 Karabylu 29
Figure 4-1: Annual growth – Index of Industrial Production (FY16-FY26YTD) 32
Figure 4-2: Total number of registered motor vehicles in India (per 1000 population) 33
Figure 4-3: Per Capita Income 34
Figure 4-4: YoY Growth in expenditure components of GDP 35
Figure 4-5: Month on Month IIP performance 36
Figure 4-6: Industrial components of GVA 36
Figure 4-7: Evolution of Karnataka's state GDP and national GDP 37
Figure 4-8: Sectoral contribution to Karnataka's GSDP in FY24 38
Figure 4-9: GDP-GSDP forecast 40
Figure 5-1: Relationship between CJV traffic and Karnataka GSDP 45
Figure 5-2: Relationship between LCV+Bus+2A combined traffic and Karnataka GSDP 46
Figure 5-3: Relationship between 3A+MAV combined traffic and India's GDP 46
Figure 6-1: Alternate routes and Asset shown against the regional network context 49
Figure 6-2: Traffic and growth rates for forecast PCUs - Background and final- TP1 58
Figure 6-3 Traffic and growth rates for forecast PCUs - Background and final- TP2 58
Figure 6.4: Long-term PCU forecasts for TP1 Neelamangala including upside and downside scenarios 60
Figure 6.5: Long-term PCU forecasts for TP2 Karbylu including upside and downside scenarios 61
Figure 6.6: Long-term revenue forecasts for TP1 Neelamangala including upside and downside scenarios 61

Figure 6.7: Long-term revenue forecasts for TP2 Karbylu including upside and downside scenarios 62

Tables

Table 1.1: Scope of work and sources of data 1
Table 2.1: Concession details 7
Table 2.2: Single toll rates on the Asset (INR), applicable September 2025 to August 2026 8
Table 3.1: Historical evolution in AADT by vehicle class at TP1- Doddakarenahalli 11
Table 3.2: Historical Tollable Traffic Levels at TP1 Doddakarenahalli 11
Table 3.3: Historical evolution in AADT by vehicle class at TP2- Karabylu 11
Table 3.4: Historical Tollable Traffic Levels at TP2 Karabylu 12
Table 3.5: Revenue (INR Crore) by vehicle type at TP1 Doddakarenahalli, and AADC (annual average daily collection) in INR Lakhs 13
Table 3.6: Revenue (INR Crore) by vehicle type at TP2 Karabylu, and AADC (annual average daily collection) 13
Table 3.7: Typical ticket types sold at NHAI plazas 14
Table 3.8: Historical ticket segmentation at TP1 Doddakarenahalli 18
Table 3.9: Historical ticket segmentation at TP2 Karabylu 18
Table 3.10: Data collection schedule 19
Table 3.11: Difference in vehicle counts when combined 21
Table 3.12: Sample rates for OD data 22
Table 3.13: Zone aggregations for zonal influence analysis 22
Table 3.14: Aggregate commodity categories 26
Table 4.1: CAGR of population in India 31
Table 4.2: Population Growth in Karnataka and India (FY12 – FY24) 32
Table 5.1: Seasonality correction factors for TP1 – Doddakarenahalli 42
Table 5.2: Seasonality correction factors for TP2- Karabylu 42
Table 5.3: Adopted AADT for FY26, Doddakarenahalli 43
Table 5.4: Adopted AADT for FY26, Karabylu toll plaza 43
Table 5.5: Split between individual vehicle types, 2026 44
Table 5.6: Identified growth drivers to model traffic growth 44
Table 5.7: Derived elasticities from regression analysis and assumed forecast elasticities for background growth 47
Table 6.1: List of network/other developments 49
Table 6.2 :Impact of STRR (Dobbaspet- Hoskote section) at TP01 50
Table 6.3: Impact of Peripheral Ring Road at TP1 and TP2 51
Table 6.4: Summary of impact assessments 51
Table 6.5: WPI growth forecast assumptions 52
Table 6.6: Toll estimation overview 52

Table 6.7: Forecast toll segmentation for the forecast years , TP1 Doddakarenahalli 53
Table 6.8: Forecast toll segmentation for the forecast years, TP2 Karabylu 53
Table 6.9: Trip factors for the forecast years, TP1 Doddakarenahalli 53
Table 6.10: Trip factors for the forecast years, TP2 Karabylu 54
Table 6.11: Revenue reconciliation summary for Apr-Jun FY26 AADC 54
Table 6.12: Traffic forecast (with impacts) at TP1 Doddakarenahalli 55
Table 6.13: Traffic forecast (with impacts) growth rates (%), TP1 Doddakarenahalli 55
Table 6.14: Revenue forecasts (in INR crores including annual pass compensation) at TP1 Doddakarenahalli 56
Table 6.15: Revenue forecast with growth rates (%), TP1 Doddakarenahalli 56
Table 6.16: Traffic forecast (with impacts) at TP2 Karabylu 56
Table 6.17: Traffic forecast (with impacts) with growth rates at TP2 Karabylu 57
Table 6.18: Revenue forecast (in INR crores including annual pass compensation) at TP2 Karabylu 57
Table 6.19: Revenue forecast with growth rates (%) at TP2 Karabylu 57
Table 6.20: Summary of Macro-economic Assumptions for upside and downside cases 59
Table 6.21: Summary of impacts on the Assets 59
Table 6.22: Summary of impacts on the Assets 60
Table 6.23: Percentage Difference Upside and Downside Case Forecasts vs. Base Case Forecasts – FY33 60

Appendices

A Top OD Pairs

B Data Collection Exercise

C Detailed Forecasts

Disclaimer

This report has been produced for the sole benefit of Cube Highways Pte. Ltd ("the Client"). The report may only be relied upon by Approved Addressees in accordance with the terms of our engagement letter. This Report (the "Report") is confidential and disclosed only for information purposes, and it may not be relied upon by any party other than the Client or a Party to a Reliance Letter, and Steer: a) makes no warranty, expressed or implied, with respect to the use of any information or methods disclosed in this Report; and b) assumes no liability with respect to the use of any information or methods disclosed in this document. Any such party by its acceptance or use of this Report releases Steer from any liability for direct, indirect, consequential, or special loss or damage whether arising in contract, warranty, express or implied, tort or otherwise.

The Report is based on standard professional efforts, and information available to us at the time the review took place and is subject to time and budget constraints of the Report's scope of work. This Report, information and statements contained herein, are all based on third party data provided to us, or sourced by us, and Steer has not sought to establish the reliability of the data, except as specifically stated in the Report. Steer bears no responsibility for the results of any actions taken on the basis of third-party data.

Certain forward-looking statements in the Report are estimates based on interpretations or assessments of information available at the time of writing. The Report is thus to be viewed as an assessment that is time-relevant, specifically referring to conditions at the time of the review. Steer undertakes no obligation to update the Report for any reason.

While the estimates contained in the Report are not precise forecasts, they do represent, in our view a reasonable expectation of the future, based on information we have been provided with or sourced. However, the estimates necessarily rely on numerous assumptions and judgements, and circumstances may occur over the timeframe of the project that go counter to these assumptions and judgements and that affect the project's realized revenues. Actual events may differ from those assumed, and events are subject to change. Therefore, Steer makes or provides no warranty, whether implied or otherwise, as to the accuracy of forward-looking information presented. Further, it is important to note that forecasts presented represent long term growth profiles; the results for individual time periods may vary from forecasted values.

Traffic Consultant developed the relationships in the models used to produce the forecasts for the projects based on data available through February 2026. This report does not consider variations in traffic performance due to changing macro and force majeure events such (but not limited to) as global wars, economic uncertainty (high inflation, global recession), and changes in the regulatory environment. The situation remains dynamic and is subject to significant change in the short and medium term. In this challenging context, Traffic Consultant has produced base forecasts with a view on a possible scenario for the traffic forecasts. However, it is important to note that this is only one view, and there continues to remain uncertainty as to the short-term, intermediate or prolonged effects of and responses to such macro-economic/force majeure events. As a result, no assurance can be provided by Traffic Consultant that the scenarios and assumptions Traffic Consultant has identified will prove to be accurate. Given the uncertainty inherent in this scenario, Traffic Consultant advises that all readers of the Report consider the Report in the context of their own assessment of the impact of such events.

TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE LIABILITY OF THE TRAFFIC CONSULTANT FOR ANY LOSS, DAMAGE, COST OR EXPENSE SUFFERED OR INCURRED BY ALL PERSONS OR ENTITIES AND FOR ALL CLAIMS RESPECTING ITS WORK PERFORMED IN CONNECTION WITH THE ISSUE OR THE REPORTS IS HEREBY LIMITED IN THE AGGREGATE TO THE AMOUNT OF FEES ACTUALLY PAID BY THE CLIENT TO THE TRAFFIC CONSULTANT IN RESPECT OF THE REPORTS AND CONNECTED SERVICES.

Glossary Items

Acronym	Meaning
2A/ Truck	2 Axle/ Truck
3A	3 Axle
AADT	Annual Average Daily Traffic
BOT	Build Operate Transfer
CAGR	Compound Annual Growth Rate
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DPR	Detailed Project Report
ETC	Electronic Toll Collection, also referred to as FASTag
FY	Financial Year
GDP	Gross Domestic Product
GSDP	Gross State Domestic Product
HAM	Hybrid Annuity Model
HCM/ EME	Heavy Commercial Vehicles/ Earth Moving Machinery
IE reports	Independent Engineers' reports
IHMCL	Indian Highway Management Company Limited
INR	Indian Rupees
InvIT	Infrastructure Investment Trust
Km	Kilometer
LCV/ LGV	Light Commercial Vehicles/ Light Goods Vehicle
LMV	Light motor vehicles
MADT	Monthly average daily traffic
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NSDP	National State Domestic Production
OD	Origin Destination
OSV	Over-sized vehicles
PCU	Passenger Car Unit; it is a measure of standard vehicle unit to convert all vehicle classes to a single unit by using PCU factors to compute total traffic on an Asset.
Q1	Quarter 1 of financial year, from April to June
Q2	Quarter 2 of financial year, from July to September
Q3	Quarter 3 of financial year, from October to December
Q4	Quarter 4 of financial year, from January to March
RNP	Registered Number Plate
SCF	Seasonality Correction Factor

Acronym	Meaning
SH	State Highway
T&R	Traffic and Revenue
TMS	Traffic Management System
TVC	Traffic Volume Count
WADT	Weekly average daily traffic
YTD	Year to Date

1 Introduction

The assignment

1.1 The Cube Highways Fund Advisors Private Limited (the "Client") has commissioned Steer Davies Gleave India Private Limited ("Steer") for a traffic due diligence to be carried out on the Nelamangala-Devihalli Toll Road (hereafter called "Asset"). This report forms part of the annual fair market valuation (FMV) undertaken as part of the "Transit 11 project". This report presents an update of the traffic and revenue forecasts based on actual traffic data available up to February 2026 and latest macro-economic assumptions.

1.2 The Asset Nelamangala-Devihalli consists of a single toll road section with two toll plazas. For this report, we hereafter call both the toll road sections and the toll plazas together as Asset and name the toll plazas as TP1 and TP2 respectively as follows:

- TP1 – Doddakarenahalli (Nelamangala)
- TP2 – Karabylu

1.3 Our scope of work for the traffic and revenue forecasting process includes:

Table 1.1: Scope of work and sources of data

Scope of work	Data source
• Review of historical Traffic Management System (TMS) data, Vendor reports and documents	• Provided by client for the period between FY13 and Mar'26, with FY26 base AADT and forecasts considering data up to Feb'26
• Historical analysis and forecasts for baseline growth, including; — Background growth, and — Seasonality trends	• Historical data provided by the Client and benchmarking using plazas in the vicinity or of similar nature of the Asset has been done wherever sufficient data was unavailable.
• Validation of revenue reported in FY26YTD	• TMS data provided by Client • Revenue reconciliation using toll plaza traffic and ticket type data to calculate revenue and reconciling it with toll plaza reported revenue
• Origin Destination (OD) analysis to understand growth drivers: — Zonal influence and Top OD pairs — Commodity distribution — Trip length distribution	• Origin Destination (OD) surveys undertaken by Steer in 2023 (TP1) and 2026 (TP2) respectively.
• Analysis of upcoming network improvements and other	• Secondary research and our in-house experience of working in the vicinity of the Asset. Impact analysis to be

Scope of work	Data source
developments, that may have future impacts on traffic	conducted by Steer based on Generalised Journey Cost spreadsheet-based analysis
• Historical revenue analysis and forecasts for revenue estimation, including — Toll segmentation and trip factors, — Overloading shares	• Calculated from historical data provided by Client
• Final traffic growth forecasts including baseline growth rates and potential future impacts	• Elasticity based base growth and potential impacts from secondary research, Asset historical traffic performance and Steer's in-house experience of working on toll roads on the corridor • Gross Domestic Product (GDP) forecast assumptions provided by Client
• Toll revenue estimation for the entire concession, including toll evolution	• Toll evolution based on latest toll notification published by National Highway Authority of India (NHAI) and latest actual Wholesale Price Index (WPI) trends as shared by the Client. • Assumptions of WPI forecasts and future tolling length changes provided by Client • Revenues estimated as a product of traffic forecasts and toll evolution

Our approach

1.4 Our approach follows well-established practices for forecasting ongoing traffic growth on an existing/brownfield Asset. The analysis has essentially focused on two sets of issues, namely:

- Understanding the traffic that is currently using the Asset; and
- Identifying how and why that traffic is likely to change in the future.

1.5 To understand the current traffic on the Asset, we have analysed traffic data from multiple independent sources and Client-provided secondary data, including:

- TMS data pertaining from July 2012 to February 2026. The historical traffic and revenue presented in Chapter 3 considers information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated
- Concession agreement and toll notifications for FY25 and FY26
- Previous studies related to traffic and revenue
- Bid documents and studies by lenders
- As part of study in earlier commission Steer-conducted OD survey on 3rd July 2023 at TP1 Nelamangala to validate any change in growth drivers and travel patterns. The OD survey on TP2 Karabylu had been undertaken on 6th March 2026.

- Steer-commissioned 3-day TVC survey from 1st July to 3rd July 2023 at TP1 Nelamangala on behalf of the Client to validate TMS data independently. Whereas on TP2 Karabylu three-day TVC survey was conducted between 6th to 8th March 2026 as part of study.
- We undertook revenue reconciliation for FY26YTD, by building up revenue from the traffic reported by the toll plaza and subsequently matched it to the reported revenue for FY26 using the prevalent toll rates and reported segmentation/toll-frequencies for FY26, this is a key part of our analysis to validate the segmentation/toll-frequency assumptions and the Annual Average Daily Traffic (AADT) reported for each of the toll plaza.

1.6 The estimation of future traffic demand on the Asset was undertaken through:

- Estimating FY26 base year position by applying seasonality correction factors (SCFs) on the 11 months of actual traffic data available (April to February).
- Secondary research to understand plans for new developments and progress of ongoing developments on the Asset.
- Steer independent primary surveys and site visits to validate our network and contextual understanding.
- Developing a bespoke growth model for each Asset/plaza/toll class to forecast year-on-year traffic growth from FY26 to the end of concession period.
- Investigating the elasticity of historical traffic growth compared to state (GSDP) and national (GDP) growth. Where historical data is limited, we have benchmarked the Asset against our Steer knowledge base (e.g., similar Asset types in the same state or on the same corridor), to derive appropriate elasticities.
- Applying our elasticities to independent GDP forecasts as provided by Client.
- Identifying and analysing the potential impacts of any relevant changes to the competitive position of each Asset – these include impacts of changes to road network including expressways and opening of competitive modes of travel.
- Identifying and analysing any other potential impacts to traffic and revenue on each Asset – these include axle load norms, axle shift for heavy goods, FASTag implementation.
- Considering changes in trends of segmentation over time and making suggestions for changes in exemptions in the future
- Preparing traffic and revenue forecast for the Asset for the complete length of concession. The analysis here includes the specific impacts of network, or other exogenous factors specific to the Asset. We have developed a set of forecasting assumptions for three scenarios: a base case and upside and downside scenarios.

Contents of this report

1.7 The report has been divided into the following chapters, including Chapter 1 providing an introduction:

1. Chapter 1 introduces the methodology and approach to undertake the traffic and revenue due diligence;
2. Chapter 2 describes the key characteristics of the Asset and its surrounding road network, primarily based on site visits;
3. Chapter 3 summarises the current and historical traffic on the Asset, including results from the TMS, TVC and OD analyses;

4. Chapter 4 presents the socio-economic context of the corridor and region/state containing the Asset, along with our approach and results on estimating background traffic demand growth; and
5. Chapter 5 presents our baseline year forecast and summarises our results on estimating background traffic demand growth
6. Chapter 6 summarises our assessment of network impacts and presents concession traffic and revenue forecasts for the Asset along with the assumptions for upside and downside cases.

2 The Asset

Introduction

2.1 This chapter provides description of the Asset, based on both primary data (from site visits), and our understanding of the region and network surrounding the Asset. We cover the strategic network context, followed by key economic activities and network developments around the Asset.

Strategic network

2.2 The Asset is situated in the southern state of Karnataka connecting the city of Bengaluru to Mangaluru via NH75. It is one of the three sections making this corridor, the other two being Devihalli-Hassan Tollway Limited (DHTL) and Hassan-Mangaluru highway. Figure 2-1 below shows the regional road network in which the Asset is located.

Figure 2-1: Asset location in the regional road network

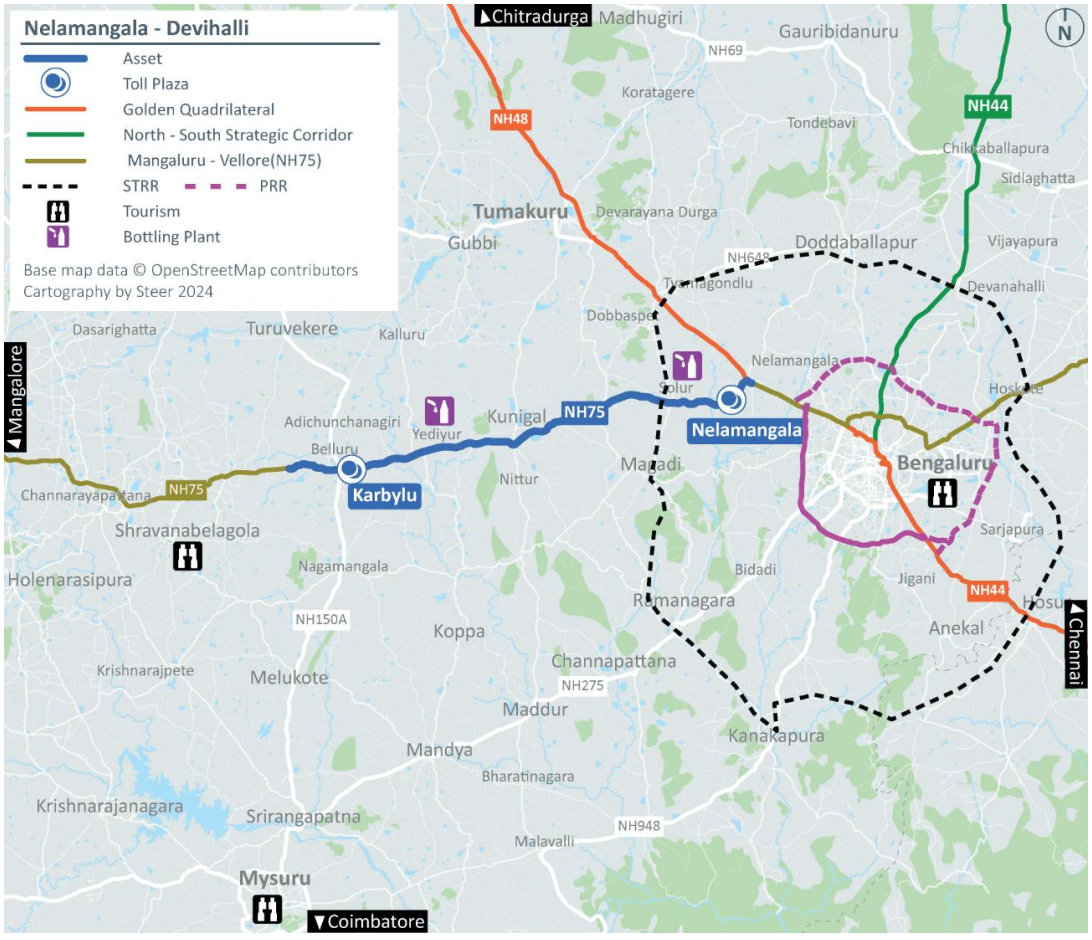
Source: Steer cartography using OpenStreetMap data

2.3 The Asset primarily caters to the following types of movements, by virtue of its strategic location:

- **Medium-distance movements** between **Bengaluru and Mangaluru** primarily for leisure and tourism. The CJVs contribute around 80% on an average to the total traffic on the Asset. This is driven by the large number of tourist destinations along the Asset and close to the Asset which drives the car growth such as Bengaluru, Mangaluru, Madikeri, Coorg, etc.
- Work and leisure trips between local cities, towns, and villages like Nelamangala, Hassan, nearby tourist spots, and Bengaluru city.
- Petroleum-related traffic:
  - Between ports and refineries in Mangaluru and Kochi and liquified petroleum gas (LPG) bottling plants lying on the Asset, viz Hindustan Petroleum Corporation Limited (HPCL) plant at Yediyur and Bharat Petroleum Corporation Limited (BPCL) plant at Solur.
  - Between the bottling plants and the neighbouring consumption centres like Bengaluru.

2.4 The Asset is an 80.26-km toll road which forms a part of NH75 in Karnataka. This is a four-lane road with two toll plazas, namely, Doddakarenahalli/Nelamangala (TP1 closer to Bengaluru) and Karabylu (TP2 closer to Devihalli). Figure 2-2 below provides a closer view of the Asset in the context of its immediate surroundings.

Figure 2-2: Asset context



Source: Steer cartography using OpenStreetMap data

Concession and tolling details

2.5 The toll plazas on the Asset have been operational since June 2012. There are 7 years left in the concession period with FY33 being the last year of concession. Table 2.1 below provides a summary of the Asset concession details.

Table 2.1: Concession details

Particulars	Details
State	Karnataka
Highway	NH 75 4-lane
Toll Plaza	TP1: Doddakarenahalli TP2: Karabylu
Length (km)	TP1: 40.13 km TP2: 40.13 km
Commencement of operations*	TP1: July 2012 TP2: July 2012
Concession period	20 years
Last year of concession	FY33

2.6 Source: Concession agreement

2.7 Figure 2-3 below shows a typical cross-section of the Asset and its toll plaza.

Figure 2-3: Typical cross section of the Asset and toll plaza

Source: Steer site visit

2.8 Tolls on the Asset are collected as per the rates presented in Table 2.2 below. The toll plazas have dedicated ETC/FASTag lanes for electronic tolling.

2.9 Apart from single tickets, the typical NHAI ticket categories like return, monthly, local personal and local commercial passes are also available on the Asset.

Table 2.2: Single toll rates on the Asset (INR), applicable September 2025 to August 2026

Type of Vehicle	Single Journey Fee (INR)	
	TP1 Doddakarenahalli	TP2 Karabylu
CJV	60	60
LCV	100	100
Bus/Truck	205	205
3A/MAV/OSV	325	325

Source: NHAI Revision of User fee Rate w.e.f 01.09.2025

2.11 Apart from the (Concession Agreement) CA-prescribed toll categories mentioned above, the toll plaza management charges a small number of school buses at an agreed monthly amount.

Key economic activities

2.12 Bengaluru is both the capital and the largest city of Karnataka. The Asset, passing through several districts, is located just outside and to the west of the Bengaluru urban district. The industrial town of Nelamangala, at the Asset's eastern end, has several large-scale industries.

2.13 The Asset serves various tourist locations between Bengaluru and Mangaluru such as Madikeri, Coorg and temple tourism spots between the two cities. While Bengaluru earlier known as the 'Garden City' has been popular for its lakes, gardens, and pleasant weather; Mangaluru, on the western Indian coast, is known for its beaches and cuisine. Mangaluru is also the headquarters of the Dakshina Kannada district. Apart from Shravanabelagola, a major Jain pilgrimage centre near Channarayapattana, there are several temple locations in Dakshina Kannada district. Madikeri district, also known as Coorg or Kodagu, is a popular hill destination and coffee-growing region.

2.14 The Asset has two major LPG bottling plants, Solur and Yediyur, in close vicinity. Solur is present near TP1 whereas Yediyur is present near TP2. As urbanisation increases along the corridor, growth of household products and goods including the demand for LPG will also grow and continue to benefit the asset over time.

Key Network Developments

2.15 In close proximity to the Asset, the proposed construction of the Satellite Town Ring Road (4-6L) access-controlled expressway is currently underway. Designed to function as a broader bypass, it will facilitate smoother and faster movement of long-distance traffic

that does not need to enter the city. This network development has been covered in detail in Chapter 6. [1]

2.16 There are no alternate long-distance or medium-distance routes that pose a threat to the Asset. Also, during our site visit to the Asset, no major micro-diversions through local roads were observed close to the toll plazas. Chapter 6 provides a discussion and estimation of potential impacts on the Asset.

[1] https://www.thehindu.com/news/cities/bangalore/peripheral-ring-road-under-ppp-model/article34022482.ece

3 Traffic Description

Introduction

3.1 This chapter presents historical and current traffic and revenue trends on the Asset, as well as our analysis of origin-destination (OD) survey data and traffic count data. This covers data which was collected as a part of this study and in previous studies, as well as data provided by the Client.

3.2 Traffic demand data is generally collected and analysed to understand the volume and vehicle composition of demand currently using the Asset, while OD data is used to obtain a better understanding of travel patterns, trip lengths, trip purposes and areas of influence in the vicinity of the Asset, as well as the commodities being moved by goods vehicles. This analysis, combined with our understanding of the Asset (based on our site visits), enables us to identify the key drivers of demand on the Asset.

3.3 Actual toll plaza data is used as the basis from which the current/base year Monthly Average Daily Traffic (MADT) is established. This data is typically provided by the Client and independently analysed and validated by us using Traffic Volume Count (TVC) information.

3.4 The below sections present historical traffic and revenue information up to March 2026. This is to present the latest available traffic and revenue information at the time of submission of report. However, the FY26 base traffic and forecasts presented Chapter 5 onwards use data available up to February 2026, with March 2026 estimated.

PCU factor assumptions for reporting

3.5 The PCU values have been taken from 'IRC 64:1990- Guidelines for Capacity of Roads in Rural Areas'. For MAV, based on the discussion with the Client, we have referred to the rigid and trailer splits in the latest TVC counts conducted in 2026 for calculating the effective PCU for MAVs. For rigid trailer trucks we have assumed a PCU factor of 3, whereas for trailer trucks we have assumed a PCU factor of 4.5. These factors have been used to arrive at the PCU values presented in the following sections.

Table 3-1: PCU factors

Vehicle Category	PCU Factor
CJV/Mini LCV	1.0
LCV	1.5
Bus/2A	3.0
3A	3.0
MAV*	3.35
OSV	4.5

Source: Steer analysis and IRC64,1990; MAV PCU factor has been arrived using the split between rigid and trailer trucks

Historical trends

3.6 Table 3.1 through Table 3.4 below present the historical traffic evolution for each of the Asset toll plazas.

Table 3.1: Historical evolution in AADT by vehicle class at TP1- Doddakarenahalli

Vehicle	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR-FY22 - 26 (%)
CJV	12,794	13,000	14,458	15,656	16,509	19,909	20,291	21,415	24,093	9.9%
LCV	2,658	2,631	2,775	2,476	1,241	1,337	1,173	1,204	1,437	3.7%
Bus	1,522	1,436	1,442	539	974	1,370	1,527	1,698	1,813	16.8%
2A	894	812	806	996	711	877	973	1,000	1,311	16.6%
3A/MAV	831	744	952	960	999	1,074	1,136	1,137	1,126	3.1%
Total	**18,699**	**18,623**	**20,432**	**20,627**	**20,433**	**24,568**	**25,100**	**26,454**	**29,780**	**9.9%**
PCU	**26,816**	**26,185**	**28,554**	**27,191**	**26,772**	**32,256**	**33,358**	**35,124**	**39,396**	**10.1%**

Source: Steer analysis of the Client data. 3A/MAV PCU is a weighted average of Rigid-trailer PCU (MAV) and 3A/MAV splits using TVC to arrive at 3A/MAV PCU; FY26 AADT represents the full year actual (April to March)

Table 3.2: Historical Tollable Traffic Levels at TP1 Doddakarenahalli

Vehicle	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR-FY22 - 26 (%)
CJV	10,812	10,872	11,780	13,279	14,845	18,116	18,322	19,225	21,940	10.3%
LCV	2,516	2,494	2,624	2,353	1,199	1,305	1,141	1,157	1,204	0.1%
Bus	1,520	1,433	1,431	788	972	1,362	1,522	1,690	1,805	16.7%
2A	816	741	744	698	686	851	946	970	1,054	11.3%
3A/MAV	829	738	938	942	985	1,050	1,104	1,091	1,083	2.4%
Total	**16,493**	**16,277**	**17,516**	**18,061**	**18,687**	**22,683**	**23,035**	**24,133**	**27,085**	**9.7%**
PCU	**24,373**	**23,609**	**25,385**	**24,424**	**24,919**	**30,232**	**31,138**	**32,597**	**35,950**	**9.7%**

Source: Steer analysis of Client data; FY26 AADT represents the full year actual (April to March); Tollable traffic excludes exemption and violation

Table 3.3: Historical evolution in AADT by vehicle class at TP2- Karabylu

Vehicle	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR-FY22 - 26 (%)
CJV	8,997	8,766	10,273	11,291	12,376	14,748	14,876	15,861	18,185	10.1%
LCV	1,998	1,956	2,149	1,887	901	902	807	835	965	1.7%
Bus	1,281	1,227	1,236	643	806	1,162	1,249	1,382	1,487	16.5%
2A	709	583	603	557	553	680	738	729	847	11.3%
3A/MAV	776	660	915	876	952	990	1,119	1,127	1,108	3.9%
Total	**13,761**	**13,193**	**15,176**	**15,255**	**15,587**	**18,482**	**18,789**	**19,934**	**22,592**	**9.7%**

Vehicle	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR-FY22 - 26 (%)
PCU	**20,565**	**19,342**	**22,081**	**20,658**	**20,996**	**24,945**	**25,798**	**27,224**	**30,347**	**9.7%**

Source: Steer analysis of the Client data; FY26 AADT represents the full year actual (April to March)

Table 3.4: Historical Tollable Traffic Levels at TP2 Karabylu

Vehicle	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	CAGR-FY22 - 26 (%)
CJV	8,316	8,069	8,995	10,156	11,632	14,000	14,065	14,914	18,917	12.9%
LCV	1,890	1,839	1,998	1,772	885	886	789	817	966	2.2%
Bus	1,278	1,223	1,233	631	804	1,157	1,244	1,379	1,621	19.2%
2A	662	540	553	521	516	654	712	702	811	12.0%
3A/MAV	732	626	884	858	938	985	985	1,121	1,205	6.5%
Total	**12,879**	**12,297**	**13,662**	**13,939**	**14,775**	**17,681**	**17,919**	**18,933**	**23,521**	**12.3%**
PCU	**19,425**	**18,215**	**20,313**	**19,146**	**20,064**	**24,064**	**24,834**	**26,140**	**31,703**	**12.2%**

Source: Steer analysis of Client data; FY26 AADT represents the full year actual (April to March); Tollable traffic excludes exemption and violation

3.7 On the Asset, Doddakarenahalli toll plaza recorded ~39,400 PCUs in FY26 and Karabylu toll plaza at ~30,350 PCUs.

3.8 In terms of vehicle composition, CJVs are the biggest contributor on the Asset. As discussed in Chapter 2, the Asset caters to large volume of tourism-oriented traffic travelling from Bengaluru to tourism centres such as Coorg, Madikeri, and Shravanabelagola which contribute towards the CJV traffic on the Asset. These shares are slightly higher at TP1 which is closer to the urban centre of Bengaluru.

3.9 The CJV traffic on the Asset was impacted during FY20 and FY21 due to Covid-19. Passenger traffic showed signs of recovery post-FY21 and has exhibited stable growth since then. Between FY22 and FY26, overall traffic grew at a PCU CAGR of 10.1% and 9.7% at TP1 and TP2 respectively. This growth across both TPs was driven by robust increases observed in both the Bus/2A categories, followed by CJVs and MAVs.

3.10 Share of MAVs on the Asset has historically remained at about 4-5% of total traffic. Majority of these MAVs carry LPG cylinders from the Hindustan Petroleum Corporation Limited (HPCL) bottling plant at Solur and Bharat Petroleum Corporation Limited (BPCL) bottling plant at Yediyur. Commercial traffic volumes (2A/3A/MAV) at TP2 (Karabylu) observed declines in the early months of FY25 (June-August 2024) as long-distance movements from (or to) Mangaluru along the NH75 were disrupted due to a Landslip near Doddatapale (further west of TP2). TP1 also observed declines but to a lesser extent as traffic volumes observed at TP1 are dominated more by urban activity of Bangaluru city and outside. Periodic landslides every 1-2 years have historically disrupted traffic flows on the NH75, partially due to prolonged roadworks along the Shiradi Ghat section of the highway. These periodic disruptions are expected to continue going forward.

3.11 The increasing number of CJVs observed on this Asset can be directly linked to the growth of the city of Bengaluru both in terms of population and per capita income levels. As mentioned previously, this corridor is primarily used for social, leisure and tourism

activities, the growth in local economy and local tourism has led to strong growth in the CJV traffic. The growth in CJVs in FY22 and FY23 is also attributed to Mini LCV now being correctly tolled in CJVs post FASTag implementation, which were earlier accounted in LCVs.

3.12 The flat or negative growth trend in LCVs between FY22 and FY26 can be partially attributed to changes in vehicle classification of Mini LCVs under FASTag implementation, where Mini LCVs that were earlier classified as LCVs are now classified as CJVs. Flat growth in LCVs as of FY26 is indicative of a stabilisation of these trends and a return to trend growth, and future growth in LCVs are expected to follow underlying trends in the regional economy more closely.

Historical Revenue

3.13 Table 3.5 and Table 3.6 below present the revenue (in INR Lakhs) by each vehicle type at each toll plaza for FY19-FY26 at an annual and daily level.

Table 3.5: Revenue (INR Crore) by vehicle type at TP1 Doddakarenahalli, and AADC (annual average daily collection) in INR Lakhs

	CJV	LCV	Bus	2A	3A/MAV	Total	AADC	Growth %
FY19	13.6	5.9	6.7	3.1	5.8	35.10	9.62	
FY20	15.5	6.2	6.5	3.2	7.8	39.20	10.74	**11.7%**
FY21	17.0	5.4	4.0	2.6	6.5	35.60	9.75	**(9.2%)**
FY22	24.7	2.8	4.6	3.2	8.7	44.10	12.08	**23.9%**
FY23	27.8	3.0	5.6	3.9	9.3	49.60	13.59	**12.5%**
FY24	31.0	3.0	6.6	5.0	10.7	56.30	15.42	**13.5%**
FY25	33.5	3.2	7.5	5.2	10.8	60.20	16.50	**7.1%**
FY26	34.4	3.3	8.1	5.4	10.7	61.90	17.0	**2.8%**

Source: Steer analysis of the Client data; AADC represents Average Annual Daily Collection in INR Lakhs; FY26 represents the full year actual (April to March);

Table 3.6: Revenue (INR Crore) by vehicle type at TP2 Karabylu, and AADC (annual average daily collection)

	CJV	LCV	Bus	2A	3A/MAV	Total	AADC	Growth %
FY19	11.9	4.3	4.0	2.7	5.3	28.20	7.73	
FY20	13.3	4.8	4.5	2.7	7.3	32.60	8.93	**15.6%**
FY21	11.4	4.2	2.5	5.6	5.3	29.10	7.97	**(10.7%)**
FY22	20.4	2.2	4.1	2.7	8.6	38.10	10.44	**30.9%**
FY23	22.5	2.3	4.6	3.3	9.0	41.70	11.42	**9.4%**
FY24	24.6	2.3	5.9	4.2	11.2	48.20	13.21	**15.6%**
FY25	26.8	2.5	6.7	4.4	11.7	52.04	14.26	**8.3%**
FY26	27.9	2.7	7.2	4.5	11.6	53.9	14.8	**3.6%**

Source: Steer analysis of the Client data; AADC represents Average Annual Daily Collection in INR Lakhs; FY26 represents the full year actual (April to March);

3.14 From the above table it can be observed that TP1 generates higher daily collection for the Asset. This is due to higher volumes of CJV, LCV and MAV traffic on TP1 given its proximity to Bengaluru.

Toll Frequencies

3.15 Toll frequency or segmentation is typically the share of each ticket category recorded for a particular vehicle type. This is based on the toll policy which forms a part of the concession agreement. Each vehicle category has different segmentation. As a part of historical analysis, we calculate the toll frequency for each vehicle category from the monthly data shared by the Client. The most common ticket categories observed on a typical National Highway concession are: Single, Return, Monthly, Local and Exempt. Given the local nature of traffic, some toll plazas offer custom made local passes to attract the local commuters to opt for these category passes instead of evading toll.

3.16 Understanding the toll frequency gives insights into the nature of traffic. CJVs generally have higher shares of return passes or local monthly passes because they travel for short to medium distances, while heavy trucks mostly have single tickets since they travel long distance. CJVs and buses also tend to have a higher share of exemption/violations than other commercial vehicle categories as their tolls are higher and tend to contribute the most to the Asset's total revenue. However, this varies from Asset to Asset or even toll plaza to toll plaza. The Asset catering to short distance local traffic generally observes high share of return or other local monthly passes while the Asset catering to strategic long-distance traffic generally observes high share of single ticket traffic.

3.17 Table 3.7 below presents the different types of tickets being sold at both the Asset plazas.

Table 3.7: Typical ticket types sold at NHAI plazas

Category	Description
Single	Allows the vehicle to cross the toll plaza once
Return	Allows the vehicle to take two trips within a day with second trip at 50% of single fee.
Local Personal	Discounted single entry monthly pass only for private cars of residents within 20km radius of toll plaza
Local Commercial	50% discount on single trips for commercial vehicles registered in the local district. The pass allows single entry only.
Monthly	For all vehicle categories which charges the user 1/3rd the fee of 50 Single trips
Exemptions	Officially exempted vehicles like ambulance, police cars, key political personnel etc.

3.18 Further, the toll plazas also record violations which are non-paying users, who are not officially allowed under exemptions category but are forced exemptions. For the Asset, the segmentation discussed below reports Exemption and violations together

3.19 As a general pattern, the shares of single/return/monthly tickets tend to stabilise within 2-3 years of the commencement of Asset operations. Only in the cases where trip patterns are expected to change significantly due to urban expansion is where we expect these

shares to change over the period or due to some external events impacting the trip patterns. During FY20 and FY21, however, two key events impacted the traffic patterns throughout the country: COVID-19 and FASTag implementation.

Introduction of Annual pass for CJVs

3.20 The National Highway Authority of India launched the "The FASTag Annual Pass" on August 15, 2025, a prepaid facility that allows private CJVs to travel across designated National Highway and National Expressway toll plazas. The annual pass is worth INR 3,000. The pass is valid for one year or 200 trips, whichever occurs first and is applicable only to private, non-commercial vehicles (Car/Jeep/Vans).

Since this pass has been introduced by NHAI, it is not valid on

- state governed toll plazas on highways
- state governed toll plazas expressways
- Parking areas or other non-NHAI tolling locations

3.21 The pass can be activated via the RajmargYatra app or the NHAI website, and links directly to an existing FASTag.

The Annual Pass aims to:

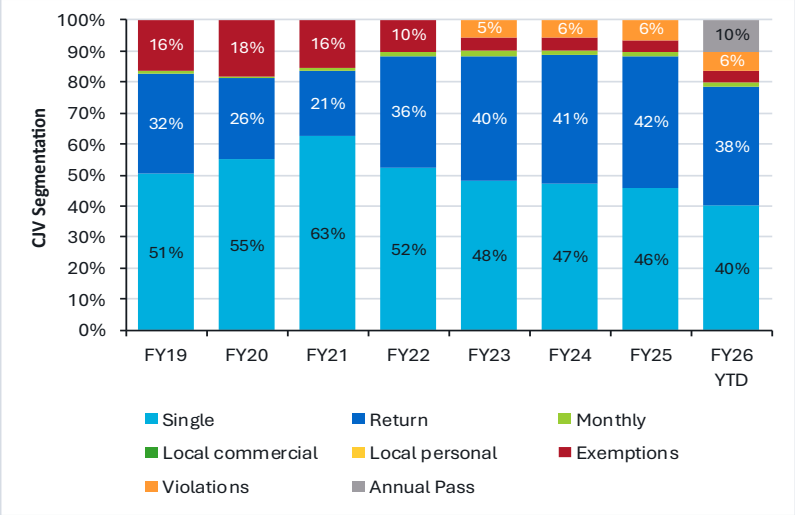
- Promote cashless and seamless travel on national highways.
- Reduce congestion and improve traffic flow at tolls
- Provide cost-effective travel for frequent users of NH/NE toll roads

Share of traffic by payment type

3.22 Figure 3-1 through Figure 3-4 below present toll segmentation for the historical years at TP1 Doddakarenahalli and TP2 Karabylu for CJVs and MAVs. Table 3.8 and Table 3.9 below provide the same for the remaining vehicle types. FY21 was a partial year in terms of operation of the toll plazas. Further, there was a change in ticket patterns due to the mandatory implementation of FASTag as a mode of payment (share of single tickets increased in FY21). FY22 was also impacted by 2nd wave of COVID-19 in Q1 and Q2 of FY22. Hence during this period travel patterns were also disrupted. With FY21 and FY22 being Covid-19 impacted it is assumed that segmentation of FY23 onwards is normal. The figures below show ticket segmentation for CJV and MAV categories.

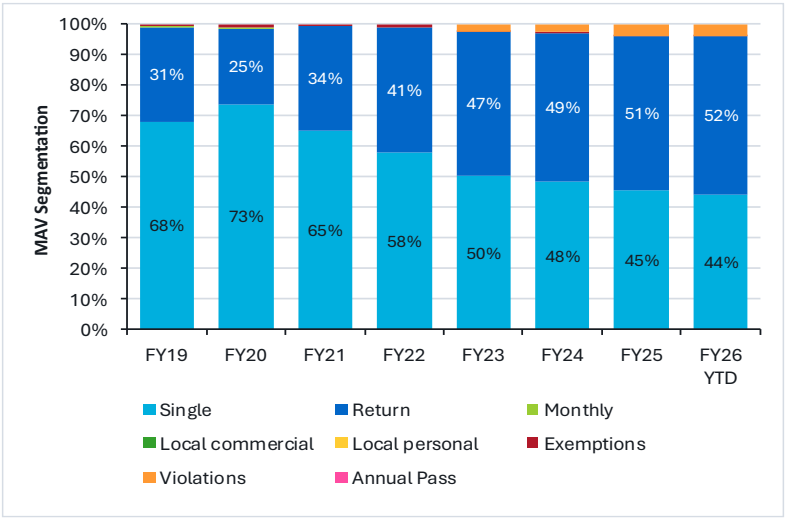
3.23 The introduction of annual passes for private CJVs from 15 August 2025 has impacted the ticket segmentation of CJVs. Nearly, 10% at TP1 and 11% at TP2 of CJVs have adopted annual pass. While exemptions and violation trips have remained at the same levels as FY25, it can be observed that the share of single and return trips have reduced.

Figure 3-1: Ticket-segmentation for CJV, TP1 Doddakarenahalli



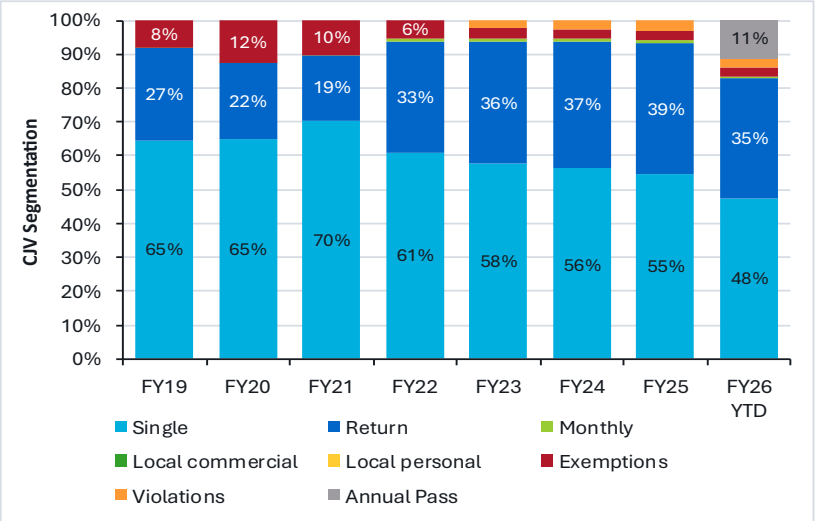
Source: Steer analysis of the Client data. FY26 Segmentation is representative of Client data up till Feb'26.

Figure 3-2: Ticket-segmentation for MAV, TP1 Doddakarenahalli



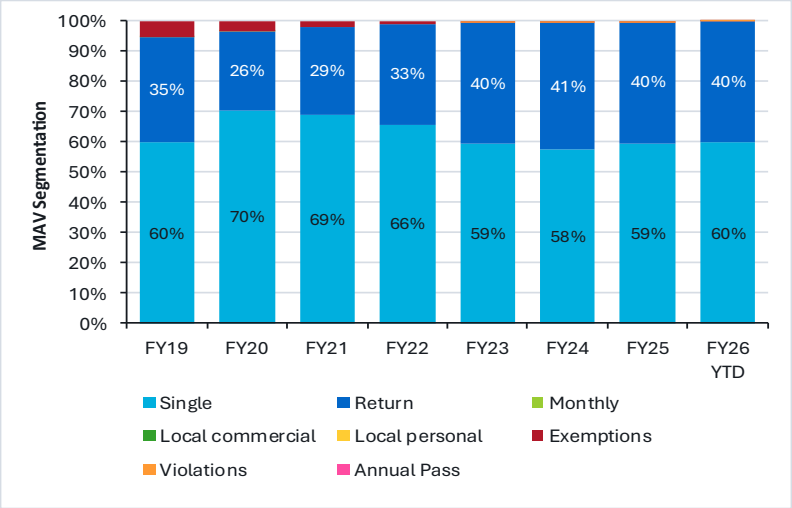
Source: Steer analysis of the Client. FY26 Segmentation is representative of Client data up till Feb'26.

Figure 3-3: Ticket-segmentation for CJV, TP2 Karabylu



Source: Steer analysis of the Client data. FY26 Segmentation is representative of Client data up till Feb'26.

Figure 3-4: Ticket Segmentation for MAV, TP2 Karabylu



Source: Steer analysis of the Client data. FY26 Segmentation is representative of Client data up till Feb'26.

3.24 For CJVs, the dominant ticket type at both plazas is 'Single' tickets (nearly 40% at TP1 and just under 48% at TP2), due to the high share of tourism-related traffic, wherein the commuters generally travel for couple of days, not making users eligible for a return ticket within 24 hours.

3.25 The share of exemptions observed on this Asset is in line with our observations on similar urban Assets across the region. The share of exemptions is higher on TP1 due to its urban nature. With increasing ETC penetration on the Asset, the combined share of exemptions and violations on the Asset has dropped significantly compared to FY22 levels. This is likely because of better management and operation of traffic system post FASTag implementation.

3.26 MAVs also show a high share of 'Single' ticket type (44% at TP1 and 60% at TP2), showing the significance of medium-distance traffic. The remaining shares for MAVs are primarily held by 'Return' tickets. Since TP1 of the Asset caters to more local traffic feeding the

local industries as verified from the OD data in chapter 3 therefore the share of return tickets is higher on TP1 of the Asset and has been growing FY22 onwards. In case of MAVs, both the plazas report negligible exemptions.

3.27 Refer below to the table for FY26YTD (Apr'25 – Feb'26) segmentation for LCV, Bus, 2A and 3A /MAV category at TP1 Doddakarenahalli and T2 Karabylu

Table 3.8: Historical ticket segmentation at TP1 Doddakarenahalli

Ticket	LCV	Bus	2A	3A/MAV
Single	26%	41%	28%	44%
Return	68%	53%	53%	52%
Monthly	2%	-	15%	-
Local commercial	1%	6%	1%	-
Exemptions	-	-	-	-
Violations	3%	0%	4%	4%

Source: Steer analysis of the Client data till Feb'26.

Table 3.9: Historical ticket segmentation at TP2 Karabylu

Ticket	LCV	Bus	2A	3A
Single	44%	45%	48%	60%
Return	52%	48%	45%	40%
Monthly	1%	-	4%	-
Local commercial	1%	7%	0%	-
Exemptions	-	-	-	-
Violations	2%	0%	2%	0%

Source: Steer analysis of the Client data till Feb'26.

Overloading

3.28 The Asset being a part of NHAI concession follows the NHAI Overloading policy released in 2016 which bans the overloading of commercial vehicle on any NHAI toll plaza. In case of non-compliance, overloaded vehicles on the Asset are charged twice the toll fee they would otherwise pay for a Single ticket at the toll plaza. The Asset currently doesn't report overloading under any ticket category.

Data Collection exercise

3.29 To validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset comprising the surveys listed in the table below. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas. TVC data collection involves video graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

Table 3.10: Data collection schedule

Toll Plaza	3-day videography based TVC			1 day OD survey	
	Start date	End date	Time (hrs)	Start date	Time (hrs)
TP1 Doddakarenahalli	1st Jul 2023	3rd Jul 2023	0000-2359	3rd July 2023	08:00
TP2 Karabylu	6th Mar 2026	8 Mar 2026	0000-2359	6th Mar 2026	08:00

Source: Data collection plan as followed for collecting independent survey data

3.30 It should be noted that, in our experience, traffic on national highways shows variation across the week due to the economic activities surrounding each road. To derive a representative TVC count considering daily variation, three-day to seven-day traffic counts are generally recommended, and hence, in order to fully understand the impact of this weekly fluctuation on the Asset, we collected three-day counts at each toll plaza.

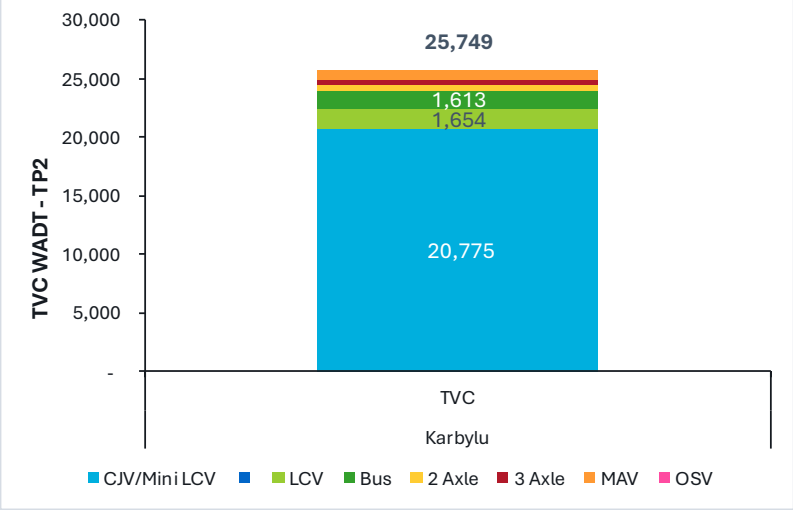
Key findings of the TVC data analysis

WADT estimates

3.31 For Doddakarenahalli, the average of a three-day TVC survey conducted between (1st July – 3rd July 2023, 0000-2359) was used, and for Karabylu an average of the three-day TVC counts (6th -8th Mar 2026, 0000-2359) was used, to obtain the following average daily traffic (WADT) for each toll plaza. This WADT excludes non-tollable vehicle such as tractors, two-wheelers, bullock-carts, etc., but includes officially exempt vehicles such as police cars, ambulances, emergency response vehicle, government vehicle and other vehicle types officially allowed as 'exempted' under the concession agreement.

3.32 From Figure 3-5 below, we see that both toll plazas exhibit similar characteristics in terms of vehicle shares. CJVs form major share on both TPs, where they account for ~80% of the total traffic, followed by LCVs which constitute ~8-10% of the remaining shares.

Figure 3-5: TVC WADT



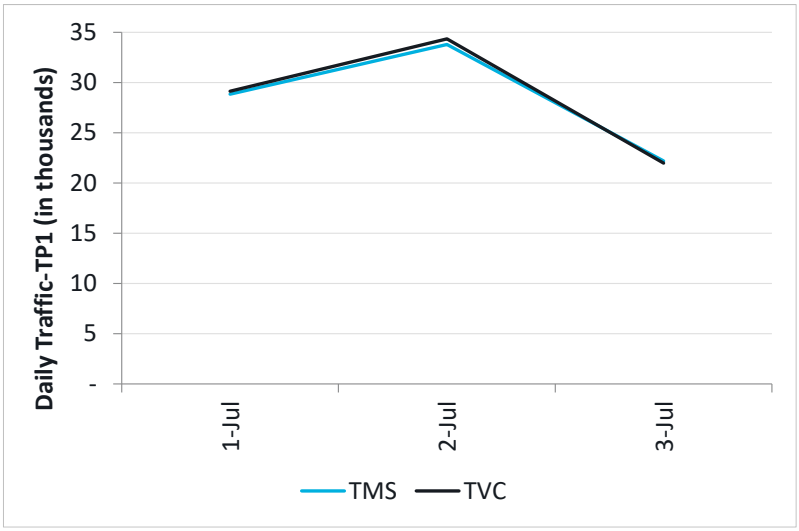
Source: Steer analysis of TVC data

TVC v/s TMS analysis

3.33 We used our TVC data to validate the toll plaza data for the same days, as supplied by the Client via their toll management system (TMS). This TMS data was then used as the base data, for our forecasting model.

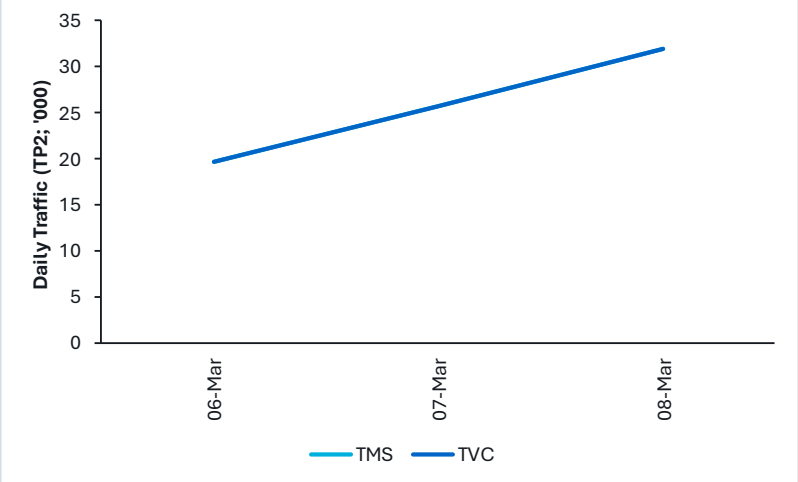
3.34 Figure 3-6 and Figure 3-7 below show the comparison between daily traffic data and shares of vehicle categories in TVC and TMS for the two toll plazas. As can be seen both TP1 Doddakarenahalli and TP2 Karabylu show a good fit between the TVC and TMS. The minor difference on two days of the seven-day period at TP2 is within the acceptable range of variation.

Figure 3-6: Comparison between TVC and TMS daily traffic data on TP1 Doddakarenahalli



Source: Steer analysis of TVC and Client TMS data

Figure 3-7: Comparison between TVC and TMS daily traffic data on TP2 Karabylu

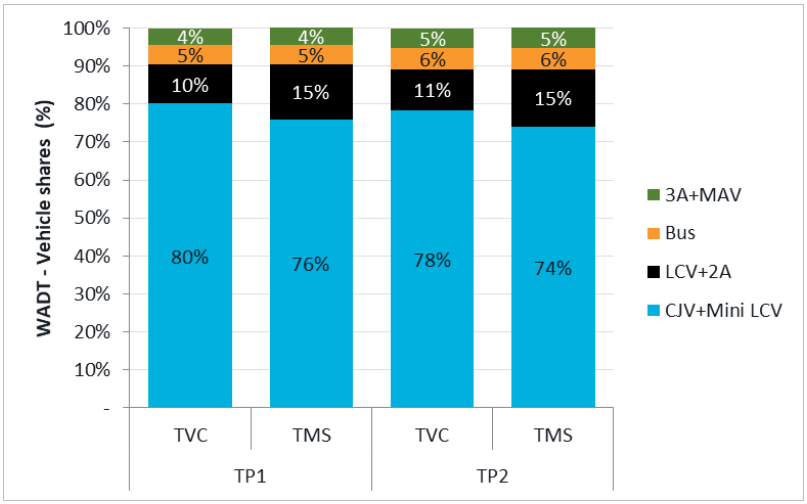


Source: Steer analysis of TVC and Client TMS data

3.35 Figure 3-8 below compares the shares of vehicle types at both plazas, between TVC and TMS data. We see that while most vehicle categories show similar shares, the CJV shares show differences between TMS and TVC. This difference is mostly compensated by the shares of LCVs showing the reverse. This reciprocal mismatch between CJV and LCVs can

be attributed to common misclassification of vehicle categories especially the Mini LCVs. Other vehicle class shares hold consistent across the TVC and TMS.

Figure 3-8 Comparison between vehicle shares from TVC and TMS WADTs



Source: Steer analysis of TVC and Client TMS data

Table 3.11: Difference in vehicle counts when combined

Vehicle type	TP1 Doddakarenahalli			TP2 Karabylu		
	TVC	TMS	TVC vs TMS (%)	TVC	TMS	TVC vs TMS (%)
CJV+Mini LCV	21,705	19,463	8.3%	20,775	21,247	(2.2%)
Bus	1,341	1,290	4.0%	1,613	1,532	5.3%
LCV+2A	2,731	3,748	(27.1%)	2,186	1,762	(24.1%)
3A+MAV+OSV	1,171	1,146	(2.1%)	1,176	1,229	(4.3%)
Total	**26,319**	**25,646**	**(2.6%)**	**25,749**	**25,769**	**(0.1%)**

Source: Steer analysis of TVC and Client TMS data

Key findings of origin-destination analysis

Overview

3.36 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Asset. The OD analysis presented here is based on data collected on behalf of the Client in February 2026. More recent OD surveys were not undertaken as this Asset has a long operational history, and we did not believe material changes in these patterns would have occurred in this period.

3.37 We have analysed the regional drivers of demand based on the following analyses:

- Zonal influence
- Commodity distribution
- Top OD pairs
- Trip length distribution

3.38 While zonal analysis and the list of top OD pairs help us to understand 'where' people and goods travel, commodity distribution sheds light on 'what' goods get transported. Trip length distribution show 'how far' vehicles and people travel, and goods get transported. This set of analyses is generally used to estimate the key drivers of traffic and aid the making of informed forecasting assumptions around traffic demand elasticities, growth drivers and exogenous impacts.

Sample rates

3.39 Sample rates help understand the reliability of OD data. They are calculated by dividing OD samples captured by the traffic counts (based on the TVC data) during the same time period. Table 3.12 below presents the sample rates for key vehicle type aggregations at both the toll plazas. We believe that the sample rates of the OD data are reasonable. Lower sample share for Cars and LCV on the Asset is due to reduced stopping time of vehicles at the plaza post implementation of FASTag which has affected the sample rate.

Table 3.12: Sample rates for OD data

Vehicle type	TP1 Doddakarenahalli	TP2 Karabylu
Car	31%	15%
Bus	69%	50%
LCV	42%	51%
3A Truck / MAV	92%	87%

Source: Steer analysis of OD data

Zone categories

3.40 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones, and influenced by various towns, cities, states, and regions in the vicinity of the Asset, we have aggregated zonal data as described in Table 3.13 below. The methodology behind this aggregation of zones may vary as per the characteristics displayed by the different Assets being studied.

Table 3.13: Zone aggregations for zonal influence analysis

Aggregate Zone	Description
Local	Local zones are those that fall on or very close to the Asset.
IAOI	IAOI zones are the locations which generate traffic and lie within approximately 75-150 km distance from the Asset.
Rest of State	Rest of the cities/Districts in the state that Asset lies in.
Tamil Nadu	Tamil Nadu
Telangana	Telangana
Andhra Pradesh	Andhra Pradesh
Kerala	Kerala
Central India	Madhya Pradesh, Chhattisgarh
West India	Maharashtra, Goa, Gujarat
East and Northeast India	West Bengal, Odisha, Jharkhand, Bihar, and Northeast Indian States
North India	Uttar Pradesh, Rajasthan, and other North Indian states

Aggregate Zone	Description
Outside India	Nepal, Bhutan, Bangladesh

Source: Steer analysis

Zonal influence

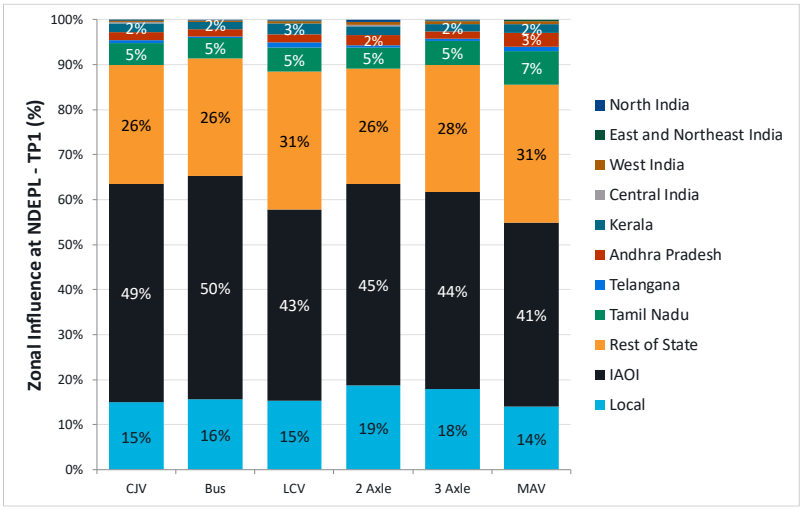
3.41 The zonal influence is the contribution of the zone or the zonal aggregation to trips by a vehicle type. This section presents the zonal influence[2] at each toll plaza of each Asset, aggregated based on zonal aggregation listed in the previous sub-section. Please note that zonal influence is analysed on trip ends and not trips.

3.42 Figure 3-9 and Figure 3-10 below present the zonal influence on various vehicle types on the toll plaza. We can see that 'IAOI', (including locations such as Bengaluru, Hassan, Mandya, etc) trips make up the largest share for all vehicle types. We find high shares of local and IAOI zonal influence. Combined with the internal-external distribution (presented in the next section, showing high I-ROS and ROS-I shares), we see that understandably, trips with one end at various locations in Bengaluru district dominate the traffic profile. These reflect in the IAOI zonal influence.

3.43 At TP1 Doddakarenahalli, the highest share of trips can be attributed to IAOI with a share of 40%-50%. Local trips, i.e., trips with their origins along or very near the Asset (including areas like Kunigal, Solur etc), have 15-19% share across categories and 'Rest of State', which includes locations such as Mysore, Mangaluru, Bellary etc which don't fall in either the local or IAOI categories; has about 26-31% share each across all vehicle categories. Tamil Nadu has a share of 5% across categories which rises to 7% for MAVs.

3.44 These trips which are being made between local and IAOI zones for heavy trucks are majorly concentrated in the regions between Bengaluru, Hassan, and Devihalli. Either the origin point, or the destination for most local/IAOI trips are the aforementioned regions.

Figure 3-9: Zonal influence, TP1 Doddakarenahalli

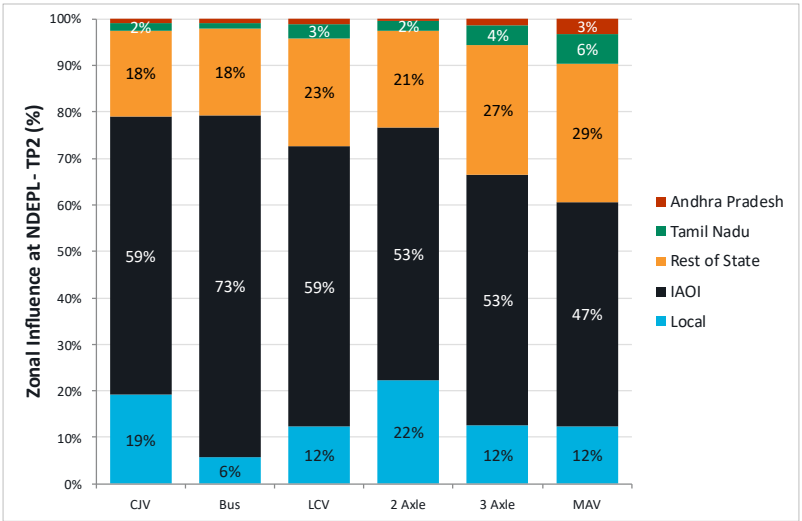


[2] For example, if out of 100 trips at a toll plaza on an Asset, 10 trips are between Hyderabad and Delhi and 90 trips are between Hyderabad and Chennai, then zonal influence of Hyderabad is 50% since one trip end of all trips are at Hyderabad. Likewise, zonal influence of Delhi and Chennai would be 5% and 45%, respectively.

Source: Steer analysis of OD data

3.45 For TP2 Karabylu, IAOI retains the highest proportion on zone influence across all vehicle types, ranging between 47%-73%. This is closely followed by 'Rest of Karnataka' trips, especially for heavy vehicles. Compared to TP1, the share of local trips is comparatively similar across the vehicle categories.

Figure 3-10: Zonal influence, TP2 Karabylu



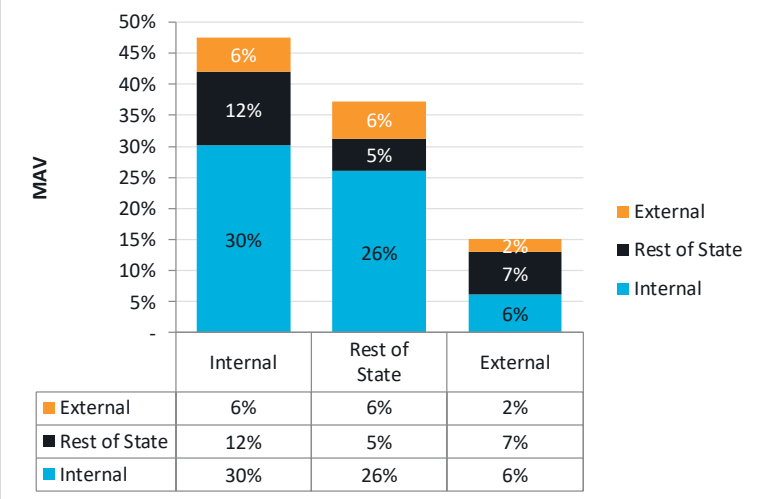
Source: Steer analysis of OD data

Internal External analysis

3.46 Internal-External analysis helps in identifying the trips which have both the origin and destination on or near the Asset i.e. local/IAOI zones (Internal-Internal or I-I), any one end on the Asset (Internal-External or I-E), or neither end on the Asset i.e., through trips (External-External or E-E). RoS here represents areas within the state which are neither local nor IAOI. 'Internal' zones are those that were analysed as 'local' and 'IAOI' in the zonal influence analysis, i.e., lying on the Asset, while 'External' zones are areas lying outside the state.

3.47 Figure 3-11 and Figure 3-12 below show the distribution of trips based on these categories. Understandably, these reflect the observations seen in the zonal influence presented earlier, at a higher level of aggregation but at a trip level.

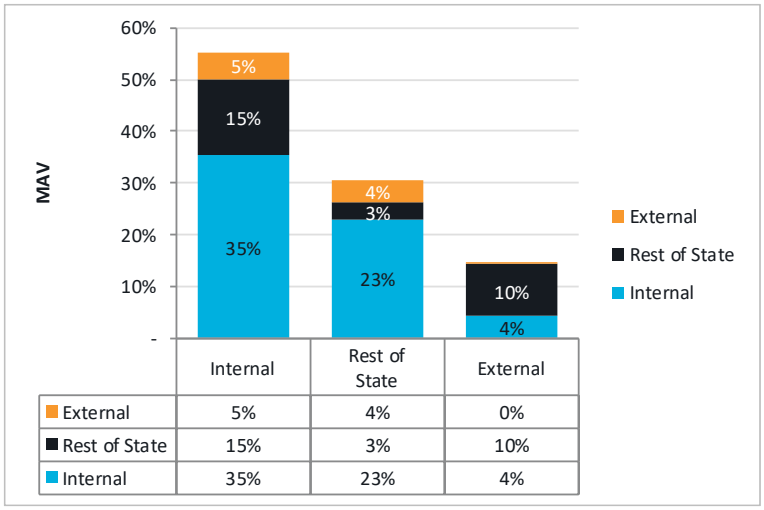
Figure 3-11: Internal-external distribution, TP1 Doddakarenahalli



	Internal	Rest of State	External
External	6%	6%	2%
Rest of State	12%	5%	7%
Internal	30%	26%	6%

Source: Steer analysis of OD data

Figure 3-12 Internal-external distribution, TP2 Karabylu



	Internal	Rest of State	External
External	5%	4%	0%
Rest of State	15%	3%	10%
Internal	35%	23%	4%

Source: Steer analysis of OD data

3.48 As can be seen from the charts above, the I-I distribution makes up the major share for heavy vehicles. This is followed by the trips which have one end of the trip in rest of the state, this includes places like Bengaluru, Mangaluru and Hassan and other end on the Asset.

Commodity distribution

3.49 We have grouped various commodities into aggregate categories for ease of interpretation, as shown in the table below. The charts in the following sub-section present information in terms of aggregate commodity categories.

Table 3.14: Aggregate commodity categories

Commodity Description	Code	Combined codes used for charts
Agriculture Products / Cash crops (Wheat, Rice, Sugar cane, Maize etc.)	AGR	AGR
Cattle Food / Livestock (sheep, goat, cow, cattle food etc)	LIV	
Perishable Items (Fruits, vegetables)	PER	GRO
Animal Products/Dairy/Eggs/Fish/Meat/Animals	DFM	
Groceries / Food items (Soap, Salt, Sugar, Pulses, Spices, Biscuits, bread, cool drinks, beer etc.)	GRO	
Building Material / Construction (Cement, Lime, Brick, fly ash, etc)	CNS	CNS
Sand/Clay	SND	
Stone (kota stone, marble, Granite, Aggregate stone etc.)	STN	
Ceramic	CRM	
Petroleum Products (Oil, LPG, CNG, etc.)	PET	PET
Chemicals / Fertilizers (Acids, Fertilizers etc.)	CHM	
Electrical/Manufacturing items (Electronic items, Medicine, Leather, Wine, Rubber/ Tyre, Plastics, Cloth, Paper etc.)	MAN	MAN
Raw Wood, Cork & Wood Products, Furn	WUD	
Machinery / Spare parts	MAC	
Automobiles (Finished products, auto parts, Car/bike manufacturing, New Chassis)	AUT	AUT
Basic / Fabricated Metals (Iron, Steel / Metal)	MET	MET
Mining Minerals (Coal, Gypsum, Cobalt etc.)	MIN	
Empty	EMT	EMT
Container	CTR	MSC
Miscellaneous (Parcel, Courier, Household items etc.)	MSC	
Passengers	PAS	
Scrap	SCR	

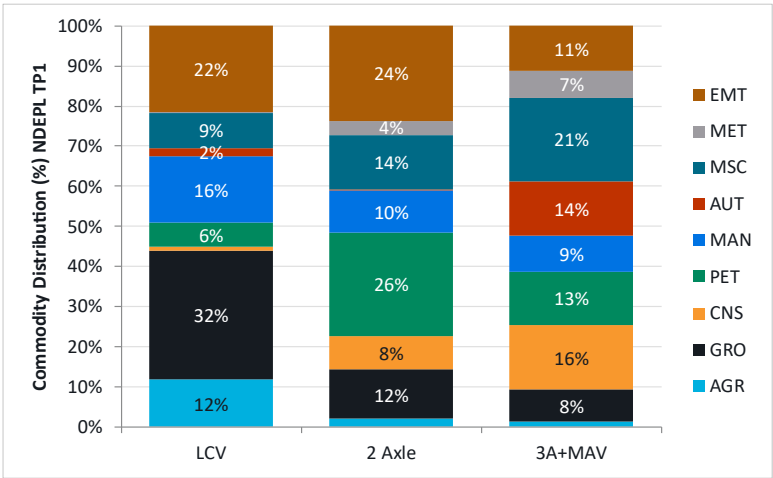
Source: Steer analysis

3.50 Figure 3-13 and Figure 3-14 below present the commodity distribution for goods vehicles at this toll plaza. These help in identifying the mix of goods carried on the Asset and in turn, the potential growth drivers.

3.51 As observed during our site visits, we see that a significant number of vehicles are bullet tankers carrying petroleum from port and oil refineries in Mangaluru to bottling plants at Yediyur and Solur, and trucks that carry bottled petroleum products. These lie very close to the Asset, leading to the high proportion of petroleum (up to 26% for 2As and 13% for 3A+MAV at TP1, and up to 15% for 2As and 30% for 3A+MAV at TP2) in the commodity distribution.

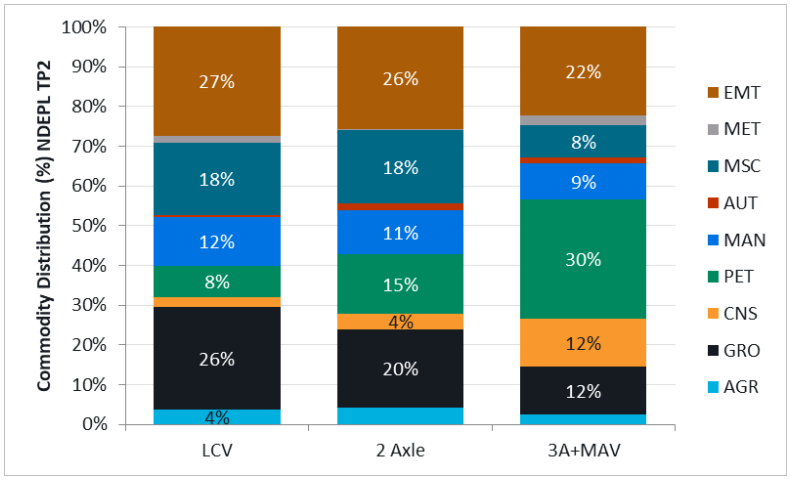
3.52 A major segment of the 3A+ MAVs 14% at TP1 is carrying automobiles and related products. This is due to the presence of the electric vehicle manufacturing cluster around Hosur to the southeast of the Asset. On TP2, a significant proportion of 3A+MAV is carrying groceries and construction materials at 12% each.

Figure 3-13: Commodity distribution, TP1 Doddakarenahalli (Total)



Source: Steer analysis of OD data

Figure 3-14: Commodity distribution, TP2 Karabylu



Source: Steer analysis of OD data

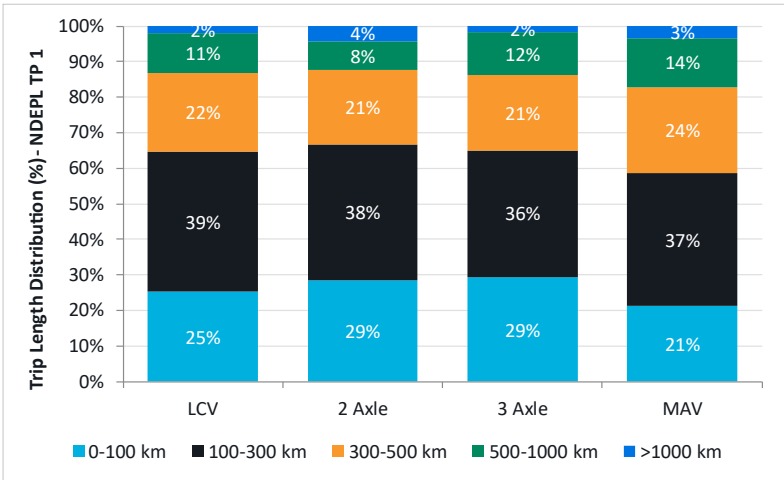
Trip length analysis

3.53 Trip-length distribution provides the distance-based profile of various vehicle types. This helps to validate assumptions around the share of macro-economic drivers, inputs from zonal influence and toll segmentation. For ease of interpretation, we have categorised distances into groups –local (0 -100km), short-distance (100-300 km), medium-distance (300-500 km), long-distance (500-1000 km) and very-long-distance (+1,000 km). The trip

distances were derived as driving distances from Google Distance Matrix Tool based on zonal coordinates for OD pairs.[3]

3.54 Figure 3-15 and Figure 3-16 below present the distribution of trip distances for various vehicle categories at the toll plazas on the Asset.

Figure 3-15: Trip length distribution, TP1 Doddakarenahalli



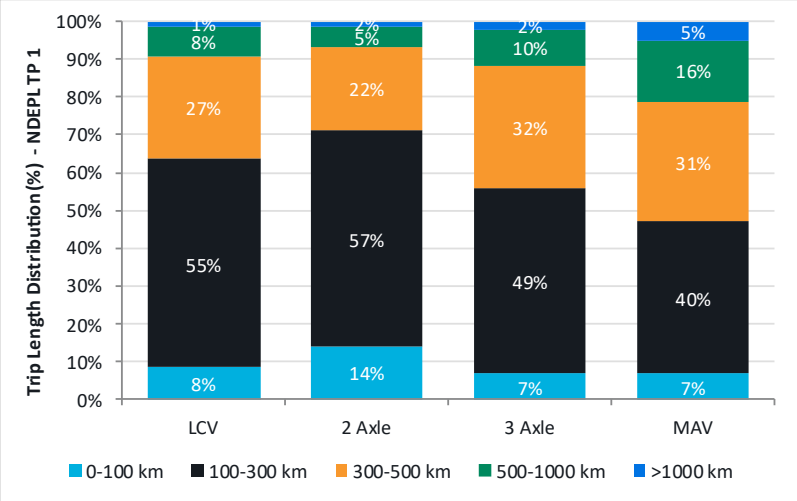
Source: Steer analysis of OD data

3.55 As shown in Figure 3-15 above, TP1 (Doddakarenahalli) has a high share of vehicles covering 100-300 km (~35-39%). The same trend is visible at TP2 for LCV/2A/3As (40%-57%). However, 3A / MAV trips covering longer distances (300-500km) also have significant share in the respective category. As previously discussed, the Asset serves mostly short/medium distance traffic between Bengaluru (as one of its major activity centres) and Mangaluru or Hassan being the other main activity centre. The higher proportion of shorter trips (<300 km) at TP1 reflects its proximity to Bengaluru and Nelamangala.

3.56 As we move towards heavy vehicle categories, the trip distances increase. However, the strategic location of the Asset in the east-west direction in the southern Indian peninsular region limits trips to being medium-distance (<500 km). Therefore, MAVs do not show high shares of long-distance traffic (14% on TP1and 16% on TP2 in the '500-1000 km' category) as observed on other assets located on strategic corridors across the country.

[3] Google Distance API is a tool that is available on a chargeable basis from Google Maps Platform. Link: **https://developers.google.com/maps/documentation/distance-matrix/start**. Travel distance and time information for driving/transit under various congestion scenarios can be extracted through this tool by using macro-enabled Excel, R, etc.

Figure 3-16: Trip length distribution, TP2 Karabylu



Source: Steer analysis of OD data

Conclusions

3.57 In FY25 and FY26, the Asset's AADT at TP1 Doddakarenahalli reached approximately 26,454 and 29,780 respectively while TP2 Karabylu recorded around 19,934 and 22,592 respectively. At both toll plazas in FY26, CJVs remained the dominant vehicle class, contributing roughly 80–82% of total traffic. Buses are the second-largest category, accounting for about 6–7%, followed by MAVs, which represent 3.9% at TP1 and 5.0% at TP2.

3.58 Since FY22, following the stabilization of pandemic-related impacts, traffic volumes on the Asset have shown robust recovery, supported by economic growth along the corridor. At a PCU level, the Asset has delivered strong growth from FY22 to FY26, with PCU CAGRs of ~10.1% at TP1 Doddakarenahalli and ~9.7% at TP2 Karabylu. This trend underscores sustained improvement in traffic performance and capacity utilization.

3.59 Whilst overall the TVC counts are similar to the TMS data, TMS is consistently 1-2% lower than TVC counts. This difference is well within the acceptable ranges and ensures that the systems used by the toll plazas are robust in nature and are able to capture the traffic correctly.

3.60 The OD analysis found that in terms of zonal influence, IAOI retains the highest proportion on zone influence across all vehicle types. This is followed by 'Rest of Karnataka' trips (note the higher share of 'Rest of Karnataka' at TP2). Looking at local trips, the share is 5%-10% lower at TP2 compared to TP1 share across the vehicle categories. Key commodities transported on the Asset include Petroleum products, which is expected given the location of the Asset relative to the Mangaluru and the petroleum bottling plants at Yediyur and Solur. Manufactured products and agriculture products also hold a considerable share of commercial traffic at both plazas (9-16% at TP1 and 9-12% at TP2.)

3.61 When considering the internal – external analysis, I-I, I-ROS and ROS-I distribution makes up the major share for both light and heavy vehicles. The trip length analysis has found that the Asset predominantly serves short/medium distance traffic, with trips under 300km having a share of 60-65% (across all vehicle categories) at TP1, and 47-65% for LCV/2A/3A traffic at TP2. MAVs at TP2 are observed to traverse comparatively longer

distances – with 31% of such trips between 300-500km. The high share of I-I and short/medium distance traffic is considered to be the captive traffic which will remain sticky to the Asset.

3.62 Overall, the historical analysis, the TVC counts and the OD survey data point to the highly tourism and car-dominated nature of the Asset with regional movement of goods traffic, with petroleum being a major regional industry.

4 Socio-economic context and traffic growth

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the Asset is in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions of the region where the Asset is located and conditions on a national scale. These include:

1. Changes in factors such as population, economic growth (regional and national) and industrial production; and,
2. Other local factors such as strategic port growth, and growth in local industries near the Assets.

4.2 In turn, the change in the competitive position of the Asset (and thus of the traffic capture it will achieve) derives from how the service offered and the prices charged on the Asset change in comparison to competing roads; and whether any new competing road facilities are available. In this chapter, we assess the socio-economic and macro-economic indicators relevant to traffic growth on the Asset.

Population growth

4.3 We have analysed the key socioeconomic drivers of the background traffic demand in the state of Karnataka, where the Asset is located.

National Level

4.4 The total population in India has grown at a Compound Annual Growth Rate (CAGR) of 1.5% since 2000, decreasing over the years, as shown in Table 4.1 below. The World Bank forecasts this growth to decrease to 0.6% CAGR by the 2030-45 period.

Table 4.1: CAGR of population in India

Years	CAGR		
	Total Population (m)	Rural Population (m)	Urban Population (m)
1970 – 1985	2.3%	1.9%	3.8%
1985 – 2000	2.0%	1.7%	2.9%
2000 – 2015	1.5%	1.0%	2.6%
2015 – 2030*	1.0%	0.3%	2.3%
2030 – 2045*	0.6%	-0.3%	1.9%

Source: World Bank Data on Health Nutrition and Population Statistics, *forecast population growth

State Level

4.5 Table 4.2 below shows the evolution of population in the state of Karnataka (containing the Asset), compared to that of the country. Karnataka's has grown at a rate slower than that witnessed across India – between FY12-24, Karnataka's population grew at a 0.8% CAGR, compared to 1.2% for India.

Table 4.2: Population Growth in Karnataka and India (FY12 – FY24)

State	FY12 Population (m)	FY24 Population (m)	CAGR (FY12 – FY24)
Karnataka	61.5	67.9	**0.8%**
India	1,210	1,395	**1.2%**

Source: MoSPI estimates

4.6 Due to the complexities of urbanisation, and the dynamic nature of local population migration (both of which are very difficult to forecast with accuracy), we do not use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide the underlying socio-economic context of the state/trends in the regions in which the Asset is located.

Economic Indicators

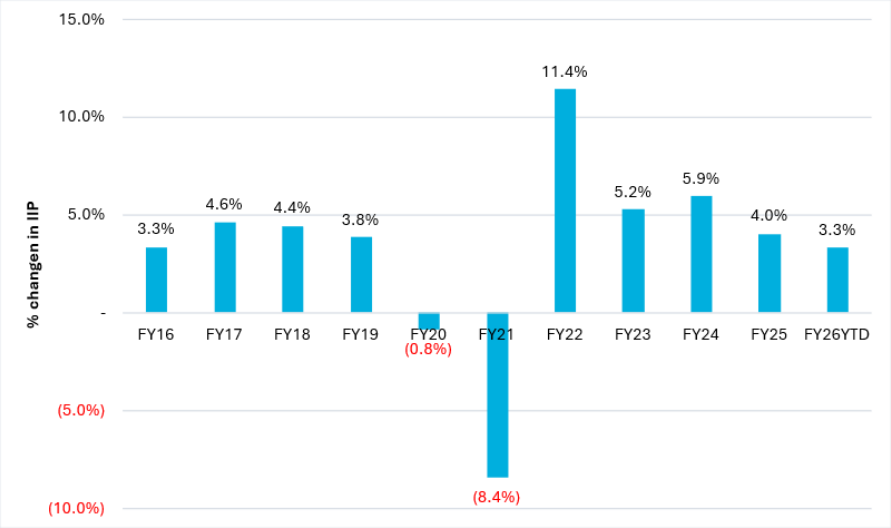
Industrial Production

4.7 The Index of Industrial Production (IIP) is a composite indicator that measures the short-term changes in the volume of production for a basket of industrial products. The IIP data tracks the manufacturing activity in different sectors of an economy, with mining, manufacturing, and electricity being the three broad sectors constituting the IIP.

4.8 Figure 4-1 below shows that at an annual level, national IIP was growing at an average of 4% per year over the period FY15-19, before the country underwent a liquidity crisis and experienced an overall economic slowdown in FY20. In the aftermath, IIP shrank by over 8% in FY21 due to a decline in economic activity in the wake of global lockdowns introduced to curb the Covid-19 pandemic. Post the immediate recovery in FY22, IIP growth has since stabilised, with FY25 recording 4% and FY26YTD (till February 2026) recording 3.3% growth over FY25 .

4.9 Since state-level IIP data is not as readily available as national level IIP, we have presented national IIP here to indicate nationwide activity in key industrial sectors like power, manufacturing, and mining, all of which influence long-distance commercial movements across the nation, and not unique to this asset. However, we do not use it to forecast future travel demand growth since long-term forecast for IIP is not available through official sources such as MOSPI, RBI or through multilateral organisations like WB, or the IMF.

Figure 4-1: Annual growth – Index of Industrial Production (FY16-FY26YTD)



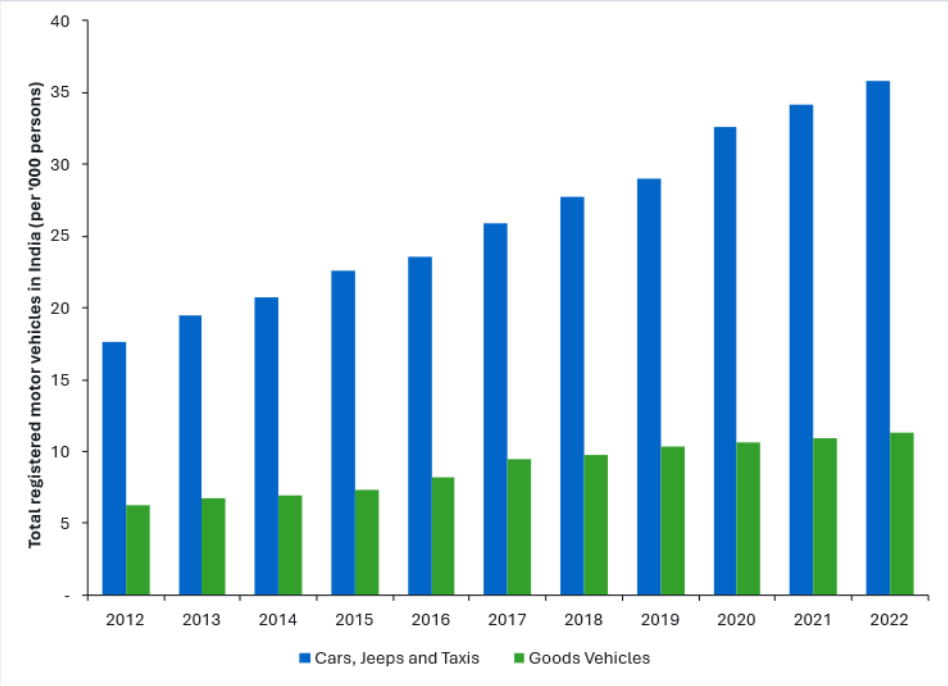
Source: Ministry of Statistics and Program Implementation (MoSPI), FY26YTD represents data till Feb'26

Vehicle Ownership

4.10 The gap in car ownership between India and developed nations remains substantial – with 36 cars/jeeps/taxis and 11 commercial vehicles per thousand people, as of FY22 (the latest year for which official data is available). However, with increasing per capita income levels, a booming economy and the subsequent increase in demand for mobility, the number of registered vehicles has been on a gradual upward trend.

4.11 Overall, India still stands at a very nascent stage in the vehicle saturation curve, offering huge potential for growth going forward. Between FY12 and FY22, the CAGR for CJV and goods' vehicles registered in India was 8.6% and 7.3% respectively.

Figure 4-2: Total number of registered motor vehicles in India (per 1000 population)



Source: Ministry of Road Transport and Highways (MoRTH)

Per Capita Income (PCI)

4.12 As per the latest MOSPI data presented in Figure 4-3, Karnataka's per capita income (PCI) in FY25, at constant 2011–12 prices, stood at around ₹2,00,000, compared to the national average of approximately ₹1,12,000. This implies that Karnataka's PCI was nearly 1.78 times the national level.

4.13 This highlights the relatively stronger economic performance of the state compared to the national average, indicating sustained economic and traffic growth. Going forward, we expect local consumption to be strong which would drive the growth in both passenger and commercial traffic.

Figure 4-3: Per Capita Income

Source: Ministry of Statistics and Program Implementation (MoSPI)

4.14 However, given the difficulty in obtaining granular district level PCI data it is not advisable to use this as a growth driver. Also, since long-term forecasts for PCI are not available, we therefore refrain from using it to forecast traffic.

Economic growth

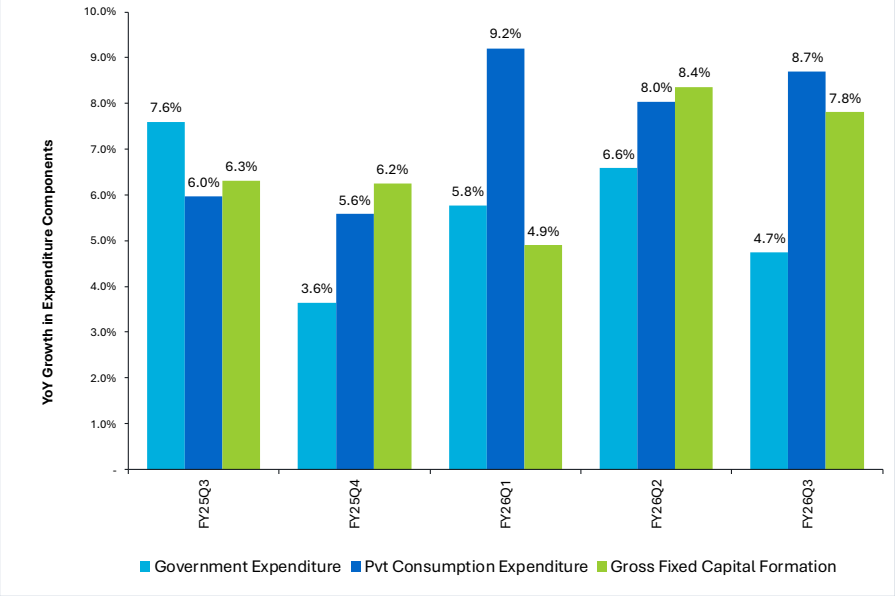
India's Performance

4.15 Despite a slowdown in the economy during H1FY25, the Indian economy has observed strong growth each quarter since FY25Q2, with the latest published estimates for FY26Q3 GDP at 7.8% over FY25Q3. This performance has been driven by strong growth in investment and consumption expenditures and higher consumer optimism for the year ahead[4].

[4] Gov**ernment of India PIB Release (27th February 2026)**

4.16 In Figure 4-4 below, we present quarterly Y-o-Y growth in three major components of GDP – government expenditures, consumption expenditures, and business investment (gross fixed capital expenditure) over the past years (FY25Q3-FY26Q3).

Figure 4-4: YoY Growth in expenditure components of GDP

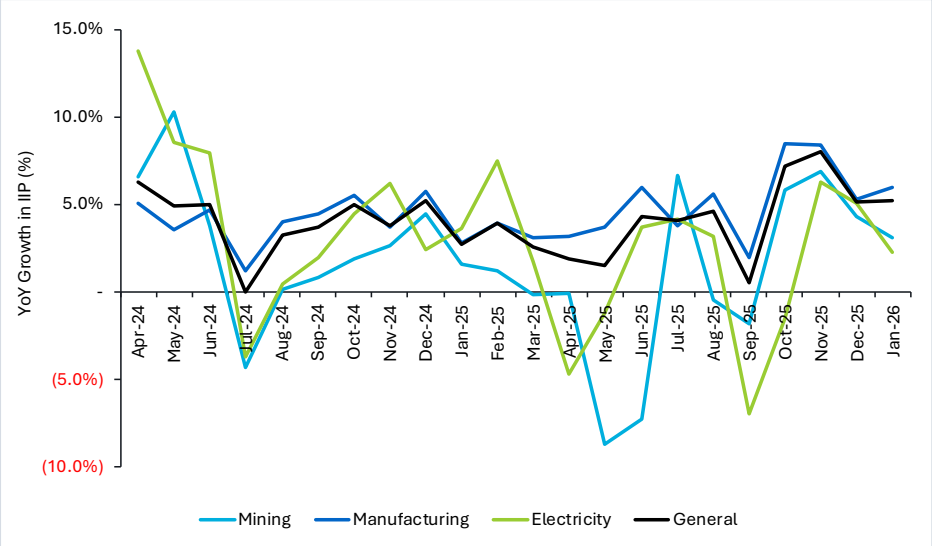


Source: Steer Analysis of MOSPI Data

4.17 While consumption and investment expenditures have continued to show consistent growth over the past two quarters, government expenditures observed a marginal decline in FY25Q4. In FY26Q1, government expenditures rebounded, recording 5.8% growth over FY25Q1 levels.

4.18 Performance across different types of industrial activities (such as Mining, Manufacturing, and Power Generation) directly impact freight movement and commercial traffic volume growth across the country, including on the Asset. In Figure 4-5 below, we present growth trends in IIP – a measure that tracks the performance of the economy across these activities. As of FY26YTD (Apr-Feb'26), the Manufacturing sector continues to perform strongly, recording positive y-o-y growth since FY25Q3. While industrial activity across the two other sectors (i.e., Power Generation and Mining) dropped between May and Jun/Jul '25, they have since rebounded and show signs of continued growth going forward.

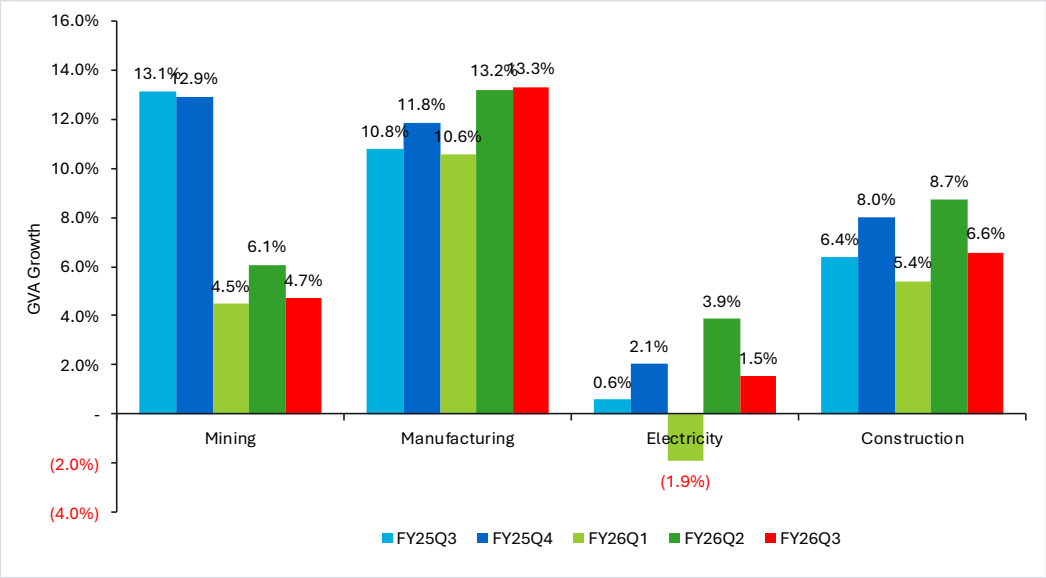
Figure 4-5: Month on Month IIP performance



Source: Steer Analysis of MOSPI Data

4.19 In addition to monthly trends in IIP, Figure 4-6 below presents y-o-y growth of quarterly GVA in four industrial sectors - Mining (& Quarrying), Manufacturing, Electricity (and other Utilities), and Construction. While the Mining and Power sectors observed decline and muted growth in FY26Q1, the Manufacturing and Construction sectors experienced strong growth. Generally, economic growth has remained resilient as of FY26YTD, but performance across industries have varied, impacting economic growth across different regions and on the Asset as well.

Figure 4-6: Industrial components of GVA



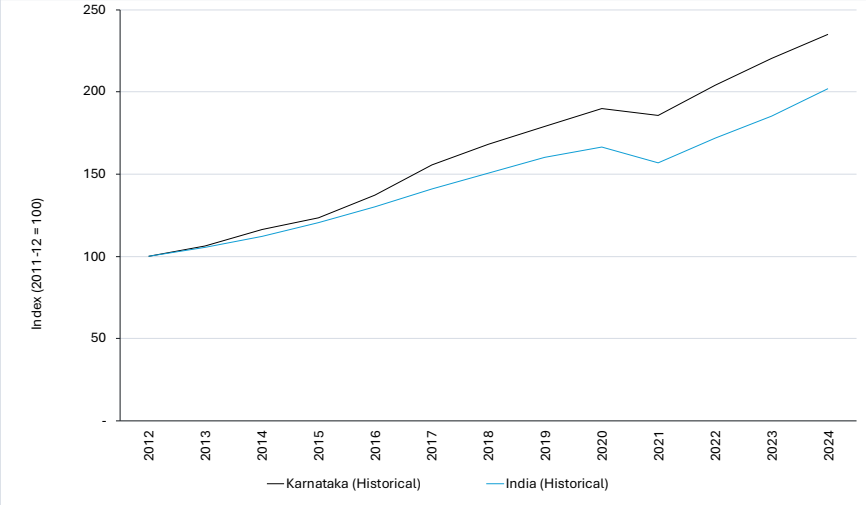
Source: Steer Analysis of MOSPI Data

GDP and GSDP Growth

4.20 Over the period FY12-FY24, National Real GDP (at 2011-12 constant prices) has grown at 5.9% per year, aided by a strong growth in the services/tertiary sector. The economic growth of Karnataka has been stronger than the country overall; between the same FY12-24 period, the state's GSDP grew at a 7.4% CAGR.

4.21 Karnataka contributed approximately 8.2% of India's GDP in FY24 but accounted for 4.9% of its total population – highlighting its relative significance in contributing to nationwide economic growth. Figure 4-7 below compares historical growth of Karnataka's GSDP relative to national GDP growth over the period FY12-FY24.

Figure 4-7: Evolution of Karnataka's state GDP and national GDP



Source: Steer Analysis of MOSPI Data

4.22 Karnataka is the information and technology (IT) hub of India and home to one of the largest technology clusters in the world - Bengaluru. The city contributes to nearly one-third of the state GSDP as of FY24 and houses several major industrial sectors including automobiles, aerospace, textiles, heavy machinery, agriculture and food processing[5].

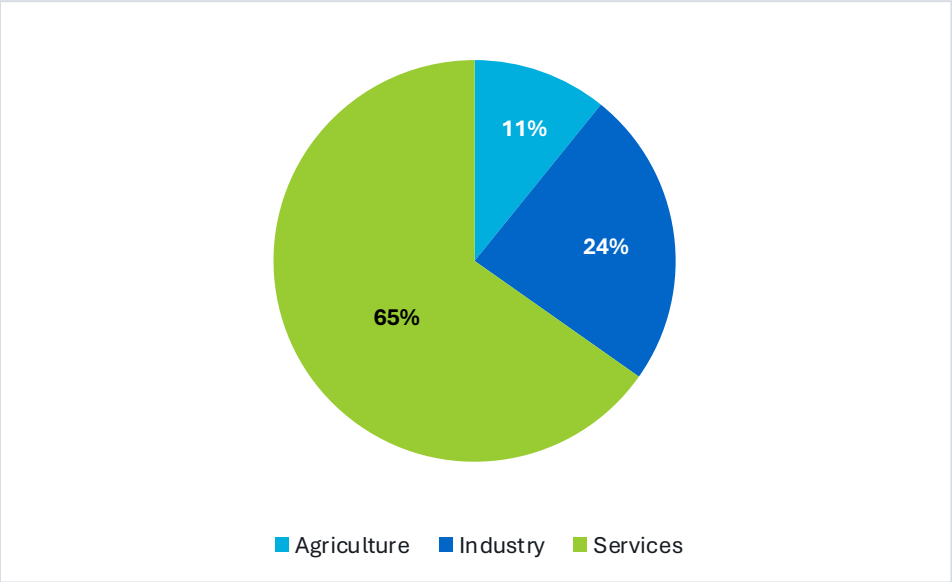
4.23 As shown in Figure 4-7 above, over the past decade, the state of Karnataka followed the same upwards economic growth trend observed at the national level, but at a faster rate. The growth of Karnataka can be attributed to the boom in IT services sector in the region and policies encouraging the establishment of research and development facilities. Apart from the IT sector, automobile, aerospace, textiles, biotechnology, and heavy engineering industries also contribute to the state's growth. Karnataka also houses one of the 13 major ports in India, the Mangaluru port.

4.24 In terms of the secondary sector, the state has key industrial areas in Hubli-Dharwad, Belgaum and Bengaluru (automobile cluster), Mangaluru and Udupi (petrochemical), Bellary, Koppal, Raichur (steel and iron ore) and Belgaum and Bengaluru (aerospace). The state also has a major port in Mangaluru, which is known for import of crude and petroleum products.

[5] **Bengaluru, Karnataka: India Investment Brief**

4.25 As seen in Figure 4-8 below, in terms of sectoral contribution, the services sector is the biggest contributor to the state's GSVA (65%), followed by secondary (24%) and primary sector (11%), as of FY24. Karnataka's GSDP CAGR was 7.4% between FY12-24 and its relative share to the national GDP was around 8.2% in FY24[6]

Figure 4-8: Sectoral contribution to Karnataka's GSDP in FY24



Source: Steer Analysis of MOSPI Data

4.26 The official historical GDP and GSDP data for India are released by the Ministry of Statistics and Program Implementation (MoSPI. The GDP forecasts for India are available from various reliable sources such as Oxford and Consensus, but the GSDP forecasts for the same are not published. However, using the past trends of the relationship between GDP and GSDP, we can develop reasonable GSDP forecasts. Therefore, in our view, GDP is the best source of growth driver for long term traffic forecasts.

4.27 For any indicator to be used as a growth driver to forecast traffic, a reliable source of historical and forecast data availability for that indicator is the key requirement. Of the key socioeconomic indicators discussed above, GDP was assessed to be the only growth driver for which reliable data is available both in terms of historical and forecast data. Therefore, to forecast traffic, we use GDP/GSDP as our key growth drivers.

Forecasts for growth drivers

4.28 Following the discussion in Chapter 4 on the nature of economic activity in the state of Karnataka, in this section, we describe the assumptions in relation to forecasts of the key macro-economic drivers of traffic growth on the Asset.

4.29 We have based our forecasts of GSDP for Karnataka using forecasts of GDP based on the forecasts of the GDP of India as provided by the Client.

[6] GSVA/NSVA by economic activities | Ministry of Statistics and Program Implementation | Government Of India

National GDP

4.30 After the last period of economic slowdown in FY11-12, the country experienced an economic downturn again in late FY19 with FY20 having reported a GDP growth of 4% (relative to an average growth rate of 7% per year between FY13 and FY19). India's GDP growth declined as domestic investment and consumption demand were already under stress because of the liquidity crunch before Covid-19. Other factors that contributed to the economic slowdown included reduced growth rates in automobile sales and production, liquidity crunch in credit markets and rising number of Non-Performing Assets (NPAs) within the banking sector, as well as lower manufacturing production and lower rural consumption.[7]

4.31 The Covid19 outbreak had a significant impact on the Indian economy during the first two quarters of FY21 as government mandated lockdowns across the country effectively stalled economic activity and growth. The growth momentum eventually picked up in Q3 of FY21, with a sharp rebound in the economy in FY22 (GDP recorded 9.7% growth over FY21) and has since observed a consistent growth of 7.6% in FY23, 9.2% in FY24. GDP growth remained strong through FY26, with quarterly growth of 7.8% in Q1, 8.4% in Q2 and 7.8% in Q3, while the RBI estimates full-year FY26 growth at 7.6% under the revised GDP series.

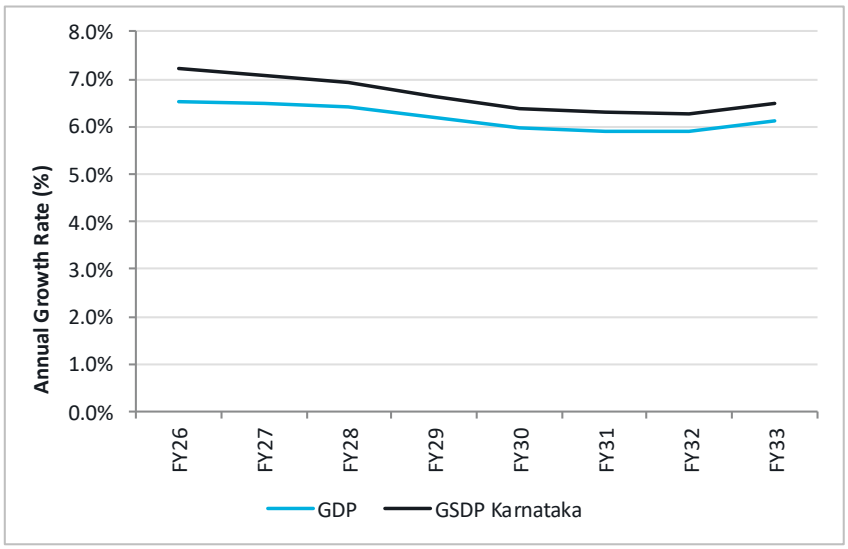
4.32 Figure 4-9 below shows Client-provided GDP projections for India. The forecast expects the Indian GDP to grow at 6.3% between FY27-FY30 and 5.5% between FY31-FY44, gradually tapering down to 5.2% by FY50. The GDP growth forecast is broadly in line with other independent forecasts available from reliable sources such as IMF, World Bank and RBI[8] in the medium term

4.33 State economic policies in combination with its fast-growing urban centres such as Bangalore are expected to keep statewide economic growth buoyant. Thus, over the short and medium term, we have assumed KA GSDP to continue growing above national GDP growth, with gradual convergence with the latter in the long-term.

[7] **Data | India's GDP was on a downward slope even before COVID-19 wreaked havoc - The Hindu** (September 2020)

[8] **Survey of Professional Forecasters on Macroeconomic Indicators – Results of the 93rd Round (April 2025)**

Figure 4-9: GDP-GSDP forecast



Source: GDP and GSDP forecast

5 FY26 Base year AADT and Traffic growth Analysis

Introduction

5.1 In this chapter, we present our approach, assumptions, and results for base (or background) traffic growth for each vehicle category on the Asset.

5.2 Traffic growth is commonly related to a variety of macro-economic and industry- or commodity-specific factors (hereafter referred to as 'traffic growth drivers'). These growth drivers are typically identified from the results of the OD data analysis and the site visits that help us appreciate the nature of traffic movement – 'what' travels 'where' and 'why'.

5.3 We carry out regression analyses to determine the historical relationship between traffic growth by vehicle category and growth in the underlying economic drivers. In this specification, traffic volumes form the dependent variable, and the underlying economic driver forms the independent (or "explanatory") variables.

5.4 Typically, passenger and light commercial vehicle traffic like cars, buses, LCVs and 2-axle trucks grow in line with the GSDP of the state in which the toll road is located. Heavy vehicle traffic like 3-axle trucks and MAVs grow in line with the national GDP. This is because most light vehicles tend to travel shorter distances within the state, whereas a significant proportion of heavy vehicles carry commodities for long-distances across the country. These commodities also tend to be part of industry ecosystems whose demand-supply relationships are scattered across the country and are thus related more with GDP growth.

FY26 Base year AADT estimates

5.5 The base year is the year on which long-term background forecast growth rates are applied to derive year-wise average annual daily traffic (AADT) estimates for forecast years. This is therefore an important aspect of our forecasting approach as traffic and ultimately revenue forecasts for future years are built on top of the base year traffic estimate. We have used FY26 as the base year for AADT estimates for the forecast years.

5.6 As described previously in Chapter 3, to establish the base year (FY26) traffic position, we utilised information from various sources – including from the Client and our context knowledge, to assess a reasonable demand on the corridor.

Methodology

5.7 The base traffic for FY26 has been estimated using 11 months of actual traffic data (April to February). Each toll plaza's seasonality correction factors were applied on the actual

MADTs of Apr-25 to Feb-26 to obtain seasonally corrected estimates for FY26 traffic. An average of these estimates was considered to be the FY26 base traffic.

Seasonality Correction factors

5.8 Traffic on any Asset varies on a month-on-month level. Such variations maybe due to monsoons (typically Jul to Sept) or due to festivals in the region. For e.g. It is observed that typically the truck traffic during the first half of the financial year (April-September) is generally lower than the annual average, mainly because of peak summer season followed by monsoons affecting the freight movement patterns in large parts of the country in the July-September period. In addition to these there may be other seasonal variations specific to the Asset.

5.9 In order to normalise for these variations across the year to provide an AADT estimate, Seasonality Correction Factors (SCF) are used. SCFs are estimated to convert the monthly traffic numbers to an AADT level while accounting for seasonal variation due to local/national festivals, weather changes and/or temporary external impacts. These are typically estimated using historical data for each plaza and vehicle category over multiple years. An SCF >1 means that the traffic for the month is lower than the annual average and vice-versa.

5.10 To achieve this, we studied the seasonality between monthly average daily traffic (MADT) – We have analysed the seasonality trends between monthly average daily traffic (MADT) and AADT for data during the historical years of tolling (as described in Chapter 3) excluding the years that were impacted by specific events. This averaged seasonality trend is then applied to the monthly traffic to obtain AADT as mentioned in the previous sections.

5.11 Table 5.1 and Table 5.2 below present the average of FY24 and FY25 SCFs used to arrive at the FY26 base estimates.

Table 5.1: Seasonality correction factors for TP1 – Doddakarenahalli

SCF	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	0.94	0.90	1.01	1.16	1.12	1.08	0.95	0.95	0.94	1.06	0.99	0.99
LCV	1.02	0.99	0.98	1.06	1.03	1.02	1.05	1.02	0.99	1.02	0.93	0.92
Bus	1.04	1.03	1.04	1.08	1.05	1.01	0.96	0.95	0.95	0.98	0.96	0.98
2A	1.10	1.03	1.05	1.02	0.98	0.96	1.01	1.01	0.98	0.97	0.92	0.98
3A	1.05	1.07	1.03	1.05	1.02	1.00	1.01	0.97	0.96	0.97	0.95	0.94
MAV	1.05	1.07	1.03	1.05	1.02	1.00	1.01	0.97	0.96	0.97	0.95	0.94

Source: Steer analysis of Client historical TMS data

Table 5.2: Seasonality correction factors for TP2- Karabylu

SCF	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	0.95	0.88	1.02	1.18	1.16	1.09	0.91	0.92	0.90	1.05	1.02	1.05
LCV	1.00	0.98	1.01	1.13	1.07	1.04	1.01	0.98	0.96	0.98	0.95	0.93
Bus	1.03	1.03	1.04	1.09	1.06	1.02	0.95	0.95	0.93	0.98	0.96	0.98
2A	1.01	1.01	1.07	1.13	1.01	0.99	1.03	1.01	0.96	0.95	0.92	0.96

SCF	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
3A	1.05	1.05	1.02	1.10	1.03	1.00	0.96	0.98	0.95	1.01	0.93	0.96
MAV	1.05	1.05	1.02	1.10	1.03	1.00	0.96	0.98	0.95	1.01	0.93	0.96

Source: Steer analysis of Client historical TMS data

Adopted base estimates

5.12 Based on the above methodology and inputs, the adopted base traffic positions for both the Asset toll plazas are shown in Table 5.3 and Table 5.4 below:

Table 5.3: Adopted AADT for FY26, Doddakarenahalli

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	21,415	23,731	23,790	11.1%
LCV	1,204	1,245	1,258	4.5%
Bus	1,698	1,815	1,820	7.2%
2A	1,000	1,069	1,072	7.2%
3A/MAV	1,137	1,123	1,130	(0.6%)
TOTAL	**26,454**	**28,983**	**29,069**	**9.9%**
PCU	**35,969**	**37,905**	**38,032**	**8.8%**

Source: Steer analysis: FY25 is actual full year data. FY26YTD includes 11 months of FY26; FY26A is adopted base for FY26

Table 5.4: Adopted AADT for FY26, Karabylu toll plaza

	FY25	FY26YTD	FY26A	FY26A vs FY25
CJV	15,861	17,931	17,882	12.7%
LCV	835	901	908	8.8%
Bus	1,382	1,490	1,493	8.1%
2A	729	751	756	3.7%
3A/MAV	1,127	1,098	1,103	(2.2%)
TOTAL	**19,934**	**22,172**	**22,143**	**11.1%**
PCU	**27,070**	**29,583**	**29,584**	**9.3%**

Source: Steer analysis: FY25 is actual full year data. FY26YTD includes 11 months of FY26; FY26A is adopted base for FY26

5.13 As we can see from the above tables, FY26A AADT and PCU estimates are 9.9% and 8.9% above full year FY25 for TP1, and 11.1% and 9.1% at TP2 (respectively). TP1 has strong influence of growing Bengaluru economy hence it's growing at a healthy rate. Similar trends are observed at TP2. Both TPs show a muted growth profile for 3A/MAVs, which we believe is largely driven off a negative variance observed in 3As on account of evolving axle-preferences.

Estimation of background elasticities

5.14 Elasticities, in the case of traffic growth, are the relationships between traffic growth and the growth in underlying economic drivers of traffic. Multiplied with forecasts of growth drivers like GDP or GSDP, they provide forecasts of background traffic growth rates.

5.15 The TMS data for the Asset reports Bus and 2A separately whereas 3A and MAV volumes are reported together. Therefore, to understand the growth pattern of the vehicle category separately recent TVC splits of 2026 were used. Following the brief note on historical trends shown in Chapter 3, we now delve deeper into results of the historical growth analysis for each major vehicle type. For this Asset Car, LCV and Bus do more regional movement as validated from OD trip length and zonal analysis hence the growth of this vehicle category is more influenced by Karnataka GSDP. Whereas 2A, 3A and MAV carry heavy commodities like construction material, containers, metals and miscellaneous products within Karnataka, Tamil Nadu, and other parts of the country.

5.16 Table 5.5 below presents the growth drivers identified to model the forecast background traffic growth rates.

Table 5.5: Split between individual vehicle types, 2026

Toll plaza	Vehicle type (for growth)	Share (%)
Doddakarenahalli & Karabylu	3A	23%
	MAV	77%

Source: Steer analysis of independent TVC data

5.17 Table 5.6 below presents the growth drivers identified to model the forecast background traffic growth rates.

Table 5.6: Identified growth drivers to model traffic growth

Vehicle type	GSDP Karnataka	GDP India
Car	100%	
LCV	100%	
Bus	100%	
2A		100%
3A		100%
MAV		100%

Source: Steer analysis of Client data

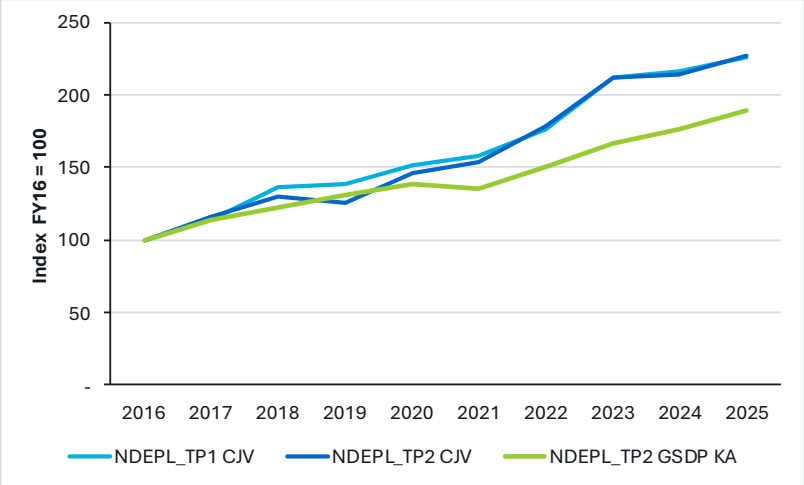
5.18 For the purpose of regression analysis, we have considered the period of FY16-25 Though there were combination of activities including construction on the Hassan-Mangaluru section of the corridor and the introduction of the petroleum pipeline between the Mangaluru Port and HPCL bottling plant at Yediyur in FY16-24 period, these episodes didn't impact traffic volumes significantly hence have been considered in regression analysis.

CJV

5.19 We see from the OD data that the CJVs primarily cater to regional movements between Bengaluru, Hassan, Mangaluru, Kunigal and other towns lying on the Asset. We have

therefore taken Karnataka GSDP to be the growth driver to model the growth of CJV traffic. Figure 5-1 below shows the relationship between indexed values of CJV traffic and Karnataka GSDP at TP1 Doddakarenahalli and TP2 Karabylu.

Figure 5-1: Relationship between CJV traffic and Karnataka GSDP



Source: Steer analysis of Client TMS data and publicly available GSDP data

5.20 Generally, we would expect that in fast-growing economies with relatively low car ownership levels, car traffic growth rates are often in line with or slightly higher than growth in GSDP/GDP (i.e. suggesting elasticities at or just above 1.0). Further, there is an expected increase in car ownership proportion of overall population as the economy grows. This assumption is very contextual and subject to change as there are changes in economic policies of government and overall economic stability nationally and globally.

5.21 Historically, for the period of FY16-25, Car growth on TP1 (9.6%) and TP2 (9.6%) is similar while the GSDP growth for the same period is 7.3%. This is with the Asset connecting high urban centres Bengaluru and Mangaluru and feeding tourism driven Mysore traffic as well. Considering the positive outlook for passenger traffic on the tourism-driven Asset, proximity to the fast-growing Bengaluru urban agglomeration we have assumed a forecast background elasticity starting of 1.2 at TP1 and 1.1 TP2 for CJV.

5.22 We have assumed the elasticity of CJV growth to the underlying regional economy to reduce with time at TP1 and TP2, going from 1.20 in FY26 to 1.1 in FY31and beyond at TP1 and at TP2 it is reduced from 1.1 in FY26 to 1.0 by FY31 onwards.

LCV, 2A

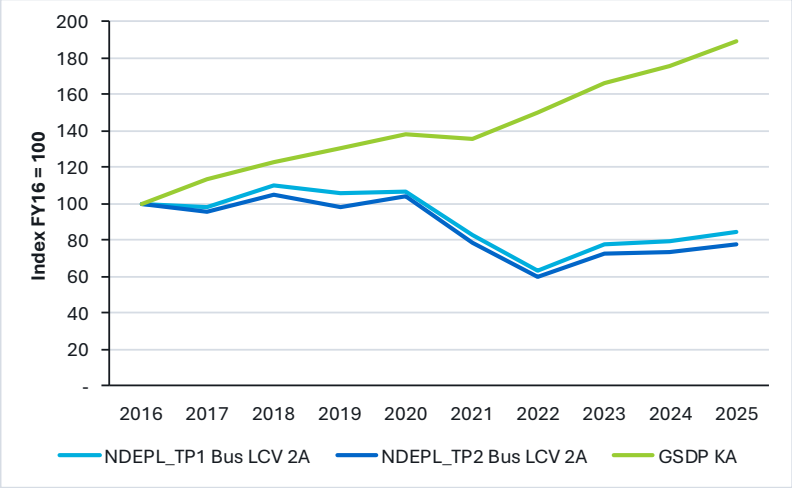
5.23 Compared to heavy vehicles like 3A and MAV, LCV, 2A and Bus have more regional movements within the state – Karnataka in this case, as seen in the OD data analysis. More than 85% of LCVs, 2A and Bus have both trip ends within Karnataka. We have therefore taken GSDP of Karnataka to be the growth driver to model growth of LCV+2A traffic.

5.24 For the period of FY16-25, combined LCV, Bus and 2A show a degrowth of 1.9% on TP1 and 2.8% on TP2 against growing GSDP. This is because at a vehicle category, LCV are historically dropping more than 7% across both toll plazas. This is with shift from LCV to 2A to carry excess tonnage benefit and a mis-categorisation of 2A, Bus and LCV in reporting system.

5.25 Bus growth tends to be largely supply-driven in many parts of the country, with new buses being bought and deployed by the government at intervals of time. Based on our experience across the country, buses on inter-urban and tourism corridors show elasticities of 0.4 to 0.6 with respect to the GSDP.

5.26 Figure 5-2 below show the relationship between indexed values of LCV+2A+Bus combined traffic India GDP and Karnataka's GSDP.

Figure 5-2: Relationship between LCV+Bus+2A combined traffic and Karnataka GSDP

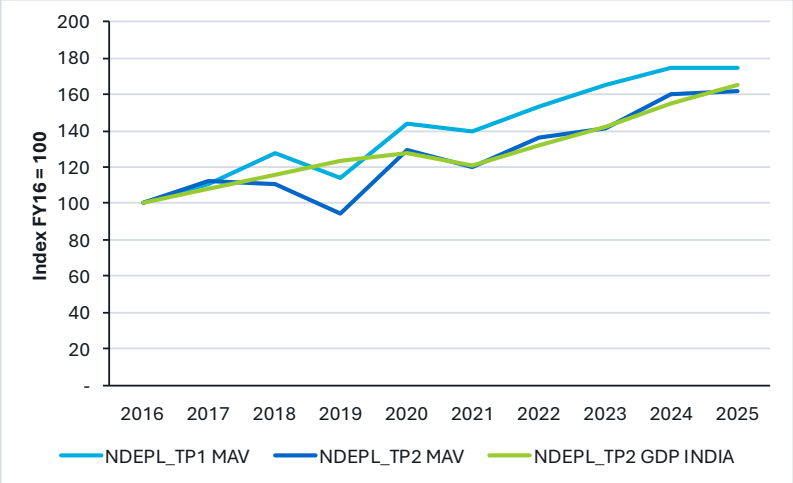


Source: Steer analysis of Client TMS data and publicly available GSDP data

3A/MAV Trucks

5.27 Compared to lighter trucks like LCV and 2A, 3A and MAV have more national or long-distance movements covering several states. Given that manufacturing-related commodities tend to take prominence in their commodity distribution which means that traffic growth in 3A and MAV is dependent on industry demand-supply ecosystems spread across the country, we have taken GDP as the growth driver to model the traffic growth in 3A and MAV. Figure 5-3 below shows the relationship between indexed values of 3A+MAV combined traffic and India's GDP.

Figure 5-3: Relationship between 3A+MAV combined traffic and India's GDP



Source: Steer analysis of Client TMS data and publicly available GDP/GSDP data

5.28 For the period of FY16-25, we observe CAGR 6.4% growth at TP1 and CAGR of 5.4% at TP2 against CAGR of 5.6% GDP growth in the same period. With the shift from 3A to MAV, the growth of 3A has been lower compared to MAV.

Forecasts for background elasticities

5.29 Table 5.7 below presents a summary of the results of the regression analysis carried out on the historical toll plaza data and the macroeconomic (GDP/GDSP) growth, along with the assumed forecast elasticities for background traffic growth.

5.30 Given the nascent stage of India's logistics sector, characterized by a highly fragmented trucking industry (95% of operators owning fewer than five trucks) and low car ownership rates (30-35 per 1000 people), the forecast elasticities for 2A/3A vehicles have been kept constant throughout the concession period, while that of MAVs has been marginally increased in FY27, being brought back to 0.7 from FY30 onwards.

5.31 In terms of passenger traffic, the CJV elasticity at TP1 Doddakarenahalli and TP2 Karabylu has been tapered down to 1.0 by FY31. This assumption is grounded in historical trends and a long-term perspective on regional and national growth, suggesting market maturity is still several years away.

Table 5.7: Derived elasticities from regression analysis and assumed forecast elasticities for background growth

<table>
<tr><th rowspan="2">Vehicle type</th><th rowspan="2">Growth driver</th><th colspan="2">History</th><th colspan="2">Forecast</th></tr>
<tr><th>Derived elasticity</th><th>Years considered</th><th>Assumed forecast elasticity</th><th>Evolution of elasticity</th></tr>
<tr><td colspan="6">TP1 Doddakarenahalli</td></tr>
<tr><td>Car</td><td>GSDP Karnataka</td><td>1.37</td><td rowspan="5">FY16-25</td><td>1.20</td><td>Reduce to 1.1 by FY31</td></tr>
<tr><td>LCV</td><td>GSDP Karnataka</td><td rowspan="3">0.55</td><td>0.40</td><td>No change</td></tr>
<tr><td>Bus</td><td>GSDP Karnataka</td><td>0.4</td><td>No change</td></tr>
<tr><td>2A</td><td>GDP</td><td>0.60</td><td>No change</td></tr>
<tr><td>3A</td><td>GDP</td><td rowspan="2">1.21</td><td>0.1</td><td>No change</td></tr>
<tr><td>MAV</td><td>GDP</td><td>0.7</td><td>No change</td></tr>
<tr><td colspan="6">TP2 Karabylu</td></tr>
<tr><td>Car</td><td>GSDP Karnataka</td><td>1.39</td><td rowspan="5">FY16-25</td><td>1.10</td><td>Reduce to 1.0 by FY31</td></tr>
<tr><td>LCV</td><td>GSDP Karnataka</td><td rowspan="3">0.42*</td><td>0.40</td><td>No change</td></tr>
<tr><td>Bus</td><td>GSDP Karnataka</td><td>0.4</td><td>No change</td></tr>
<tr><td>2A</td><td>GDP</td><td>0.60</td><td>No change</td></tr>
<tr><td>3A</td><td>GDP</td><td rowspan="2">1.05</td><td>0.10</td><td>No change</td></tr>
<tr><td>MAV</td><td>GDP</td><td>0.70</td><td>No change</td></tr>
</table>

Source: Steer analysis of Client data; *insignificant results; regression was run on LCV+Bus +2A and 3A-MAV combined; Invalid model results have been excluded from presentation in the table

6 Forecasts: Network overlays and forecasts

Introduction

6.1 Following the discussion on estimated and assumed forecast background growth rates in the previous chapter, this chapter first deals with the forecasting assumptions around base year AADT and potential impacts on traffic growth on the Asset. Later, it also presents the assumed toll segmentation, trip factors and evolution of toll rates for the forecast period which are used to estimate the forecast revenue based on the forecast traffic. In the final section, the chapter summarises the traffic growth rates for the forecast years. The following table lists key intermediate and final outputs that have presented in chapter 3, 5 and 6.

Analysis of potential network/developmental impacts

Summary of alternate routes and planned changes

6.2 The section below details the impacts which we believe would affect traffic on the Asset during the concession period. As discussed earlier in Chapter 2, in order to assess the impacts on the Asset, whether positive or negative, we have studied developments (alternate roads, feeder roads and regulatory) in the surrounding road network.

6.3 Figure 6-1 below shows the road network surrounding the Asset.

Figure 6-1: Alternate routes and Asset shown against the regional network context

Source: Steer analysis and cartography

6.4 Past network developments on the corridor include the construction and improvement of the Shiradi Ghat section on the Hassan-Mangaluru Road. Upcoming developments include potential construction of Satellite Ring Road around Bengaluru. Table 6.1 below presents the upcoming network developments, corresponding feeder routes, year of completion and direction of impact on the Asset.

Table 6.1: List of network/other developments

S. No.	Development	Route affected	Year	Impact (+/-)
1.	Satellite Town Ring Road (STRR) around Bengaluru (Solur to Dobbaspet spur)	Trips between TN/Hyderabad and Coastal Karnataka (TP1 only)	FY27 onwards	-ve
2	Peripheral Ring Road – LOS improvement		FY30 onwards	+ve

Source: Steer analysis

Impact assessment for network/other developments

6.5 The subsections below include a narrative of each of the improvements, as listed in the table above, and impacts associated from each of these. Please note that all traffic volumes for impacts were estimated as impact rates applied on FY26 Base AADT.

Satellite Town Ring Road (STRR) around Bengaluru

6.6 STRR is an under construction 4-6 lane access-controlled expressway around Bengaluru and will provide a larger bypass for long distance traffic. This will serve as bypass around Bengaluru city and increases the speed of freight movement and traffic handling capacity for the long-distance traffic which does not have anything to do with Bengaluru City.

6.7 STRR involves the realignment of NH648 and can be accessed from Dobbaspet. Currently, the Dobbaspet- Doddaballapur- Devanahalli- Hoskote section of the STRR is completed and operational with tolling in place. The remaining two sections of the Obalapur-Mudugadapalli corridor are the last sections of the STRR and includes the Solur to Dobbaspet spur on the western side of Bengaluru city. Our analysis considers the impact of the currently operational sections of the STRR as well as the impact the completion of the Solur-Dobbaspet spur will have on the Asset.

6.8 The impact of STRR will be applicable to only TP1 as this expressway provides a direct bypass option to Industrial clusters at Dobbaspet- Doddaballapur, can access Kempegowde International Airport and NH44 (Hyderabad highway) through Devanahalli Exit and STRR provides a direct connection to the upcoming Bengaluru- Chennai Expressway which originates from Hoskote.

6.9 Based on the GJC approach we estimate the impact of STRR (due to both the current operational sections as well as the future completion of the Solur-Dobbaspet spur) as shown in Table 6.2 below.

Table 6.2 :Impact of STRR (Dobbaspet- Hoskote section) at TP01

Vehicle type	FY27	FY28 Onwards
Staging	*50%*	*100%*
CJV	(1.4%)	(2.8%)
2A	(1.5%)	(3.0%)
3A	(1.7%)	(3.4%)
MAV	(1.8%)	(3.6%)

Source: Steer analysis of Client OD data, Client TMS data and publicly available information.

Peripheral Ring Road – LOS improvement

6.10 he Peripheral Ring Road (PRR) is a proposed 65 km, 100-meter-wide expressway circumventing Bengaluru, intended to connect Tumakuru Road (NH 48) in the northwest to Hosur Road (NH 44) in the southeast. Once completed, the PRR will form an intermediate bypass around the city connecting major radial highways such as NH 75 (Old Madras Road), NH 648, and NH 44. The facility is designed to reduce the volume of through and inter-city traffic currently forced to enter the Outer Ring Road network and Bengaluru's arterial roads.

6.11 The PRR will serve as a high-capacity, access-controlled corridor facilitating smoother traffic distribution across the city's periphery. This is expected to divert part of the intra-metropolitan freight and passenger traffic away from NH 75 towards peripheral routes. By providing alternative connectivity between industrial zones in Hoskote, Tumakuru Road, and Hosur Road, the PRR will indirectly reduce congestion levels on NH 75, particularly

within the sections intersecting the eastern and southeastern parts of Bengaluru's urban limits.

6.12 The expected impact of the Peripheral Ring Road on NH 75 traffic is assessed to be moderately positive, given that it will complement the diversionary benefits currently provided by the Satellite Town Ring Road. While the PRR's influence will be more localized to Bengaluru's outer periphery rather than long-haul freight routes, its operationalization will likely result in marginally higher travel speeds and improved traffic flow on NH 75 due to redistribution of commuter and logistics trips that currently use the highway for orbital movement.

Table 6.3: Impact of Peripheral Ring Road at TP1 and TP2

Vehicle type	TP1	TP2
Staging	*FY30 onwards*	*FY30 onwards*
CJV	0.5%	0.4%

Source: Steer analysis of Client OD data, Client TMS data and publicly available information.

Summary of impact assessments

6.13 Table 6.4 below summarises the potential impacts on the Asset due to the several ongoing and foreseen improvements on the alternate routes.

Table 6.4: Summary of impact assessments

Impact	Year of impact	Probability/ scale of impact	Magnitude of impact	
			TP1	TP2
Satellite Town Ring Road (STRR)	FY26 Onwards	Medium	CJV (2.8%) 2A (3.0%) 3A (3.4%) MAV (3.6%)	-
Peripheral Ring Road – LOS improvement	FY30 onwards	Medium	CJV: 0.5%	CJV: 0.4%

Source: Steer analysis of OD data, Client TMS data and publicly available information

Revenue forecasting assumptions

6.14 To forecast the revenues for a forecast year, the traffic forecast for each vehicle type is converted into tickets sold, which is then multiplied with the corresponding toll rate. While toll segmentation provides the breakup of trips paying each ticket type, trip factors provide the conversion factor to convert from traffic (trips) to tickets sold. This section discusses assumptions related to toll segmentation, trip factors and toll rates for the forecast period.

Toll evolution

6.15 Based on the concession agreement and the gazetted toll notification, we understand that base toll rates increase every year (revision month is September) based on WPI-linked inflation. These are rounded up to the nearest five decimals to estimate the final toll rate charged to users.

6.16 We have used actual toll rates from the FY25 toll notifications and FY26 WPI to validate the modelling of future toll evolution. Increase in WPI was calculated based on the Client's WPI forecasts, as shown in the table below.

6.17 These forecasts provided by the Client expect the WPI to grow at an average of 4.0% between FY25-FY51. The WPI forecasts available from other independent forecasting agencies may vary from this assumption and could be lower or higher than that provided by the client.

Table 6.5: WPI growth forecast assumptions

Financial year	WPI growth (%)
FY26	2.3%
FY27	0.7%
FY28	5.0%
FY29	5.1%
FY30	4.9%
FY31	4.4%
FY32 onwards	4.1%

Source: FY28 onwards WPI as per client inputs

Table 6.6: Toll estimation overview

Toll fee escalation	Revision date	Nearest rounding
Linked to 100% WPI increase	September	5

Source: Concession agreement and toll notification

Toll segmentation and trip factors

6.18 The Ministry of Road Transport & Highways has finalized a compensation formula for existing toll concessionaires to offset revenue loss from the Annual Pass scheme for non-commercial vehicles[9].

6.19 Across multiple assets, the share of annual pass trips has been rising on a monthly basis since August 5. A corresponding decline in other ticket categories including Single and Return journeys has been observed.

6.20 The segmentation for CJVs in FY27 has been assumed to be the same as the estimated March 2026 segmentation as trends suggest that the share of annual pass trips have stabilised. For other vehicle categories we have analysed the historical TMS data split by ticket categories, to understand trends, as shown in Chapter 3. For the traffic and revenue forecast, FY26YTD (Apr- Feb) as discussed in the earlier sections, can be considered a normal period.

[9] https://morth.nic.in/sites/default/files/Finalization-Concessionaire-Annual-Pass-Facility-on-NHs-01092025.pdf

Table 6.7: Forecast toll segmentation for the forecast years , TP1 Doddakarenahalli

Forecast	CJV (FY26)	CJV (FY27)	Mini-LCV	LCV	Bus	2A	3A/MAV
Single	40%	32%	46%	26%	9%	28%	44%
Return	38%	34%	43%	68%	85%	53%	52%
Local commercial	-	-	-	2%	-	15%	-
Local Personal				-	-	-	-
Monthly	2%	1%	2%	1%	6%	1%	-
Exemptions	3%	4%	4%	0%	0%	0%	0%
Violations	7%	7%	7%	3%	0%	4%	4%
Annual Pass	11%	23%	-	-	-	-	-

Source: Steer analysis of Client TMS data

Table 6.8: Forecast toll segmentation for the forecast years, TP2 Karabylu

Forecast	CJV (FY26)	CJV (FY27)	Mini-LCV	LCV	Bus	2A	3A/MAV
Single	47%	38%	55%	44%	45%	48%	60%
Return	35%	32%	39%	52%	48%	45%	40%
Local commercial	-	-	-	1%	-	4%	-
Local Personal				-	-	-	-
Monthly	1%	1%	1%	1%	7%	0%	-
Exemptions	3%	3%	3%	0%	0%	1%	0%
Violations	3%	3%	3%	2%	0%	2%	0%
Annual Pass	12%	25%	-	-	-	-	-

Source: Steer analysis of Client TMS data

Table 6.9: Trip factors for the forecast years, TP1 Doddakarenahalli

Forecast	CJV/Mini-LCV	LCV	Bus	2A	3A	MAV
Single	1	1	1	1	1	1
Return	2	2	3	2	2	2
Monthly	29	398	56	43	45	45
Local commercial	1	1	1	1	1	1
Local personal	38	1	1	1	1	1
Exemptions	1	1	1	1	1	1
Violations	1	1	1	1	1	1

Source: Steer analysis of Client TMS data

Table 6.10: Trip factors for the forecast years, TP2 Karabylu

Forecast	CJV/Mini-LCV	LCV	Bus	2A	3A	MAV
Single	1	1	1	1	1	1
Return	2	2	2	2	2	2
Monthly	23	183	57	86	45	45
Local commercial	1	1	1	1	1	1
Local personal	22	1	1	1	1	1
Exemptions	1	1	1	1	1	1
Violations	1	1	1	1	1	1

Source: Steer analysis of Client TMS data

6.21 The Annual pass compensation is separately calculated using the formula prescribed by NHAI in the same circular. Following Table 6.6 presents the Annual pass compensation computed for the toll plaza.

Table 6.11: Annual Pass Compensation for CJV (in Crores)

Toll Plaza	FY26	FY28	FY33	FY38	FY43	FY50
Doddakarenahalli	4.6	11.9	20.6	34.1	56.2	113.2
Karabylu	3.9	10.2	17.2	27.6	44.2	85.9

Source: Steer Analysis

Revenue reconciliation

6.22 As part of validating the data provided by the Client, as well as our assumptions around toll calculations, we have reconciled the actual reported revenue on a monthly level for the Asset. To reconcile we have used the segmentation and AADT for the period of FY26 (Apr-Aug) and compared it with the reported revenue over the same period.

6.23 The comparison, as shown in Table 6.11 below, shows that our modelled revenue is within a variation of 1.0% from the reported revenue over the selected period of reconciliation (excluding buses). This gives us confidence that the revenues estimated using the traffic data in our forecasts are accurately representing the revenues being reported from the Asset.

Table 6.11: Revenue reconciliation summary for Apr-Jun FY26 AADC

Toll Plaza	Steer modelled revenue (INR lakhs)	Reported revenue (INR lakhs)	Difference (%)
Doddakarenahalli	16.9	16.9	**0.3%**
Karabylu	14.7	14.7	**0.3%**

Source: Steer comparison between modelled and reported revenue

Traffic and Revenue forecasts

6.24 Based on the traffic and revenue-related forecast assumptions discussed above, we have modelled the traffic and revenue forecasts for the forecast period for the Asset. Table 6.12, Table 6.13, Table 6.16, and Table 6.17 below present the AADT/PCU forecast growth rates and CAGRs on this Asset. Further, Appendix C presents the detailed AADT and revenues for the forecast period.

6.25 For MAV, based on the discussion with Client, for forecasting purposes, we have referred to the Rigid and Trailer trucks splits in the TVC counts for calculating the effective PCU for MAV trucks. For Rigid trailer trucks we have assumed a PCU factor of 3, whereas for Trailer trucks we have assumed a PCU factor of 4.5.

Table 6.12: Traffic forecast (with impacts) at TP1 Doddakarenahalli

Vehicle Type	FY26	FY27	FY29	FY31	FY33
CJV	21,953	23,454	26,861	30,938	35,427
Mini LCV	1,837	1,941	2,157	2,381	2,630
LCV	1,258	1,294	1,365	1,435	1,509
Bus	1,820	1,871	1,974	2,075	2,183
2 Axle	1,072	1,097	1,163	1,247	1,339
3 Axle	305	302	300	304	308
MAV	825	847	906	983	1,067
AADT	**29,069**	**30,806**	**34,727**	**39,364**	**44,463**
PCUs	**38,032**	**39,985**	**44,416**	**49,648**	**55,387**

Source: Steer analysis

Table 6.13: Traffic forecast (with impacts) growth rates (%), TP1 Doddakarenahalli

Vehicle Type	FY26-FY27	FY27-FY29	FY29-FY31	FY31-FY33	FY26-FY33
CJV	6.8%	7.0%	7.3%	7.0%	7.1%
Mini LCV	5.7%	5.4%	5.1%	5.1%	5.3%
LCV	2.8%	2.7%	2.5%	2.5%	2.6%
Bus	2.8%	2.7%	2.5%	2.5%	2.6%
2 Axle	2.3%	3.0%	3.6%	3.6%	3.2%
3 Axle	(1.0%)	(0.2%)	0.6%	0.6%	0.1%
MAV	2.7%	3.5%	4.2%	4.2%	3.8%
AADT	**6.0%**	**6.2%**	**6.5%**	**6.3%**	**6.3%**
PCUs	**5.1%**	**5.4%**	**5.7%**	**5.6%**	**5.5%**

Source: Steer analysis

Table 6.14: Revenue forecasts (in INR crores including annual pass compensation) at TP1 Doddakarenahalli

Vehicle Type	FY26	FY27	FY29	FY31	FY33
CJV	36.2	39.6	48.1	61.0	75.4
Mini LCV	3.0	3.3	3.8	4.7	5.6
LCV	3.2	3.4	3.9	4.5	5.1
Bus	8.1	8.4	9.7	11.1	12.7
2 Axle	5.3	5.5	6.3	7.4	8.6
3 Axle	2.8	2.9	3.1	3.4	3.8
MAV	7.7	8.0	9.3	11.1	13.0
Total	**66.3**	**70.9**	**84.1**	**103.1**	**124.2**

Source: Steer analysis

Table 6.15: Revenue forecast with growth rates (%), TP1 Doddakarenahalli

Vehicle Type	FY26-FY27	FY27-FY29	FY29-FY31	FY31-FY33	FY26-FY33
CJV	9.4%	10.2%	12.6%	11.2%	11.1%
Mini LCV	9.4%	8.1%	10.7%	9.3%	9.4%
LCV	3.7%	7.3%	7.4%	6.6%	6.6%
Bus	3.6%	7.3%	7.2%	7.1%	6.7%
2 Axle	3.1%	7.2%	8.3%	8.1%	7.2%
3 Axle	0.5%	4.0%	5.3%	4.7%	4.1%
MAV	4.2%	7.8%	9.0%	8.5%	7.8%
Total	**6.9%**	**8.9%**	**10.7%**	**9.8%**	**9.4%**

Source: Steer analysis

Table 6.16: Traffic forecast (with impacts) at TP2 Karabylu

Vehicle Type	FY26	FY27	FY29	FY31	FY33
CJV	16,502	17,764	20,379	23,174	26,221
Mini LCV	1,381	1,449	1,590	1,734	1,892
LCV	908	934	985	1,036	1,089
Bus	1,493	1,536	1,620	1,703	1,791
2 Axle	756	785	846	907	973
3 Axle	298	300	303	307	311
MAV	805	842	917	995	1,081
AADT	**22,143**	**23,609**	**26,640**	**29,856**	**33,358**
PCUs	**29,584**	**31,297**	**34,829**	**38,549**	**42,595**

Source: Steer analysis

Table 6.17: Traffic forecast (with impacts) with growth rates at TP2 Karabylu

Vehicle Type	FY26-FY27	FY27-FY29	FY29-FY31	FY31-FY33	FY26-FY33
CJV	7.6%	7.1%	6.6%	6.4%	6.8%
Mini LCV	5.0%	4.7%	4.4%	4.5%	4.6%
LCV	2.8%	2.7%	2.5%	2.5%	2.6%
Bus	2.8%	2.7%	2.5%	2.5%	2.6%
2 Axle	3.9%	3.8%	3.6%	3.6%	3.7%
3 Axle	0.6%	0.6%	0.6%	0.6%	0.6%
MAV	4.5%	4.4%	4.2%	4.2%	4.3%
AADT	**6.6%**	**6.2%**	**5.9%**	**5.7%**	**6.0%**
PCUs	**5.8%**	**5.5%**	**5.2%**	**5.1%**	**5.3%**

Source: Steer analysis

Table 6.18: Revenue forecast (in INR crores including annual pass compensation) at TP2 Karabylu

Vehicle Type	FY26	FY27	FY29	FY31	FY33
CJV	29.4	32.6	39.6	49.7	60.6
Mini LCV	2.4	2.7	3.1	3.7	4.4
LCV	2.7	2.8	3.3	3.8	4.3
Bus	7.2	9.0	10.3	11.9	13.6
2 Axle	4.5	4.7	5.5	6.4	7.5
3 Axle	3.1	3.2	3.5	3.9	4.2
MAV	8.4	8.9	10.6	12.6	14.8
Total	**57.7**	**63.8**	**75.8**	**91.9**	**109.4**

Source: Steer analysis

Table 6.19: Revenue forecast with growth rates (%) at TP2 Karabylu

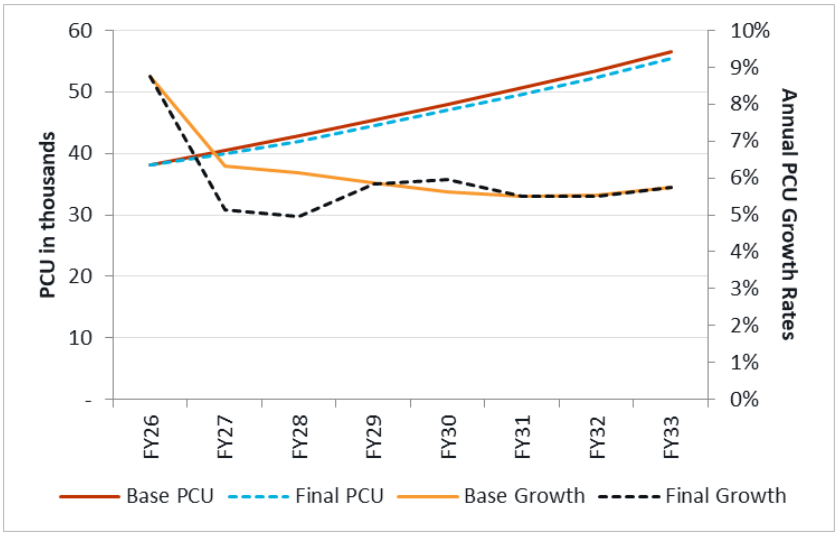
Vehicle Type	FY26-FY27	FY27-FY29	FY29-FY31	FY31-FY33	FY27-FY33
CJV	10.9%	10.3%	11.9%	10.5%	10.9%
Mini LCV	8.6%	7.4%	10.1%	8.6%	8.7%
LCV	3.5%	7.8%	7.3%	6.6%	6.7%
Bus	24.5%	6.9%	7.4%	7.1%	9.5%
2 Axle	4.8%	8.0%	8.5%	8.2%	7.7%
3 Axle	2.2%	4.9%	5.3%	4.7%	4.6%
MAV	6.1%	8.8%	9.1%	8.4%	8.4%
AADT	**10.5%**	**9.0%**	**10.1%**	**9.1%**	**9.6%**

Source: Steer analysis

6.26 As presented in Table 6.13 and Table 6.17 above, at TP1 and TP2, FY26-33 PCU CAGRs (inclusive of impacts) are 5.5% and 5.3% respectively. While the background growth is

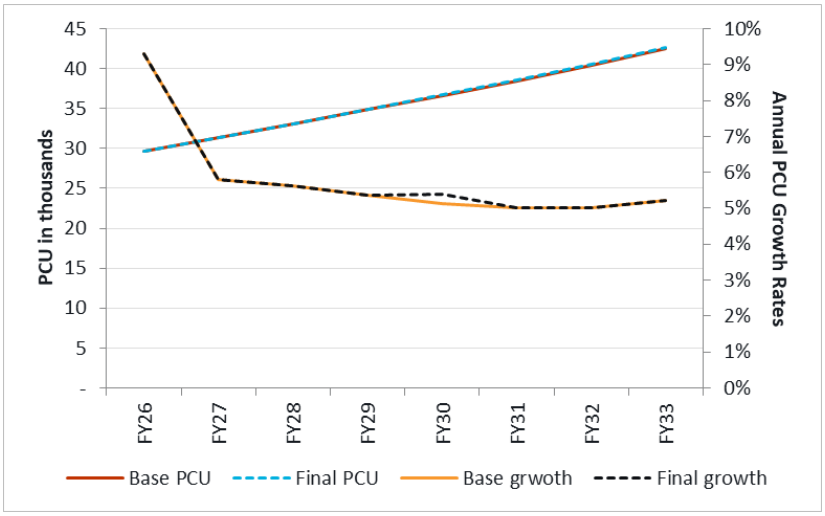
primarily driven by car growth followed by 3A/MAVs, the opening of the Bengaluru STRR Solur-Dobaspet spur is expected to impact traffic growth over the medium term, after which growth is expected to stabilise and remain stable over the long-term.

Figure 6-2: Traffic and growth rates for forecast PCUs - Background and final- TP1



Source: Steer analysis

Figure 6-3 Traffic and growth rates for forecast PCUs - Background and final- TP2



Source: Steer analysis

Upside and Downside cases

Upside and Downside scenario assumptions

6.27 We have developed our base case scenario considering a balanced view on the risks associated with input assumptions around GDP growth and traffic growth elasticities. There is always a risk that the outturn values of these inputs will vary as compared to the assumptions taken due to exogenous impacts, e.g. GDP growth could be influenced both

positively and negatively by the impact of monsoons, export-import balances, political changes etc.

6.28 Similarly, traffic growth elasticities could be influenced by increased efficiencies achieved by technology, large shifts in commodity prices globally, changes in local manufacturing practices. However, at this stage we consider that the base case represents a central case scenario given the risks of variation of input assumptions.

6.29 Further, network developments are highly dependent on governmental directions, policies, legal and financial measure which might result in early or delayed completion of developments. Therefore, we have included an Upside (optimistic) and a Downside (pessimistic) case. However, at this stage, we consider that the base case represents a central case scenario given the risks of variation of input assumptions

6.30 To account for the possible variations in the growth drivers, we are also presenting an Upside (optimistic) and a Downside (pessimistic) scenario. These scenarios are defined by the following variations from the base assumptions:

Table 6.20: Summary of Macro-economic Assumptions for upside and downside cases

Input	Upside	Downside
Macro Assumptions		
GDP/GSDP	+1% every year	-1% every year
WPI	+1% every year	-1% every year
Elasticities	+ 10%	- 10%

Source: Steer analysis

Impacts-Upside Case

6.31 The upside case impacts included in forecasts are summarised in below.

Table 6.21: Summary of impacts on the Assets

Development	Year of Impact	Change in impact w.r.t base case	Magnitude of impact	
			TP1	TP2
Satellite Ring Road	FY27 (50%), FY28 onwards (100%)	+25% of base case	CJV: (2.1%) 2A: (2.3%) 3A: (2.5%) MAV: (2.7%)	N/A
Peripheral Ring Road – LOS improvement	FY 30 Onwards		CJV: 0.64%	CJV: 0.55%

Source: Steer analysis of OD data

Impacts-Downside Case

6.32 The downside case impacts included in forecasts are summarised in below.

Table 6.22: Summary of impacts on the Assets

Development	Year of Impact	Change in impact w.r.t base case	Magnitude of impact	
			TP1	TP2
Satellite Ring Road	FY27 (50%), FY28 onwards (100%)	+25% of base case	CJV: (3.5%) 2A: (3.8%) 3A: (4.2%) MAV: (4.5%)	N/A
Peripheral Ring Road – LOS improvement	FY 30 Onwards		CJV: 0.51%	CJV: 0.43%

Source: Steer analysis of OD data

Upside and Downside Case Forecasts

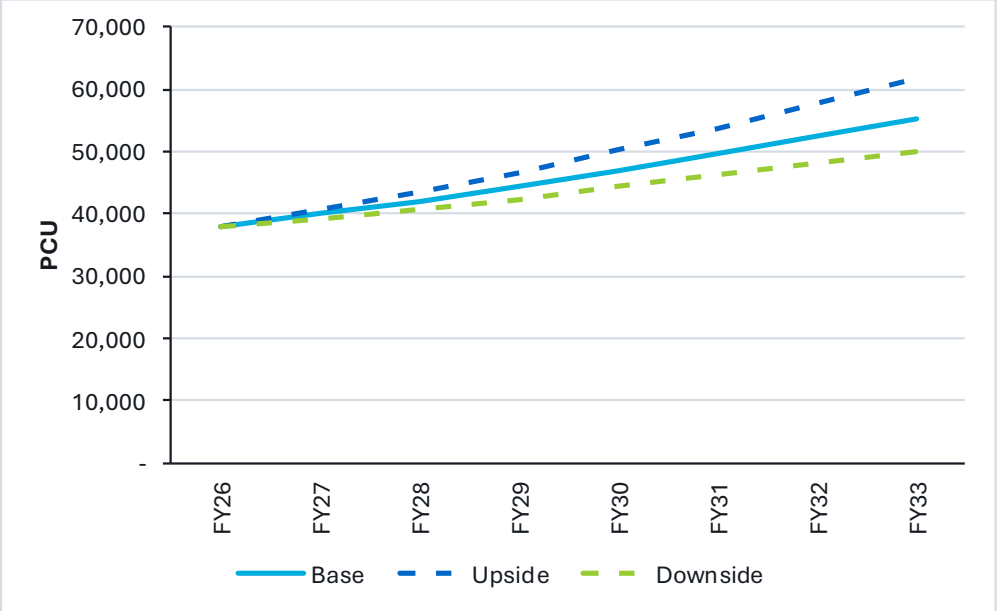
6.33 Table 6.23 below presents the difference between the Upside and Downside Case forecasts relative to the Base Case forecasts in FY33 (i.e., the concession end year) for both Asset toll plazas. The figures below plot the Upside and Downside Case forecasts relative to the Base Case forecasts for each Asset toll plaza over the full concession period (FY26-FY33).

Table 6.23: Percentage Difference Upside and Downside Case Forecasts vs. Base Case Forecasts – FY33

Case	Measure	TP1 Neelamangala	TP2 Karabylu
Upside Case	Traffic (PCU)	11.7%	10.1%
Downside Case		(9.5%)	(8.2%)
Upside Case	Revenue	18.9%	16.9%
Downside Case		(14.8%)	(13.6%)

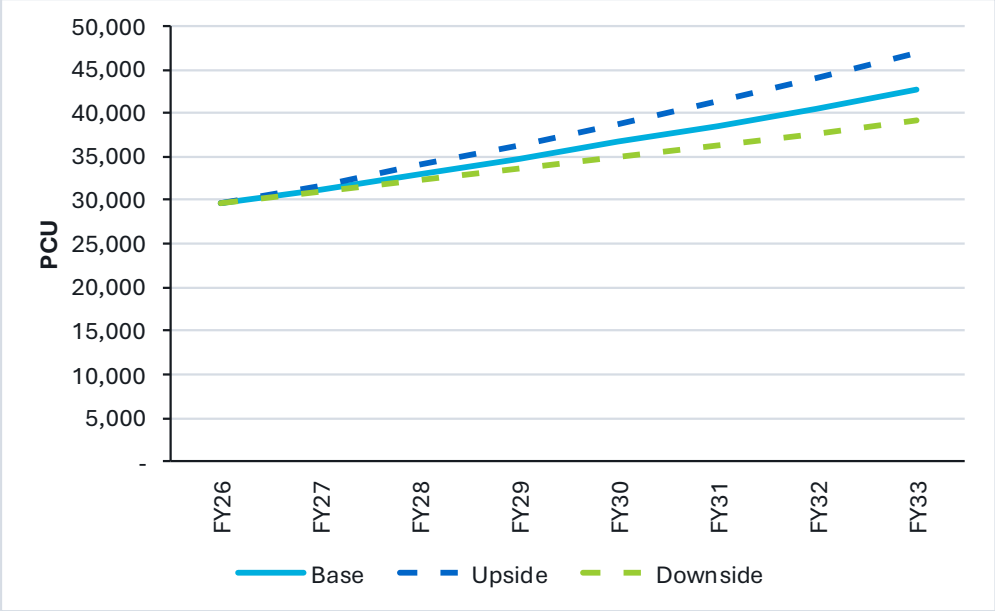
Source: Steer.

Figure 6.4: Long-term PCU forecasts for TP1 Neelamangala including upside and downside scenarios



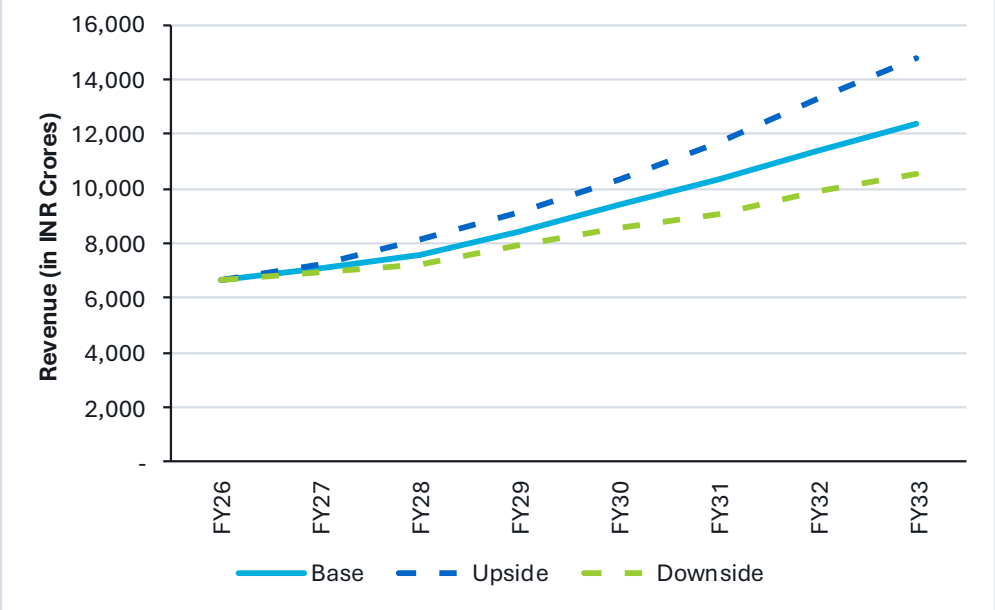
Source: Steer Analysis

Figure 6.5: Long-term PCU forecasts for TP2 Karbylu including upside and downside scenarios



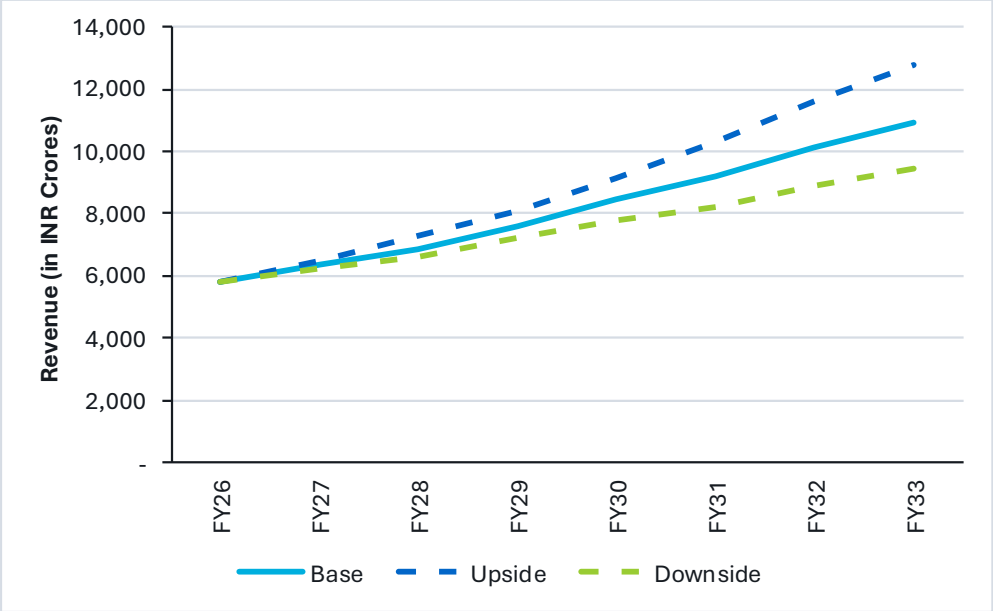
Source: Steer Analysis

Figure 6.6: Long-term revenue forecasts for TP1 Neelamangala including upside and downside scenarios



Source: Steer Analysis

Figure 6.7: Long-term revenue forecasts for TP2 Karbylu including upside and downside scenarios



Source: Steer Analysis

Summary outlook

6.34 The Asset is a part of a well-established east-west corridor (NH75) that connects two major cities in Karnataka (Mangaluru and Bengaluru). In general, the Asset's value to the regional economy, and particularly for passenger traffic is defined by the critical link it provides in connecting Bengaluru city to regional activity centres further west of the city and towards Mangaluru. This includes local and regional movements connecting key urban centres of the Bengaluru Metro region with Mangaluru, Udupi and Hassan.

6.35 The Asset also serves as the key gateway and primary route to reach Mangaluru on the western coast of Karnataka - known for its temples, hills and beaches, and popular visitor sites for tourism, business and leisure travellers. It is also the headquarters of the Dakshin Kannada district, which is home to several prominent temple locations including Shravanabelagola. Thus, statewide growth in both services and tourism are expected to positively influence passenger traffic growth on the Asset.

6.36 Commercial traffic plying the Asset carry consumption-based agro-related commodities in light goods vehicles while bullet tankers carry petroleum-related products. Two bottling plants, BPCL (Solur) and HPCL (Yediyur) located on the Asset, as well as the Mangaluru port/petroleum refinery are key (trip) generators in the Asset's region of influence. Given the commodities being carried on the Asset are essential in nature and largely serve the growing urban consumption demand of the Bengaluru Metro region, we believe future growth in commercial traffic on the Asset will follow from expanding urbanisation trends.

6.37 The upgradation of the Bengaluru airport, development of new enterprises nearby, and Bengaluru's overall economic development have all contributed to traffic growth on the Asset and continues to support our growth outlook for the Asset. Ongoing improvements to the Shiradi Ghat section of the NH75 and plans to construct Gundya-Sakleshpur tunnel

between Hassan and Mangaluru also bode well for the future level of service of the corridor.

6.38 Our positive outlook for the region is driven by historically robust growth in Karnataka's economy (GSDP CAGR of 7.4% per year) between FY12-24 which we believe to sustain going forward. Continued growth in the regional economy, specifically in service-based sectors such as tourism and IT, and goods-production sectors such as petroleum, agriculture, and consumption-based goods is expected to drive long-term growth in both passenger and commercial traffic on the Asset.

Appendices

A Top 10 OD Pairs

A.1 Further to the OD analysis presented in Chapter 3 this appendix presents the top 10 OD pairs at each toll plaza. Please see this data for both CJVs and MAVs and OSVs combined below.

TP1 Doddakarenahalli

Table A.1: CJV and Bus top 10 OD pair shares at TP1 Doddakarenahalli

	OD Pair	Share
1.	Hassan Area-Bengaluru City	12%
2.	Mangaluru City-Bengaluru City	8%
3.	Kunigal Area-Bengaluru City	6%
4.	Soluru City-Bengaluru City	4%
5.	Kunigal Area-Nelamangala Area	3%
6.	Hassan Area-Nelamangala Area	3%
7.	Bengaluru Rural-Bengaluru City	2%
8.	Mandya-Bengaluru City	2%
9.	Mangaluru City-Nelamangala Area	2%
10.	Magadi Area-Bengaluru City	1%

Source: Steer analysis of OD data

Table A.2: 3A and MAV top 10 OD pair shares at TP1 Doddakarenahalli

	OD Pair	Share
1.	Hassan Area-Bengaluru City	9%
2.	Mangaluru City-Bengaluru City	9%
3.	Kunigal Area-Bengaluru City	7%
4.	Soluru City-Bengaluru City	4%
5.	Hassan Area-Nelamangala Area	2%
6.	Soluru City-Nelamangala Area	2%
7.	Kunigal Area-Nelamangala Area	2%
8.	Mangaluru City-Nelamangala Area	2%
9.	Mandya-Bengaluru City	1%
10.	Chikmagalur-Bengaluru City	1%

Source: Steer analysis of OD data

TP2 Karabylu

Table A.3: CJV top 10 OD pair shares at TP2 Karabylu

	OD Pair	Share
1.	Hassan Area-Bangalore City	23%
2.	Mangaluru City-Bangalore City	8%
3.	Belluru Area-Bangalore City	6%
4.	Channarayapattana Area-Bangalore City	3%
5.	Nagamangala Area-Bangalore City	3%
6.	Kunigal Area-Belluru Area	3%
7.	Kunigal Area-Hassan Area	3%
8.	Sakleshpur Area-Bangalore City	3%
9.	Chikmagalur-Bangalore City	2%
10.	Uppinangady Area-Bangalore City	2%

Source: Steer analysis of OD data

Table A.4: MAV and OSV top 10 OD pair shares at TP2 Karabylu

	OD Pair	Share
1.	Mangaluru City-Bangalore City	21%
2.	Mangaluru City-Bangalore City	16%
3.	Belluru Area-Chennai City	5%
4.	Channarayapattana Area-Bangalore City	3%
5.	Nagamangala Area-Bangalore City	3%
6.	Kunigal Area-Bangalore City	2%
7.	Kunigal Area-Hassan Area	2%
8.	Sakleshpur Area-Belluru Area	2%
9.	Chikmagalur-Bangalore City	1%
10.	Uppinangady Area-Bangalore City	1%

B Data collection exercise

B.1 In order to validate and inform various inputs used in our forecasting, we undertook primary data collection on the Asset. OD survey data was collected on behalf of the Client, TVC surveys were commissioned by Steer with a third party. OD data collection typically involves manual data entry by enumerators based on oral surveys with road users crossing toll plazas. TVC data collection involves video-graphic capture of traffic passing crossing the toll plazas, followed by manual counting.

3/7-day TVC counts

Table B.1: TVC counts at TP1

Date	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
01-07-2023	22,326	1,603	2,105	1,621	484	400	606	6	**29,151**
02-07-2023	28,706	1,432	1,566	1,628	352	251	429	8	**34,372**
03-07-2023	15,854	1,546	1,638	1,719	400	320	494	8	**21,979**

Source: Steer analysis of TVC data

Table B.2: TVC counts at TP2

Date	CJV	Mini LCV	LCV	Bus	2 Axle	3 Axle	MAV	OSV	Total
06-03-2026	13,129	1,660	1,590	1,499	577	335	843	-	**19,633**
07-03-2026	19,133	1,595	1,644	1,586	556	321	867	-	**25,702**
08-03-2026	25,250	1,557	1,727	1,754	463	298	863	-	**31,912**

Source: Steer analysis of TVC data

TVC vs TMS comparison

Table B.3: TVC and TMS WADT

Toll Plaza	Source	CJV+ Mini LCV	LCV	Bus	2 Axle	3 Axle+ MAV	OSV	Total
TP1	TVC	23,822	1,770	1,656	412	833	7	**28,501**
	TMS	24,209	1,057	1,463	693	862	-	**28,284**
TP2	TVC	20,775	1,654	1,613	532	1,176	-	**25,749**
	TMS	21,247	968	1,532	794	1,229	-	**25,769**

Source: Steer analysis of TVC data

Zone List

Table B.4: Zone list

Zone No	Zone name	State
1	Rest of India	Andaman & Nicobar Island
2	Rest of North AP	Andhra Pradesh
3	Anantapur	Andhra Pradesh
4	Kuppam Area	Andhra Pradesh
5	Y.s.r.	Andhra Pradesh
6	Rajahmundry City	Andhra Pradesh
7	Guntur	Andhra Pradesh
8	Vijayawada North City	Andhra Pradesh
9	Kurnool	Andhra Pradesh
10	Sri Potti Sriramulu Nellore	Andhra Pradesh
11	Prakasam	Andhra Pradesh
12	West Godavari	Andhra Pradesh
13	Visakhapatnam Port	Andhra Pradesh
14	Rest of Krishna	Andhra Pradesh
15	Rest of Chittoor	Andhra Pradesh
16	North East India	Arunanchal Pradesh
17	Bangladesh	Bangladesh
18	Bhutan	Bhutan
19	East Bihar	Bihar
20	Rest of West Bihar	Bihar
21	Gaya	Bihar
22	Chandigarh	Chandigarh
23	Rest of Chhattisgarh	Chhattisgarh
24	Bailadilla City	Chhattisgarh
25	Bilaspur City	Chhattisgarh
26	Bhilai City	Chhattisgarh
27	Dadara & Nagar Havelli	Dadara & Nagar Havelli
28	Daman & Diu	Daman & Diu
29	Goa	Goa
30	Pipavav Port	Gujarat
31	Rest of Gujarat	Gujarat

Zone No	Zone name	State
32	Jamnagar Port	Gujarat
33	Mundra Port	Gujarat
34	Surat Port	Gujarat
35	Kandla Port	Gujarat
36	Rest of Haryana	Haryana
37	Gurgaon City	Haryana
38	Panipat City	Haryana
39	North India	Himachal Pradesh
40	Bokaro City	Jharkhand
41	Rest of Jharkhand	Jharkhand
42	Hazaribagh City	Jharkhand
43	Jamshedpur City	Jharkhand
44	Bagalkot	Karnataka
45	Soladevanhalli Area	Karnataka
46	Belgaum	Karnataka
47	Bellary City	Karnataka
48	Rest of Bellary	Karnataka
49	Bidar	Karnataka
50	Bijapur	Karnataka
51	Chamrajnagar	Karnataka
52	Chikkaballapura	Karnataka
53	Chikmagalur	Karnataka
54	Chitradurga	Karnataka
55	Mangaluru City	Karnataka
56	Davanagere	Karnataka
57	Dharwad	Karnataka
58	Gadag	Karnataka
59	Gulbarga	Karnataka
60	Sakleshpur Area	Karnataka
61	Haveri	Karnataka
62	Kodagu	Karnataka
63	Kolar	Karnataka
64	Koppal	Karnataka
65	Krishnarajpete Area	Karnataka
66	Rest of Mysore	Karnataka

Zone No	Zone name	State
67	Raichur	Karnataka
68	Sankighatta Area	Karnataka
69	Shimoga	Karnataka
70	Yadavani Area	Karnataka
71	Udupi	Karnataka
72	Uttara Kannada	Karnataka
73	Yadgir	Karnataka
74	Mysore City	Karnataka
75	Pittekoppalu Area	Karnataka
76	Mandya	Karnataka
77	Nelligere Area	Karnataka
78	Karabylu Toll Plaza	Karnataka
79	Kadaballi Area	Karnataka
80	Chunchanahalli Area	Karnataka
81	Doddajataka Area	Karnataka
82	Bairasandra Area	Karnataka
83	Huliyar Area	Karnataka
84	Tumkur	Karnataka
85	Doddamadure Area	Karnataka
86	Hulical Area	Karnataka
87	Channapatna Area	Karnataka
88	Tumakuru Area	Karnataka
89	Bengaluru Rural	Karnataka
90	Magadi Area	Karnataka
91	Lanca Toll Plaza	Karnataka
92	Gudemaranahalli Area	Karnataka
93	Tattekere Area	Karnataka
94	Talekere Area	Karnataka
95	Herur Area	Karnataka
96	Kunigal Area	Karnataka
97	Nagamangala Area	Karnataka
98	Doddaballapura Area	Karnataka
99	Ramanagara	Karnataka
100	Sira Area	Karnataka
101	Tiptur Area	Karnataka

Zone No	Zone name	State
102	Madhugiri Area	Karnataka
103	Chikkanayakanahalli Area	Karnataka
104	Hebburu Area	Karnataka
105	Turuvekere Area	Karnataka
106	Kodinagasandra Area	Karnataka
107	Ungra Dodderi Area	Karnataka
108	Gororu Banavadi Area	Karnataka
109	Soluru City	Karnataka
110	Maruru Kudur Area	Karnataka
111	Kalari Area	Karnataka
112	Sankenapura Area	Karnataka
113	Huliyurdurga Area	Karnataka
114	Chowdanakuppe Area	Karnataka
115	Kannagatta Area	Karnataka
116	Chakenahalli Area	Karnataka
117	Chabbanahalli Area	Karnataka
118	Belluru Area	Karnataka
119	Arakalagud Area	Karnataka
120	Hassan Area	Karnataka
121	Arasikere Area	Karnataka
122	Channarayapattana Area	Karnataka
123	Belur Area	Karnataka
124	Holenarasipur Area	Karnataka
125	Rest of Ramanagara	Karnataka
126	Beechanahalli Area	Karnataka
127	Malavalli Area	Karnataka
128	Maddur Area	Karnataka
129	Bidadi Area	Karnataka
130	Ramanagara Area	Karnataka
131	Srirangapatna Area	Karnataka
132	Mandya Area	Karnataka
133	PaneMangaluru Area	Karnataka
134	Putturu Sulva Area	Karnataka
135	Mudigere Area	Karnataka
136	Uppinangady Area	Karnataka

Zone No	Zone name	State
137	Yadiyuru Area	Karnataka
138	Hoskote Area	Karnataka
139	Devihalli Area	Karnataka
140	Nelamangala Area	Karnataka
141	Rest of Bengaluru West	Karnataka
142	Bengaluru City	Karnataka
143	Rest of Bengaluru South	Karnataka
144	Rest of Bengaluru North	Karnataka
145	Rest of Bengaluru East	Karnataka
146	Hirisava Area	Karnataka
147	Rest of Kerala	Kerala
148	Kochi Port	Kerala
149	Kannur	Kerala
150	Kasaragod	Kerala
151	Kozhikode	Kerala
152	Malappuram	Kerala
153	Palakkad	Kerala
154	Thrissur	Kerala
155	Wayanad	Kerala
156	Rest of West Madhya Pradesh	Madhya Pradesh
157	Rest of East Madhya Pradesh	Madhya Pradesh
158	Rest of Central Madhya Pradesh	Madhya Pradesh
159	Balaghat City	Madhya Pradesh
160	Bhopal	Madhya Pradesh
161	Indore City	Madhya Pradesh
162	NW Maharashtra	Maharashtra
163	Central Maharashtra	Maharashtra
164	Rest of Nagpur Region	Maharashtra
165	Rest of East Maharashtra	Maharashtra
166	SW Maharashtra	Maharashtra
167	Mumbai City	Maharashtra
168	Pune	Maharashtra
169	Nagpur City	Maharashtra
170	Myanmar	Myanmar
171	NCT of Delhi	NCT of Delhi

Zone No	Zone name	State
172	Nepal	Nepal
173	Rest of Odisha	Odisha
174	Rayagada City	Odisha
175	Paradip Port	Odisha
176	Rourkela City	Odisha
177	Pakistan	Pakistan
178	Puducherry	Puducherry
179	Punjab	Punjab
180	Rest of East Rajasthan	Rajasthan
181	Rest of West Rajasthan	Rajasthan
182	Jaipur City	Rajasthan
183	Jodhpur City	Rajasthan
184	Udaipur City	Rajasthan
185	Ariyalur	Tamil Nadu
186	Chennai City	Tamil Nadu
187	Coimbatore City	Tamil Nadu
188	Rest of Coimbatore	Tamil Nadu
189	Cuddalore	Tamil Nadu
190	Dharmapuri	Tamil Nadu
191	Dindigul	Tamil Nadu
192	Erode	Tamil Nadu
193	Kancheepuram	Tamil Nadu
194	Rest of South TN	Tamil Nadu
195	Karur	Tamil Nadu
196	Denkanikottai Area	Tamil Nadu
197	Namakkal	Tamil Nadu
198	Perambalur	Tamil Nadu
199	Pudukkottai	Tamil Nadu
200	Salem	Tamil Nadu
201	Thanjavur	Tamil Nadu
202	The Nilgiris	Tamil Nadu
203	Thiruvallur	Tamil Nadu
204	Thiruvarur	Tamil Nadu
205	Tuticorin Port	Tamil Nadu
206	Tiruchirappalli	Tamil Nadu

Zone No	Zone name	State
207	Tiruppur City	Tamil Nadu
208	Rest of Tiruppur	Tamil Nadu
209	Tiruvannamalai	Tamil Nadu
210	Tirupattur Area	Tamil Nadu
211	Villupuram	Tamil Nadu
212	Nagappattinam	Tamil Nadu
213	Hosur Area	Tamil Nadu
214	Uthangarai Area	Tamil Nadu
215	Shoolagiri Area	Tamil Nadu
216	Krishnagiri Area	Tamil Nadu
217	Ambur Area	Tamil Nadu
218	Vellore Area	Tamil Nadu
219	Rest of Telangana	Telangana
220	Hyderabad City	Telangana
221	Khammam	Telangana
222	Agra City	Uttar Pradesh
223	Agra	Uttar Pradesh
224	Rest of UP	Uttar Pradesh
225	Allahabad	Uttar Pradesh
226	Kanpur Nagar City	Uttar Pradesh
227	Mathura City	Uttar Pradesh
228	Moradabad City	Uttar Pradesh
229	Rest of West Uttar Pradesh	Uttar Pradesh
230	Varanasi City	Uttar Pradesh
231	Rest of Uttarakhand	Uttarakhand
232	Hardwar City	Uttarakhand
233	Rest of West Bengal	West Bengal
234	Kolkata City	West Bengal
235	BCPL Plant Solur	Karnataka
236	Mangaluru Port	Karnataka
237	Hesaraghatta	Karnataka

Direction wise commodity distribution

Table B.5: Commodity distribution (towards Hassan) at TP1

Commodity Category	LCV	2 Axle	3 Axle	MAV
Agriculture	19%	1%	0%	-
Groceries	29%	7%	4%	3%
Construction	1%	8%	25%	6%
Petroleum	2%	25%	14%	7%
Manufacturing	3%	10%	13%	4%
Automobiles	-	-	0%	31%
Miscellaneous	13%	16%	25%	29%
Metals	0%	2%	7%	3%
Empty	33%	31%	12%	17%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer analysis of OD data

Table B.6: Commodity distribution (towards Bengaluru) at TP1

Commodity Category	LCV	2 Axle	3 Axle	MAV
Agriculture	7%	4%	8%	-
Groceries	34%	23%	18%	11%
Construction	1%	10%	22%	17%
Petroleum	9%	28%	21%	16%
Manufacturing	26%	12%	7%	13%
Automobiles	4%	1%	-	12%
Miscellaneous	6%	8%	2%	18%
Metals	-	6%	13%	6%
Empty	14%	8%	7%	6%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer Analysis of OD data

Table B.7: Commodity distribution (towards Hassan) at TP2

Commodity Category	LCV	2A Truck	3A Truck	MAV + OSV
Agriculture	2%	4%	3%	1%
Groceries	22%	21%	14%	9%
Construction	4%	4%	11%	15%
Petroleum	9%	15%	35%	27%
Manufacturing	13%	10%	9%	9%
Automobiles	1%	2%	-	3%
Miscellaneous	15%	20%	6%	7%

Metals	4%	0%	1%	4%
Empty	29%	25%	20%	24%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer analysis of OD data

Table B.8: Commodity distribution (towards Bengaluru) at TP2

Commodity Category	LCV	2A Truck	3A Truck	MAV + OSV
Agriculture	5%	6%	4%	3%
Groceries	30%	18%	17%	12%
Construction	0%	3%	8%	10%
Petroleum	7%	16%	33%	26%
Manufacturing	11%	13%	3%	14%
Automobiles	-	2%	-	1%
Miscellaneous	21%	15%	10%	12%
Metals	-	-	2%	1%
Empty	25%	28%	23%	21%
Total	**100%**	**100%**	**100%**	**100%**

Source: Steer analysis of OD data

Trip length frequency

Table B.9: Trip length frequency at TP1

Distance range	LCV	2A Truck	3A Truck	MAV
0-100 km	25%	29%	29%	21%
100-300 km	39%	38%	36%	37%
300-500 km	22%	21%	21%	24%
500-1000 km	11%	8%	12%	14%
>1000 km	2%	4%	2%	3%

Source: Steer analysis of OD data

Table B.10: Trip length frequency at TP2

Distance range	LCV	2A Truck	3A Truck	MAV
0-100 km	8%	14%	7%	7%
100-300 km	55%	57%	49%	40%
300-500 km	27%	22%	32%	31%
500-1000 km	8%	5%	10%	16%
>1000 km	1%	2%	2%	5%

Source: Steer analysis of OD data

C Detailed Forecasts

C.1 Further to the summary of forecasts presented in Chapter 6, this appendix presents detailed forecasts.

Traffic forecasts

C.2 This section presents the detailed traffic forecasts for the forecast period until FY33. The following two tables show the traffic growth rates and AADT, respectively.

Table C.1: Traffic Forecast (with impacts) over horizon years at TP1 Doddakarenahalli

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY27	23,454	1,941	1,294	1,871	1,097	302	847	**30,806**	**39,985**
FY28	24,977	2,048	1,329	1,923	1,122	299	869	**32,567**	**41,961**
FY29	26,861	2,157	1,365	1,974	1,163	300	906	**34,727**	**44,416**
FY30	28,935	2,267	1,400	2,024	1,205	302	944	**37,078**	**47,061**
FY31	30,938	2,381	1,435	2,075	1,247	304	983	**39,364**	**49,648**
FY32	33,071	2,500	1,471	2,127	1,292	306	1,024	**41,791**	**52,383**
FY33	35,427	2,630	1,509	2,183	1,339	308	1,067	**44,463**	**55,387**

Source: Steer analysis

Table C.2: Forecasts for final (background + impacts) growth rates (%), TP1 Doddakarenahalli

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY27	6.8%	5.7%	2.8%	2.8%	2.3%	(1.0%)	2.7%	**6.0%**	**5.1%**
FY28	6.5%	5.5%	2.8%	2.8%	2.2%	(1.1%)	2.6%	**5.7%**	**4.9%**
FY29	7.5%	5.3%	2.6%	2.6%	3.7%	0.6%	4.3%	**6.6%**	**5.9%**
FY30	7.7%	5.1%	2.6%	2.6%	3.6%	0.6%	4.2%	**6.8%**	**6.0%**
FY31	6.9%	5.0%	2.5%	2.5%	3.5%	0.6%	4.1%	**6.2%**	**5.5%**
FY32	6.9%	5.0%	2.5%	2.5%	3.5%	0.6%	4.1%	**6.2%**	**5.5%**
FY33	7.1%	5.2%	2.6%	2.6%	3.7%	0.6%	4.3%	**6.4%**	**5.7%**

Source: Steer analysis

Table C.3: Traffic Forecast (with impacts) over horizon years at TP2 Karabylu

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY27	17,764	1,449	934	1,536	785	300	842	**23,609**	**31,297**
FY28	19,066	1,519	960	1,578	815	302	879	**25,120**	**33,058**
FY29	20,379	1,590	985	1,620	846	303	917	**26,640**	**34,829**
FY30	21,801	1,661	1,010	1,661	876	305	956	**28,271**	**36,710**
FY31	23,174	1,734	1,036	1,703	907	307	995	**29,856**	**38,549**
FY32	24,626	1,810	1,062	1,746	939	309	1,036	**31,527**	**40,483**
FY33	26,221	1,892	1,089	1,791	973	311	1,081	**33,358**	**42,595**

Source: Steer Analysis

Table C.4: Forecasts for final (background + impacts) growth rates (%), TP2 Karabylu

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total	PCU
FY27	7.6%	5.0%	2.8%	2.8%	3.9%	0.6%	4.5%	**6.6%**	**5.8%**
FY28	7.3%	4.8%	2.8%	2.8%	3.8%	0.6%	4.5%	**6.4%**	**5.6%**
FY29	6.9%	4.6%	2.6%	2.6%	3.7%	0.6%	4.3%	**6.1%**	**5.4%**
FY30	7.0%	4.5%	2.6%	2.6%	3.6%	0.6%	4.2%	**6.1%**	**5.4%**
FY31	6.3%	4.4%	2.5%	2.5%	3.5%	0.6%	4.1%	**5.6%**	**5.0%**
FY32	6.3%	4.4%	2.5%	2.5%	3.5%	0.6%	4.1%	**5.6%**	**5.0%**
FY33	6.5%	4.5%	2.6%	2.6%	3.7%	0.6%	4.3%	**5.8%**	**5.2%**

Source: Steer analysis

Revenue forecasts

C.3 The following table presents the year-wise annual revenue forecasts for the forecast period until FY33.

Table C.5: Forecasts for annual revenue (INR crores), TP1 Doddakarenahalli

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	39.6	3.3	3.4	8.4	5.5	2.9	8.0	**70.9**
FY28	42.6	3.5	3.6	9.0	5.8	2.9	8.5	**75.9**
FY29	48.1	3.8	3.9	9.7	6.3	3.1	9.3	**84.1**
FY30	55.4	4.3	4.2	10.4	6.8	3.2	10.2	**94.5**
FY31	61.0	4.7	4.5	11.1	7.4	3.4	11.1	**103.1**
FY32	68.8	5.1	4.8	11.9	8.0	3.6	12.0	**114.2**
FY33	75.4	5.6	5.1	12.7	8.6	3.8	13.0	**124.2**

Source: Steer analysis

Table C.6: Forecasts for annual revenue (INR crores), TP2 Karabylu

	CJV	Mini LCV	LCV	Bus	2A	3A	MAV	Total
FY27	32.6	2.7	2.8	9.0	4.7	3.2	8.9	**63.8**
FY28	35.3	2.8	3.0	9.6	5.0	3.3	9.6	**68.7**
FY29	39.6	3.1	3.3	10.3	5.5	3.5	10.6	**75.8**
FY30	45.4	3.4	3.5	11.0	5.9	3.7	11.5	**84.5**
FY31	49.7	3.7	3.8	11.9	6.4	3.9	12.6	**91.9**
FY32	55.6	4.1	4.1	12.8	7.0	4.1	13.7	**101.2**
FY33	60.6	4.4	4.3	13.6	7.5	4.2	14.8	**109.4**

Source: Steer analysis

Control Information

Prepared by

Steer
Suite No. S3, Vatika Business Centre,
Vatika Triangle, MG Road,
Gurgaon, Haryana, 122002, India
+91 124 441 8650
www.steergroup.com

Prepared for

Cube Highways Fund Advisors Private Limited
1901, Tower B, 19th Floor, World Trade Tower, Plot No. C - 1,
Sector 16, Noida- 201301 (UP, India)

Steer project/proposal number

Our ref: 23741311

Client contract/project number

Client ref: Transit 11

Author/originator

Vineet Karlapalem

Reviewer/approver

Vaibhav Gupta

Other contributors

Shipra Bhatia, Ayushman Rai, Samridha K, Harshit Garg

Distribution

Client: Steer:

Version control/issue number

Date

April 2026

steergroup.com

steer

ANNEXURE D – AUDITED CONSOLIDATED FINANCIAL STATEMENTS

(*The remainder of this page is intentionally kept blank*)

S. B. Billimoria
& Co. LLP

Chartered Accountants
7th floor, Building 10
Tower B
DLF Cyber City Complex
DLF City Phase II
Gurugram-122 002
Haryana, India

Tel: +91 124 679 2000
Fax: +91 124 679 2012

INDEPENDENT AUDITOR'S REPORT

To the Board of Directors,
Cube Highways Fund Advisors Private Limited (the "Investment Manager")
(Acting in capacity as the Investment Manager of Cube Highways Trust (the "Trust"))
Report on the Audit of the Consolidated Financial Statements

Opinion

We have audited the accompanying consolidated financial statements of Cube Highways Trust (the "Trust") and its subsidiaries, (the Trust and its subsidiaries together referred to as the "Group"), which comprise the Consolidated Balance Sheet as at March 31, 2026, the Consolidated Statement of Profit and Loss (including Other Comprehensive Income), the Consolidated Statement of Cash Flows, the Consolidated Statement of Changes in Unitholders' Equity and the Statement of Net Distributable Cash Flows of the Trust and each of the subsidiaries for the year ended on that date, and notes to the consolidated financial statements, including a summary of the material accounting policies and other explanatory information (together hereinafter referred as the "Consolidated Financial Statements").

In our opinion and to the best of our information and according to the explanations given to us and based on the consideration of reports of other auditors on separate audited financial statements of the subsidiaries referred to in the Other Matters section below, the aforesaid Consolidated Financial Statements are presented in accordance with the requirements of Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014 as amended (the "SEBI InvIT Regulations") and give a true and fair view in conformity with the Indian Accounting Standards, prescribed under section 133 of the Companies Act 2013, as amended and other accounting principles generally accepted in India, to the extent not inconsistent with the SEBI InvIT Regulations, of the consolidated state of affairs of the Group as at March 31, 2026, and its consolidated profit including consolidated other comprehensive income, consolidated cash flows, consolidated changes in unitholders' equity and Statement of Net Distributable Cash Flows of the Trust and of each of the subsidiaries for the year ended March 31, 2026.

Basis for Opinion

We conducted our audit of the Consolidated Financial Statements in accordance with the Standards on Auditing ("SAs"), issued by the Institute of Chartered Accountants of India (the "ICAI"). Our responsibilities under those Standards are further described in the 'Auditor's Responsibility for the Audit of the Consolidated Financial Statements' section of our report. We are independent of the Group in accordance with the Code of Ethics issued by the ICAI together with the ethical requirements that are relevant to our audit of the Consolidated Financial Statements under the provisions of the SEBI InvIT Regulations, and we have fulfilled our other ethical responsibilities in accordance with these requirements and the ICAI's Code of Ethics. We believe that the audit evidence obtained by us and the audit evidence obtained by the other auditors in terms of their reports referred to in Other Matters section below is sufficient and appropriate to provide a basis for our audit opinion on the Consolidated Financial Statements.

Emphasis of Matter

We draw attention to Note 19(a)(v) of the Consolidated Financial Statements, which describes the presentation of "Unit Capital" as "Equity" to comply with the SEBI InvIT Regulations. Our opinion is not modified in respect of this matter.

Key Audit Matter

Key audit matters are those matters that, in our professional judgement, were of most significance in our audit of the Consolidated Financial Statements of the current period. These matters were addressed in the context of our audit of the Consolidated Financial Statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters. We have determined the matters described below to be the key audit matters to be communicated in our report.

Key Audit Matter	Auditor's Response
A) Impairment of Rights under Service Concession arrangement (Intangibles Assets) and Receivables under Service Concession arrangement The Group through its subsidiaries have right to collect toll or annuity under the Service Concession Arrangements (SCA) entered into by respective subsidiaries having net carrying value in amounting to Rs. 271,617.63 million (Net of impairment) as at March 31, 2026. As per the requirement of Ind AS 36 "Impairment of assets", the Management of the Investment Manager regularly reviews whether there are any indicators of impairment of rights under SCA and receivables under SCA, and where impairment indicators exist, the Management of the Investment Manager estimates the recoverable amounts of the assets, basis value in use. The recoverable amount of the aforesaid assets is determined by the Management of the Investment Manager on the basis of valuation report of the independent valuer, using discounted cash flow method which involves significant management judgement in respect of various key assumptions used as inputs such as determination of future cash flows, traffic estimates, assessment of the variation in concession period in certain subsidiaries considered on account of target traffic/ target revenue at the Target date as per the terms of respective SCA subject to approvals from the authorities, discount rates, revenue growth rate, inflation rate and other economic factors. The determination of value in use involve judgement due to inherent high estimation uncertainty in the underlying assumptions. Considering complexity and significant management judgements, impairment assessment of these assets are considered as a key audit matter.	Principal audit procedures performed included the following: • We obtained an understanding of the Group's process to identify indicators of impairment of Rights under Service Concession Arrangement (Intangibles Assets) and Receivables under Service Concession Arrangement, and process for determination of recoverable amounts of these assets on the basis of valuation report of the independent valuer, including involvement of independent valuer and other management experts. • We assessed competence, capability and objectivity of independent valuer and other management experts involved in the process by the Management. • We obtained and read the valuation report of the independent valuer used by the Group to determine the recoverable amounts. • We reviewed the reasonableness of the valuation methodology and assumptions (including those provided by the Management of the Investment Manager) used by the independent valuer in determining the recoverable amounts. • We assessed the reliability of management's cashflow forecast through the review of actual performance against previous forecasts including the considerations due to current economic and market factors. • We assessed the reasonableness of the Management's assessment of the expected variations to the concession period including the matters under

Key Audit Matter	Auditor's Response
Refer Notes 2(III)(d)(10), 2(III)(d)(11) and 2(III)(x) for material accounting policies and Notes 6, 9, 16 and 62 to the Consolidated Financial Statements for the year ended March 31,2026.	arbitration with reference to the terms of the relevant concession agreements, the methodology followed by the Group and the legal advice obtained by the Management in respect of such matters, as applicable. • In performing the above procedures, we involved our internal specialists, who assessed the reasonableness of (i) management's forecast of revenue which mainly included traffic growth, revenue projections based on the independent experts' traffic study reports and inflation factor for assessing user toll fee and (ii) discount rate used in valuation, by challenging underlying assumptions used in such estimates and the methodology to determine the recoverable amounts. • We tested the arithmetical accuracy of the data used in determination of recoverable amounts and also of computation of impairment loss. • We evaluated the appropriateness and adequacy of disclosures made by the Management of the Investment Manager.
B) Computation and disclosures relating to Statement of Net Assets at Fair Value and Statement of Total Returns at Fair Value as per SEBI InvIT Regulations In accordance with the SEBI InvIT Regulations, the Group discloses Statement of Net Assets at Fair Value and Statement of Total Returns at Fair Value, carried out by the independent valuer appointed by the Trust. As at March 31, 2026, fair value of total assets was Rs. 378,024.37 million; out of which fair value of investments in subsidiaries is Rs. 368,417.57 million representing 97.46% of the fair value of total assets. The fair value of investments in subsidiaries is determined by the Management of the Investment Manager on the basis of valuation report of the independent valuer, using discounted cash flow method which involves significant management judgement in respect of various key assumptions used as inputs such as determination of future cash flows, traffic estimates, assessment of the variation in concession period in certain subsidiaries considered on account of target traffic/ target revenue at the Target date as per the terms of respective SCA subject to approvals from the authorities, revenue growth rate, discount rates, inflation rates and other economic factors. The determination of fair value involve judgement due to inherent high estimation uncertainty in the underlying assumptions.	Principal audit procedures performed included the following: • We read the requirements of the SEBI InvIT Regulations for disclosures relating to Statement of Net Assets at Fair Value and Statement of Total Returns at Fair Value. • We obtained understanding of the Trust's process for preparation of Statement of Net Assets at Fair Value and Statement of Total Returns at Fair Value as per the SEBI InvIT Regulations and the assumptions used by the Management of the Investment Manager including involvement of the independent valuer and other management experts. • We assessed competence, capability and objectivity of the independent valuer and other management experts involved in the process by the Management. • We obtained and read the valuation report of the independent valuer used by the Trust to determine fair value. • We reviewed the reasonableness of the valuation methodology and assumptions (including those provided by the Management of the Investment Manager)

Key Audit Matter	Auditor's Response
Considering the importance of disclosure required under the SEBI InvIT Regulations, significant judgement involved in determination of fair values due to inherent uncertainty and complexity of the assumptions used in determination of fair values, this matter is considered as a key audit matter. Refer Note 2(III)(d)(2) for material accounting policy, Notes 57 and 58 for Statement of Net Assets at Fair Value and Statement of Total Returns at Fair Value in the Consolidated Financial Statements for the year ended March 31,2026.	used by the independent valuer in determining the fair valuation. • We assessed the reliability of management's cashflow forecast through the review of actual performance against previous forecasts including the considerations due to current economic and market factors. • We assessed the reasonableness of the Management's assessment of the expected variations to the concession period including the matters under arbitration with reference to the terms of the relevant concession agreements, the methodology followed by the Trust and the legal advice obtained by the Management in respect of such matters, as applicable. • In performing the above procedures, we involved our internal specialists, who assessed the reasonableness of (i) management's forecast of revenue which mainly included traffic growth, revenue projections based on the independent experts' traffic study reports and inflation factor for assessing user toll fee and (ii) discount rate used in valuation, by challenging underlying assumptions used in such estimates and the methodology to determine the fair value. • We tested the arithmetical accuracy of the data used in determination of fair value and also of computation of Net Assets at Fair Value and Total Returns at Fair Value. • We evaluated the appropriateness and adequacy of disclosures made by the Management of the Investment Manager for compliance with the relevant requirements of the SEBI InvIT Regulations.
C) Provision for Periodic Major Maintenance (MM) expenses In accordance with Ind AS 37 "Provisions, contingent liabilities and contingent assets", the Group estimates and provides for contractual obligations as per Service Concession Arrangement (SCA) with National Highways Authority of India ("NHAI")/ State Authorities to restore the infrastructure to a specified level of serviceability at periodic intervals during the SCA period or before it is handed over to NHAI. The Group has Provision for Periodic Major Maintenance (MM) expenses amounting to Rs.8,792.66 million outstanding as at March 31, 2026. The MM expense estimate is based on maintenance strategy/ methodology prepared by the	Principal audit procedures performed included the following: • We assessed the appropriateness of the accounting policy followed by the Group for accounting obligations towards Periodic Major Maintenance (MM) expense with reference to requirements as per the applicable accounting standards. • Obtained an understanding and evaluated the Management process of estimating provision for MM expense including involvement of management experts. • We assessed competence, capability and objectivity of independent experts involved in the process by the Management.

Key Audit Matter	Auditor's Response
management in accordance with the requirements of SCA and after taking into account road survey reports issued by an independent expert. These estimates are further corroborated through purchase orders/ work orders placed or to be placed by the management generally close to the maintenance execution period. The projected MM expense is periodically reviewed and updated for factors such as new information and past experience. As the estimated cost is based on the various assumptions such as current infrastructure (road, pavements, etc.) condition, inflation in material cost, government policies etc., the Management is required to apply judgement over these factors for estimating the provision for MM expenses. Considering the high inherent estimation uncertainty in measurement of Provision for Periodic Major Maintenance expense and amount involved, this matter is considered as a key audit matter. Refer Notes 2(III)(d)(6) and 2(III)(y) for material accounting policy and Notes 23, 29 and 48 (a) to the Consolidated Financial Statements for the year ended March 31,2026.	• We evaluated reasonableness of the method, assumptions and judgements used by the management. It included evaluation of: a) Subsidiaries' contractual obligation to restore infrastructure at specified level of serviceability as per the respective SCA. Corroborating the quantities from the bill of quantity as per technical report issued by the independent expert prepared based on MM strategy using the road survey reports issued by the field expert. b) Current prevailing or forecasted rates of materials and services, and inflation adjustments thereupon. c) Discount rate used for determining the present value of the projected MM expenditure. d) Appropriateness of above inputs used in estimation of MM expenses by comparing them with the previous completed MM cycle. • We have tested the arithmetical accuracy, where required, involved in the above estimation. • We assessed and validated the adequacy and appropriateness of the disclosures made by the Management of the Investment Manager in the Consolidated Financial Statements.

Responsibilities of the Management and Board of Directors of the Investment Manager for the Consolidated Financial Statements

The Board of Directors of the Investment Manager (the "Board") is responsible for the preparation of these Consolidated Financial Statements that give a true and fair view of the consolidated financial position of the Group as at March 31, 2026, consolidated financial performance including other comprehensive income, consolidated cash flows, consolidated changes in unitholder's equity, net distributable cash flows of the Trust and each of the subsidiaries for the year ended March 31, 2026, and other financial information of the Group in accordance with the SEBI InvIT Regulations, including the Indian Accounting Standards specified under section 133 of the Companies Act 2013, as amended, and other accounting principles generally accepted in India, to the extent not inconsistent with the SEBI InvIT Regulations.

The Board and the respective Board of Directors of the subsidiaries included in the Group are responsible for maintenance of adequate accounting records in accordance with the provisions of the Companies Act, 2013, as applicable, for safeguarding the assets of the Group and for preventing and detecting frauds and other irregularities; selection and application of appropriate accounting policies; making judgments and estimates that are reasonable and prudent; and the design, implementation and maintenance of adequate internal controls, that were operating effectively for ensuring the accuracy and completeness of the accounting records, relevant to the preparation and presentation of the Consolidated Financial Statements that give a true and fair view and are free

from material misstatement, whether due to fraud or error which have been used for the purpose of preparation of the Consolidated Financial Statements by the Board, as aforesaid.

In preparing the Consolidated Financial Statements, the respective Management, the Board and the respective Board of Directors of the subsidiaries included in the Group are responsible for assessing the ability of the Trust and respective entities to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless the Board and the respective Board of Directors of the subsidiaries included in the Group either intend to liquidate their respective entities or to cease operations, or has no realistic alternative but to do so.

The Board and the respective Board of Directors of the subsidiaries included in the Group are also responsible for overseeing the financial reporting process of the Group.

Auditor's Responsibility for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the Consolidated Financial Statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with SAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these Consolidated Financial Statements.

As part of an audit in accordance with SAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the Consolidated Financial Statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal controls relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of such internal controls.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by the Board.

- Conclude on the appropriateness of the Board's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the ability of the Group to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the Consolidated Financial Statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the Consolidated Financial Statements, including the disclosures, and whether the Consolidated Financial Statements represent the underlying transactions and events in a manner that achieves fair presentation.

- Obtain sufficient appropriate audit evidence regarding the financial information of the entities within the Group to express an opinion on the Consolidated Financial Statements. We are responsible for the direction, supervision and performance of the audit of financial information of such entities included in the Consolidated Financial Statements of which we are the independent auditors. For the other entities included in the Consolidated Financial Statements, which have been audited by the other auditors, such other auditors remain responsible for the direction, supervision and performance of the audits carried out by them. We remain solely responsible for our audit opinion.

Materiality is the magnitude of misstatements in the Consolidated Financial Statements that, individually or in aggregate, makes it probable that the economic decisions of a reasonably knowledgeable user of the Consolidated Financial Statements may be influenced. We consider quantitative materiality and qualitative factors in (i) planning the scope of our audit work and in evaluating the results of our work; and (ii) to evaluate the effect of any identified misstatements in the Consolidated Financial Statements.

We communicate with those charged with governance of the Trust and such other entities included in the Consolidated Financial Statements of which we are the independent auditors regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the Consolidated Financial Statements of the current period and are therefore key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such communication.

We have performed procedures in accordance with regulation 13(2)(e) of the SEBI InvIT Regulations, as amended, to the extent applicable.

Other Matters

a). The Consolidated Financial Statements include audited financial statements of 4 subsidiaries, whose financial statements reflect total assets of Rs. 47,969.98 million as at March 31, 2026, total revenues of Rs.7,769.92 million, and net cash outflows amounting to Rs.4,895.58 million, for the year ended on that date, as considered in the Consolidated Financial Statements, which have been audited by their respective other auditors. These other auditor's report on the financial statements of these entities have been furnished to us by the Management and our opinion on the Consolidated Financial Statements, in so far as it relates to the amounts and disclosures included in respect of these entities, and our report in terms of the SEBI InvIT Regulations, in so far as it relates to the these entities is based solely on the reports of such auditors and the procedures performed by us as stated above.

b). The Trust had prepared a separate set of annual consolidated financial statements as at and for the year ended March 31, 2026, in accordance with the requirements of Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014 as amended (the SEBI InvIT Regulations) and in conformity with the Indian Accounting Standards prescribed under section 133 of the Companies Act 2013, as amended and other accounting principles generally accepted in India, to the extent not inconsistent with the SEBI InvIT Regulations. These consolidated financial statements were approved by the Board of Directors of Investment

Manager in their meeting held on May 22, 2026 on which we had issued audit report dated May 22, 2026 which expressed an unmodified opinion.

c). The comparative Consolidated Financial Statements as at and for the years ended March 31, 2025 and 2024 were approved by the Board of Directors of the Investment Manager in their meeting held on May 28, 2025 and May 22, 2024 on which we had issued audit reports dated May 28, 2025 and May 22, 2024 respectively which expressed an unmodified opinion on those Consolidated Financial Statements for the respective years. The Management of Investment Manager has made additional disclosures and changes to presentation (to the extent applicable) in such comparative consolidated financial information to comply with the SEBI Master Circular SEBI/HO/DDHS-PoD2/P/CIR/2025/102 dated July 11, 2025 (Refer note 2(I) of the Consolidated Financial Statements), which have been audited by us and in so far it relates to the disclosure and changes to presentation for the entities audited by other auditors and referred below, our reporting is solely based on the reports of such other auditors.

The audit reports on the consolidated financial statements for the respective years were unmodified and includes following explanatory paragraphs:

i) As at and for the year ended March 31, 2025

1) Emphasis of Matter Paragraph:

We draw attention to Note 20 (v) of the consolidated financial statements, which describes the presentation of "Unit Capital" as "Equity" to comply with the SEBI InvIT Regulations. Our opinion is not modified in respect of this matter.

Note 20(v) as described above is reproduced as Note 19(a)(v) of the accompanying Consolidated Financial Statements.

2) Other Matter Paragraph:

We did not audit the standalone financial statements of 2 subsidiaries, whose financial information reflect total assets of Rs. 19,837.90 million as at March 31, 2025, total revenues of Rs. 1,983.96 million, total comprehensive income of Rs. 14.40 million and net cash inflows amounting to Rs. 784.99 million for the year ended on that date, as considered in the consolidated financial statements. These financial have been audited by other auditors whose reports have been furnished to us by the Investment Manager and our opinion and conclusion on the consolidated financial information, in so far as it relates to the amounts and disclosures included in respect of these subsidiaries are based solely on the reports of the other auditors. Our opinion on the consolidated financial statements above and our report on Other Legal and Regulatory Requirements below, is not modified in respect of the above matters with respect to our reliance on the work done and the reports of the other auditors.

ii) As at and for the year ended March 31, 2024

1) Emphasis of Matter Paragraph:
We draw attention to Note 20 of the consolidated financial statements, which describes the presentation of "Unit Capital" as "Equity" to comply with the SEBI InvIT Regulations. Our opinion is not modified in respect of this matter.

Note 20 as described above is reproduced as Note 19(a)(v) of the accompanying Consolidated Financial Statements.

2) Other Matter Paragraph:
We did not audit the standalone financial statements of 2 subsidiaries, whose financial information reflect total assets of Rs. 26,795.34 million as at March 31, 2024, total revenues of Rs. 7,338.73 million, total comprehensive loss of Rs. 344.19 million and net cash inflows amounting to Rs. 1,928.51 million for the year ended on that date, as considered in the

consolidated financial statements. These financial have been audited by other auditors whose reports have been furnished to us by the Investment Manager and our opinion and conclusion on the consolidated financial information, in so far as it relates to the amounts and disclosures included in respect of these subsidiaries are based solely on the reports of the other auditors. Our opinion on the consolidated financial statements above and our report on Other Legal and Regulatory Requirements below, is not modified in respect of the above matters with respect to our reliance on the work done and the reports of the other auditors.

Our opinion on the Consolidated Financial Statements and our report on Other Legal and Regulatory Requirements below, is not modified in respect of the above matters.

Report on Other Legal and Regulatory Requirements

As required by the SEBI InvIT Regulations, based on our audit and on the consideration of report of other auditors on the financial statements mentioned in "Other Matters" section above, we report that:

a) We have sought and obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purpose of our audit.

b) The Consolidated Balance Sheet, the Consolidated Statement of Profit and Loss (including Other Comprehensive Income) are in agreement with the books of account of the Trust.

c) In our opinion, the aforesaid Consolidated Financial Statements comply with the SEBI InvIT Regulations, Indian Accounting Standards prescribed under section 133 of the Companies Act 2013, as amended and other accounting principles generally accepted in India, to the extent not inconsistent with the SEBI InvIT Regulations.

d) In our opinion and to the best of our information and according to the explanations given to us, the Consolidated Statement of Net Assets at Fair Value as at March 31, 2026 and Consolidated Statement of Total Returns at Fair Value for the year ended March 31, 2026 have been prepared in accordance with the requirements of the SEBI InvIT Regulations.

For **S.B. Billimoria & Co. LLP**
Chartered Accountants
(Firm's Registration No. 101496W/W100774)

Pramod Baijnath Shukla
Digitally signed by Pramod Baijnath Shukla
Date: 2026.07.02 20:06:32 +05'30'

Pramod B. Shukla
(Partner)
(Membership No. 104337)
UDIN: 26104337SCEISD5541

Place : Mumbai
Date : July 02, 2026

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/22-23/0022
Consolidated Balance Sheet as at March 31, 2026
(All amounts in Rs. million unless otherwise stated)

Particulars	Notes	As at March 31, 2026 (Audited)	As at March 31, 2025 (Audited)	As at March 31, 2024 (Audited)
ASSETS				
Non-current assets				
Property, plant and equipment	3	451.72	412.91	250.89
Capital work-in-progress	4	70.22	3.86	14.10
Investment properties	5	7.93	6.73	6.80
Intangible assets	6	2,32,907.32	2,44,382.18	2,21,160.26
Intangible assets under development	7	36.46	222.55	1,126.94
Financial assets:				
Investments	8	0.01	0.01	0.01
Other financial assets	9	23,771.81	7,465.08	18.88
Deferred tax assets (net)	24B	455.88	643.79	243.23
Current tax assets (net)	10A	1,683.37	1,009.01	541.94
Other non-current assets	11	793.09	146.13	120.18
Total non-current assets		**2,60,177.81**	**2,54,292.25**	**2,23,483.23**
Current assets				
Inventories	12	404.01	346.54	223.64
Financial assets:				
Investments	12A	5,000.98	-	13,527.76
Trade receivables	13	2,205.27	1,636.71	600.79
Cash and cash equivalents	14	5,190.21	8,467.08	2,416.84
Bank balances other than cash and cash equivalents	15	2,948.86	6,091.68	3,593.98
Other financial assets	16	16,747.63	7,936.75	1,808.76
Current tax assets (net)	10A	7.23	0.02	-
Other current assets	17	1,299.04	1,230.52	602.42
Total current assets		**33,803.23**	**25,709.30**	**22,774.19**
Assets held for sale	18	3.66	-	0.10
Total assets		**2,93,984.70**	**2,80,001.55**	**2,46,257.52**
EQUITY AND LIABILITIES				
EQUITY				
Unit Capital	19	1,34,396.03	1,37,183.89	1,44,773.67
Other equity	20A	(23,990.35)	(15,969.77)	(15,284.29)
Distribution-Repayment of Capital	20B	(12,578.80)	(6,840.23)	-
Total equity attributable to unitholders		**97,826.88**	**1,14,373.89**	**1,29,489.38**
Equity attributable to Non-controlling interests	20C	2.30	0.66	0.53
Total equity		**97,829.18**	**1,14,374.55**	**1,29,489.91**
LIABILITIES				
Non-current liabilities				
Financial liabilities:				
Borrowings	21	1,71,353.74	1,46,296.27	1,02,630.24
Other financial liabilities	22	2.11	114.17	185.09
Provisions	23	6,419.87	4,390.01	2,338.04
Deferred tax liabilities (net)	24A	3,920.08	2,289.14	311.81
Total non-current liabilities		**1,81,695.80**	**1,53,089.59**	**1,05,465.18**
Current liabilities				
Financial liabilities:				
Borrowings	25	5,293.39	4,850.58	4,722.49
Trade payables	26			
- total outstanding dues of micro enterprises and small enterprises		1,341.05	937.36	273.52
- total outstanding dues of creditors other than micro enterprises and small enterprises		1,661.24	1,290.25	1,372.02
Other financial liabilities	27	1,669.08	1,536.54	1,407.31
Other current liabilities	28	292.96	283.74	214.69
Provisions	29	4,202.00	3,638.94	3,312.38
Current tax liabilities (net)	10B	-	-	0.02
Total current liabilities		**14,459.72**	**12,537.41**	**11,302.43**
Total liabilities		**1,96,155.52**	**1,65,627.00**	**1,16,767.61**
Total equity and liabilities		**2,93,984.70**	**2,80,001.55**	**2,46,257.52**

The above Consolidated Balance Sheet should be read in conjunction with the accompanying notes 1 to 74

As per our report of even date attached

For S.B. Billimoria & Co. LLP
Chartered Accountants

Pramod Baijnath Shukla
Digitally signed by Pramod Baijnath Shukla
Date: 2026.07.02 20:05:47 +05'30'

Pramod B. Shukla
Partner
Place: Mumbai
Date: July 02, 2026

For and on behalf of the Board of Directors of
Cube Highways Fund Advisors Private Limited
(in its capacity as the Investment Manager of Cube Highways Trust)

UPENDRA KUMAR SINHA
Digitally signed by UPENDRA KUMAR SINHA
Date: 2026.07.02 19:06:38 +05'30'

Upendra Kumar Sinha
Chairman
DIN: 00010336
Place: New Delhi
Date: July 02, 2026

VINAY C SEKAR
Digitally signed by VINAY C SEKAR
Date: 2026.07.02 19:08:22 +05'30'

Vinay Chandramouli Sekar
Chief Executive Officer

Place: Gurugram
Date: July 02, 2026

PANKAJ VASANI
Digitally signed by PANKAJ VASANI
Date: 2026.07.02 19:10:11 +05'30'

Pankaj Vasani
Chief Financial Officer

Place: Noida
Date: July 02, 2026

Richa Gupta Rohatgi
Digitally signed by Richa Gupta Rohatgi
Date: 2026.07.02 19:12:10 +05'30'

Richa Gupta Rohatgi
Compliance Officer & CS
MRN: A24446
Place: Noida
Date: July 02, 2026

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/22-23/0022
Consolidated Statement of Profit and Loss for the year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

Particulars	Notes	For the year ended March 31, 2026 (Audited)	For the year ended March 31, 2025 (Audited)	For the year ended March 31, 2024 (Audited)
Income				
Revenue from operations	30	42,388.85	33,071.44	29,161.37
Other income	31	1,201.41	1,460.08	1,579.68
Total income		**43,590.26**	**34,531.52**	**30,741.05**
Expenses				
Cost of construction	32	172.65	634.14	4,025.77
Operation and maintenance expenses	33	8,786.92	7,554.62	5,046.42
Employee benefits expense	34	721.45	514.68	429.66
Finance costs	36	14,653.82	11,171.01	8,731.29
Depreciation and amortisation expense	37	14,444.75	13,129.12	11,825.72
Impairment charge/(reversal) of Intangible Assets	62	(1,421.00)	-	5,871.87
Other expenses	35	2,984.80	2,031.08	1,678.77
Total expenses		**40,343.39**	**35,034.65**	**37,609.50**
Profit/(loss) before tax		**3,246.87**	**(503.13)**	**(6,868.45)**
Less: Tax expense/(income)	39			
Current tax		488.65	367.11	287.41
Tax for earlier years		4.58	18.54	5.40
Deferred tax		586.49	(531.58)	(102.11)
Total tax expense/(income)		**1,079.72**	**(145.93)**	**190.70**
Profit/(loss) after tax for the year		**2,167.15**	**(357.20)**	**(7,059.15)**
Other comprehensive income				
Items that will not be reclassified to profit or loss				
Re-measurement (losses)/gains on defined benefit obligations		1.37	0.70	0.35
Income tax relating to these items		(0.17)	(0.15)	0.10
Total other comprehensive income for the year		**1.20**	**0.55**	**0.45**
Total comprehensive income/(loss) for the year		**2,168.35**	**(356.65)**	**(7,058.70)**
Profit/(loss) for the year				
Attributable to:				
Unitholders		2,165.51	(357.33)	(7,059.22)
Non-controlling interests		1.64	0.13	0.07
Total comprehensive income/(loss) for the year				
Attributable to:				
Unitholders		2,166.71	(356.78)	(7,058.77)
Non-controlling interests		1.64	0.13	0.07
Earnings per unit (Face value Rs. 100/- (absolute amount) per unit)	38			
Basic (Rs. absolute amount)		1.61	(0.27)	(5.72)
Diluted (Rs. absolute amount)		1.61	(0.27)	(5.72)

The above Consolidated Statement of Profit and Loss should be read in conjunction with the accompanying notes 1 to 74
As per our report of even date attached

For S.B. Billimoria & Co. LLP
Chartered Accountants

Pramod Baijnath Shukla
Digitally signed by Pramod Baijnath Shukla
Date: 2026.07.02 20:05:23 +05'30'

Pramod B. Shukla
Partner
Place: Mumbai
Date: July 02, 2026

For and on behalf of the Board of Directors of
Cube Highways Fund Advisors Private Limited
(in its capacity as the Investment Manager of Cube Highways Trust)

UPENDRA KUMAR SINHA
Digitally signed by UPENDRA KUMAR SINHA
Date: 2026.07.02 19:06:48 +05'30'

Upendra Kumar Sinha
Chairman
DIN: 00010336
Place: New Delhi
Date: July 02, 2026

VINAY C SEKAR
Digitally signed by VINAY C SEKAR
Date: 2026.07.02 19:08:33 +05'30'

Vinay Chandramouli Sekar
Chief Executive Officer

Place: Gurugram
Date: July 02, 2026

PANKAJ VASANI
Digitally signed by PANKAJ VASANI
Date: 2026.07.02 19:10:25 +05'30'

Pankaj Vasani
Chief Financial Officer

Place: Noida
Date: July 02, 2026

Richa Gupta Rohatgi
Digitally signed by Richa Gupta Rohatgi
Date: 2026.07.02 19:12:24 +05'30'

Richa Gupta Rohatgi
Compliance Officer & CS
MRN: A24446
Place: Noida
Date: July 02, 2026

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/22-23/0022
Consolidated Statement of Changes in Unit Holder's Equity for the year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

A Unit Capital

i) Ordinary unit capital

Particulars	Unit in Nos.	Amount
Balance as at April 01, 2025	1,33,44,48,362	1,33,433.89
Add: Units issued during the year	-	-
Add:Subordinate units reclassified to Ordinary units during the year (Refer note 65)	96,21,400	962.14
Balance as at March 31, 2026	**1,34,40,69,762**	**1,34,396.03**
Balance as at April 01, 2024	1,29,03,46,112	1,29,023.67
Add: Units issued during the year	-	-
Add: Subordinate units reclassified to Ordinary units during the year (Refer note 64)	4,41,02,250	4,410.22
Balance as at March 31, 2025	**1,33,44,48,362**	**1,33,433.89**
Balance as at April 01, 2023	-	-
Add: Units issued during the year (Refer note 19)	1,29,03,46,112	1,29,034.61
Less: Issue expenses	-	(10.94)
Balance as at March 31, 2024	**1,29,03,46,112**	**1,29,023.67**

ii) Subordinate unit capital

Particulars	Unit in Nos.	Amount
Balance as at April 01, 2025	3,75,00,000	3,750.00
Add: Units issued during the year	-	-
Less:Subordinate units reclassified to Ordinary units during the year (Refer note 65)	(96,21,400)	(962.14)
Less:Subordinate units extinguished during the year (Refer note 65)	(2,78,78,600)	(2,787.86)
Balance as at March 31, 2026	**-**	**-**
Balance as at April 01, 2024	15,75,00,000	15,750.00
Add: Units issued during the year	-	-
Less:Subordinate units reclassified to Ordinary units during the year (Refer note 64)	(4,41,02,250)	(4,410.22)
Less:Subordinate units extinguished during the year (Refer note 64)	(7,58,97,750)	(7,589.78)
Balance as at March 31, 2025	**3,75,00,000**	**3,750.00**
Balance as at April 01, 2023	-	-
Add: Units issued during the year (Refer note 19)	15,75,00,000	15,750.00
Less: Issue expenses	-	-
Balance as at March 31, 2024	**15,75,00,000**	**15,750.00**

iii)	**Total Unit Capital as at March 31, 2026 (i+ii)**	**1,34,396.03**
	Total Unit Capital as at March 31, 2025 (i+ii)	**1,37,183.89**
	Total Unit Capital as at March 31, 2024 (i+ii)	**1,44,773.67**

B Other equity

Particulars	Capital reserve	Retained earnings	Total attributable to Unitholders of the Trust	Attributable to Non-Controlling Interest	Total
Balance as at April 01, 2025	**7,589.78**	**(23,559.55)**	**(15,969.77)**	**0.66**	**(15,969.11)**
Subordinate units extinguished during the year	2,787.86	-	**2,787.86**	-	**2,787.86**
Profit for the year	-	2,165.51	**2,165.51**	1.64	**2,167.15**
Other comprehensive income:					
Re-measurement gain on defined benefit obligations (net of income tax) for the year	-	1.20	**1.20**	-	**1.20**
Total comprehensive income for the year	**-**	**2,166.71**	**2,166.71**	**1.64**	**2,168.35**
Distribution during the quarter ended June 30, 2025	-	(3,055.89)	(3,055.89)	-	**(3,055.89)**
Distribution during the quarter ended September 30, 2025	-	(1,787.64)	(1,787.64)	-	**(1,787.64)**
Distribution during the quarter ended December 31, 2025	-	(4,408.55)	(4,408.55)	-	**(4,408.55)**
Distribution during the quarter ended March 31, 2026	-	(3,723.07)	(3,723.07)	-	**(3,723.07)**
Balance as at March 31, 2026	**10,377.64**	**(34,367.99)**	**(23,990.35)**	**2.30**	**(23,988.05)**

Particulars	Capital reserve	Retained earnings	Total attributable to Unitholders of the Trust	Attributable to Non-Controlling Interest	Total
Balance as at April 01, 2024	**-**	**(15,284.29)**	**(15,284.29)**	**0.53**	**(15,283.76)**
Subordinate units extinguished during the year	7,589.78	**-**	**7,589.78**	**-**	**7,589.78**
Loss for the year	**-**	(357.33)	**(357.33)**	0.13	**(357.20)**
Other comprehensive income:					**-**
Re-measurement gain on defined benefit obligations (net of income tax) for the year	**-**	0.55	**0.55**	-	**0.55**
Total comprehensive loss for the year	**-**	**(356.78)**	**(356.78)**	**0.13**	**(356.65)**
Distribution during the quarter ended June 30, 2024	-	(2,580.69)	(2,580.69)	-	**(2,580.69)**
Distribution during the quarter ended September 30, 2024	-	(1,694.75)	(1,694.75)	-	**(1,694.75)**
Distribution during the quarter ended December 31, 2024	-	(1,721.44)	(1,721.44)	-	**(1,721.44)**
Distribution during the quarter ended March 31, 2025	-	(1,921.60)	(1,921.60)	-	**(1,921.60)**
Balance as at March 31, 2025	**7,589.78**	**(23,559.55)**	**(15,969.77)**	**0.66**	**(15,969.11)**

Particulars	Capital reserve	Retained earnings	Total attributable to Unitholders of the Trust	Attributable to Non-Controlling Interest	Total
Balance as at April 01, 2023	**-**	**(289.96)**	**(289.96)**	**-**	**(289.96)**
Additions on account of acquisition (Refer note 50)	-	-	-	0.46	**0.46**
Loss for the year	-	(7,059.15)	(7,059.15)	0.07	**(7,059.08)**
Other comprehensive income:					
Re-measurement loss on defined benefit obligations (net of income tax) for the year	-	0.45	0.45	-	**0.45**
Total comprehensive loss for the year	**-**	**(7,058.70)**	**(7,058.70)**	**0.53**	**(7,058.17)**
Distribution during the quarter ended June 30, 2023	-	-	-	-	**-**
Distribution during the quarter ended September 30, 2023		(2,774.25)	(2,774.25)	-	**(2,774.25)**
Distribution during the quarter ended December 31, 2023		(2,580.69)	(2,580.69)	-	**(2,580.69)**
Distribution during the quarter ended March 31, 2024		(2,580.69)	(2,580.69)	-	**(2,580.69)**
Balance as at March 31, 2024	**-**	**(15,284.29)**	**(15,284.29)**	**0.53**	**(15,283.76)**

This space has been intentionally left blank

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/22-23/0022
Consolidated Statement of Changes in Unit Holder's Equity for the year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

C Distribution-Repayment of Capital [(ii)]

Particulars	Total
Balance as at April 01, 2025	**(6,840.23)**
Distribution during the quarter ended June 30, 2025	(1,948.29)
Distribution during the quarter ended September 30, 2025	(1,572.56)
Distribution during the quarter ended December 31, 2025	(430.10)
Distribution during the quarter ended March 31, 2026	(1,787.62)
Balance as at March 31, 2026	**(12,578.80)**
Balance as at April 01, 2024	-
Distribution during the quarter ended June 30, 2024	(2,503.27)
Distribution during the quarter ended September 30, 2024	(974.15)
Distribution during the quarter ended December 31, 2024	(947.46)
Distribution during the quarter ended March 31, 2025	(2,415.35)
Balance as at March 31, 2025	**(6,840.23)**
Balance as at April 01, 2023	-
Distribution during the year	-
Balance as at March 31, 2024	**-**

Notes:

(i) The distributions made by the Trust to its unitholders are based on the Net Distributable Cash Flows (NDCFs) of the Trust under the InvIT Regulations. Refer Note 63 for distribution made during the respective periods.

(ii) The Trust had reduced the Retained Earnings (under Other Equity) for the amount of NDCF in the nature of repayment of capital in past periods. In terms of Clause 4.2.8(b) of the SEBI Master Circular SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025, the Trust is required to regroup the figures for Retained Earnings (under Other Equity) for prior periods presented in the Consolidated Financial Statements and to disclose the same as a separate line item on the face of Consolidated Balance Sheet. Accordingly the Trust has regrouped Rs. 6,840.23 million as at March 31, 2025 from Retained earnings to Distribution-Repayment of Capital.

The above Consolidated Statement of Changes in Unit Holder's Equity should be read in conjunction with the accompanying notes 1 to 74

As per our report of even date attached

For S.B. Billimoria & Co. LLP
Chartered Accountants

Pramod Baijnath Shukla
Digitally signed by Pramod Baijnath Shukla
Date: 2026.07.02 20:05:01 +05'30'

Pramod B. Shukla
Partner
Place: Mumbai
Date: July 02, 2026

For and on behalf of the Board of Directors of
Cube Highways Fund Advisors Private Limited
(in its capacity as the Investment Manager of Cube Highways Trust)

UPENDRA KUMAR SINHA
Digitally signed by UPENDRA KUMAR SINHA
Date: 2026.07.02 19:06:55 +05'30'

Upendra Kumar Sinha
Chairman
DIN: 00010336
Place: New Delhi
Date: July 02, 2026

VINAY C SEKAR
Digitally signed by VINAY C SEKAR
Date: 2026.07.02 19:08:43 +05'30'

Vinay Chandramouli Sekar
Chief Executive Officer

Place: Gurugram
Date: July 02, 2026

PANKAJ VASANI
Digitally signed by PANKAJ VASANI
Date: 2026.07.02 19:10:35 +05'30'

Pankaj Vasani
Chief Financial Officer

Place: Noida
Date: July 02, 2026

Richa Gupta Rohatgi
Digitally signed by Richa Gupta Rohatgi
Date: 2026.07.02 19:12:35 +05'30'

Richa Gupta Rohatgi
Compliance Officer & CS
MRN: A24446
Place: Noida
Date: July 02, 2026

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/22-23/0022
Consolidated Statement of Cash Flows for the year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

	For the year ended March 31, 2026 (Audited)	For the year ended March 31, 2025 (Audited)	For the year ended March 31, 2024 (Audited)
A. Cash flows from operating activities			
Profit/ (Loss) before tax	**3,246.87**	**(503.13)**	(6,868.45)
Adjustments for:			
Extinguishment of financial liability related contingent consideration	(24.14)	-	
Depreciation and amortisation expense	14,444.75	13,129.12	11,825.72
Loss on remeasurement of Contingent Consideration	23.76	-	-
Loss/(profit) on sale/write-off of property, plant and equipment (net)	(0.93)	0.62	1.91
Net gain on sale of mutual funds	(389.64)	(771.34)	(719.07)
Net gain on investments measured at fair value through profit or loss	(46.63)	-	(296.31)
Liabilities no longer required written back	(76.11)	(76.53)	(79.00)
Interest income	(444.25)	(403.34)	(435.04)
Interest on income tax refund	(29.18)	(30.99)	(8.28)
Impairment charge/(reversal) of Intangible Assets	(1,421.00)	-	5,871.87
Impairment loss allowance on financial assets (including write-off)	93.67	27.47	59.74
Other assets written off	1.62	-	
Allowance for doubtful advances	-	12.31	-
Finance costs	14,653.82	11,171.01	8,731.29
Operating cash flows before working capital changes and other adjustments	**30,032.61**	**22,555.20**	**18,084.38**
Working capital changes and other adjustments:			
Increase in inventories	(57.47)	(61.88)	(64.03)
Decrease/(Increase) in trade receivables	(634.25)	542.58	151.16
Decrease/(Increase) in financial assets and non financial assets	6,643.40	4,363.99	1,605.42
(Decrease)/Increase in trade payables	707.46	282.88	(597.79)
Increase in provisions	2,303.17	1,570.82	2.39
(Decrease)/Increase in financial liabilities and non financial liabilities	(236.07)	1.53	(114.97)
Cash flow generated from operating activities post working capital changes	**38,758.85**	**29,255.12**	**19,066.56**
Income tax (paid)/ refund (net)	(729.37)	(91.54)	(367.10)
Net cash generated from operating activities (A)	**38,029.48**	**29,163.58**	**18,699.46**
B. Cash flows from investing activities			
Payment towards purchase of property, plant and equipment & intangible assets (after adjustment of increase/decrease in capital work-in-progress, intangible assets under development (net) and advances for capital expenditure)	(604.65)	(1,928.97)	(5,107.58)
Proceeds from sale of property, plant and equipment	-	115.93	(1.91)
Movement in bank balances (including deposits) not considered as cash and cash equivalents (net)	7,529.48	(738.53)	(3,287.78)
Consideration paid for acquisition of Subsidiaries	(10,532.83)	(17,884.00)	-
Investment/(redemption) from mutual funds (net)	(4,564.71)	16,841.17	(2,187.13)
Interest received	587.93	574.98	255.51
Net cash used in investing activities (B)	**(7,584.78)**	**(3,019.42)**	**(10,328.89)**
C. Cash flows from financing activities			
Proceeds from issue of unit capital	-	-	38,025.92
Expense incurred towards issue of units	-	-	(10.94)
Proceeds from long term borrowings	48,090.00	48,790.00	1,08,800.00
Proceeds from short term borrowings	13,292.87	-	-
Repayment of long term borrowings	(53,520.79)	(44,094.23)	(1,33,798.23)
Repayment of short term borrowings	(13,292.87)	-	-
Processing fees paid	(142.13)	(208.36)	(638.00)
Interest paid (including interest capitalised)	(14,407.68)	(11,593.73)	(16,683.62)
Payment of distributions to unitholders	(18,713.72)	(14,758.71)	(7,935.63)
Net cash used in financing activities (C)	**(38,694.32)**	**(21,865.03)**	**(12,240.50)**
D. Net increase/(decrease) in cash and cash equivalents (A+B+C)	**(8,249.62)**	**4,279.13**	**(3,869.93)**
E. Cash and cash equivalents at the beginning of the year	8,163.86	2,415.24	-
Cash and cash equivalents acquired on asset acquisition (Refer Note 50)	4,877.55	1,469.49	6,285.17
Cash and cash equivalents at the end of the year (D+E) (Refer reconciliation below)	**4,791.79**	**8,163.86**	**2,415.24**
Reconciliation of cash and cash equivalents as per Consolidated Statement of Cash Flows			
Cash and cash equivalents comprise of following:			
Cash and cash equivalents [Refer note 14]	5,190.21	8,467.08	2,416.84
Less: Earmarked balances [Refer note 14]	(398.42)	(303.22)	(1.60)
As per Consolidated Statement of Cash Flows	**4,791.79**	**8,163.86**	**2,415.24**

Notes:

(i) The above Consolidated Statement of Cash Flows has been prepared under the 'Indirect Method' as set out in Ind AS 7, 'Statement of Cash Flows'.

(ii) During the year ended March 31, 2026, there was reclassification of 9.62 million (March 31, 2025 : 44.10 million, March 31, 2024: Nil) Subordinate Units to Ordinary Units and extinguishment of 27.87 million (March 31, 2025 : 75.90 million, March 31, 2024: Nil) Subordinate Units. These transactions being the non-cash transactions have been excluded from Consolidated Statement of Cash Flows.

(iii) The working capital changes and other adjustments exclude those arising on the date of asset acquisitions.

(iv) The Trust has issued units in exchange for equity interest in 18 SPVs (Refer note 19(a)(i)) during the year ended March 31, 2024. The same has not been reflected in Consolidated Statement of Cash Flow since these were non-cash transaction.

This space has been intentionally left blank

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/22-23/0022
Consolidated Statement of Cash Flows for the year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

(v) Changes in financial liabilities arising from financing activities

For the year ended March 31, 2026 (Audited)

Particulars	Balance as at April 01, 2025	Additions on account of acquisition (refer note 50)	Cash flows from financing activities		Processing fees paid	Non-cash adjustment	Balance as at March 31, 2026
			Inflow	Outflow			
Long Term Borrowings							
Term loan	1,19,035.52	28,508.40	28,370.00	(44,017.89)	(106.67)	200.85	1,31,990.21
Non Convertible Debentures, Debt Securities and Optionally Convertible Debentures	31,960.34	2,346.87	19,720.00	(9,502.90)	(35.46)	17.08	44,505.93
Other long term borrowings	150.99	-	-	-	-	-	150.99
TOTAL (A)	**1,51,146.85**	**30,855.27**	**48,090.00**	**(53,520.79)**	**(142.13)**	**217.93**	**1,76,647.13**
Short Term Borrowings							
Commercial Papers	-	-	13,292.87	(13,292.87)	-	-	-
TOTAL (B)	**-**	**-**	**13,292.87**	**(13,292.87)**	**-**	**-**	**-**
Total liabilities from financing activities (A+B)	**1,51,146.85**	**30,855.27**	**61,382.87**	**(66,813.66)**	**(142.13)**	**217.93**	**1,76,647.13**

For the year ended March 31, 2025 (Audited)

Particulars	Balance as at April 01, 2024	Additions on account of acquisition (refer note 50)	Cash flows from financing activities		Processing fees paid	Non-cash adjustment	Balance as at March 31, 2025
			Inflow	Outflow			
Long Term Borrowings							
Term loan	95,119.30	10,966.86	27,710.00	(14,657.02)	(163.29)	59.67	1,19,035.52
Non Convertible Debentures, Debt Securities and Optionally Convertible Debentures	12,082.44	28,271.26	21,080.00	(29,437.21)	(45.07)	8.92	31,960.34
Other long term borrowings	150.99	-	-	-	-	-	150.99
TOTAL (A)	**1,07,352.73**	**39,238.12**	**48,790.00**	**(44,094.23)**	**(208.36)**	**68.59**	**1,51,146.85**
Short Term Borrowings							
Loans from others	-	-	-	-	-	-	-
TOTAL (B)	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Total liabilities from financing activities	**1,07,352.73**	**39,238.12**	**48,790.00**	**(44,094.23)**	**(208.36)**	**68.59**	**1,51,146.85**

For the year ended March 31, 2024 (Audited)

Particulars	Balance as at April 01, 2023	Additions on account of acquisition (refer note 50)	Cash flows from financing activities		Processing fees Paid	Non-cash adjustment	Balance as at March 31, 2024
			Inflow	Outflow			
Long Term Borrowings							
Term loan	-	64,115.33	98,500.00	(66,973.38)	(609.02)	86.37	95,119.30
Non Convertible Debentures, Debt Securities and Optionally Convertible Debentures	-	68,359.81	10,300.00	(66,554.85)	(28.98)	6.46	12,082.44
Other long term borrowings	-	419.28	-	(270.00)	-	1.71	150.99
TOTAL (A)	**-**	**1,32,894.42**	**1,08,800.00**	**(1,33,798.23)**	**(638.00)**	**94.54**	**1,07,352.73**
Short Term Borrowings							
Loans from others	-	-	-	-	-	-	-
TOTAL (B)	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Total liabilities from financing activities	**-**	**1,32,894.42**	**1,08,800.00**	**(1,33,798.23)**	**(638.00)**	**94.54**	**1,07,352.73**

The above Consolidated Statement of Cash Flows should be read in conjunction with the accompanying notes 1 to 74

As per our report of even date attached

For S.B. Billimoria & Co. LLP
Chartered Accountants

Pramod Baijnath Shukla
Digitally signed by Pramod Baijnath Shukla
Date: 2026.07.02 20:04:33 +05'30'

Pramod B. Shukla
Partner
Place: Mumbai
Date: July 02, 2026

For and on behalf of the Board of Directors of
Cube Highways Fund Advisors Private Limited
(in its capacity as the Investment Manager of Cube Highways Trust)

UPENDRA KUMAR SINHA
Digitally signed by UPENDRA KUMAR SINHA
Date: 2026.07.02 19:07:02 +05'30'

Upendra Kumar Sinha
Chairman
DIN: 00010336
Place: New Delhi
Date: July 02, 2026

VINAY C SEKAR
Digitally signed by VINAY C SEKAR
Date: 2026.07.02 19:08:54 +05'30'

Vinay Chandramouli Sekar
Chief Executive Officer

Place: Gurugram
Date: July 02, 2026

PANKAJ VASANI
Digitally signed by PANKAJ VASANI
Date: 2026.07.02 19:10:48 +05'30'

Pankaj Vasani
Chief Financial Officer

Place: Noida
Date: July 02, 2026

Richa Gupta Rohatgi
Digitally signed by Richa Gupta Rohatgi
Date: 2026.07.02 19:12:52 +05'30'

Richa Gupta Rohatgi
Compliance Officer & CS
MRN: A24446
Place: Noida
Date: July 02, 2026

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

Disclosures as required by chapter 4 to the SEBI Master Circular No. SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025

Statement of Net Distributable Cash Flows - Cube Highways Trust

Particulars	Year ended	
	March 31, 2026 (Audited)	March 31, 2025 (Audited)
Cashflows from operating activities of the Trust	**(844.02)**	**(628.18)**
(+) Cash flows received from SPV's/ Investment entities which represent distributions of NDCF computed as per relevant framework (Refer note i)	35,672.57	26,536.85
(+) Treasury income / income from investing activities of the Trust (interest income received from FD, any investment entities as defined in Regulation 18(5), tax refund, any other income in the nature of interest, profit on sale of Mutual funds, investments, assets etc., dividend income etc., excluding any Ind AS adjustments. Further clarified that these amounts will be considered on a cash receipt basis) (refer note iii)	(2.97)	98.05
(+) Proceeds from sale of infrastructure investments, infrastructure assets or shares of SPVs/Holdcos or Investment Entity adjusted for the following • Applicable capital gains and other taxes • Related debts settled or due to be settled from sale proceeds • Directly attributable transaction costs • Proceeds reinvested or planned to be reinvested as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations	-	-
(+) Proceeds from sale of infrastructure investments, infrastructure assets or sale of shares of SPVs/ Hold cos or Investment Entity not distributed pursuant to an earlier plan to re-invest as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations, if such proceeds are not intended to be invested subsequently	-	-
(-) Finance cost on Borrowings, excluding amortisation of any transaction costs as per Profit and Loss account of the Trust	(13,602.78)	(10,593.82)
(-) Debt repayment at Trust level (to include principal repayments as per scheduled EMI's except if refinanced through new debt including overdraft facilities and to exclude any debt repayments / debt refinanced through new debt in any form or funds raised through issuance of units)	(4,840.12)	(4,139.09)
(-) any reserve required to be created under the terms of, or pursuant to the obligations arising in accordance with, any: (i). loan agreement entered with financial institution, or (ii). terms and conditions, covenants or any other stipulations applicable to debt securities issued by the Trust or any of its SPVs/ HoldCos, or (iii). terms and conditions, covenants or any other stipulations applicable to external commercial borrowings availed by the Trust or any of its SPVs/ HoldCos, or (iv). agreement pursuant to which the Trust operates or owns the infrastructure asset, or generates revenue or cashflows from such asset (such as, concession agreement, transmission services agreement, power purchase agreement, lease agreement, and any other agreement of a like nature, by whatever name called); or (v). statutory, judicial, regulatory, or governmental stipulations; or	(126.16)	(450.00)
(-) any capital expenditure on existing assets owned / leased by the InvIT, to the extent not funded by debt / equity or from contractual reserves created in the earlier years	-	-
NDCF at Trust Level	**16,256.52**	**10,823.81**

Distribution made out of opening cash	**2,257.61**	**3855.13**
Total amount distributable	18,514.13	14,678.94
Total distribution for the year	**18,507.84**	**14,678.92**

Notes:

i) This includes Rs. 4,106.38 million received from SPVs after March 31, 2026 but before the date of the Board meeting for adoption of the Financial Statement for the year ended March 31, 2026 i.e. May 22, 2026, and excludes Rs. 3,171.92 million received from SPVs during the current financial year which was already considered for computation of NDCF for the quarter ended March 31, 2025.

ii) Subsequent to the year ended March 31, 2026, the Board of Directors of the Investment Manager in its meeting dated May 22, 2026 approved a distribution of Rs. 3.57 per unit aggregating Rs. 4,798.33 million for the quarter ended March 31, 2026. The distribution is subsequently paid.

iii) Unrealised gain on overnight mutual funds considered as "Cash and cash equivalents" is excluded from treasury income as the same is recognised on receipt basis for purpose of NDCF calculation.

iv) In accordance with the SEBI circular no SEBI/HO/DDHS-PoD-2/P/CIR/2024/44 dated May 15, 2024, the framework for computation of Net Distributable cash flows ("NDCF") is revised with effect from April 01, 2024. Accordingly, NDCF for the periods on or before March 31, 2024 was calculated and presented as per the earlier framework.

Cube Highways Trust
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

Disclosures as required by chapter 3 to the Master Circular No. SEBI/HO/DDHS-PoD-2/P/CIR/2023/115 dated July 06, 2023

Statement of Net Distributable Cash Flows (NDCFs) of the Cube Highways Trust-Contd.

Particulars	**For the year ended March 31, 2024**
Cash flows received from the SPVs in the form of:	
-Interest (net of applicable taxes, if any)	15,558.12
-Dividend (net of applicable taxes, if any)	1,513.26
-Repayment of the debt issued to the SPVs by the Trust or redemption of debentures issued by the SPVs to the Trust	3,054.20
Add: Proceeds from the SPVs for any capital reduction / buy back / redemption subject to Applicable Laws (net of applicable Taxes, if any)	-
Add: Proceeds from sale or transfer or liquidation or redemption or otherwise realization of investments, assets or shares of/interest in SPVs (net of applicable taxes and / or directly attributable transaction costs , if any)	-
Add: Proceeds from sale of assets of the SPVs not distributed pursuant to an earlier plan to re-invest, if such proceeds are not intended to be invested subsequently	-
Add: Any other income accruing at the Trust level and not captured above, including but not limited to interest / return on surplus cash invested by the Trust	119.75
Total cash inflow at the Trust level (A)	**20,245.33**
Less: Any payment of fees, interest and expense incurred at the Trust level, including but not limited to the Investment Manager fees, security trustee fees, annual fees for traffic, technical and other studies and fees for annual valuation.	(8,696.53)
Less: Any capital expenditure at any SPV level where sufficient cash is not available	-
Less: Costs/retention associated with sale of assets of the SPVs, including transaction costs paid on sale of the assets of the SPVs	-
Add: Additional borrowings (including debentures / other securities) adjusted for the following:[1]	1,46,176.98
· any prepayment of borrowings if deemed necessary by the Investment Manager;	-
· any identified end use as specified in the lender agreement or as deemed necessary by the Investment Manager.	-
Less: Repayment of external debt	(3,069.92)
Less: Income tax (if applicable) at the Standalone Trust Level (including capital gains taxes on sale of assets / share in SPVs / other investments) (net of any tax refunds)	(51.17)
Less: Related debts settled or due to be settled from sale proceeds of SPVs	-
Less: Investment in shares or debentures of SPVs or other similar investments or lending to SPVs [2]	(1,43,842.92)
Less: Proceeds reinvested or planned to be reinvested in accordance with Regulation 18(7)(a) of the InvIT Regulations	-
Less: Net cash set aside (i) to comply with reserve requirements under the loan agreements (including but not limited to DSRA and MMRA) adjusted for amount released from DSRA/MMRA or any other reserve in lieu of providing bank guarantee, and/or (ii) on a prudential basis for repayments of borrowings etc., as appropriate.	-
Less: Any cash reserve deemed necessary by the IM Board for expenses which may be due but for which there may not be commensurate cash available by the date such expenses become due	-
Less: Any other adjustment to be undertaken by the Investment Manager to ensure that there is no double counting of the same item for the above calculations	-
Total Adjustments (B)	**(9,483.56)**
Net Distributable Cash Flows (C) = (A+B) [3]	**10,761.77**

Notes:

(1) Includes proceeds from issue of Ordinary Unit Capital (net of issue expenses) and excludes processing costs.
(2) Includes Subordinate loan of Rs. 3,083.20 million being given to NKTPL (SPV) for maintaining Debt Service Reserve Account (DSRA) at InvIT level.
(3) The difference between SPV level NDCF and Trust level NDCF is primarily on account of utilization of opening cash at the SPV level.

The above Statement of Net Distributable Cash Flows (NDCFs) should be read in conjunction with the accompanying notes 1 to 74

As per our report of even date attached

For S.B. Billimoria & Co. LLP
Chartered Accountants

Pramod Baijnath Shukla
Digitally signed by Pramod Baijnath Shukla
Date: 2026.07.02 20:04:10 +05'30'

Pramod B. Shukla
Partner
Place: Mumbai
Date: July 02, 2026

For and on behalf of the Board of Directors of
Cube Highways Fund Advisors Private Limited
(the "Investment Manager" in its capacity as the Investment Manager of Cube Highways Trust)

UPENDRA KUMAR SINHA
Digitally signed by UPENDRA KUMAR SINHA
Date: 2026.07.02 19:07:18 +05'30'

Upendra Kumar Sinha
Chairman
DIN: 00010336
Place: New Delhi
Date: July 02, 2026

VINAY C SEKAR
Digitally signed by VINAY C SEKAR
Date: 2026.07.02 19:09:05 +05'30'

Vinay Chandramouli Sekar
Chief Executive Officer

Place: Gurugram
Date: July 02, 2026

PANKAJ VASANI
Digitally signed by PANKAJ VASANI
Date: 2026.07.02 19:10:59 +05'30'

Pankaj Vasani
Chief Financial Officer

Place: Noida
Date: July 02, 2026

Richa Gupta Rohatgi
Digitally signed by Richa Gupta Rohatgi
Date: 2026.07.02 19:13:04 +05'30'

Richa Gupta Rohatgi
Compliance Officer & CS
MRN: A24446
Place: Noida
Date: July 02, 2026

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

Statement of net distributable cash flows has been disclosed for the following SPVs

In accordance with the SEBI circular no SEBI/HO/DDHS-PoD-2/P/CIR/2024/44 dated May 15, 2024, the framework for computation of Net Distributable cash flows ("NDCF") is revised with effect from April 01, 2024. Accordingly, NDCF for the periods on or before March 31, 2024 was calculated and presented as per the earlier framework.

Sr. No.	Name of the SPVs
1	Western UP Tollway Private Limited (WUPTPL) (formerly known as Western UP Tollway Limited)
2	Andhra Pradesh Expressway Private Limited (APEPL) (formerly known as Andhra Pradesh Expressway Limited)
3	Jaipur-Mahua Tollway Private Limited (JMTPL) (formerly known as Jaipur-Mahua Tollway Limited)
4	Mahua Bharatpur Expressways Limited (MBEL)
5	Farakka- Raiganj Highways Private Limited (FRHPL) (formerly known as Farakka- Raiganj Highways Limited)
6	DA Toll Road Private Limited (DATRPL)
7	Ghaziabad Aligarh Expressway Private Limited (GAEPL)
8	Walayar Vaddakencherry Expressways Private Limited (WVEPL)
9	Nelamangala Devihalli Expressway Private Limited (NDEPL)
10	Hazaribagh Tollway Private Limited (HTPL) (formerly known as Hazaribagh Tollway Limited)
11	Jhansi-Lalitpur Tollway Private Limited (JLTPL) (formerly known as Jhansi-Lalitpur Tollway Limited)
12	Jhansi-Vigakhet Tollway Private Limited (JVTPL) (formerly known as Jhansi-Vigakhet Tollway Limited)
13	Kanyakumari-Etturavattam Tollway Private Limited (KETPL) (formerly known as Kanyakumari-Etturavattam Tollway Limited)
14	Kotwa-Muzaffarpur Tollway Private Limited (KMTPL) (formerly known as Kotwa-Muzaffarpur Tollway Limited)
15	Lucknow-Raebareli Tollway Private Limited (LRTPL) (formerly known as Lucknow-Raebareli Tollway Limited)
16	Madurai-Kanyakumari Tollway Private Limited (MKTPL) (formerly known as Madurai-Kanyakumari Tollway Limited)
17	Nanguneri-Kanyakumari Tollway Private Limited (NKTPL) (formerly known as Nanguneri-Kanyakumari Tollway Limited)
18	Salaipudhur-Madurai Tollway Private Limited (SMTPL) (formerly known as Salaipudhur-Madurai Tollway Limited)
19	Srirangam Infra Private Limited (SIPL) (formerly KNR Srirangam Infra Private Limited)*
20	Shankarampet Projects Private Limited (SPPL) (formerly KNR Shankarampet Projects Private Limited)*
21	Tirumala Highways Private Limited (THPL) (formerly KNR Tirumala Infra Private Limited)*
22	Borgaon Watembare Highways Private Limited (BWHPL)*
23	Mangalwedha Solapur Highways Private Limited (MSHPL)*
24	Mangloor Highways Private Limited (MHPL)*
25	N.A.M. Expressway Private Limited (NAMEPL) (formerly N.A.M. Expressway Limited)**
26	Quazigund Expressway Private Limited (QEPL)***
27	Jammu Udhampur Highway Private Limited (JUHPL) (formerly Athang Jammu Udhampur Highway Private Limited)***

*Since HAM SPVs were acquired on June 04, 2024, no NDCF for the comparative periods have been disclosed.
**Since NAMEPL SPV was acquired on February 12, 2025, no NDCF for the comparative periods have been disclosed.
***Since QEPL and JUHPL SPVs were acquired on June 12, 2025, no NDCFs for the comparative periods have been disclosed.

This space has intentionally left blank

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

SPV wise statement of net distributable cash flows for the period from April 01, 2025 to March 31, 2026 (contd.)

Particulars	HTPL	JLTPL	JVTPL	KETPL	KMTPL	LRTPL	MKTPL
Cash flow from operating activities as per Cash Flow Statement of SPV	**1,378.24**	**987.16**	**675.06**	**683.47**	**985.91**	**596.14**	**1,525.18**
Add: Cash Flows received from SPV's which represent distributions of NDCF computed as per relevant framework	-	-	-	-	-	-	-
Add:Treasury income / income from investing activities (interest income received from FD, tax refund, any other income in the nature of interest, profit on sale of Mutual funds, investments, assets etc., dividend income etc., excluding any Ind AS adjustments. Further clarified that these amounts will be considered on a cash receipt basis)*	31.41	14.24	7.95	12.84	0.39	54.56	0.98
Add: Proceeds from sale of infrastructure investments, infrastructure assets or shares of SPVs or Investment Entity adjusted for the following: - Applicable capital gains and other taxes - Related debts settled or due to be settled from sale proceeds - directly attributable transaction costs; - Proceeds reinvested or planned to be reinvested as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations	-	-	-	-	-	-	-
Add: Proceeds from sale of infrastructure investments, infrastructure assets or sale of shares of SPVs or Investment Entity not distributed pursuant to an earlier plan to re invest as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations, if such proceeds are not intended to be invested subsequently	-	-	-	-	-	-	-
Less: Finance cost on Borrowings, excluding amortisation of any transaction costs as per Profit and Loss Account and any shareholder debt / loan from Trust	-	-	-	-	-	-	-
Less: Debt repayment (to include principal repayments as per scheduled EMI's except if refinanced through new debt including overdraft facilities and to exclude any debt repayments / debt refinanced through new debt, in any form or equity raise as well as repayment of any shareholder debt / loan from Trust)	-	-	-	-	-	-	-
Less: any reserve required to be created under the terms of, or pursuant to the obligations arising in accordance with, any: (i). loan agreement entered with banks / financial institution from whom the Trust or any of its SPVs/ HoldCos have availed debt, or (ii). terms and conditions, covenants or any other stipulations applicable to debt securities issued by the Trust or any of its SPVs/ HoldCos, or (iii). terms and conditions, covenants or any other stipulations applicable to external commercial borrowings availed by the Trust or any of its SPVs/ HoldCos, (iv). agreement pursuant to which the SPV/ HoldCo operates or owns the infrastructure asset, or generates revenue or cashflows from such asset (such as, concession agreement, transmission services agreement, power purchase agreement, lease agreement, and any other agreement of a like nature, by whatever name called); or (v). statutory, judicial, regulatory, or governmental stipulations;	-	-	-	-	-	-	-
Less: any capital expenditure on existing assets owned / leased by the SPV or Holdco, to the extent not funded by debt / equity or from reserves created in the earlier years	(0.31)	(22.16)	(21.46)	(2.69)	(31.58)	(0.80)	(3.76)
Net Distributable Cash Flows	**1,409.34**	**979.24**	**661.55**	**693.62**	**954.72**	**649.90**	**1,522.40**

*Unrealised gain on overnight mutual funds considered as "Cash and cash equivalents" is excluded from treasury income as the same is recognised on receipt basis for purpose of NDCF calculation.

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

SPV wise statement of net distributable cash flows for the period from April 01, 2025 to March 31, 2026 (contd.)

Particulars	NKTPL	SMTPL	NDEPL	APEPL	MBEL	JMTPL	WUPTPL**
Cash flow from operating activities as per Cash Flow Statement of SPV	**742.06**	**759.29**	**968.22**	**1,015.62**	**828.88**	**1,810.67**	**863.91**
Add: Cash Flows received from SPV's which represent distributions of NDCF computed as per relevant framework	-	-	-	-	-	-	-
Add:Treasury income / income from investing activities (interest income received from FD, tax refund, any other income in the nature of interest, profit on sale of Mutual funds, investments, assets etc., dividend income etc., excluding any Ind AS adjustments. Further clarified that these amounts will be considered on a cash receipt basis)*	267.45	(0.46)	5.38	32.30	46.90	23.20	37.62
Add: Proceeds from sale of infrastructure investments, infrastructure assets or shares of SPVs or Investment Entity adjusted for the following: - Applicable capital gains and other taxes - Related debts settled or due to be settled from sale proceeds - directly attributable transaction costs; - Proceeds reinvested or planned to be reinvested as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations	-	-	-	-	0.75	-	-
Add: Proceeds from sale of infrastructure investments, infrastructure assets or sale of shares of SPVs or Investment Entity not distributed pursuant to an earlier plan to re invest as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations, if such proceeds are not intended to be invested subsequently	-	-	-	-	-	-	-
Less: Finance cost on Borrowings, excluding amortisation of any transaction costs as per Profit and Loss Account and any shareholder debt / loan from Trust	-	-	-	-	(92.55)	-	-
Less: Debt repayment (to include principal repayments as per scheduled EMI's except if refinanced through new debt including overdraft facilities and to exclude any debt repayments / debt refinanced through new debt, in any form or equity raise as well as repayment of any shareholder debt / loan from Trust)	-	-	-	-	(200.00)	-	-
Less: any reserve required to be created under the terms of, or pursuant to the obligations arising in accordance with, any: (i). loan agreement entered with banks / financial institution from whom the Trust or any of its SPVs/ HoldCos have availed debt, or (ii). terms and conditions, covenants or any other stipulations applicable to debt securities issued by the Trust or any of its SPVs/ HoldCos, or (iii). terms and conditions, covenants or any other stipulations applicable to external commercial borrowings availed by the Trust or any of its SPVs/ HoldCos, (iv). agreement pursuant to which the SPV/ HoldCo operates or owns the infrastructure asset, or generates revenue or cashflows from such asset (such as, concession agreement, transmission services agreement, power purchase agreement, lease agreement, and any other agreement of a like nature, by whatever name called); or (v). statutory, judicial, regulatory, or governmental stipulations;	-	-	-	(344.49)	(243.49)	(21.13)	-
Less: any capital expenditure on existing assets owned / leased by the SPV or Holdco, to the extent not funded by debt / equity or from reserves created in the earlier years	(2.29)	(2.28)	(2.01)	(0.47)	(3.51)	(2.62)	(0.01)
Net Distributable Cash Flows	**1,007.22**	**756.55**	**971.59**	**702.96**	**336.98**	**1,810.12**	**901.52**

*Unrealised gain on overnight mutual funds considered as "Cash and cash equivalents" is excluded from treasury income as the same is recognised on receipt basis for purpose of NDCF calculation.

**WUPTPL is not able to declare dividend and therefore not able to make distribution as required by SEBI InvIT Regulations to Trust due to negative free reserves and no outstanding debts to the Trust. The Company is seeking approval under proposed scheme of capital reduction and reorganisation; which is yet to be heard as of date (refer note 71).

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

SPV wise statement of net distributable cash flows for the period from April 01, 2025 to March 31, 2026 (contd.)

Particulars	GAEPL	WVEPL	FRHPL	DATRPL	BWHPL	SIPL	SPPL
Cash flow from operating activities as per Cash Flow Statement of SPV	**3,700.13**	**913.68**	**2,184.62**	**5,334.67**	**752.30**	**810.54**	**841.24**
(+) Opening balance (reserve created earlier years)	-	-	-	-	159.93	45.45	32.58
Add: Cash Flows received from SPV's which represent distributions of NDCF computed as per relevant framework	-	-	-	-	-	-	-
Add:Treasury income / income from investing activities (interest income received from FD, tax refund, any other income in the nature of interest, profit on sale of Mutual funds, investments, assets etc., dividend income etc., excluding any Ind AS adjustments. Further clarified that these amounts will be considered on a cash receipt basis)*	36.85	(0.03)	0.04	20.41	17.78	9.78	17.97
Add: Proceeds from sale of infrastructure investments, infrastructure assets or shares of SPVs or Investment Entity adjusted for the following: - Applicable capital gains and other taxes - Related debts settled or due to be settled from sale proceeds - directly attributable transaction costs; - Proceeds reinvested or planned to be reinvested as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations	-	-	-	336.73	-	-	-
Add: Proceeds from sale of infrastructure investments, infrastructure assets or sale of shares of SPVs or Investment Entity not distributed pursuant to an earlier plan to re invest as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations, if such proceeds are not intended to be invested subsequently	-	-	-	-	-	-	-
Less: Finance cost on Borrowings, excluding amortisation of any transaction costs as per Profit and Loss Account and any shareholder debt / loan from Trust	-	-	-	-	-	-	(0.01)
Less: Debt repayment (to include principal repayments as per scheduled EMI's except if refinanced through new debt including overdraft facilities and to exclude any debt repayments / debt refinanced through new debt, in any form or equity raise as well as repayment of any shareholder debt / loan from Trust)	-	-	-	(100.00)	-	-	-
Less: any reserve required to be created under the terms of, or pursuant to the obligations arising in accordance with, any: (i). loan agreement entered with banks / financial institution from whom the Trust or any of its SPVs/ HoldCos have availed debt, or (ii). terms and conditions, covenants or any other stipulations applicable to debt securities issued by the Trust or any of its SPVs/ HoldCos, or (iii). terms and conditions, covenants or any other stipulations applicable to external commercial borrowings availed by the Trust or any of its SPVs/ HoldCos, (iv). agreement pursuant to which the SPV/ HoldCo operates or owns the infrastructure asset, or generates revenue or cashflows from such asset (such as, concession agreement, transmission services agreement, power purchase agreement, lease agreement, and any other agreement of a like nature, by whatever name called); or (v). statutory, judicial, regulatory, or governmental stipulations;	-	-	-	-	(160.62)	(28.22)	(16.11)
Less: any capital expenditure on existing assets owned / leased by the SPV or Holdco, to the extent not funded by debt / equity or from reserves created in the earlier years	(8.13)	(2.10)	(2.40)	(15.79)	(0.06)	(0.35)	(1.15)
Net Distributable Cash Flows	**3,728.85**	**911.55**	**2,182.26**	**5,576.02**	**769.33**	**837.20**	**874.52**

*Unrealised gain on overnight mutual funds considered as "Cash and cash equivalents" is excluded from treasury income as the same is recognised on receipt basis for purpose of NDCF calculation.

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

SPV wise statement of net distributable cash flows for the period from April 01, 2025 to March 31, 2026 (contd.)

Particulars	THPL	MHPL	MSHPL	NAMEPL	QEPL	JUHPL
Cash flow from operating activities as per Cash Flow Statement of SPV	**1,016.20**	**561.92**	**819.50**	**2,403.19**	**4,169.73**	**1,445.46**
(+) Opening balance (reserve created earlier years)	37.58	62.19	53.54	-	-	-
Add: Cash Flows received from SPV's which represent distributions of NDCF computed as per relevant framework	-	-	-	-	-	-
Add:Treasury income / income from investing activities (interest income received from FD, tax refund, any other income in the nature of interest, profit on sale of Mutual funds, investments, assets etc., dividend income etc., excluding any Ind AS adjustments. Further clarified that these amounts will be considered on a cash receipt basis)*	24.48	20.59	15.26	84.99	157.90	127.23
Add: Proceeds from sale of infrastructure investments, infrastructure assets or shares of SPVs or Investment Entity adjusted for the following: - Applicable capital gains and other taxes - Related debts settled or due to be settled from sale proceeds - directly attributable transaction costs; - Proceeds reinvested or planned to be reinvested as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations	-	-	-	-	1.77	2.49
Add: Proceeds from sale of infrastructure investments, infrastructure assets or sale of shares of SPVs or Investment Entity not distributed pursuant to an earlier plan to re invest as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations, if such proceeds are not intended to be invested subsequently	-	-	-	-	-	-
Less: Finance cost on Borrowings, excluding amortisation of any transaction costs as per Profit and Loss Account and any shareholder debt / loan from Trust	-	-	-	-	(182.61)	(166.07)
Less: Debt repayment (to include principal repayments as per scheduled EMI's except if refinanced through new debt including overdraft facilities and to exclude any debt repayments / debt refinanced through new debt, in any form or equity raise as well as repayment of any shareholder debt / loan from Trust)	-	-	-	-	(59.79)	(991.91)
Less: any reserve required to be created under the terms of, or pursuant to the obligations arising in accordance with, any: (i). loan agreement entered with banks / financial institution from whom the Trust or any of its SPVs/ HoldCos have availed debt, or (ii). terms and conditions, covenants or any other stipulations applicable to debt securities issued by the Trust or any of its SPVs/ HoldCos, or (iii). terms and conditions, covenants or any other stipulations applicable to external commercial borrowings availed by the Trust or any of its SPVs/ HoldCos, (iv). agreement pursuant to which the SPV/ HoldCo operates or owns the infrastructure asset, or generates revenue or cashflows from such asset (such as, concession agreement, transmission services agreement, power purchase agreement, lease agreement, and any other agreement of a like nature, by whatever name called); or (v). statutory, judicial, regulatory, or governmental stipulations;	(33.81)	(66.43)	(57.10)	-	(304.95)	(230.04)
Less: any capital expenditure on existing assets owned / leased by the SPV or Holdco, to the extent not funded by debt / equity or from reserves created in the earlier years	(1.62)	(1.92)	(0.15)	(16.61)	(5.06)	(3.21)
Net Distributable Cash Flows	**1,042.83**	**576.35**	**831.05**	**2,471.57**	**3,776.99**	**183.95**

*Unrealised gain on overnight mutual funds considered as "Cash and cash equivalents" is excluded from treasury income as the same is recognised on receipt basis for purpose of NDCF calculation.

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

SPV wise statement of net distributable cash flows for the period from April 01, 2024 to March 31, 2025 (contd.)

Particulars	HTPL	JLTPL	JVTPL	KETPL	KMTPL	LRTPL	MKTPL
Cash flow from operating activities as per Cash Flow Statement of SPV	**1,174.16**	**907.37**	**609.65**	**495.74**	**880.38**	**602.67**	**909.39**
Add: Cash Flows received from SPV's which represent distributions of NDCF computed as per relevant framework	-	-	-	-	-	-	-
Add:Treasury income / income from investing activities (interest income received from FD, tax refund, any other income in the nature of interest, profit on sale of Mutual funds, investments, assets etc., dividend income etc., excluding any Ind AS adjustments. Further clarified that these amounts will be considered on a cash receipt basis)*	33.01	22.64	22.29	9.91	12.74	37.34	7.91
Add: Proceeds from sale of infrastructure investments, infrastructure assets or shares of SPVs or Investment Entity adjusted for the following: - Applicable capital gains and other taxes - Related debts settled or due to be settled from sale proceeds - directly attributable transaction costs; - Proceeds reinvested or planned to be reinvested as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations	-	-	-	-	-	-	-
Add: Proceeds from sale of infrastructure investments, infrastructure assets or sale of shares of SPVs or Investment Entity not distributed pursuant to an earlier plan to re invest as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations, if such proceeds are not intended to be invested subsequently	-	-	-	-	-	-	-
Less: Finance cost on Borrowings, excluding amortisation of any transaction costs as per Profit and Loss Account and any shareholder debt / loan from Trust	-	-	-	-	-	-	-
Less: Debt repayment (to include principal repayments as per scheduled EMI's except if refinanced through new debt including overdraft facilities and to exclude any debt repayments / debt refinanced through new debt, in any form or equity raise as well as repayment of any shareholder debt / loan from Trust)	-	-	-	-	-	-	-
Less: any reserve required to be created under the terms of, or pursuant to the obligations arising in accordance with, any: (i). loan agreement entered with banks / financial institution from whom the Trust or any of its SPVs/ HoldCos have availed debt, or (ii). terms and conditions, covenants or any other stipulations applicable to debt securities issued by the Trust or any of its SPVs/ HoldCos, or (iii). terms and conditions, covenants or any other stipulations applicable to external commercial borrowings availed by the Trust or any of its SPVs/ HoldCos, (iv). agreement pursuant to which the SPV/ HoldCo operates or owns the infrastructure asset, or generates revenue or cashflows from such asset (such as, concession agreement, transmission services agreement, power purchase agreement, lease agreement, and any other agreement of a like nature, by whatever name called); or (v). statutory, judicial, regulatory, or governmental stipulations;	-	-	-	-	-	-	-
Less: any capital expenditure on existing assets owned / leased by the SPV or Holdco, to the extent not funded by debt / equity or from reserves created in the earlier years	(0.63)	(6.64)	(7.16)	(5.25)	(11.31)	(27.80)	(5.13)
Net Distributable Cash Flows	**1,206.54**	**923.37**	**624.78**	**500.40**	**881.81**	**612.21**	**912.17**

*Unrealised gain on overnight mutual funds considered as "Cash and cash equivalents" is excluded from treasury income as the same is recognised on receipt basis for purpose of NDCF calculation.

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

SPV wise statement of net distributable cash flows for the period from April 01, 2024 to March 31, 2025 (contd.)

Particulars	NKTPL	SMTPL	NDEPL	APEPL***	MBEL	JMTPL	WUPTPL**
Cash flow from operating activities as per Cash Flow Statement of SPV	**453.87**	**545.70**	**882.63**	**41.61**	**657.07**	**1,362.55**	**1,070.64**
(+) Opening balance (reserve created earlier years)	-	-	-	-	-	-	279.30
Add: Cash Flows received from SPV's which represent distributions of NDCF computed as per relevant framework	-	-	-	-	-	-	-
Add:Treasury income / income from investing activities (interest income received from FD, tax refund, any other income in the nature of interest, profit on sale of Mutual funds, investments, assets etc., dividend income etc., excluding any Ind AS adjustments. Further clarified that these amounts will be considered on a cash receipt basis)*	406.89	5.15	15.28	65.85	66.84	14.87	29.87
Add: Proceeds from sale of infrastructure investments, infrastructure assets or shares of SPVs or Investment Entity adjusted for the following: - Applicable capital gains and other taxes - Related debts settled or due to be settled from sale proceeds - directly attributable transaction costs; - Proceeds reinvested or planned to be reinvested as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations	-	-	-	-	-	-	-
Add: Proceeds from sale of infrastructure investments, infrastructure assets or sale of shares of SPVs or Investment Entity not distributed pursuant to an earlier plan to re invest as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations, if such proceeds are not intended to be invested subsequently	-	-	-	-	-	-	-
Less: Finance cost on Borrowings, excluding amortisation of any transaction costs as per Profit and Loss Account and any shareholder debt / loan from Trust	-	-	-	(34.55)	(108.11)	-	-
Less: Debt repayment (to include principal repayments as per scheduled EMI's except if refinanced through new debt including overdraft facilities and to exclude any debt repayments / debt refinanced through new debt, in any form or equity raise as well as repayment of any shareholder debt / loan from Trust)	-	-	-	(125.49)	(150.00)	-	-
Less: any reserve required to be created under the terms of, or pursuant to the obligations arising in accordance with, any: (i). loan agreement entered with banks / financial institution from whom the Trust or any of its SPVs/ HoldCos have availed debt, or (ii). terms and conditions, covenants or any other stipulations applicable to debt securities issued by the Trust or any of its SPVs/ HoldCos, or (iii). terms and conditions, covenants or any other stipulations applicable to external commercial borrowings availed by the Trust or any of its SPVs/ HoldCos, (iv). agreement pursuant to which the SPV/ HoldCo operates or owns the infrastructure asset, or generates revenue or cashflows from such asset (such as, concession agreement, transmission services agreement, power purchase agreement, lease agreement, and any other agreement of a like nature, by whatever name called); or (v). statutory, judicial, regulatory, or governmental stipulations;	(180.00)	-	-	-	(149.76)	-	-
Less: any capital expenditure on existing assets owned / leased by the SPV or Holdco, to the extent not funded by debt / equity or from reserves created in the earlier years	(7.35)	(5.20)	(4.25)	-	(0.47)	(0.95)	(0.72)
Net Distributable Cash Flows	**673.41**	**545.65**	**893.66**	**(52.58)**	**315.57**	**1,376.47**	**1,379.09**

*Unrealised gain on overnight mutual funds considered as "Cash and cash equivalents" is excluded from treasury income as the same is recognised on receipt basis for purpose of NDCF calculation.
**Amount reflected in opening cash and bank balance as on 01 April 2024 represent reserves created Rs. 279.30 millions as per SEBI guidelines as on 31 March 2024.
***On account of negative NDCF no reserve is created for expected cash outflows towards operating expenses and statutory dues till receipt of next annuity payment from NHAI.

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

SPV wise statement of net distributable cash flows for the period from April 01, 2024 to March 31, 2025 (contd.)

Particulars	GAEPL	WVEPL	FRHPL	DATRPL	BWHPL	SIPL	SPPL
Cash flow from operating activities as per Cash Flow Statement of SPV	**3,107.39**	**828.09**	**2,082.54**	**5,097.43**	**971.12**	**966.19**	**595.77**
Add: Cash Flows received from SPV's which represent distributions of NDCF computed as per relevant framework	-	-	-	-	-	-	-
Add:Treasury income / income from investing activities (interest income received from FD, tax refund, any other income in the nature of interest, profit on sale of Mutual funds, investments, assets etc., dividend income etc., excluding any Ind AS adjustments. Further clarified that these amounts will be considered on a cash receipt basis)*	87.06	7.98	20.55	45.07	32.54	46.22	54.36
Add: Proceeds from sale of infrastructure investments, infrastructure assets or shares of SPVs or Investment Entity adjusted for the following: - Applicable capital gains and other taxes - Related debts settled or due to be settled from sale proceeds - directly attributable transaction costs; - Proceeds reinvested or planned to be reinvested as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations	-	-	-	-	-	-	-
Add: Proceeds from sale of infrastructure investments, infrastructure assets or sale of shares of SPVs or Investment Entity not distributed pursuant to an earlier plan to re invest as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations, if such proceeds are not intended to be invested subsequently	-	-	-	-	-	-	-
Less: Finance cost on Borrowings, excluding amortisation of any transaction costs as per Profit and Loss Account and any shareholder debt / loan from Trust	-	-	-	(2.66)	(3.94)	(3.36)	(4.22)
Less: Debt repayment (to include principal repayments as per scheduled EMI's except if refinanced through new debt including overdraft facilities and to exclude any debt repayments / debt refinanced through new debt, in any form or equity raise as well as repayment of any shareholder debt / loan from Trust)	-	-	-	-	(4.52)	(4.67)	(9.39)
Less: any reserve required to be created under the terms of, or pursuant to the obligations arising in accordance with, any: (i). loan agreement entered with banks / financial institution from whom the Trust or any of its SPVs/ HoldCos have availed debt, or (ii). terms and conditions, covenants or any other stipulations applicable to debt securities issued by the Trust or any of its SPVs/ HoldCos, or (iii). terms and conditions, covenants or any other stipulations applicable to external commercial borrowings availed by the Trust or any of its SPVs/ HoldCos, (iv). agreement pursuant to which the SPV/ HoldCo operates or owns the infrastructure asset, or generates revenue or cashflows from such asset (such as, concession agreement, transmission services agreement, power purchase agreement, lease agreement, and any other agreement of a like nature, by whatever name called); or (v). statutory, judicial, regulatory, or governmental stipulations;	-	-	-	-	(159.93)	(45.46)	(32.58)
Less: any capital expenditure on existing assets owned / leased by the SPV or Holdco, to the extent not funded by debt / equity or from reserves created in the earlier years	(1.72)	(1.01)	(4.40)	(24.28)	(1.20)	(1.06)	(0.28)
Net Distributable Cash Flows	**3,192.73**	**835.06**	**2,098.69**	**5,115.56**	**834.07**	**957.86**	**603.66**

*Unrealised gain on overnight mutual funds considered as "Cash and cash equivalents" is excluded from treasury income as the same is recognised on receipt basis for purpose of NDCF calculation.

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

SPV wise statement of net distributable cash flows for the period from April 01, 2024 to March 31, 2025

Particulars	THPL	MHPL	MSHPL	NAMEPL
Cash flow from operating activities as per Cash Flow Statement of SPV	**504.90**	**796.94**	**1,019.39**	**328.97**
Add: Cash Flows received from SPV's which represent distributions of NDCF computed as per relevant framework	-	-	-	-
Add:Treasury income / income from investing activities (interest income received from FD, tax refund, any other income in the nature of interest, profit on sale of Mutual funds, investments, assets etc., dividend income etc., excluding any Ind AS adjustments. Further clarified that these amounts will be considered on a cash receipt basis)*	100.65	10.53	25.64	28.88
Add: Proceeds from sale of infrastructure investments, infrastructure assets or shares of SPVs or Investment Entity adjusted for the following: - Applicable capital gains and other taxes - Related debts settled or due to be settled from sale proceeds - directly attributable transaction costs; - Proceeds reinvested or planned to be reinvested as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations	-	-	-	-
Add: Proceeds from sale of infrastructure investments, infrastructure assets or sale of shares of SPVs or Investment Entity not distributed pursuant to an earlier plan to re invest as per Regulation 18(7) of InvIT Regulations or any other relevant provisions of the InvIT Regulations, if such proceeds are not intended to be invested subsequently	-	-	-	-
Less: Finance cost on Borrowings, excluding amortisation of any transaction costs as per Profit and Loss Account and any shareholder debt / loan from Trust	(57.10)	(36.93)	(3.78)	(78.28)
Less: Debt repayment (to include principal repayments as per scheduled EMI's except if refinanced through new debt including overdraft facilities and to exclude any debt repayments / debt refinanced through new debt, in any form or equity raise as well as repayment of any shareholder debt / loan from Trust)	(9.00)	(10.88)	(9.82)	-
Less: any reserve required to be created under the terms of, or pursuant to the obligations arising in accordance with, any: (i). loan agreement entered with banks / financial institution from whom the Trust or any of its SPVs/ HoldCos have availed debt, or (ii). terms and conditions, covenants or any other stipulations applicable to debt securities issued by the Trust or any of its SPVs/ HoldCos, or (iii). terms and conditions, covenants or any other stipulations applicable to external commercial borrowings availed by the Trust or any of its SPVs/ HoldCos, (iv). agreement pursuant to which the SPV/ HoldCo operates or owns the infrastructure asset, or generates revenue or cashflows from such asset (such as, concession agreement, transmission services agreement, power purchase agreement, lease agreement, and any other agreement of a like nature, by whatever name called); or (v). statutory, judicial, regulatory, or governmental stipulations;	(37.58)	(62.19)	(53.54)	-
Less: any capital expenditure on existing assets owned / leased by the SPV or Holdco, to the extent not funded by debt / equity or from reserves created in the earlier years	(0.46)	(10.94)	(1.86)	(4.40)
Net Distributable Cash Flows	**501.41**	**686.53**	**976.03**	**275.17**

*Unrealised gain on overnight mutual funds considered as "Cash and cash equivalents" is excluded from treasury income as the same is recognised on receipt basis for purpose of NDCF calculation.

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

SPV wise statement of net distributable cash flows for the period from April 01, 2023 to March 31, 2024 (contd.)

(Amounts in Rs. Million)

Particulars	HTPL	JLTPL	JVTPL	KETPL	KMTPL	LRTPL
Profit after tax as per Statement of Profit and Loss of the SPV (standalone) - A	**(568.73)**	**30.15**	**57.13**	**(604.09)**	**(664.97)**	**(131.48)**
Add: Depreciation, impairment, and amortisation as per profit and loss account. In case of impairment reversal, same needs to be deducted from profit and loss.	327.14	196.84	125.55	199.76	326.91	163.11
Add/less: Loss/gain on sale / transfer / disposal / liquidation of infrastructure assets, investments, other assets of the SPVs (if applicable)(1)	-	-	-	0.04	1.29	0.83
Add: Proceeds from sale / transfer / disposal / liquidation of infrastructure assets, investments, other assets of the SPVs (if applicable), adjusted for the following:(1)	-	-	-	-	-	-
• related debts settled or due to be settled.	-	-	-	-	-	-
• directly attributable transaction costs.	-	-	-	-	-	-
• proceeds reinvested or planned to be reinvested as per Regulation 18(7)(a) of the InvIT Regulations.	-	-	-	-	-	-
Add: Additional borrowings (including debentures / other securities) (external as well as borrowings from Trust) adjusted for the following:	9,814.65	4,940.03	3,051.06	5,988.28	8,310.03	4,194.23
• any prepayment of borrowings if deemed necessary by the Investment Manager;(2)	(9,814.65)	(4,940.03)	(3,051.06)	(5,988.28)	(8,310.03)	(4,194.23)
• any identified end use as specified in the lender agreement or as deemed necessary by the Investment Manager	-	-	-	-	-	-
Less: Repayment of accrued interest/principal component of senior and additional debt as approved by NHAI	-	-	-	-	-	-
Add : Amount invested by the Trust in the SPV.	-	-	-	-	-	-
Add: Any amount received from toll or annuities not recognised as income for the purposes of working out the Profit after tax	-	-	-	-	-	-
Less: Any amount payable to third parties as deemed necessary by the Investment Manager, including but not limited to NHAI, any engineering, procurement and construction contractors, if such amount has not already been considered for the determination of profit after tax	-	-	-	-	-	-
Add: Interest (or other similar payments) on borrowings (loan, debentures or other instruments) provided by the Trust	1,200.04	606.31	375.68	798.39	1,032.57	506.30
Add: Amount received from settlement of any claims. including from NHAI or any engineering, procurement and construction contractors, to the extent not already considered in profit after tax and adjusted for	-	-	-	-	-	-
(i) any amount payable to any other group entity / third party as per their contractual agreement(s) and/or	-	-	-	-	-	-
(ii) any tax obligation arising from the receipt of such claims	-	-	-	-	-	-
Less : Capital expenditure (if any)	(107.37)	(36.85)	(35.16)	(48.95)	(86.98)	-
Less: Any amount retained for future earnout payments to Walayar Vadakkencherry Expressways Private Limited, DA Toll Road Private Limited, Farakka Raiganj Highways Limited and Ghaziabad Aligarh Expressway Private Limited as per their contractual agreement(s)	-	-	-	-	-	-
Add/less: Any other item of non-cash expense / non cash income (net of actual cash flows for these items), including but not limited to	-	-	-	-	-	-
• any decrease/increase in carrying amount of an asset or a liability recognised in Statement of Profit and Loss on measurement of the asset or the liability at fair value;	(27.26)	(53.23)	(43.66)	(7.17)	(30.89)	(30.25)
• interest cost as per effective interest rate method (difference between accrued and actual paid)	-	-	-	-	-	-
• deferred tax, lease rents recognised on a straight line basis;	-	10.88	19.65	-	-	(9.96)
• unwinding of interest cost on interest free loan or other debentures;(3)	5.26	0.99	1.09	3.25	4.59	10.70
• portion reserve for major maintenance which has not been accounted for in Statement of Profit and Loss;	-	-	-	-	-	-
• reserve for debenture/ loan redemption.	-	-	-	-	-	-
• others	-					
Less: Net cash set aside (i) to comply with reserve requirements under the loan agreements (including but not limited to DSRA and MMRA) or as decided by the IM Board from time to time, adjusted for amount released from DSRA/MMRA or any other reserve in lieu of providing bank guarantee, and/or	-	-	-	-	-	-
(ii) on a prudential basis for repayments of borrowings etc., as appropriate.	-	-	-	-	-	-
Add/Less: Other adjustments, including but not limited to net changes in security deposits, working capital, deferred / prepaid income or deferred / prepaid expenditure, at the SPV.	(167.68)	(14.04)	(5.69)	78.33	12.65	(12.41)
Less: Any cash reserve deemed necessary by the board of directors of the Investment manager ("IM Board") for expenses which may be due in the next financial year but for which there may not be commensurate cash available by the date such expenses become due	-	-	-	-	-	-
Less: Any other adjustment to be undertaken by the Investment Manager to ensure that there is no double counting of the same item for the above calculations	106.98	36.43	33.76	47.68	86.98	-
Total Adjustments (B)	**1,337.11**	**747.33**	**471.22**	**1,071.33**	**1,347.12**	**628.32**
Net Distributable Cash Flows (C) = (A +B)*	**768.38**	**777.48**	**528.35**	**467.24**	**682.15**	**496.84**

*The difference between SPV level NDCF and Trust level NDCF is primarily on account of utilization of opening cash at the SPV level.

(1) Excludes Investments in mutual funds and loss/ gain thereon representing temporary investments.
(2) Includes payment of interest accrued on these borrowings.
(3) Includes unwinding of interest on provisions.

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

SPV wise statement of net distributable cash flows for the period from April 01, 2023 to March 31, 2024 (contd.)

(Amounts in Rs. Million)

Particulars	MKTPL	NKTPL	SMTPL	NDEPL	APEPL[5]	MBEL[4]
Profit after tax as per Statement of Profit and Loss of the SPV (standalone) - A	**(567.09)**	**(790.67)**	**(593.90)**	**(26.25)**	**(74.56)**	**198.18**
Add: Depreciation, impairment, and amortisation as per profit and loss account. In case of impairment reversal, same needs to be deducted from profit and loss.	308.80	243.58	200.13	300.42	0.63	170.95
Add/less: Loss/gain on sale / transfer / disposal / liquidation of infrastructure assets, investments, other assets of the SPVs (if applicable)[1]	-	-	-	-	0.03	0.29
Add: Proceeds from sale / transfer / disposal / liquidation of infrastructure assets, investments, other assets of the SPVs (if applicable), adjusted for the following:[1]	-	-	-	-	-	-
• related debts settled or due to be settled.	-	-	-	-	-	-
• directly attributable transaction costs.	-	-	-	-	-	-
• proceeds reinvested or planned to be reinvested as per Regulation 18(7)(a) of the InvIT Regulations.	-	-	-	-	-	-
Add: Additional borrowings (including debentures / other securities) (external as well as borrowings from Trust) adjusted for the following:	7,539.69	10,515.97	5,948.65	4,096.67	2,050.18	858.44
• any prepayment of borrowings if deemed necessary by the Investment Manager;[2]	(7,539.69)	(7,140.48)	(5,948.65)	(4,096.67)	(1,750.18)	(858.44)
• any identified end use as specified in the lender agreement or as deemed necessary by the Investment Manager	-	-	-	-	-	-
Less: Repayment of accrued interest/principal component of senior and additional debt as approved by NHAI	-	-	-	-	(692.00)	(161.55)
Add : Amount invested by the Trust in the SPV.	-	-	-	-	-	-
Add: Any amount received from toll or annuities not recognised as income for the purposes of working out the Profit after tax	-	-	-	-	701.80	-
Less: Any amount payable to third parties as deemed necessary by the Investment Manager, including but not limited to NHAI, any engineering, procurement and construction contractors, if such amount has not already been considered for the determination of profit after tax	-	(87.18)	-	-	-	-
Add: Interest (or other similar payments) on borrowings (loan, debentures or other instruments) provided by the Trust	1,016.46	1,143.56	788.19	481.12	227.84	110.74
Add: Amount received from settlement of any claims. including from NHAI or any engineering, procurement and construction contractors, to the extent not already considered in profit after tax and adjusted for	-	-	-	-	-	-
(i) any amount payable to any other group entity / third party as per their contractual agreement(s) and/or	-	-	-	-	-	-
(ii) any tax obligation arising from the receipt of such claims	-	-	-	-	-	-
Less : Capital expenditure (if any)	(44.20)	(62.37)	(37.20)	(3.78)	(0.56)	(7.80)
Less: Any amount retained for future earnout payments to Walayar Vadakkencherry Expressways Private Limited, DA Toll Road Private Limited, Farakka Raiganj Highways Limited and Ghaziabad Aligarh Expressway Private Limited as per their contractual agreement(s)	-	-	-	-	-	-
Add/less: Any other item of non-cash expense / non cash income (net of actual cash flows for these items), including but not limited to	-	-	-	-	-	-
• any decrease/increase in carrying amount of an asset or a liability recognised in Statement of Profit and Loss on measurement of the asset or the liability at fair value;	(5.41)	(22.59)	(1.89)	1.15	(22.65)	(14.97)
• interest cost as per effective interest rate method (difference between accrued and actual paid)	-	-	-	-	1.81	2.44
• deferred tax, lease rents recognised on a straight line basis;	-	-	-	-	(0.02)	(10.36)
• unwinding of interest cost on interest free loan or other debentures;[3]	-	3.14	4.17	-	-	62.03
• portion reserve for major maintenance which has not been accounted for in Statement of Profit and Loss;	-	-	-	-	-	-
• reserve for debenture/ loan redemption.	-	-	-	-	-	-
• others	-	-	-	-	(5.82)	22.32
Less: Net cash set aside (i) to comply with reserve requirements under the loan agreements (including but not limited to DSRA and MMRA) or as decided by the IM Board from time to time, adjusted for amount released from DSRA/MMRA or any other reserve in lieu of providing bank guarantee, and/or	-	(3,288.31)	-	-	(300.00)	-
(ii) on a prudential basis for repayments of borrowings etc., as appropriate.	-	-	-	-	-	-
Add/Less: Other adjustments, including but not limited to net changes in security deposits, working capital, deferred / prepaid income or deferred / prepaid expenditure, at the SPV.	58.12	(273.05)	66.17	(33.21)	590.10	(220.70)
Less: Any cash reserve deemed necessary by the board of directors of the Investment manager ("IM Board") for expenses which may be due in the next financial year but for which there may not be commensurate cash available by the date such expenses become due	-	-	-	-	-	-
Less: Any other adjustment to be undertaken by the Investment Manager to ensure that there is no double counting of the same item for the above calculations	42.32	59.90	33.79	-	-	-
Total Adjustments (B)	**1,376.09**	**1,092.17**	**1,053.36**	**745.70**	**801.16**	**(46.61)**
Net Distributable Cash Flows (C) = (A +B)*	**809.00**	**301.50**	**459.46**	**719.45**	**726.60**	**151.57**

*The difference between SPV level NDCF and Trust level NDCF is primarily on account of utilization of opening cash at the SPV level.

(1) Excludes Investments in mutual funds and loss/ gain thereon representing temporary investments.
(2) Includes payment of interest accrued on these borrowings.
(3) Includes unwinding of interest on provisions.
(4) MBEL has retained amounts payable towards major maintenance.
(5) APEPL has retained amounts payable towards major maintenance, debt payment, operating expense.

CUBE HIGHWAYS TRUST
Registered office : Upper Ground Floor, B-376, Nirman Vihar, New Delhi- 110092
SEBI Registration Number- IN/INVIT/ 22-23/ 0022
Statement of Net Distributable Cash Flows for year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

SPV wise statement of net distributable cash flows for the period from April 01, 2023 to March 31, 2024

Particulars	JMTPL	WUPTPL	GAEPL	WVEPL	FRHPL	DATRPL
Profit after tax as per Statement of Profit and Loss of the SPV (standalone) - A	**1,218.25**	**140.36**	**(269.72)**	**(127.64)**	**(843.14)**	**(610.96)**
Add: Depreciation, impairment, and amortisation as per profit and loss account. In case of impairment reversal, same needs to be deducted from profit and loss.	349.09	792.94	567.89	239.83	538.49	1,196.04
Add/less: Loss/gain on sale / transfer / disposal / liquidation of infrastructure assets, investments, other assets of the SPVs (if applicable)(1)	0.46	0.24	0.36	-	0.20	0.13
Add: Proceeds from sale / transfer / disposal / liquidation of infrastructure assets, investments, other assets of the SPVs (if applicable), adjusted for the following:(1)	-	-	-	4.57	-	-
• related debts settled or due to be settled.	-	-	-	-	-	-
• directly attributable transaction costs.	-	-	-	-	-	-
• proceeds reinvested or planned to be reinvested as per Regulation 18(7)(a) of the InvIT Regulations.	-	-	-	-	-	-
Add: Additional borrowings (including debentures / other securities) (external as well as borrowings from Trust) adjusted for the following:	1,974.58	2,585.15	21,154.60	5,226.39	16,641.28	28,953.03
• any prepayment of borrowings if deemed necessary by the Investment Manager;(2)	(1,974.58)	(2,585.15)	(16,298.35)	(5,226.39)	(16,641.28)	(28,953.03)
• any identified end use as specified in the lender agreement or as deemed necessary by the Investment Manager	-	-	-	-	-	-
Less: Repayment of accrued interest/principal component of senior and additional debt as approved by NHAI	-	-	-	-	-	-
Add : Amount invested by the Trust in the SPV.	-	-	-	-	-	-
Add: Any amount received from toll or annuities not recognised as income for the purposes of working out the Profit after tax	-	-	-	-	-	-
Less: Any amount payable to third parties as deemed necessary by the Investment Manager, including but not limited to NHAI, any engineering, procurement and construction contractors, if such amount has not already been considered for the determination of profit after tax	-	-	(1,200.50)	-	-	-
Add: Interest (or other similar payments) on borrowings (loan, debentures or other instruments) provided by the Trust	203.44	279.31	2,519.47	656.98	2,084.13	3,304.36
Add: Amount received from settlement of any claims. including from NHAI or any engineering, procurement and construction contractors, to the extent not already considered in profit after tax and adjusted for	-	-	-	-	-	-
(i) any amount payable to any other group entity / third party as per their contractual agreement(s) and/or	-	-	-	-	-	-
(ii) any tax obligation arising from the receipt of such claims	-	-	-	-	-	-
Less : Capital expenditure (if any)	(1.92)	(1.16)	(3,808.50)	(4.35)	(6.98)	(36.41)
Less: Any amount retained for future earnout payments to Walayar Vadakkencherry Expressways Private Limited, DA Toll Road Private Limited, Farakka Raiganj Highways Limited and Ghaziabad Aligarh Expressway Private Limited as per their contractual agreement(s)	-	-	-	-	-	-
Add/less: Any other item of non-cash expense / non cash income (net of actual cash flows for these items), including but not limited to	-	-	-	-	-	-
• any decrease/increase in carrying amount of an asset or a liability recognised in Statement of Profit and Loss on measurement of the asset or the liability at fair value;	(2.50)	(6.45)	3.28	0.29	(9.71)	(20.92)
• interest cost as per effective interest rate method (difference between accrued and actual paid)	-	-	-	-	-	-
• deferred tax, lease rents recognised on a straight line basis;	(202.90)	-	-	-	-	89.87
• unwinding of interest cost on interest free loan or other debentures;(3)	15.56	18.83	36.53	0.99	5.18	6.68
• portion reserve for major maintenance which has not been accounted for in Statement of Profit and Loss;	-	-	-	-	-	-
• reserve for debenture/ loan redemption.	-	-	-	-	-	-
• others	3.79	4.65	(12.27)	0.23	(2.74)	(20.68)
Less: Net cash set aside (i) to comply with reserve requirements under the loan agreements (including but not limited to DSRA and MMRA) or as decided by the IM Board from time to time, adjusted for amount released from DSRA/MMRA or any other reserve in lieu of providing bank guarantee, and/or	-	-	-	-	-	-
(ii) on a prudential basis for repayments of borrowings etc., as appropriate.	-	-	-	-	-	-
Add/Less: Other adjustments, including but not limited to net changes in security deposits, working capital, deferred / prepaid income or deferred / prepaid expenditure, at the SPV.	(117.00)	(47.23)	(818.80)	(265.11)	(82.26)	(1,633.28)
Less: Any cash reserve deemed necessary by the board of directors of the Investment manager ("IM Board") for expenses which may be due in the next financial year but for which there may not be commensurate cash available by the date such expenses become due	-	-	(1,000.00)	-	-	(100.00)
Less: Any other adjustment to be undertaken by the Investment Manager to ensure that there is no double counting of the same item for the above calculations	-	-	1,653.10	-	-	-
Total Adjustments (B)	**248.02**	**1,041.13**	**2,796.81**	**633.43**	**2,526.31**	**2,785.79**
Net Distributable Cash Flows (C) = (A +B)*	**1,466.27**	**1,181.49**	**2,527.09**	**505.79**	**1,683.17**	**2,174.83**

*The difference between SPV level NDCF and Trust level NDCF is primarily on account of utilization of opening cash at the SPV level.

(1) Excludes Investments in mutual funds and loss/ gain thereon representing temporary investments.
(2) Includes payment of interest accrued on these borrowings.
(3) Includes unwinding of interest on provisions.

The above Statement of Net Distributable Cash Flows (NDCFs) should be read in conjunction with the accompanying notes 1 to 74

As per our report of even date attached

For S.B. Billimoria & Co. LLP
Chartered Accountants

Pramod Baijnath Shukla
Digitally signed by Pramod Baijnath Shukla
Date: 2026.07.02 20:03:25 +05'30'

Pramod B. Shukla
Partner
Place: Mumbai
Date: July 02, 2026

For and on behalf of the Board of Directors of
Cube Highways Fund Advisors Private Limited
(the "Investment Manager" in its capacity as the Investment Manager of Cube Highways Trust)

UPENDRA KUMAR SINHA
Digitally signed by UPENDRA KUMAR SINHA
Date: 2026.07.02 19:07:34 +05'30'

Upendra Kumar Sinha
Chairman
DIN: 00038123
Place: New Delhi
Date: July 02, 2026

VINAY C SEKAR
Digitally signed by VINAY C SEKAR
Date: 2026.07.02 19:09:24 +05'30'

Vinay Chandramouli Sekar
Chief Executive Officer

Place: Gurugram
Date: July 02, 2026

PANKAJ VASANI
Digitally signed by PANKAJ VASANI
Date: 2026.07.02 19:11:15 +05'30'

Pankaj Vasani
Chief Financial Officer

Place: Noida
Date: July 02, 2026

Richa Gupta Rohatgi
Digitally signed by Richa Gupta Rohatgi
Date: 2026.07.02 19:13:22 +05'30'

Richa Gupta Rohatgi
Compliance Officer & CS
MRN: A24446
Place: Noida
Date: July 02, 2026

Cube Highways Trust
Notes forming part of Consolidated Financial Statements for the year ended March 31, 2026

1. Group Information

(i) The Consolidated Financial Statements comprise financial statements of the Cube Highways Trust and its subsidiaries (referred as "SPVs").

Cube Highways and Transportation Assets Advisors Private Limited ("Settlor") set up Cube Highways Trust (the "Trust") by way of the Original Trust Deed dated December 7, 2021 as a contributory irrevocable trust under the provisions of the Indian Trusts Act, 1882. The registered office address of the Trust is B-376, UGF, Nirman Vihar, New Delhi 110092.

On April 5, 2022, the Trust got registered as an infrastructure investment trust under the Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014, having registration number IN/InvIT/22-23/0022. The Original Trust Deed was amended and restated by way of the Trust Deed dated July 8, 2022, which was subsequently further amended and restated by the Trust Deed dated March 11, 2024. The Trustee to the Trust is Axis Trustee Services Limited (the "Trustee"). The Investment Manager for the Trust is Cube Highways Fund Advisors Private Limited (the "Investment Manager"). The Trust got its units listed on National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) w.e.f. April 19, 2023.

The objective of the Trust is to carry on the activities of an infrastructure investment trust, as permissible under the InvIT Regulations. The Trust has been formed to invest in infrastructure assets primarily being in the road sector in India. As at 31 March 2026, the Trust has made investments in 27 road assets (31 March 2025: 25 road Assets and 31 March 2024: 18 road Assets) through special purpose vehicles ("SPVs"/subsidiaries). All the road projects are implemented, operated, and held through these SPVs. The SPVs have entered into concession agreements with the National Highways Authority of India ("NHAI") or the State Authorities under different models, including Design, Build, Finance, Operate and Transfer (DBFOT), Toll Operate Transfer (TOT), Build Operate and Transfer Annuity (BOT Annuity) and Hybrid Annuity Model (HAM). These concession agreements govern the development, operation, maintenance, and transfer of the respective road infrastructure assets in accordance with terms specified therein.

(ii) The Trust acquired the following SPVs/ subsidiaries, which have entered into concession agreements with NHAI or State Authorities on Design, Build, Finance, Operate and Transfer (DBFOT) or Toll Operate Transfer (TOT) or Build Operate and Transfer Annuity (BOT Annuity) or Hybrid Annuity Model (HAM):

Sr. No.	Name of SPVs	Date of incorporation	Date of acquisition	Principal activity	Principal place of business	Percentage of Shareholding acquired by the Trust
1	Western UP Tollway Private Limited (WUPTPL) (formerly known as Western UP Tollway Limited)	20-Apr-05	17-Apr-23	Construction, operation & maintenance of toll roads including toll collection	Uttar Pradesh	100%
2	Andhra Pradesh Expressway Private Limited (APEPL) (formerly known as Andhra Pradesh Expressway Limited)	11-Nov-05	17-Apr-23	Construction, operation & maintenance of toll roads under BOT Annuity Model	Andhra Pradesh	100%
3	Jaipur-Mahua Tollway Private Limited (JMTPL) (formerly known as Jaipur-Mahua Tollway Limited)	18-Mar-05	17-Apr-23	Construction, operation & maintenance of toll roads including toll collection.	Rajasthan	100%

Sr. No.	Name of SPVs	Date of incorporation	Date of acquisition	Principal activity	Principal place of business	Percentage of Shareholding acquired by the Trust
4	Mahua Bharatpur Expressways Limited (MBEL)	23-Mar-05	17-Apr-23		Rajasthan	Trust - 99.97% Madhucon Infra Limited- 0.03%
5	Farakka Raiganj Highways Private Limited (FRHPL) (formerly known as Farakka Raiganj Highways Limited)	11-Mar-10	17-Apr-23	Construction, operation & maintenance of toll roads including toll collection	West Bengal	100%
6	DA Toll Road Private Limited (DATRPL)	26-May-10	17-Apr-23		Haryana and Uttar Pradesh	100%
7	Ghaziabad Aligarh Expressway Private Limited (GAEPL)	18-Dec-09	17-Apr-23		Uttar Pradesh	100%
8	Walayar Vaddakencherry Expressways Private Limited (WVEPL) (formerly known as "KNR Walayar Tollways Private Limited")	16-Aug-12	17-Apr-23		Kerala	100%
9	Nelamangala Devihalli Expressway Private Limited (NDEPL) (formerly known as "Gradient Infra Assets Advisors Private Limited")	20-Nov-17	17-Apr-23		Karnataka	100%
10	Hazaribagh Tollway Private Limited (HTPL) (formerly known as Hazaribagh Tollway Limited)	13-Dec-19	17-Apr-23		Jharkhand	100%
11	Jhansi-Lalitpur Tollway Private Limited (JLTPL) (formerly known as Jhansi-Lalitpur Tollway Limited)	17-Dec-19	17-Apr-23		Madhya Pradesh	100%
12	Jhansi-Vigakhet Tollway Private Limited (JVTPL) (formerly known as Jhansi-Vigakhet Tollway Limited)	13-Dec-19	17-Apr-23		Madhya Pradesh	100%

Sr. No.	Name of SPVs	Date of incorporation	Date of acquisition	Principal activity	Principal place of business	Percentage of Shareholding acquired by the Trust
13	Kanyakumari-Etturavattam Tollway Private Limited (KETPL) (formerly known as Kanyakumari-Etturavattam Tollway Limited)	13-Dec-19	17-Apr-23	Toll collection from the users and operation and maintenance of Road Projects.	Tamil Nadu	100%
14	Kotwa-Muzaffarpur Tollway Private Limited (KMTPL) (formerly known as Kotwa-Muzaffarpur Tollway Limited)	13-Dec-19	17-Apr-23	Toll collection from the users and operation and maintenance of Road Projects.	Bihar	100%
15	Lucknow-Raebareli Tollway Private Limited (LRTPL) (formerly known as Lucknow-Raebareli Tollway Limited)	13-Dec-19	17-Apr-23	Toll collection from the users and operation and maintenance of Road Projects.	Uttar Pradesh	100%
16	Madurai-Kanyakumari Tollway Private Limited (MKTPL) (formerly known as Madurai-Kanyakumari Tollway Limited)	13-Dec-19	17-Apr-23	Toll collection from the users and operation and maintenance of Road Projects.	Tamil Nadu	100%
17	Nanguneri-Kanyakumari Tollway Private Limited (NKTPL) (formerly known as Nanguneri-Kanyakumari Tollway Limited)	13-Dec-19	17-Apr-23	Toll collection from the users and operation and maintenance of Road Projects.	Tamil Nadu	100%
18	Salaipudhur-Madurai Tollway Private Limited (SMTPL) (formerly known as Salaipudhur-Madurai Tollway Limited)	13-Dec-19	17-Apr-23	Toll collection from the users and operation and maintenance of Road Projects.	Tamil Nadu	100%
19	Srirangam Infra Private Limited (SIPL) (formerly KNR Srirangam Infra Private Limited)	11-Apr-18	4-Jun-24	Operation and maintenance of Road Projects under Hybrid Annuity Model	Tamil Nadu	100%
20	Shankarampet Projects Private Limited (SPPL) (formerly KNR Shankarampet Projects Private Limited)	11-Apr-18	4-Jun-24		Telangana	100%

Sr. No.	Name of SPVs	Date of incorporation	Date of acquisition	Principal activity	Principal place of business	Percentage of Shareholding acquired by the Trust
21	Tirumala Highways Private Limited (THPL) (formerly KNR Tirumala Infra Private Limited)	11-Apr-18	4-Jun-24	Operation and maintenance of Road Projects under Hybrid Annuity Model	Andhra Pradesh	100%
22	Borgaon Watembare Highways Private Limited (BWHPL)	11-Apr-18	4-Jun-24		Maharashtra	100%
23	Mangalwedha Solapur Highways Private Limited (MSHPL)	11-Apr-18	4-Jun-24		Maharashtra	100%
24	Mangloor Highways Private Limited (MHPL)	11-Apr-18	4-Jun-24		Maharashtra	100%
25	N.A.M. Expressway Private Limited (NAMEPL) (formerly N.A.M. Expressway Limited)	15-Jun-10	12-Feb-25	Construction, operation & maintenance of toll roads including toll collection	Andhra Pradesh and Telangana	100%
26	Quazigund Expressway Private Limited (QEPL)	21-May-10	12-Jun-25	Construction, operation & maintenance of toll roads under BOT Annuity Model	Jammu and Kashmir	100%
27	Jammu Udhampur Highway Private Limited (JUHPL) (formerly Athaang Jammu Udhampur Highway Private Limited)	25-Jun-10	12-Jun-25	Construction, operation & maintenance of toll roads under BOT Annuity Model	Jammu and Kashmir	100%

Note: SPVs at Sr.No. 19 to 24 are hereafter being collectively referred as "HAM SPVs".

The above SPVs have been considered for the preparation of these Consolidated Financial Statements. Since the Trust has acquired various SPVs at different dates as detailed above, the Consolidated Financial Statements for the year ended March 31, 2026 are not comparable with the previous periods as included in the Consolidated Financial Statements.

2. Basis of preparation and material accounting policies

I. Basis of preparation

The Consolidated Financial Statements of the Trust Group comprising of the Consolidated Balance Sheet as at March 31, 2026, the Consolidated Statement of Profit and Loss (including Other Comprehensive Income), the Consolidated Statement of Cash Flows, the Consolidated Statement of Changes in Unitholders' Equity, the Statement of Net Distributable Cash Flows (NDCFs) of the Trust and each of its subsidiaries for the year then ended (together referred to as the "Consolidated Financial Statements") and a summary of material accounting policies and other explanatory notes to the Consolidated Financial Statements.

The Consolidated Financial Statements also include the following comparative information:

- Consolidated Balance Sheets as at March 31, 2025 and March 31, 2024
- Consolidated Statements of Profit and Loss (including Other Comprehensive Income) for the years ended March 31, 2025 and March 31, 2024.
- Consolidated Statements of Cash Flows for the years ended March 31, 2025 and March 31, 2024.
- Consolidated Statements of Net Distributable Cash Flows (NDCF) of the Trust and its subsidiaries for the years ended March 31, 2025 and March 31, 2024.

These Consolidated Financial Statements have been prepared in accordance with Indian Accounting Standard, prescribed under section 133 of the Companies Act 2013 (as amended) ("Ind AS") to the extent not inconsistent with the Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014, as amended (the "SEBI InvIT Regulations" or "InvIT Regulations") (Refer note 19(a)(v) of Consolidated Financial Statements on presentation of "Unit capital" as "Equity" instead of compound financial instruments under Ind AS 32- Financial Instruments: Presentation), other relevant provisions relating to disclosures required as per of the SEBI InvIT Regulations, including Chapter 3 of the SEBI InvIT Master Circular SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025 for Infrastructure Investment Trusts (InvITs) ("Master Circular") and other accounting principles generally accepted in India.

The comparative Consolidated Financial Statements as at and for the years ended March 31, 2025 and March 31, 2024 were approved by the Board of Directors of the Investment Manager in their meeting held on May 28, 2025 and May 22, 2024 on which auditors had issued unmodified opinion on those Consolidated Financial Statements vide their audit reports dated May 28, 2025, and May 22, 2024 respectively. The Management of the Investment Manager has made additional disclosures and regrouped/rearranged the comparative Consolidated Financial Statements to comply with the requirements of the Master Circular read with Schedule III, Division II, of the Companies Act, 2013. Accordingly, comparative figures for the years ended March 31, 2025 and March 31, 2024, relating to (i) realised/unrealised gains on mutual funds and interest on fixed deposits, and (ii) legal and professional fees, investment management fees, project management fees, trustee fees, custodian fees, insurance expenses, audit fees, and valuation expenses, which were previously presented on the face of the Statement of Profit and Loss, have been regrouped under "Other Income" (Note 31) and "Other Expenses" (Note 35), respectively, in these Consolidated Financial Statements.

Such regrouping and rearrangement of comparative information has no impact on the total income, total expenses, profit for the year, total comprehensive income, net assets/equity or cash flows as previously reported.

The Trust had prepared a separate set of annual consolidated financial statements as at and for the year ended March 31, 2026, in accordance with the requirements of Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014 as amended (the SEBI InvIT Regulations) and in conformity with the Indian Accounting Standards prescribed under section 133 of the Companies Act 2013, as amended and other accounting principles generally accepted in India, to the extent not inconsistent with the SEBI InvIT Regulations. These consolidated financial statements were approved by the Board of Directors of Investment Manager in their meeting held on May 22, 2026.

Accounting policies have been consistently applied except where a newly issued accounting standard is initially adopted or a revision to an existing accounting standard requires a change in the accounting policy hitherto in use.

The Consolidated Financial Statements of the Trust Group have been prepared on a going concern basis in accordance with the accounting principles generally accepted in India. However, the Consolidated Financial Statements include the financial statements of two Special Purpose Vehicles (SPVs), namely APEPL and WUPTPL, whose concession periods are scheduled to expire within the ensuing 12 months. While these entities will continue as legal entities, their principal revenue-generating operations will cease upon expiry of the concession period, and no material revenue is expected thereafter. Accordingly, the financial statements of these SPVs have been prepared on a non-going concern basis and have been consolidated on that basis. These SPVs are not material to the Trust Group, and accordingly, the preparation of their financial statements on a non-going concern basis does not have a material impact on the overall Consolidated Financial Statements of the Trust Group.

The Consolidated Financial Statements have been prepared on a historical cost basis, applying uniform accounting policies for like transactions and other events in similar circumstances, except for certain financial instruments and contingent consideration, which are measured at fair value at the end of each reporting period, as described in the relevant accounting policies. The Consolidated Financial Statements are presented in India Rupees which is also the functional currency of the Trust Group, and all values are rounded to the nearest million, unless otherwise stated.

Impact of the initial application of new and amended IND AS that are effective from current year:

Ministry of Corporate Affairs ("MCA") notifies new standards or amendments to the existing standards under Companies (Indian Accounting Standards) Rules as issued from time to time.

In May 2025, MCA notified amendments to Ind AS 21 - The Effects of Changes in Foreign Exchange Rates, applicable w.e.f. April 1, 2025. The Trust Group has reviewed the amendment and based on its evaluation has determined that it does not have any impact in its consolidated financial statements.

In August 2025, MCA notified the following amendments to:

1. Ind AS 1, Presentation of Financial Statements, applicable w.e.f April 1, 2025 - The amendment relates to classification of liabilities as current or non -current and non-current liabilities with covenants. In the context of classifying a liability as current, it removes the requirement of existence of a right to defer settlement for at least 12 months after the reporting date and instead requires that the said right should exist on the reporting date and have substance. The amendment also introduces guidance on classification of liabilities with covenants. The Group has no impact of these amendments in its classification criteria of current and non-current liabilities.

2. Ind AS 7, Statement of Cash Flows and Ind AS 107, Financial Instruments - Disclosures, applicable w.e.f April 1, 2025 – The amendment in Ind AS 7 requires to inform users of financial statements of the existence of supplier finance arrangements and explain the nature of the arrangements, the carrying amount of liabilities and the range of payment due dates. Ind AS 107 has been amended to add supplier finance arrangements as a factor that may cause concentration of liquidity risk. The Group has reviewed the amendment and based on its evaluation has determined that it does not have any impact in its consolidated financial statements.

3. Ind AS 12, International Tax Reform – Pillar Two Model Rules applicable immediately - The amendments provide a temporary mandatory relief from deferred tax accounting for top-up tax and disclose that they have applied the relief. This relief is immediate and applies retrospectively. The amendments also require companies to provide new disclosures to compensate for potential loss of information resulting from the relief. Such disclosures are to be provided for annual reporting periods beginning on or after April 1, 2025. The Group has reviewed the amendment and based on its evaluation has determined that it does not have any impact in its consolidated financial statements.

II. Statement of Compliance

The Consolidated Financial Statements have been prepared in accordance with the Indian Accounting Standard as defined in Rule 2(1)(a) of the Companies (Indian Accounting Standards) Rules, 2015, as

amended, presentation and disclosure requirements of Division II of Schedule III and other accounting principles generally accepted in India to the extent not inconsistent with the SEBI InvIT Regulations as more fully described above and as given in Note 19(a)(iii) to the Consolidated Financial Statements and presentation.

III. Summary of Material Accounting Policies

a) Basis of Consolidation

Trust Group consolidates entities which it owns or controls. Control exists when the Trust has power over the entity, is exposed, or has rights, to variable returns from its involvement with the entity and has the ability to affect those returns by using its power over the entity. Power is demonstrated through existing rights that give the ability to direct relevant activities, those which significantly affect the entity's returns. Subsidiaries are Consolidated from the date on which control is transferred to the Trust Group until the date control ceases.

Consolidated Financial Statements are prepared using uniform accounting policies for like transactions and other events in similar circumstances. The Trust Group combines the financial statements of the Trust and its subsidiaries line by line adding together like items of assets, liabilities, equity, income and expenses. Intercompany transactions, balances and unrealized gains on transactions between group companies are eliminated.

b) Asset Acquisition

If the acquisition of the asset or a group of assets does not constitute a business, the Trust identifies and recognises the individual identifiable assets acquired (including those assets that meet the definition of, and recognition criteria for, intangible assets in Ind AS 38, Intangible Assets) and liabilities assumed. The cost of the group is allocated to the individual identifiable assets and liabilities on the basis of their relative fair values at the date of purchase and no goodwill is recognised.

When the consideration transferred by the Trust in the asset acquisition includes a contingent consideration arrangement, the contingent consideration is measured at its acquisition-date fair value and included as part of the consideration transferred. Contingent consideration is remeasured to fair value at subsequent reporting dates with changes in fair value recognised in profit or loss.

c) Current and non-current classification

Based on the time involved between the acquisition of assets for processing and their realisation in cash and cash equivalents, the Trust Group has identified twelve months as its operating cycle for determining current and non- current classification of assets and liabilities in the balance sheet.

d) Critical accounting judgements and key sources of estimation uncertainty

The preparation of these Consolidated Financial Statements requires management to make judgements, estimates and assumptions that affect the reported amounts of assets, liabilities, income and expenses, and the accompanying disclosures.

The Management believes that the estimates used in preparation of the Consolidated Financial Statements are prudent and reasonable. However, actual results could differ from these estimates. Any revision to accounting estimates is recognised prospectively in the current and future periods.

1. Classification of Unitholders' funds:

The Unit Capital has been presented as "Equity" in accordance with the SEBI InvIT Regulations instead of compound financial instrument. Refer note 19(a)(v) of Consolidated Financial Statements on presentation of "Unit capital" as "Equity" instead of compound financial instruments under Indian Accounting Standard (Ind AS) 32- Financial Instruments: Presentation.

2. Fair valuation and disclosures

SEBI Master Circular issued under the SEBI InvIT Regulations require disclosures relating to net assets at fair value and total returns at fair value. In estimating the fair value of investments in subsidiaries (which constitute a substantial portion of the net assets), the Trust engages independent qualified external valuers to perform the valuation. The Investment Manager of the Trust works closely with the valuers to establish the appropriate valuation techniques and inputs to the valuation model. The inputs to the valuation models are taken from observable markets where possible, but where this is not feasible, a degree of judgement is required in establishing fair values. Judgements include considerations of inputs such as determination of future cash flows, traffic estimates, assessment of the variation in concession period in certain subsidiaries considered on account of Target Traffic subject to approvals from the authorities, discount rates, revenue growth rate and inflation and other economic factors, tax rates, etc. Changes in assumptions about these factors could affect fair value (Refer note 57 & 58 of Consolidated Financial Statements).

3. Applicability of service concession arrangement (SCA) accounting to the concessionaire arrangements entered into by the SPVs

The Trust Group has determined that Appendix C to Ind AS 115 "Revenue from Contracts with Customers" relating to 'Service Concession Arrangements' is applicable to the SPVs which provides an accounting by the operators of public to private service concession arrangements. The SPVs have entered into concession arrangement with National Highway Authority of India (NHAI) or respective State Highway Authority (the "Authority") as per which the individual SPVs would participate in Design, Build, Finance, Operate and Transfer (DBFOT) or Toll Operate Transfer (TOT) or Hybrid Annuity Model (HAM) of the toll roads infrastructure. After the end of the Concession arrangement, the SPVs have to transfer the infrastructure i.e. toll roads constructed to the Authority.

Accordingly, the SPVs other than APEPL, AJUHPL, QEPL and HAM SPVs have recognized the intangible assets as per the accounting policy mentioned in Note (f) Intangible Assets.

The accounting for Receivables against SCA ("financial assets") requires APEPL, AJUHPL, QEPL and HAM SPVs to allocate the consideration over Construction and Operating & Maintenance (O&M) activities. Revenue is allocated over "Operating & Maintenance (O&M) activities" based on estimated future operating & maintenance cash flows. The estimates of operating & maintenance cash flows require management to make significant judgments and estimates, which include assumptions related to expected future expenses and inflation. The judgments and estimates including assumptions related to expected future expenses, inflation and reliability of forecast of future expenses through the review of actual expenses against previous forecasts are reviewed periodically by the management.

4. Assessment of concession period under Service Concession Arrangements (SCA)

The concession period is specified under the SCA agreement entered into by the respective SPVs with the Grantor (NHAI/ State authorities). However, it may vary based on the terms of the respective SPVs depending upon achievement of conditions relating to Target Traffic or Target revenue generated at Target date specified in the SCA. For the purposes of estimation of variation in the concession period at each reporting period, the Trust evaluates the contractual entitlement to variations in concession period on a case-to-case basis taking into account the provisions of the concession agreement of the respective SPVs, the facts and circumstances giving rise to such variations and the status of the approvals for such variation. Estimating the concession period under Appendix C of Ind AS 115 requires a careful analysis of the specific service concession arrangement. For estimation of the concession period, the Management considers future traffic estimates with the help of an independent expert, assessment of outcomes with respect to disputes/ arbitration with the Grantor for the SPVs claims for variation in concession period on account of Target Traffic, etc. based on the legal advice received, discount rates, revenue growth rate and inflation and other economic factors, as considered relevant. Based on the above, the Management has considered variation in concession period for certain SPVs (Refer Note 52) for the purpose of estimating amortization of Intangible Assets- Toll Road Carriageway, estimating fair value of net assets of SPVs and also for determination of recoverable amounts for Intangible Assets- Toll Road Carriageway of SPVs.

5. Amortisation of Rights under Service Concession Arrangements (SCA) i.e. Intangible Assets- Toll Road Carriageway

Certain SPVs (viz. MBEL, JMTPL, WUPTPL, GAEPL and NAMEL) which has toll collection rights in respect of SCA commenced before April 1, 2014, recognizes the amortization of intangible assets relating to SCA based on proportion of actual revenue earned for the period over the sum of actual revenue for the period and projected revenue from Toll Road Carriageway expected to be earned over the balance concession period as estimated by the management of respective SPVs. The future revenue projections are based on the assumptions made by the Trust Group's management regarding future traffic growth, concession period referred above and inflation factor for assessing user toll fee as supported by the studies from the third-party independent consultant for individual SPV done at reasonable intervals.
For other SPVs which has toll collection rights in respect of SCA commenced after April 1, 2014, the intangible assets relating to Service Concession Agreements is being amortised over the estimated useful life (being the concession period referred above).
The estimated useful life of Rights under Service Concession Arrangement – Intangible assets and the projected revenue is reviewed at the end of each reporting period, with the effect of any changes in estimate being accounted for on a prospective basis.

6. Provision for periodic maintenance (overlay expenses)

The Trust Group estimates and provides for contractual obligations as per SCA with NHAI to restore the infrastructure to a specified level of serviceability at periodic intervals during the concession period or before it is handed over to NHAI. These estimates are corroborated through purchase orders/ work orders placed or to be placed by the Trust Group as per the road survey reports issued by an independent field expert and major maintenance strategy/ methodology approved by the Independent Consultant appointed by NHAI. As the estimated cost is based on the various assumptions such as current infrastructure (road, pavements, etc.) condition, expected timings of costs, inflation in material cost, discount rate, government policies etc., hence the Trust Group's management is required to apply judgement over these factors for revalidating the provision for expenses which is reviewed on annual basis.

7. Provision for Improvement works

Certain SPVs estimates and provides for contract liability in respect of unavoidable obligations to improve/upgrade the infrastructure to be undertaken as per the Concession Agreement with NHAI. These estimates are corroborated through purchase orders/ work orders placed or to be placed by these SPVs as per the road survey reports issued by an independent field expert. As the estimated cost is based on the various assumptions such as current infrastructure (road, pavements, etc.) condition, inflation in material cost etc., hence the Trust Group's management is required to apply judgement over these factors.

8. Income taxes and deferred tax

Judgements are involved in determining the provision for income taxes including judgement on whether tax positions are probable of being sustained in tax assessments. A tax assessment can involve interpretation issues, which can only be resolved over extended time periods.

Significant management judgement is also required to determine the amount of deferred tax assets that can be recognised, based upon the likely timing and the level of future taxable profits together with future tax planning strategies.

The Trust Group reviews the carrying amount of deferred tax assets (net) at the end of each reporting period. The Trust Group has recognised the deferred tax assets relating to carried forward losses and minimum alternate tax (MAT) credit to the extent there are sufficient taxable temporary differences available against which the unused tax losses can be utilized. Further, deferred tax assets have been recognised to the extent of deferred tax liabilities, in the absence of reasonable certainty that future taxable amounts will be available to utilize temporary differences.

The Trust Group has not recognised the deferred tax assets and liabilities on deductible temporary differences and tax losses reversing or originating and reversing during tax holiday period under section 80IA of the Income-tax Act, 1961 which have been estimated basis the future projections.

Deferred tax assets and liabilities are classified as non- current assets and liabilities.

9. Accounting for acquisition of Subsidiaries

The Trust Group has applied the optional concentration test, under Ind AS 103 "Business Combination", and concluded that the acquired set of activities and assets is not a business because substantially all of the fair value of the gross assets acquired is concentrated in Intangible Assets-Rights under Service Concession Arrangements (other than APEPL, JUHPL, QEPL and HAM SPVs) and Receivable under Service Concession Arrangements (for APEPL, JUHPL, QEPL and HAM SPVs), with similar risk characteristics. Accordingly, this transaction has been accounted for as an asset acquisition (Refer Note 50).

10. Impairment of financial assets

The impairment provision for financial assets is based on assumptions about risk of default and expected loss rates. The Trust Group uses judgement in making these assumptions and selecting the inputs to the impairment calculation, based on the existing market conditions as well as forward looking estimates at the end of each reporting period.

11. Impairment of intangible assets - Rights under Service Concession Arrangements

The Trust Group uses the estimated future cash flows in assessing value in use for intangible assets. Future estimated cash flows are discounted to their present value using a pre-tax discount rate that reflects the current market assessments of the time value of money and the risks specific to the asset for which the estimated future cash flows have not been adjusted.

The inputs to the valuation models are taken from observable markets where possible, but where this is not feasible, a degree of judgment is required in establishing fair values. The recoverable amounts for the intangible assets are based on value in use of the underlying SPVs as determined by an independent valuer using discounted cash flow method which involves management judgement in respect of various key assumptions used as inputs such as determination of future cash flows, estimation of concession period considering the relevant terms of the SCA dealing with modification of the concession period, future traffic estimates with the help of an independent expert, assessment of outcomes with respect to disputes/ arbitration with the Grantor for the SPVs claims for variation in concession period on account of Target Traffic, etc. supported by the legal advice, discount rates, revenue growth rate and inflation and other economic factors. The cash flows are derived from forecasts over the remaining SCA period of the SPVs.

12. Accounting of Compound financial instruments

Certain SPVs included in the Trust Group have issued Unsecured, Optionally Convertible Debentures (OCDs) on private placement basis to various related parties (Subscribers) in previous years. During the current year, the OCD Subscribers sought premature redemption of the OCDs at face value with accrued but unpaid interest on the OCDs. The SPVs have allocated the consideration paid for redemption of OCDs to the liability and equity components of the instrument at the date of the redemption.

13. Useful lives of property, plant, and equipment

Management of the Trust Group reviews the useful lives of property, plant and equipment at each reporting date to ensure that the useful lives represent the expected utility of the assets to the Trust Group.

14. Obligations relating to employee benefits

The employee benefit obligation depends on several factors (including applicable laws) that are determined on an actuarial basis using several assumptions. The assumptions used in determining the net cost/ (income) include the discount rate, inflation and mortality assumptions. Any changes in these assumptions will impact upon the carrying amount of employee benefit obligations.

e) Property, plant, and equipment

Property, plant and equipment are stated at historical cost, as applicable, less accumulated depreciation and cumulative impairment losses, if any.

Historical cost includes purchase price, borrowing costs and any cost directly attributable to bringing the assets to its working condition for its intended use.

Subsequent costs are included in the asset's carrying amount or recognised as a separate asset, as appropriate, only when it is probable that the future economic benefits associated with the item will flow to the entity and the cost of the item can be measured reliably. Cost includes expenditure that is directly attributable to qualifying assets and includes borrowing costs capitalised in accordance with the Trust Group's accounting policy. Such properties are classified to the appropriate categories of property, plant, and equipment when completed and ready for intended use.

Depreciation on Plant and Equipment is provided using straight-line method based on estimated useful life. The estimated useful life of all the property, plant and equipment is ascertained by the management using the best estimate on the basis of technical evaluation, which is depreciated based on useful life as prescribed in Schedule II of the Companies Act, 2013. Depreciation on additions/ deductions is calculated pro-rata from/ to the month of additions/ deductions.

The residual values, useful lives and methods of depreciation of Property, plant and equipment are reviewed at each period end and adjusted prospectively, if appropriate.

Non-current assets classified as held for sale are measured at the lower of carrying amount and fair value less costs to sell.

Gains or losses arising from derecognition of a Property, plant and equipment are measured as the difference between the net disposal proceeds and the carrying amount of the asset and are recognised in the Consolidated Statement of Profit and Loss when the asset is derecognised.

f) Intangible assets

Intangible assets are recognised when it is probable that future economic benefits that are attributable to the asset will flow to the Trust Group and the cost of the asset can be measured reliably. Intangible assets are stated at original cost net of tax/duty credits availed, if any, or deemed cost less accumulated amortisation, and cumulative impairment, if any.

Intangible Assets are stated at historical cost/deemed cost in certain SPVs (elected in accordance with Ind AS 101), as applicable, less accumulated amortisation and cumulative impairment losses, if any.

(i) Rights under Service Concession Arrangements (SCA)

Rights under SCA obtained in consideration for concession fee for development of toll roads under Toll-Operate-Transfer (TOT) or Build-Operate-Transfer (BOT) basis respectively represent the right to collect toll revenue during the concession period. The cost also includes corresponding obligations of the SPVs under the Concession Agreement entered with the Authority related to construction /improvements of the Project Highway granted to the SPVs. Rights under SCA are capitalized as intangible assets upon obtaining the commencement of operation certificate from the authorities at cumulative development costs. The revenue from toll collection/other income during the construction period is reduced from cost of development of intangible assets. Till the completion of the construction, the development costs are recognised under intangible assets under development.

Obligation towards negative grants and the cost incurred for work beyond the original scope per SCA (normally referred as "Change of Scope") or upgrade services is capitalized as intangible assets under development as and when incurred. Reimbursement in respect of such amounts from the Authority is reduced from the carrying amount of intangible assets under development to the extent of actual receipts. Any grant from the Authority in connection with project development is reduced from the cost of the intangible assets.

Extension of concession period by the Authority in respect of compensation for claims made by the SPVs are capitalized as part of Toll Collection Rights on acceptance of the claim. Where the SPVs have a contractual right to an extension in the concession period as per the concession agreement, the same is capitalized when the right to extension in the concession period is established at the estimated amounts of eligible claims.

Pre-operative expenses including administrative and other general overhead expenses that are directly attributable to the development or acquisition of intangible assets are allocated and capitalized as part of cost of the intangible assets.

Amortisation of intangible assets (Rights under SCA)

The Rights under SCA in respect of road projects of certain SPVs (viz. MBEL, JMTL, WUPTL, GAEPL and NAMEPL) are amortized over the period of concession using the revenue-based amortization method prescribed under Schedule II to the Companies Act, 2013. Under the revenue-based method, amortization is based on proportion of actual revenue earned for the period over the sum of actual revenue for the current period and projected revenue from Toll Road Carriageway expected to be earned over the balance concession period as estimated by the management of respective SPVs. Total projected revenue is reviewed at the end of each period end and is adjusted to reflect the changes in earlier estimate vis-a-vis the actual revenue earned till the end of the period so that the whole of the cost of the intangible asset is amortized over the concession period.

For all the other SPVs, the Rights under SCA is amortised over the shorter of the estimated period of future economic benefits which the intangible assets are expected to generate or the concession period, from the date they are available for use. The estimated useful life is reviewed at the end of each reporting period, with the effect of any changes in estimate being accounted for on a prospective basis.

An asset carried under concession arrangements is derecognised on disposal or when no future economic benefits are expected from its future use or disposal.

(ii) Other intangible assets

Other intangible assets comprise of cost of software acquired for in-house use. These assets are stated at cost less accumulated amortization and accumulated impairment losses, if any. Intangible assets are derecognized when no future economic benefits are expected from use or disposal. Amortization is recognized on a straight-line basis over their useful life. The estimated useful life is reviewed at the end of each reporting period, with the effect of any changes in estimate being accounted for on a prospective basis.

Gains or losses arising from derecognition of an intangible asset are measured as the difference between the net disposal proceeds and the carrying amount of the asset and are recognised in the statement of profit or loss when the asset is derecognised. Intangible assets that are not ready for the intended use on the date of the Balance Sheet are disclosed as "Intangible assets under development".

g) Foreign currency transactions and translations

The Consolidated Financial Statements are presented in Indian Rupee (INR), which is the Trust Group's functional and presentational currency. Foreign currency transactions are recorded at the exchange rate prevailing on the date of the respective transactions between the functional currency and the foreign currency.

Monetary items

Monetary foreign currency assets and liabilities remaining unsettled at the Balance Sheet date are translated at the rates of exchange prevailing on that date. Gains / losses arising on account of realisation / settlement of foreign currency transactions and on translation of foreign currency assets and liabilities are recognized in the Consolidated Statement of Profit and Loss.

Exchange differences arising on the settlement of monetary items or on reporting date's monetary items at rates different from those at which they were initially recorded during the period, or reported in previous financial Statements, are recognized as income or as expenses in the period in which they arise.

h) Revenue recognition

Revenue from contracts with customers is recognised when control of the goods or services are transferred to the customer at an amount that reflects the consideration to which the Trust Group expects to be entitled in exchange for those goods or services. The Trust Group has concluded that it is the principal in its revenue arrangements because it typically controls the services before transferring them to the customer. Revenue is recognised to the extent that it is probable that the economic benefits will flow to the Trust Group and the revenue can be reliably measured, regardless of when the payment is being made. Revenue is measured at the transaction price of the consideration received or receivable, excluding the estimates of variable consideration that is allocated to that performance obligation, taking into account contractually defined terms of payment and excluding taxes or duties collected on behalf of the government. The specific recognition criteria described below must also be met before revenue is recognised.

Revenue is recognised either at a point in time or over time, when (or as) the Trust Group satisfies performance obligations by transferring the promised goods or services to its customers.

Service concession arrangements - Recognition and measurement

The Trust Group builds, operate and maintain roads and other infrastructure assets under public-to-private Service Concession Arrangements (SCAs), which is an arrangement between the "grantor" (a public sector entity/authority) and the "operator" (a private sector entity/ the Concessionaire) to provide services that give the public access to major economic and social facilities utilizing private-sector funds and expertise.

With respect to SCA, revenue and costs are allocated between those relating to construction services and those relating to operation and maintenance services and are accounted for separately.

Consideration received or receivable is allocated by reference to the relative fair value of services delivered when the amounts are separately identifiable. For operation & maintenance services, such costs are executory in nature and are expensed off as and when incurred.

The Trust Group's revenue is divided into following categories:

A. Toll collections from the users of the infrastructure facility operated or maintained by the Trust Group under the Service Concession Arrangements are accounted for based on actual collection (net of amount charged over and above the normal user fee payable to NHAI). Revenue from electronic toll collection is recognized on accrual basis.

B. Under financial asset model, finance income for SCA is recognized using effective interest method. Revenues from operations and maintenance services and overlay services are recognized in each period as and when services are rendered in accordance with Appendix C to Ind AS 115.

1. Revenue from construction contracts

Contract revenue for fixed price contracts is recognized only to the extent of cost incurred till such time the outcome of the contract cannot be ascertained reliably. When the outcome of the contract is ascertained reliably, contract revenue is recognized at cost of work performed on the contract plus proportionate margin, using the percentage of completion method.

Percentage of completion is determined based on the proportion of actual cost incurred to the total estimated cost of the project. The percentage of completion method is applied on a cumulative basis in each accounting period to the current estimates of contract revenue and contract costs. The effect of a change in the estimate of contract revenue or contract costs, or the effect of a change in the estimate of the outcome of a contract, is accounted for as a change in accounting estimate and the effect of which are recognized in the Consolidated Statement of Profit and Loss in the period in which the change is made and in subsequent periods.

For the purposes of recognising revenue, contract revenue comprises the initial amount of revenue agreed in the contract, the variations in contract work, claims and incentive payments to the extent that it is probable that they will result in revenue, and they are capable of being reliably measured.

When it is probable that total contract costs will exceed total contract revenue, the expected loss is recognized as an expense in the Consolidated Statement of Profit and Loss in the period in which such probability occurs.

2. Interest income

Interest income from a financial asset is recognized when it is probable that the economic benefits will flow to the Trust Group and the amount of income can be measured reliably. Interest is accrued on time proportion basis, by reference to the principle outstanding at the effective interest rate.

i) Government grants

Grants from governments are recognized at fair value where there is reasonable assurance that the Trust Group will comply with the conditions attaching to them and that the grants will be received.

Government grants related to income are deferred and recognized in profit or loss over the periods in which the Trust Group recognizes as expenses the related costs for which the grants are intended to compensate.

Government grants whose primary condition is that the Trust Group should purchase, construct, or otherwise acquire non-current assets are deducted from the carrying amount of such non-current assets.

j) Distribution to unit holders

The Trust recognises a liability to make distribution to Unit holders when the distribution is approved by the Board of Directors of the Investment Manager to the Trust Group and a legal obligation has been created as per the SEBI InvIT Regulations. A corresponding amount is recognised directly in other equity other than Repayment of Capital.

k) Operating segments

Operating segments are reported in a manner consistent with the internal reporting provided to the chief operating decision maker.

Identification of segments:

In accordance with Ind AS 108- Operating Segment, the operating segments used to present segment information are identified on the basis of information reviewed by the Chief Operating Decision Maker to allocate resources to the segments and assess their performance. An operating segment is a component of the Trust that engages in business activities from which it earns revenues and incurs expenses, including revenues and expenses that relate to transactions with any of the Trust's Group component.

Based on an analysis of Trust structure and powers conferred to the Investment Manager to Trust, the Board of Directors of the Investment Manager has been identified as the Chief Operating Decision Maker ('CODM'), since they are empowered for all major decisions w.r.t. the management, administration, investment, disinvestment, etc.

As the Trust Group is primarily engaged in the business of toll operations and maintenance in India, CODM reviews the entire business as a single operating in respect of reportable segments are not applicable.

l) Financial Instruments

Financial assets and financial liabilities are recognized when the Trust Group become a party to the contractual provisions of the instruments.

Financial assets and financial liabilities are initially measured at fair value. Transaction costs that are directly attributable to the acquisition or issue of financial assets and financial liabilities are added to or deducted from the fair value of the financial assets or financial liabilities, as appropriate, on initial recognition. However, transaction costs directly attributable to the acquisition of financial assets or financial liabilities at fair value through profit or loss ("FVTPL") are recognized immediately in the Consolidated Statement of Profit and Loss.

If the Trust Group determines that the fair value at initial recognition differs from the transaction price, the Trust Group accounts for that instrument at that date as follows:

- at the measurement basis mentioned above if that fair value is evidenced by a quoted price in an active market for an identical asset or liability (i.e. a Level 1 input) or based on a valuation technique that uses only data from observable markets. The Trust Group recognises the difference between the fair value at initial recognition and the transaction price as a gain or loss.

- in all other cases, at the measurement basis mentioned above, adjusted to defer the difference between the fair value at initial recognition and the transaction price. After initial recognition, the Trust Group recognises that deferred difference as a gain or loss only to the extent that it arises from a change in a factor (including time) that market participants would take into account when pricing the asset or liability.

Subsequent measurement of financial assets and financial liabilities is described below:

i. Financial assets

All recognized financial assets are subsequently measured in their entirety at either amortised cost or fair value, depending on the classification of the financial assets.

Classification of Financial Assets

Financial Assets that meet the following conditions are subsequently measured at amortised cost (unless the same are designated as fair value through profit or loss (FVTPL)):

- The asset is held within a business model whose objective is to hold assets in order to collect contractual cash flows; and
- The contractual terms of instrument give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Financial assets at FVTPL is a residual category for debt instruments and all changes are recognized in profit or loss.

Amortized cost and effective interest method

Income is recognized on an effective interest method as per Ind AS 109 "Financial Instruments" for financial assets other than those financial assets classified as at FVTPL. Interest income is recognized in the Consolidated Statement of Profit and Loss and is included in the "Other income" line item.

Impairment of financial assets (Expected credit loss model)

An impairment loss on financial asset is established when there is objective evidence that the Trust Group will not be able to collect all amounts due according to the original terms of the receivables. Impairment loss if any are recognised in Consolidated Statement of Profit or Loss for the period.

De-recognition of financial assets

The Trust Group derecognize a financial asset when the contractual rights to the cash flows from the asset expire, or when it transfers the financial asset and substantially all the risks and rewards of ownership of the asset to another party.

On de-recognition of a financial asset in its entirety, the difference between the asset's carrying amount and the sum of the consideration received and receivable and the cumulative gain or loss that had been recognized in other comprehensive income and accumulated in equity is recognized in profit or loss if such gain or loss would have otherwise been recognized in the Consolidated Statement of Profit or Loss on disposal of that financial asset.

Modification of cash flows of financial assets and revision in estimates of cash flows

Modification of cash flows of financial assets and revision in estimates of cash flows when the contractual cash flows of a financial asset are renegotiated or otherwise modified and the renegotiation or modification does not result in the de-recognition of that financial asset in accordance with Ind AS 109, HAM SPV's recalculate the gross carrying amount of the financial asset and recognize a modification gain or loss in the Statement of Profit and loss. The gross carrying amount of the financial asset is recalculated as the present value of the renegotiated or modified contractual cash flows that are discounted at the financial asset's original effective interest rate. Any costs or fees incurred are adjusted to the carrying amount of the modified financial asset and are amortized over the remaining term of the modified financial asset. If HAM SPV's revise its estimates of payments or receipts (excluding modifications and changes in estimates of expected credit losses), it adjusts the gross carrying amount of the financial asset or amortized cost of a financial liability to reflect actual and revised estimated contractual cash flows. HAM SPV's re-calculates the gross carrying amount of the financial asset or amortized cost of the financial liability as the present value of the estimated future contractual cash flows that are discounted at the financial instrument's original effective interest rate. The adjustment is recognized in the Statement of Profit and Loss as an income or expense.

ii. Financial Liabilities

All financial liabilities are recognized initially at fair value and, in the case of loans and borrowings and payables, net of directly attributable transaction costs.

Loans and borrowings are subsequently measured at amortized costs using Effective Interest Rate method. Financial liabilities at fair value through profit or loss (FVTPL) are subsequently measured at fair value.

De-recognition of financial liabilities

Financial liability is derecognized when the obligation under the liability is discharged or cancelled or expires. When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability substantially modified, such an exchange or modification is treated as the de-recognition of the original liability and the recognition of the new liability. The difference in the respective carried amount is recognized in the Consolidated Statement of Profit and Loss.

iii. Classification as debt or equity

Debt and equity instruments issued by Trust Group are classified as either financial liabilities or as equity in accordance with the substance of the contractual arrangements and the definitions of a financial liability and an equity instrument.

iv. Fair value

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date, regardless of whether that price is directly observable or estimated using another valuation technique. In estimating the fair value of an asset or a liability, the Trust Group considers the characteristics of the asset or liability if market participants would take those characteristics into account when pricing the asset or liability at the measurement date. Fair value for measurement and/or disclosure purposes in these financial Statements is determined on such a basis and measurements that have some similarities to fair value but are not fair value, such as net realisable value in Ind AS 2 "Inventory" or value in use in Ind AS 36 "Impairment of Assets".

In addition, for financial reporting purposes, fair value measurements are categorized into Level 1, 2 or 3 based on the degree to which the inputs to the fair value measurements are observable and the significance of the inputs to the fair value measurement in its entirety, which are described as follows:

• Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities that entity can access at measurement date

- Level 2 inputs other than quoted prices included in Level 1, that are observable for the asset or liability, either directly (as prices) or indirectly (derived from prices); and

- Level 3 inputs for the asset or liability that are not based on observable market data (unobservable inputs).

m) Cash and cash equivalents

Cash and cash equivalents in the Consolidated Balance Sheet comprise of cash at banks and on hand and short-term deposits with an original maturity of three months or less and highly liquid instruments (overnight mutual funds) which are subject to an insignificant risk of changes in value.

n) Consolidated Statement of Cash Flows

Consolidated Statement of Cash flows is prepared segregating the cash flows from operating, investing and financing activities. Cash flows from operating activities is reported using indirect method. Under the indirect method, the net profit/(loss) is adjusted for the effects of:
a. transactions of a non-cash nature;
b. any deferrals or accruals of past or future operating cash receipts or payments and,
c. all other items of income or expense associated with investing or financing cash flows.

The cash flows from operating, investing and financing activities of the Trust Group are segregated based on the available Statements. Cash and cash equivalents are reflected as such in the Consolidated Statement of Cash Flow and excludes balances which are not available for general use as on the date of Consolidated Balance with a specific disclosure.

o) Investment property

Property that is held for long-term rental yields or for capital appreciation (including property under construction for such purposes) or both and that is not occupied by the Trust Group, is classified as investment property. Investment property is measured initially at cost, including related transaction costs and where applicable borrowing costs. Subsequent expenditure is capitalized to the assets carrying amount only when it is probable that future economic benefits associated with the expenditure will flow to the Trust Group and the cost of the item can be measured reliably.
An investment property is derecognized upon disposal or when the investment property is permanently withdrawn from use and no future economic benefits are expected from the disposal. Any gain or loss arising on derecognition of the property (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in profit or loss in the period in which the property is derecognized.

p) Borrowings

Borrowings are initially recognized at fair value, net of transaction costs incurred. Borrowings are subsequently measured at amortized cost. Any difference between the proceeds (net of transaction costs) and the redemption amount is recognized in profit or loss over the period of the borrowings using effective interest method.

The fair value of the liability portion of the optionally convertible debentures is determined by discounting the projected future cashflows of the principal and interest component at coupon rate. The amount is recorded as a liability on an amortized cost basis until extinguished on conversion or redemption of debentures. The reminder of the proceeds is attributable to the equity portion of the compound instrument. This is recognized and included in shareholders' equity, net of income tax effects, and not subsequently remeasured.

Borrowings are removed from the balance sheet when the obligation specified in the contract is discharged, cancelled or expired. The difference between the carrying amount of a financial liability that has been extinguished or transferred to another party and the consideration paid, including any non-cash assets transferred or liabilities assumed, is recognized in profit or loss as other gains/(losses).

Borrowings are classified as current liabilities unless the Trust Group has an unconditional right to defer settlement of the liability for at least 12 months after the reporting period. Where there is breach of a material provision of a long-term loan arrangement on or before the end of the reporting period with the effect that the liability becomes payable on demand on the reporting date, the entity does not classify the liability as current, if lender agreed, after the reporting period and before the approval of the financial Statements for issue, not to demand payment as a consequence of the breach.

q) Borrowing costs

Borrowing costs include interest calculated using the effective interest method, amortization of ancillary costs and other costs the Trust Group incurs in connection with the borrowing of funds. General and specific borrowing costs that are directly attributable to the acquisition, construction or production of a qualifying assets are capitalized during the period of time that is required to complete and prepare the qualifying asset for its intended use or sale. Capitalization of borrowing costs is suspended and charged to the Consolidated Statement of Profit and Loss during extended periods when active development activity on the qualifying assets is interrupted.

Income earned on the temporary investment of specific borrowings pending their expenditure on qualifying asset is deducted from the borrowing costs eligible for capitalization.

Other borrowing costs are expensed in the period in which they are incurred.

r) Employee benefits

Employee benefits includes provident fund, gratuity and compensated absences.

Short-term employee benefit

All employee benefits falling due wholly within twelve months of rendering the service are classified as short- term employee benefits. The benefits like salaries, wages, short-term compensated absences etc. and the expected cost of bonus, and ex-gratia are recognised in the period the related service is rendered at undiscounted amount of benefits expected to be paid in exchange for that service.

The cost of short-term compensated absences is accounted as under:
- in case of accumulated compensated absences, when employees render the services that increase their entitlement of future compensated absences; and
- in case of non-accumulating compensated absences, when the absences occur.

Post-employment benefits

(a) Defined contribution plans:

The Trust Group offers its employees State governed provident fund linked with employee pension scheme as defined contribution plans. The contribution paid/ payable under the scheme is recognised during the period in which the employee renders the related service.

(b) Defined benefit plans:

The SPVs operate an unfunded defined benefit gratuity plan other than two of the SPVs viz. DATRPL and WUPTPL, that make contributions to a separately administered fund through annual contributions to Life Insurance Corporation of India under its Employee Gratuity Scheme. Trust Group's liability towards gratuity is determined at each period end.

For defined benefit gratuity plans, the cost of providing benefits is determined using the projected unit credit method, with actuarial valuations being carried out at the end of each annual reporting period. Re- measurement, comprising actuarial gains and losses, the effect of the changes to the asset ceiling (if applicable) and the return on plan assets (excluding net interest), is reflected immediately in the balance sheet with a charge or credit recognized in other comprehensive income in the period in which they occur. Remeasurement recognised in other comprehensive income is reflected immediately in

retained earnings and will not be reclassified to profit or loss. Past service costs are recognised in profit or loss on the earlier of the date of the plan amendment or curtailment, and the date that the Trust Group recognises related restructuring costs.

Net interest is calculated by applying the discount rate at the beginning of the period to the net defined benefit liability or asset.

Defined benefit costs are categorized as follows:
- service cost (including current service cost, past service cost, as well as gains and losses on curtailments);
- net interest expense or income; and
- re-measurement

The Trust Group presents the first two components of defined benefit costs in Consolidated Statement of Profit and Loss in the line item 'Employee benefits expense'. Curtailment gains and losses are accounted for as past service costs.

The present value of the defined benefit liability is calculated using a discount rate which is determined by reference to market yields at the end of the reporting period on government bonds.

(c) Other long-term employee benefit
The obligation for other long-term employee benefits such as long-term compensated absences, are measured at the present value of the estimated future cash outflows expected to be made by the Trust Group in respect of services provided by employees up to the reporting date.

Liability with regard to compensated absences is accrued based on actuarial valuations determined using projected unit credit method, at the Balance Sheet date, carried out by an independent actuary. Gains or losses arising out of actuarial valuations are recognised immediately in the Statement of Profit and Loss as income or expense respectively. Long-term incentive plan (LTIP) is structured as a cash-settled scheme, wherein notional LTIP Cash Points ("LCPs") are awarded to participants based on a Board defined performance measure of Cube Highways Trust over future years. Liability with regard to LTIP is accrued based on actuarial valuations determined using projected unit credit method, at the Balance Sheet date, carried out by an independent actuary.

s) Inventories

Inventories include stores and spares used in operation and maintenance of the road highways. Inventories are stated at the lower of cost and net realisable value. Cost of inventories include all costs incurred in bringing the inventories to their present location and condition. Costs are assigned to individual items of inventory based on first-in-first-out basis. Cost of purchased inventory are determined after deducting rebates and discounts.

t) Insurance claims

Insurance claims are accounted for based on claims admitted / expected to be admitted and to the extent that the amount recoverable can be measured reliably and it is reasonable to expect ultimate collection.

u) Leases

The Trust Group assesses whether a contract contains a lease, at inception of a contract. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. To assess whether a contract conveys the right to control the use of an sidentified asset, the Trust Group assesses whether: (i) the contract involves the use of an identified asset.

(ii) the Trust Group has substantially all of the economic benefits from use of the asset through the period of the lease and (iii) the Trust Group has the right to direct the use of the asset.

At the date of commencement of the lease, the Trust Group recognizes a right-of-use asset ("ROU") and a corresponding lease liability for all lease arrangements in which it is a lessee, except for leases with a term of twelve months or less (short-term leases) and low value leases, which are accounted for as under.

Short-term leases and leases of low-value assets

Short term leases are leases with a term of twelve months or less. For short-term and low value leases, the Trust Group recognises the lease payments as an operating expense on a straight-line basis over the term of the lease.

Currently, the Trust Group has lease contracts which are short-term leases or leases of low-value assets.

v) Provisions, contingencies and contingent assets

A provision is recognized when the Trust Group has a present obligation (legal or constructive) as a result of past event and it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation, in respect of which a reliable estimate can be made of the amount of the obligation.

Contingent liabilities are disclosed in notes in case of a possible obligation arising from past events whose existence will be confirmed by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the entity or a present obligation arising from past events but is not recognized because it is not probable that an outflow of embodying economic benefits will be required to settle the obligation or the amount of the obligation cannot be measured with sufficient reliability.

A contingent asset is not recognised unless it becomes virtually certain that an inflow of economic benefits will arise. When an inflow of economic benefits is probable, contingent assets are disclosed in the financial statements. Contingent liabilities and contingent assets are reviewed at each balance sheet date.

w) Taxation

Income tax

Income tax expense or credit for the period is the tax payable on current period's taxable income based on the applicable income tax rate adjusted by changes in deferred tax assets and liabilities attributable to temporary differences and to unused tax losses. The current income tax charge is calculated based on tax laws enacted or substantively enacted at the end of the reporting period. Management periodically evaluates, positions taken in tax returns with respect to situations in which applicable tax regulation is subject to interpretation and provisions are established where appropriate based on amounts expected to be paid to the tax authorities.

Current tax items are recognized in correlation to the underlying transaction either in OCI or directly in equity. Management periodically evaluates positions taken in the tax returns with respect to situations in which applicable tax regulations are subject to interpretation and establishes provisions where appropriate.

Deferred Tax

Deferred tax is recognised on temporary differences, being the differences between the tax bases of assets and liabilities and their carrying amount in the financial Statements. Deferred tax is measured using the tax rates and the tax laws enacted or substantively enacted as at the reporting date. Deferred tax liabilities are recognised for all temporary differences. Deferred tax assets are recognised for temporary differences of items other than unabsorbed depreciation and carry forward losses only to the extent that reasonable certainty exists that sufficient future taxable income will be available against which these can be realized. However, if there are unabsorbed depreciation and carry forward of losses and items relating to capital losses, deferred tax assets are recognised only if there is reasonable certainty supported by convincing evidence that there will be sufficient future taxable income available to realize the deferred tax assets. Deferred tax assets and liabilities are offset if such items relate to taxes on income levied by the same governing tax laws and the entity has a legally enforceable right for such set off. Deferred tax assets are reviewed at each reporting date for their realisability.

Minimum Alternate Tax (MAT) paid in accordance with the tax laws, which gives future economic benefits in the form of adjustment to future income tax liability, is considered as an asset if there is convincing evidence that the entity will pay normal income tax. Accordingly, MAT is recognised as a deferred tax asset in the Consolidated Balance Sheet when it is highly probable that future economic benefit associated with it will flow to the Trust Group.

Current and deferred tax relating to items directly recognised in other comprehensive income and reserves are recognised in other comprehensive income and reserves respectively and not in the Consolidated Statement of Profit and Loss.

x) Impairment of non-financial assets

The carrying values of assets / cash generating units at each reporting date are reviewed for impairment if any indication of impairment exists. If any indication exists, the Trust Group estimates the asset's recoverable amount. use.

If the carrying amount of the assets exceed the estimated recoverable amount, an impairment is recognized for such excess amount. The impairment loss is recognized as an expense in the Consolidated Statement of Profit and Loss.

The recoverable amount is the value in use which is based on the estimated future cash flows discounted to their present value using a pre-tax discount rate that reflects the current market assessments of the time value of money and the risks specific to the asset for which the estimated future cash flows have not been adjusted.

When there is indication that an impairment loss recognized for an asset (other than a revalued asset) in earlier accounting periods no longer exists or may have decreased, such reversal of impairment loss is recognized in the Consolidated Statement of Profit and Loss.

y) Provision for periodic maintenance / resurfacing obligations

The Trust Group estimates and provides for contractual obligations as per Service Concession Arrangement (SCA) with the Authority to restore the infrastructure to a specified level of serviceability at periodic intervals or restore the infrastructure to a specified condition before it is handed over to the Authority. Provisions are measured based on management’s estimate required to settle the obligation at the balance sheet date and are discounted using a rate that reflects the time value of money. When discounting is used, the increase in the provision due to the passage of time is recognized as a finance cost. The same is reviewed at each balance sheet date and adjustments if any to the carrying amount is provided for accordingly.

z) Earnings per Unit

Basic earnings per unit are calculated by dividing the net profit / (loss) for the period attributable to unit holders of the Trust by the weighted average number of units outstanding during the period.

For the purpose of calculating diluted earnings per unit, the profit or loss for the period attributable to unit holders of the Trust and the weighted average number of units outstanding during the period are adjusted for the effects of all dilutive potential units.

Dilutive potential units are deemed converted as of the beginning of the reporting date, unless they have been issued at a later date. In computing diluted earnings per unit, only potential equity units that are dilutive and which either reduces earnings per unit or increase loss per units are included.

aa) **Recent Accounting Pronouncements**

Ministry of Corporate Affairs (“MCA”) notifies new standards or amendments to the existing standards under Companies (Indian Accounting Standards) Rules as issued from time to time. There is no such notification which would have been applicable from April 01, 2026.

	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
3 Property, plant and equipment			
Net carrying value	451.72	412.91	250.89
	451.72	**412.91**	**250.89**

Description	Land[(ii)]	Office equipment	Computers	Furniture and fixtures	Plant and equipment	Vehicles	Total
Gross carrying value							
Balance as at April 01, 2023	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Additions on account of acquisition (Refer note 50)	-	42.27	38.79	17.60	118.97	21.50	**239.13**
Additions for the year	1.15	8.11	14.56	1.63	32.16	3.86	**61.47**
Disposals/adjustments for the year	-	(12.44)	(6.03)	(2.22)	(0.31)	-	**(21.00)**
Balance as at March 31, 2024	**1.15**	**37.94**	**47.32**	**17.01**	**150.82**	**25.36**	**279.60**
Additions on account of acquisition (Refer note 50)	-	6.80	5.21	1.80	28.80	6.27	**48.88**
Additions for the year	-	12.13	14.94	5.42	137.95	1.03	**171.47**
Disposals/adjustments for the year	-	(1.34)	(0.20)	(0.93)	(3.21)	-	**(5.68)**
Balance as at March 31, 2025	**1.15**	**55.53**	**67.27**	**23.30**	**314.36**	**32.66**	**494.27**
Additions on account of acquisition (Refer note 50)	-	15.77	0.34	2.03	17.14	7.51	**42.79**
Additions for the year	-	5.28	19.91	1.07	37.01	9.68	**72.96**
Disposals for the year	-	(1.08)	(0.27)	(0.25)	(5.44)	(1.30)	**(8.34)**
Balance as at March 31, 2026	**1.15**	**75.50**	**87.25**	**26.15**	**363.07**	**48.56**	**601.68**
Accumulated depreciation							
Balance as at April 01, 2023	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Charge for the year	-	13.22	16.61	2.56	12.83	2.95	**48.17**
Disposals for the year	-	(12.00)	(5.62)	(1.64)	(0.20)	-	**(19.46)**
Balance as at March 31, 2024	**-**	**1.22**	**10.99**	**0.92**	**12.63**	**2.95**	**28.71**
Charge for the year	-	15.10	15.40	2.76	19.26	3.81	**56.33**
Disposals/adjustments for the year	-	(1.16)	(0.20)	(0.48)	(1.84)	-	**(3.68)**
Balance as at March 31, 2025	**-**	**15.16**	**26.19**	**3.20**	**30.05**	**6.76**	**81.36**
Charge for the year	-	18.14	16.45	3.67	29.51	5.22	**72.98**
Disposals for the year	-	(0.91)	(0.22)	(0.18)	(3.07)	-	**(4.38)**
Balance as at March 31, 2026	**-**	**32.39**	**42.42**	**6.69**	**56.49**	**11.98**	**149.96**
Net carrying value:							
As at March 31, 2024	**1.15**	**36.72**	**36.33**	**16.09**	**138.19**	**22.41**	**250.89**
As at March 31, 2025	**1.15**	**40.37**	**41.08**	**20.10**	**284.31**	**25.90**	**412.91**
As at March 31, 2026	**1.15**	**43.11**	**44.83**	**19.46**	**306.58**	**36.58**	**451.72**

Notes:
(i) For details of property, plant and equipment hypothecated as security for borrowings refer note 21.
(ii) The land has been mortgaged for the borrowings pursuant to Indenture of Mortgage dated April 12, 2024 (refer note 21).

This space has been intentionally left blank

4 Capital work-in-progress	**As at March 31, 2026**	**As at March 31, 2025**	**As at March 31, 2024**
Plant and equipment	70.22	3.86	13.86
Office Equipment	-	-	0.19
Computers	-	-	0.05
	70.22	**3.86**	**14.10**

Capital work-in-progress (CWIP) ageing schedule

As at March 31, 2026	**Amount in CWIP for the period of**				
Particulars	**Less than 1 year**	**1-2 years**	**2-3 years**	**More than 3 years**	**Total**
Plant and equipment	70.22	-	-	-	**70.22**
Total	**70.22**	**-**	**-**	**-**	**70.22**

As at March 31, 2025	**Amount in CWIP for the period of**				
Particulars	**Less than 1 year**	**1-2 years**	**2-3 years**	**More than 3 years**	**Total**
Plant and equipment	-	3.86	-	-	**3.86**
Total	**-**	**3.86**	**-**	**-**	**3.86**

As at March 31, 2024	**Amount in CWIP for the period of**				
Particulars	**Less than 1 year**	**1-2 years**	**2-3 years**	**More than 3 years**	**Total**
Plant and equipment	13.86	-	-	-	**13.86**
Office Equipment	0.19	-	-	-	**0.19**
Computers	0.01	0.04	-	-	**0.05**
Total	**14.06**	**0.04**	**-**	**-**	**14.10**

Notes:
(i) The Trust Group does not have any Capital work-in progress which are suspended, whose completion is overdue or has exceeded its cost compared to its original plan.

(ii) For details of Capital work-in-progress hypothecated as security for borrowings, refer note 21.

5 Investment properties	**As at March 31, 2026**	**As at March 31, 2025**	**As at March 31, 2024**
Net carrying value	7.93	6.73	6.80
	7.93	**6.73**	**6.80**

Description	**Land-Freehold**	**Flat-Freehold**	**Total**
Gross carrying value			
Balance as at April 01, 2023	**-**	**-**	**-**
Additions on account of acquisition (refer note 50)[v]	6.12	1.16	**7.28**
Disposals for the year	-	-	**-**
Balance as at March 31, 2024	**6.12**	**1.16**	**7.28**
Additions for the year	-	-	**-**
Balance as at March 31, 2025	**6.12**	**1.16**	**7.28**
Additions on account of acquisition (refer note 50)[v]	1.82	-	**1.82**
Disposals for the year	(0.55)	-	**(0.55)**
Balance as at March 31, 2026	**7.39**	**1.16**	**8.55**
Accumulated depreciation			
Balance as at April 01, 2023	**-**	**-**	**-**
Charge for the year	-	0.48	0.48
Balance as at March 31, 2024	**-**	**0.48**	**0.48**
Charge for the year	-	0.07	0.07
Balance as at March 31, 2025	**-**	**0.55**	**0.55**
Charge for the year	**-**	0.07	0.07
Balance as at March 31, 2026	**-**	**0.62**	**0.62**
Net carrying value:			
As at March 31, 2024	**6.12**	**0.68**	**6.80**
As at March 31, 2025	**6.12**	**0.61**	**6.73**
As at March 31, 2026	**7.39**	**0.54**	**7.93**

Details of the latest fair value of SPV wise investment properties are as under:

Entity	**Valuer [i]**	**Dated**	**As at March 31, 2026**	**As at March 31, 2025**	**As at March 31, 2024**
APEPL	External valuer	August 06, 2023	0.72	0.72	0.72
DATRPL	External valuer	August 06, 2023	1.46	1.46	1.46
FRHPL	External valuer	August 06, 2023	0.41	0.41	0.41
JMTPL	External valuer	August 06, 2023	3.59	3.59	3.59
MBEL	External valuer	August 06, 2023	3.80	3.80	3.80
QEPL	External valuer	March 27, 2026	1.50	-	

(i) External valuer is registered valuer as defined under Rule 2 of Companies (Registered Valuers and Valuation) Rules, 2017.

(ii) The fair value was derived using the market comparable approach based on prevailing market prices without any significant adjustments being made to the market observable data. The Trust Group obtains independent valuation for its respective investment property once in a block of three years.

(iii) Investment properties of MBEL (March 31, 2025: MBEL, March 31, 2024: MBEL, APEPL) is hypothecated as security for borrowings, refer note 21.

(iv) The charges on Investment properties of DATRPL, FRHPL, MBEL, APEPL and JMTPL have been fully satisfied during the year ended March 31, 2024. However, the respective SPVs are in the process of getting the pledge/mortgage vacated with the concerned authorities.

(v) The Trust Group acquired an investment property amounting to Rs. 1.82 million (March 31, 2025: Nil, March 31, 2024: Rs. 6.12 million) as part of the acquisition transaction referred to in note 50.

	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
6 Intangible assets			
Net carrying value	2,32,907.32	2,44,382.18	2,21,160.26
	2,32,907.32	**2,44,382.18**	**2,21,160.26**

Description	Rights under Service Concession Arrangements(i)	Computer software	Total
Gross carrying value			
Balance as at April 01, 2023	**-**	**-**	**-**
Additions on account of acquisition (Refer note 50)	2,33,470.43	2.24	**2,33,472.67**
Additions for the year	5,341.97	2.23	**5,344.20**
Adjustments for the year	(7.67)	(0.05)	**(7.72)**
Balance as at March 31, 2024	**2,38,804.73**	**4.42**	**2,38,809.15**
Additions on account of acquisition (Refer note 50)	34,847.93	0.73	**34,848.66**
Additions for the year	1,560.35	0.63	**1,560.98**
Adjustments for the year (iii)	(115.00)	-	**(115.00)**
Balance as at March 31, 2025	**2,75,098.01**	**5.78**	**2,75,103.79**
Additions on account of acquisition (Refer note 50)	697.64	-	**697.64**
Additions for the year	290.36	2.73	**293.09**
Adjustments for the year (iii)	485.24	(0.13)	**485.11**
Balance as at March 31, 2026	**2,76,571.25**	**8.38**	**2,76,579.63**
Accumulated amortisation and impairment			
Balance as at April 01, 2023	**-**	**-**	**-**
Charge for the year	11,775.97	1.10	**11,777.07**
Impairment loss for the year (Refer Note 62)	5,871.87	-	**5,871.87**
Adjustments for the year	-	(0.05)	**(0.05)**
Balance as at March 31, 2024	**17,647.84**	**1.05**	**17,648.89**
Charge for the year	13,071.44	1.28	**13,072.72**
Balance as at March 31, 2025	**30,719.28**	**2.33**	**30,721.61**
Charge for the year	14,369.50	2.20	**14,371.70**
Impairment reversal for the year (Refer Note 62)	(1,421.00)	-	**(1,421.00)**
Balance as at March 31, 2026	**43,667.78**	**4.53**	**43,672.31**
Net carrying value:			
As at March 31, 2024	**2,21,156.89**	**3.37**	**2,21,160.26**
As at March 31, 2025	**2,44,378.73**	**3.45**	**2,44,382.18**
As at March 31, 2026	**2,32,903.47**	**3.85**	**2,32,907.32**

Notes:

(i) Refer note 52 for information (including remaining amortisation period) related to Service Concession Arrangements.
(ii) For details of Intangible Assets hypothecated as security for borrowings, refer note 21.
(iii) Adjustments are on account of changes in estimated contractual liability for infrastructure upgrade work. [refer note 48(b)]

This space has been intentionally left blank

7 Intangible assets under development (IAUD) - (Relating to Rights under Service Concession Arrangements)

	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
Opening balance	222.55	1,126.94	-
Additions on account of acquisition (Refer note 50)	-	67.07	2,097.21
Additions during the year [(i)]	104.27	588.89	4,371.70
Capitalised during the year	(290.36)	(1,560.35)	(5,341.97)
Closing balance	**36.46**	**222.55**	**1,126.94**

Intangible assets under development (IAUD) ageing schedule

As at March 31, 2026	**Amount in IAUD for the period of**				
Particulars	**Less than 1 year**	**1-2 years**	**2-3 years**	**More than 3 years**	**Total**
Project-in-progress	36.46	-	-	-	36.46
Projects temporarily suspended	-	-	-	-	-
Total	**36.46**	**-**	**-**	**-**	**36.46**

As at March 31, 2025	**Amount in IAUD for the period of**				
Particulars	**Less than 1 year**	**1-2 years**	**2-3 years**	**More than 3 years**	**Total**
Project-in-progress	222.55	-	-	-	222.55
Projects temporarily suspended	-	-	-	-	-
Total	**222.55**	**-**	**-**	**-**	**222.55**

As at March 31, 2024	**Amount in IAUD for the period of**				
Particulars	**Less than 1 year**	**1-2 year**	**2-3 year**	**More than 3 year**	**Total**
Project-in-progress	1,126.94	-	-	-	1,126.94
Projects temporarily suspended	-	-	-	-	-
Total	**1,126.94**	**-**	**-**	**-**	**1,126.94**

Notes:

(i) Includes construction costs aggregating Rs. 104.27 million (March 31, 2025: Rs. 580.69 million, March 31, 2024: Rs. 4,345.48 million) and borrowing costs aggregating Rs. Nil (March 31, 2025: Rs. 8.20 million, March 31, 2024: Rs. 26.22 million). The weighted average rate used to determine the amount of general borrowing costs eligible for capitalisation is Nil (March 31, 2025 : 8.19%, March 31, 2024: 8.30%).

(ii) For details of Intangible assets hypothecated as security for borrowings, refer note 21.

(iii) There is no IAUD whose completion is overdue or has exceeded its cost compared to the original plan. Projects pending removal of hinderance by Grantor (State authority) have been excluded from the assessment of overdue status.

This space has been intentionally left blank

	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
8 Investments			
Non-current			
Investments in equity instruments (Unquoted) - at cost			
500 Equity shares of Rs.10 each in Cube Highways Root Foundation, fully paid	0.01	0.01	0.01
	0.01	**0.01**	**0.01**

On September 12, 2020, APEPL, JMTPL, MBEL, NAMEPL and WUPTPL each subscribed 100 shares of Cube Highways Root Foundation (CHRF), incorporated under Section 8 of the Companies Act, 2013 to carry out CSR activities in line with Schedule VII of the Companies Act, 2013 as amended from time to time. As per Memorandum of Association of CHRF, upon a winding up or dissolution of CHRF, there remains, after the satisfaction of all the debts and liabilities, any property whatsoever, the same shall not be distributed amongst the members of the CHRF but shall be given or transferred to such other Company having objects similar to the Objects of CHRF, subject to such conditions as the concerned National Company Law Tribunal may impose, or may be sold and proceeds thereof credited to the Insolvency and Bankruptcy Fund formed under Section 224 of the Insolvency and Bankruptcy Code, 2016.

9 Other financial assets			
Non-current			
Unsecured, considered good			
Security deposits	34.35	30.54	18.88
Receivable under service concession arrangements [(i)]	23,614.51	7,311.43	-
Amount recoverable towards payment made on behalf of Grantor (Andhra Pradesh Road Development Corporation)	122.95	123.11	-
Unsecured, considered doubtful			
Receivable under service concession arrangements (i)	33.45	-	-
Less: Impairment of financial assets	(33.45)	-	-
	23,771.81	**7,465.08**	**18.88**

Note:
(i) Refer footnote (iii) to Note 16

10 Current tax assets/(liabilities) (net)			
10A Current tax assets (net)			
Non current			
Income tax assets (net of tax provisions)	1,683.37	1,009.01	541.94
Current			
Income tax assets (net of tax provisions)	7.23	0.02	-
	1,690.60	**1,009.03**	**541.94**
10B Current tax liabilities (net)			
Income tax liabilities (net of tax payments)	-	-	(0.02)
	-	**-**	**(0.02)**
11 Other non-current assets			
Capital advances	148.47	132.19	92.13
Less: Allowance for doubtful advances	(1.68)	(1.34)	-
	146.79	130.85	92.13
Balance with government authorities	624.12	32.33	28.05
Less: Provision for doubtful receivable	(15.30)	(17.05)	-
	608.82	15.28	28.05
Prepaid expenses	37.48	-	-
	793.09	**146.13**	**120.18**
12 Inventories			
Valued at lower of cost and net realisable value			
Stores and spares	404.01	346.54	223.64
	404.01	**346.54**	**223.64**

Note:
The cost of inventories recognised as an expense in the Consolidated Statement of Profit and Loss amounted to Rs. 736.56 million (March 31, 2025: Rs. 798.45 million, March 31, 2024: Rs. 290.44 million).

12A Investments			
Current			
Investments in Mutual Funds at fair value through profit or loss (FVTPL):*			
909,723.26 (March 31, 2025: Nil, March 31, 2024: Nil) units in Bandhan Liquid Fund - Direct Plan- Growth Option	3,026.43	-	-
Nil (March 31, 2025: Nil, March 31, 2024: 27,980.47) units in SBI Liquid Fund - Growth Option	-	-	105.75
522,264.28 (March 31, 2025: Nil, March 31, 2024: Nil) units in Invesco Liquid Fund - Direct Plan- Growth Option	1,974.55	-	-
Nil (March 31, 2025: Nil, March 31, 2024: 4,94,00,976.75) units in SBI Saving Fund- Growth Option	-	-	1,997.84
Nil (March 31, 2025: Nil, March 31, 2024: 22,77,382.48) units in SBI Magnum Low Duration Fund - Direct Growth	-	-	7,509.48
Nil (March 31, 2025: Nil, March 31, 2024: 3,17,836.71) units in Axis Liquid Fund - Direct Plan - Growth Option	-	-	852.97
Nil (March 31, 2025: Nil, March 31, 2024: 92,965.00) units in Axis Money Market Fund Direct Growth	-	-	121.97
Nil (March 31, 2025: Nil, March 31, 2024: 13,65,356.00) units in ICICI Money Market Fund Direct Growth	-	-	476.82
Nil (March 31, 2025: Nil, March 31, 2024: 8,38,192.07) units in Axis Treasury Advantage Fund - Direct Growth	-	-	2,462.93
Total	**5,000.98**	**-**	**13,527.76**
Aggregate amount of unquoted investment- Carrying value			
*Carrying value of unquoted investments is same as the fair value which is based on Net Asset Value (NAV).	5,000.98	-	13,527.76

Notes:
(i) Includes amount earmarked pursuant to loan covenant of common loan agreement and debenture trust deed of the Trust Group towards:

(a) Debt Service Reserve Account (DSRA)	-	-	513.97
(b) Major Maintenance Reserve Account (MMRA)	436.99	-	800.84

This space has been intentionally left blank

	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
13 Trade receivables			
Current			
Trade receivables			
- Unsecured, considered good	2,205.27	1,636.71	600.79
- Unsecured, which have significant increase in credit risk	-	-	-
- Unsecured, credit impaired	167.69	168.98	180.65
Less: Impairment loss allowance (expected credit loss)	(167.69)	(168.98)	(180.65)
	2,205.27	**1,636.71**	**600.79**

Trade receivable ageing schedule	**Outstanding for following periods from due date of payment**						
	Not due	**Less than 6 months***	**6 month - 1 year**	**1-2 years**	**2-3 years**	**More than 3 years**	**Total**
As at March 31, 2026							
Undisputed trade receivables – considered good	-	1,051.08	14.63	19.15	174.54	422.59	**1,681.99**
Undisputed trade receivables – which have significant increase in credit risk	-	-	-	-	-	-	**-**
Undisputed trade receivables – credit impaired	-	-	-	-	18.14	149.55	**167.69**
Disputed trade receivables - considered good	-	-	-	-	279.23	244.05	**523.28**
Disputed trade receivables – which have significant increase in credit risk	-	-	-	-	-	-	**-**
Disputed trade receivables – credit impaired	-	-	-	-	-	-	**-**
Provision for doubtful debt receivable	-	-	-	-	(18.14)	(149.55)	**(167.69)**
Total Trade receivables	-	**1,051.08**	**14.63**	**19.15**	**453.77**	**666.64**	**2,205.27**

Trade receivable ageing schedule	**Outstanding for following periods from due date of payment**						
	Not due	**Less than 6 months**	**6 month - 1 year**	**1-2 years**	**2-3 years**	**More than 3 years**	**Total**
As at March 31, 2025							
Undisputed trade receivables – considered good	-	187.52	121.23	171.57	307.79	305.90	**1,094.01**
Undisputed trade receivables – which have significant increase in credit risk	-	-	-	-	-	-	**-**
Undisputed trade receivables – credit impaired	-	-	-	-	-	168.98	**168.98**
Disputed trade receivables - considered good	-	-	-	298.59	-	244.11	**542.70**
Disputed trade receivables – which have significant increase in credit risk	-	-	-	-	-	-	**-**
Disputed trade receivables – credit impaired	-	-	-	-	-	-	**-**
Provision for doubtful debt receivable	-	-	-	-	-	(168.98)	**(168.98)**
Total Trade receivables	-	**187.52**	**121.23**	**470.16**	**307.79**	**550.01**	**1,636.71**

Trade receivable ageing schedule	**Outstanding for following periods from due date of payment**						
	Not due	**Less than 6 month**	**6 month - 1 year**	**1-2 years**	**2-3 years**	**More than 3 years**	**Total**
As at March 31, 2024							
Undisputed trade receivables – considered good	-	115.73	1.48	65.57	141.87	144.80	**469.45**
Undisputed trade receivables – which have significant increase in credit risk	-	-	-	**-**	**-**	**-**	**-**
Undisputed trade receivables – credit impaired	-	2.58	8.67	**-**	4.39	165.01	**180.65**
Disputed trade receivables - considered good	-	-	-	**-**	**-**	131.34	**131.34**
Disputed trade receivables – which have significant increase in credit risk	-	-	-	**-**	**-**	-	**-**
Disputed trade receivables – credit impaired	-	-	-	**-**	**-**	-	-
Provision for doubtful debt receivable	-	(2.58)	(8.67)	-	(4.39)	(165.01)	**(180.65)**
Total Trade receivables	-	**115.73**	**1.48**	**65.57**	**141.87**	**276.14**	**600.79**

*Also refer note 30 (ii)

	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
14 Cash and cash equivalents			
Cash on hand	10.33	15.02	16.13
Balances with banks:			
- current accounts	1,798.52	1,862.21	357.57
- deposits with original maturity of less than three months(i)	726.41	150.10	2,043.14
Liquid investments- mutual funds[(i) &(ii)]	2,654.95	6,439.75	-
	5,190.21	**8,467.08**	**2,416.84**

Notes:

(i) Includes amount earmarked pursuant to loan covenant of common loan agreement and debenture trust deed of the Trust Group towards:

(a) Debt Service Reserve Account (DSRA)	-	0.54	0.56
(b) Major Maintenance Reserve Account (MMRA)	59.30	302.68	1.04
(c) Balances lien marked as per concession agreement	339.12	-	-

(ii) Comprises Overnight mutual funds that are readily convertible to known amounts of cash and which are subject to insignificant risk of change in value.

15 Bank balances other than cash and cash equivalents			
Deposits with original maturity more than three months but less than twelve months(i)	2,948.86	6,091.68	3,593.98
	2,948.86	**6,091.68**	**3,593.98**

Note:

(i) Includes amount earmarked pursuant to loan covenant of common loan agreement and debenture trust deed of the Trust group towards:

Debt Service Reserve Account (DSRA)	2,288.40	3,044.00	3,083.20

This space has been intentionally left blank

	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
16 Other financial assets			
Current - Unsecured, considered good			
Interest accrued on fixed deposits with banks[(i)]	76.08	156.69	233.61
Deposits with banks with original maturity of more than twelve months[(i)]	1,096.24	446.82	957.29
Security deposits	4.79	1.49	0.27
Grant receivable [(ii)]	181.03	181.03	-
Receivable under service concession arrangements[(iii)]	15,099.65	7,122.52	600.91
Receivable from related parties (Refer note 46)	69.19	14.94	0.08
Net Plan assets for Gratuity fund (Refer note 40)	12.37	12.96	16.59
Other receivables (Refer note 46.4)	208.28	0.30	0.01
	16,747.63	**7,936.75**	**1,808.76**

Notes:

(i) Includes amount earmarked pursuant to loan covenant of common loan agreement and debenture trust deed of the Trust Group towards:

(a) Debt Service Reserve Account (DSRA)	839.20	250.00	834.93
(b) Major Maintenance Reserve Account (MMRA)	-	-	355.97

(ii) **Movement in grant receivable**

Particulars			
Opening Balance	**181.03**	**-**	**-**
Additions on account of acquisition (Refer note 50)	-	66.48	83.14
Accrued during the year	-	-	-
Grant received during the year	-	-	(5.00)
Grant adjusted in Intangible assets during the year	-	114.55	(78.14)
Closing balance	**181.03**	**181.03**	**-**

(iii) **Movement in receivables under service concession arrangements during the year:**

Particulars			
Opening balance	**14,433.95**	**600.91**	**-**
Additions on account of acquisition (Refer note 50)	31,084.29	15,231.56	1,330.99
Add: Interest income on annuity receivable from National Highways Authority of India ('NHAI') [Refer note 30]	2,933.99	1,106.90	105.68
Add: Recoverable for operation and maintenance income for the year [Refer note 30]	4,423.10	1,862.68	294.64
Add: Recoverable for renewal and overlay income for the year [Refer note 30]	-	1,166.12	-
Less: Annuity received from NHAI	(14,127.72)	(5,587.93)	(1,130.40)
Add: Transfer from CWIP	-	53.71	-
Sub total	**38,747.61**	**14,433.95**	**600.91**
Less: Impairment of financial assets	(33.45)	-	-
Closing balance	**38,714.16**	**14,433.95**	**600.91**
- Non-current	23,614.51	7,311.43	-
- Current	15,099.65	7,122.52	600.91

	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
17 Other current assets			
Advance to suppliers	108.15	76.04	130.19
Less: Allowance for doubtful advances(i)	(4.83)	(10.97)	-
	103.32	65.07	130.19
Balance with government authorities	274.58	349.81	167.55
Less: Provision for doubtful receivable(i)	(2.91)	(2.91)	(2.91)
	271.67	346.90	164.64
Advance to others	-	1.19	0.75
Amount paid under protest	239.74	226.22	33.00
Advance to employees	7.99	6.99	4.14
Unbilled revenue related to construction	436.92	335.18	107.25
Prepaid expenses	219.65	248.97	161.43
Other receivables	19.75	-	1.02
	1,299.04	**1,230.52**	**602.42**

Note:

(i) Also refer to note 44A for impairment loss allowance movement.

18 Assets held for sale*			
Building	2.82	-	-
Land	0.84	-	0.10
	3.66	**-**	**0.10**

*Additions on account of acquisition (Refer note 50)

	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
19 Unit Capital			
1,344,069,762 units (March 31, 2025: 1,334,448,362 units, March 31, 2024: 1,290,346,112 units) Ordinary units of Rs.100 (absolute amount) each (fully paid)	1,34,396.03	1,33,433.89	1,29,023.67
Nil units (March 31, 2025: 37,500,000 units, March 31, 2024: 157,500,000 units) Subordinate units of Rs.100 (absolute amount) each (fully paid)	-	3,750.00	15,750.00
Total	**1,34,396.03**	**1,37,183.89**	**1,44,773.67**

(a) Reconciliation of units outstanding at the beginning and at the end of the year :

	March 31, 2026		March 31, 2025		March 31, 2024	
	No. of units	**Rs. in million**	**No. of units**	**Rs. in million**	**No. of units**	**Rs. in million**
Ordinary unit capital of Rs.100 (absolute amount) each fully paid up						
Opening Balance	1,33,44,48,362	1,33,433.89	1,29,03,46,112	1,29,023.67	-	-
Add: Ordinary units issued during the year	-	-	-	-	1,29,03,46,112	1,29,034.61
Add:Subordinate units reclassified to Ordinary units during the year (Refer note 64 and 65)	96,21,400	962.14	4,41,02,250	4,410.22	-	-
Units issue Expenses[iv]	-	-	-	-	-	(10.94)
Closing Balance	**1,34,40,69,762**	**1,34,396.03**	**1,33,44,48,362**	**1,33,433.89**	**1,29,03,46,112**	**1,29,023.67**

	March 31, 2026		March 31, 2025		March 31, 2024	
	No. of units	**Rs. in million**	**No. of units**	**Rs. in million**	**No. of units**	**Rs. in million**
Subordinate unit capital of Rs.100 (absolute amount) each fully paid up						
Opening Balance	3,75,00,000	3,750.00	15,75,00,000	15,750.00	-	-
Add: Subordinate units issued during the year	-	-	-	-	15,75,00,000	15,750.00
Less:Subordinate units reclassified to Ordinary units during the year (Refer note 64 and 65)	(96,21,400)	(962.14)	(4,41,02,250)	(4,410.22)	-	-
Less:Subordinate units extinguished during the year (Refer note 64 and 65)	(2,78,78,600)	(2,787.86)	(7,58,97,750)	(7,589.78)	-	-
Closing Balance	**-**	**-**	**3,75,00,000**	**3,750.00**	**15,75,00,000**	**15,750.00**

Notes:

(i) **Units allotted for consideration other than cash, bonus units or units bought back during last five financial years:**

On April 17, 2023, the acquisition of equity interest in the 18 SPVs was done by the first allotment of 910,086,940 Ordinary Units of Rs. 100 (absolute amount) each and 157,500,000 Subordinate Units of Rs. 100 (absolute amount) each aggregating to Rs. 106,758.69 million to the Sponsors (viz. Cube Highways and Infrastructure Pte. Ltd. and Cube Highways and Infrastructure III Pte. Ltd., collectively referred to as "Sponsors") and/or their associates (viz. Cube Highways and Infrastructure II Pte. Ltd., Cube Highways and Infrastructure I-D Pte. Ltd. and Cube Mobility Investments Pte. Ltd., collectively referred to as "Associates").

Details of Numbers of Units allotted for acquiring all the equity interest held by the sponsor and its associates in the following SPVs:

Name of SPVs	**Ordinary Units**		**Total Ordinary Units**	**Subordinate Units**
	Sponsor	**Sponsor-associates**		**Sponsor (refer note d given below)**
MBEL	1,01,94,395	-	1,01,94,395	69,03,914
JMTPL	4,51,78,514	-	4,51,78,514	3,05,96,086
WUPTPL	26,25,197	-	26,25,197	-
APEPL	16,92,117	-	16,92,117	-
GAEPL	10,35,17,584	-	10,35,17,584	-
NDEPL	-	2,46,55,095	2,46,55,095	-
FRHPL	-	14,02,82,874	14,02,82,874	-
DATRPL	27,80,74,813	-	27,80,74,813	12,00,00,000
WVEPL	3,46,10,065	-	3,46,10,065	-
HTPL	-	4,32,83,656	4,32,83,656	-
JLTPL	-	3,85,85,743	3,85,85,743	-
JVTPL	-	2,59,56,285	2,59,56,285	-
KETPL	-	1,01,23,890	1,01,23,890	-
KMTPL	-	3,86,82,134	3,86,82,134	-
LRTPL	-	4,27,41,236	4,27,41,236	-
MKTPL	-	4,02,28,259	4,02,28,259	-
NKTPL	-	1,25,32,849	1,25,32,849	-
SMTPL	-	1,71,22,234	1,71,22,234	-
Total	**47,58,92,685**	**43,41,94,255**	**91,00,86,940**	**15,75,00,000**

Note: The Trust has not allotted any fully paid-up units by way of bonus units nor has it bought back any class of units from the date of incorporation till the balance sheet date.

(ii) During the year ended March 31, 2024, the Trust allotted 380,259,172 Ordinary Units of Rs. 100 each as Fresh Issue aggregating to Rs. 38,025.92 million. The details of utilisation of fresh proceeds are as follows:-

Particulars	**Proposed Utilisation**	**Actual Utilisation upto March 31, 2024**	**Unutilised Amount as at March 31, 2024**
Providing loans to SPV's for repayment or pre-payment of debt, including any accrued interest, availed by them from certain banks and financial institutions and the	34,742.92	34,742.92	-
General Purposes including funding of expenses of the InvIT (including interest on InvIT Loan) and refinance fees	3,268.00	3,268.00	-
Offer Expense	15.00	15.00	-
Total	**38,025.92**	**38,025.92**	**-**

(iii) There is reclassification during the year ended March 31, 2026 of 9.62 million (March 31, 2025: 44.10 million, March 31, 2024: Nil) Subordinate Units to Ordinary Units and extinguishment of 27.87 million (March 31, 2025: 75.90 million, March 31, 2024: Nil) Subordinate Units (Refer note 64 and 65).

(iv) Issue expenses of Rs. 10.94 million incurred during year ended March 31, 2024 in connection with issue of units had been reduced from the Unit capital in accordance with Ind AS 32 Financial Instruments: Presentation.

(v) Under the provisions of the InvIT Regulations, the Trust is required to distribute to Unitholders not less than 90% of the Net Distributable Cash Flows of the Trust for each financial year. Accordingly, a portion of the Unit Capital contains a contractual obligation of the Trust to pay to its Unitholders as cash distributions. Hence, the Unit Capital is a compound financial instrument which contains both equity and liability components in accordance with Ind AS 32 - Financial Instruments: Presentation. However, in accordance with SEBI Circulars issued under the InvIT Regulations, the Unit Capital has been presented as "Equity" in order to comply with the requirements of Chapter 4 to the SEBI Master Circular No. SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025 (as amended) dealing with the minimum disclosures for key financial information/statements. Consistent with Unit Capital being classified as equity, the distributions to Unitholders is also presented in Consolidated Statement of Changes in Unitholders' Equity when the distributions are approved by the Board of Directors of Investment Manager other than repayment of capital. As per Clause 4.2.8(b) of the SEBI Master Circular SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025, distributions made by an InvIT to its unitholders that represent a repayment of capital should be disclosed as a negative item on the face of the Consolidated Balance Sheet. Accordingly, for reporting periods up to March 31, 2025, such distributions which was previously reflected as a reduction in Retained Earnings, has been regrouped from Retained Earnings to Distribution-Repayment of Capital.

(vi) **Sponsor lock in**

In terms of the InvIT Regulations, the Sponsor and Sponsor Group are required to, collectively, hold not less than 15% (fifteen percent) of the Ordinary Units on a post-Offer basis which it shall be locked-in for a period of three years from the date of listing of the Ordinary Units. Further, the unitholding of Ordinary Units of the Sponsor and Sponsor Group, exceeding 15% (fifteen percent) on a post-Offer basis, shall be locked-in for a period of not less than one year from the date of listing of the Ordinary Units. As on March 31, 2025, CH III holds as Sponsor 279,654,900 Ordinary Units (March 31, 2024: 246,578,212 Ordinary Units), aggregating to 20.96% (March 31, 2024: 19.11%) of the Ordinary Units on a post-Offer basis, out of which 200,167,255 Ordinary Units (March 31, 2024: 193,551,917 Ordinary Units) held by CH-III, aggregating to 15% of the Ordinary Units on a post-Offer basis, are locked-in for a period of three years from the date of listing of the Ordinary Units.

As at March 31, 2026, Cube Highways and Infrastructure III Pte. Ltd. ("CH III") holds 252,604,900 Units, aggregating to 18.79% of the Units on a post-Offer basis, out of which 201,610,464 Units held by CH-III as Sponsor group entity, aggregating to 15% of the Units on a post-Offer basis, are locked-in for a period of three years from the date of listing of the Units (i.e. from April 19, 2023), and were released from such lock in requirements subsequent to the year end i.e. April 21, 2026.

(b) Terms and rights attached to unit:

The Trust has two classes of units having a par value of Rs. 100 per unit namely Ordinary Unit and Subordinate Unit.

Terms in relation to Ordinary unit: Each unit represents an undivided beneficial interest in the Trust . Each holder of Ordinary unit is entitled to one vote per unit. The Ordinary Unitholders have the right to receive at least 90% of the Net Distributable Cash Flows of the Trust at least once in each financial year in accordance with the SEBI InvIT Regulations. The Board of Directors of the Investment Manager approves distributions. The distribution will be in proportion to the number of units held by the unitholders. The Trust declares and pays distributions in Indian rupees. The distributions will be as per the distribution policy of the Trust.

The Unitholder(s) shall not have any personal liability or obligation with respect to the Trust.

Terms in relation to Subordinate unit: The Subordinate Unitholders shall not be entitled to any distribution rights or other economic rights or any other rights available in relation to the Ordinary Units.

The Subordinate Unitholders shall not be entitled to any voting rights in relation to the Trust and/or its Project SPVs. Further, the Subordinate Unitholders shall not be entitled to receive notices of or participate in, any meeting of the Unitholders holding Ordinary Units, including the annual meeting of Unitholders, in their capacity as holders of the Subordinate Units, unless it is proposed to vary the terms of the Subordinate Units. Further, subject to applicable law and except as required for the purposes of Trust Deed, the Subordinate Unitholders shall not be considered, for the purposes of the rights of unitholders under Regulation 22 of the InvIT Regulations.

The Sponsors shall not transfer the Subordinate Units to any entity which is not a sponsor of the Trust or an Associate of the Sponsors. The Subordinate Units shall remain unlisted at all times unless mandated under applicable law or by any regulatory and statutory authority.

(1) Entitlement Event A (Refer note 64)

Date of Trigger	June 30, 2024 (Completed reclassification on July 19, 2024)
Underlying Reference Initial Portfolio Asset	DATRPL
Actual Performance Metric	Cumulative actual toll revenues (excluding Overloading Revenue and Penalty Revenue) for financial years ended March 31, 2023 and March 31, 2024, as provided under the audited financials of DATRPL, rounded off to the nearest multiple of one lakh.
Base Performance Metric	Rs. 9,900 million
Entitlement Terms	For every additional Rs. 0.10 million of Actual Performance Metric over and above the Base Performance Metric, number of Initial Tranche Subordinate Units as defined below will be entitled to carry the same rights as Ordinary Units, subject to limit defined under Maximum Entitlement Event A Number of Initial Tranche Subordinate Units = 425,000/ issue price per Ordinary Unit allotted in the Initial Offer
Maximum Entitlement Event A	Maximum number of initial Tranche Subordinate Units that can be entitled to carry the same rights as Ordinary Units based on occurrence of Entitlement Event A = 12,000 million/ issue price per Ordinary Unit allotted in the Initial Offer

(2) Entitlement Event B (Refer note 65)

Date of Trigger	June 30, 2025 (Completed reclassification on July 14, 2025)
Underlying Reference Portfolio Assets	JMTPL & MBEL
Actual Performance Metric	Cumulative actual toll revenues (excluding Overloading Revenue and Penalty Revenue) for the financial years ended March 31, 2023, March 31, 2024 and March 31, 2025, as provided under the audited financials of JMTPL and MBEL, rounded off to the nearest multiple of one lakh.
Base Performance Metric A	Rs. 9,375 million
Base Performance Metric B	Rs. 9,750 million
Entitlement Terms	1. For every additional Rs. 0.1 million of Actual Performance Metric over the Base Performance Metric A and up to Base Performance Metric B, number of Initial Tranche Subordinate Units as defined below will be entitled to carry the same rights as Ordinary Units Number of Initial Tranche Subordinate Units = 1,40,000/ issue price per Ordinary Unit allotted in the Initial Offer. 2. For every additional Rs. 0.1 million of Actual Performance Metric over and above the Base Performance Metric B, number of Initial Tranche Subordinate Units as defined below will be entitled to carry the same rights as Ordinary Units. Number of Initial Tranche Subordinate Units = 220,000/ issue price per Ordinary Unit allotted in the Initial Offer.
Maximum Entitlement Event B	Maximum number of Initial Tranche Subordinate Units that can be entitled to carry the same rights as Ordinary Units based on occurrence of Entitlement Event B = 3,750 million/ issue price per Ordinary Unit allotted in the Initial Offer

(c) Unitholders holding more than 5% units as at balance sheet date

(i) Ordinary units

Name of the Unitholders	**As at March 31, 2026**		**As at March 31, 2025**		**As at March 31, 2024**	
	No. of units	**% holding**	**No. of units**	**% holding**	**No. of units**	**% holding**
Cube Mobility Investment Pte. Ltd.	13,36,47,336	9.94%	24,12,56,286	18.08%	26,92,56,286	20.87%
Cube Highways and Infrastructure-III Pte Ltd.	25,26,04,900	18.79%	27,96,54,900	20.96%	24,65,78,212	19.11%
BCI IRR India Holdings INC.	24,92,41,294	18.54%	24,74,13,228	18.54%	23,90,33,801	18.52%
Cube Highways and Infrastructure II Pte Ltd.	10,41,28,887	7.75%	10,41,28,887	7.80%	12,37,56,208	9.59%
Larsen and Toubro Limited	10,95,75,000	8.15%	8,59,50,000	6.44%	-	-
Cube Highways and Infrastructure Pte Ltd	-	-	-	-	10,35,17,584	8.02%
Seventy Second Investment Company LLC	8,06,43,273	6.00%	8,00,65,989	6.00%	7,74,19,854	6.00%

(ii) Subordinate units

Name of the Unitholders	**As at March 31, 2026**		**As at March 31, 2025**		**As at March 31, 2024**	
	No. of units	**% holding**	**No. of units**	**% holding**	**No. of units**	**% holding**
Cube Highways and Infrastructure-III Pte Ltd.	-	-	-	-	12,00,00,000	76.19%
Cube Highways and Infrastructure Pte Ltd	-	-	3,75,00,000	100.00%	3,75,00,000	23.81%

(d) Details of Units held by Sponsors

Ordinary Units

Sponsors name	As at March 31, 2026			
	No. of units at the beginning of the year	Change during the year	No. of units at the end of the year	% change during the year
Cube Highways and Infrastructure Pte. Ltd*	-	-	-	-
Cube Highways and Infrastructure-III Pte Ltd*	27,96,54,900	-	27,96,54,900	-
Cube Highways and Infrastructure V Pte Ltd#	-	-	-	-

Sponsors name	As at March 31, 2025			
	No. of units at the beginning of the year	Change during the year	No. of units at the end of the year	% change during the year
Cube Highways and Infrastructure Pte. Ltd	10,35,17,584	(10,35,17,584)	-	-100.00%
Cube Highways and Infrastructure-III Pte Ltd	24,65,78,212	3,30,76,688	27,96,54,900	13.41%

Sponsors name	As at March 31, 2024			
	No. of units at the beginning of the year	Change during the year	No. of units at the end of the year	% change during the year
Cube Highways and Infrastructure Pte. Ltd	-	10,35,17,584	10,35,17,584	100.00%
Cube Highways and Infrastructure-III Pte Ltd	-	24,65,78,212	24,65,78,212	100.00%

Subordinate Units

Sponsors name	As at March 31, 2026			
	No. of units at the beginning of the year	Change during the year	No. of units at the end of the year	% change during the year
Cube Highways and Infrastructure Pte. Ltd*	3,75,00,000	(3,75,00,000)	-	-100.00%
Cube Highways and Infrastructure-III Pte Ltd*	-	-	-	-
Cube Highways and Infrastructure V Pte Ltd#	-	-	-	-

Sponsors name	As at March 31, 2025			
	No. of units at the beginning of the year	Change during the year	No. of units at the end of the year	% change during the year
Cube Highways and Infrastructure Pte. Ltd	3,75,00,000	-	3,75,00,000	0.00%
Cube Highways and Infrastructure-III Pte Ltd	12,00,00,000	(12,00,00,000)	-	-100.00%

Sponsors name	As at March 31, 2024			
	No. of units at the beginning of the year	Change during the year	No. of units at the end of the year	% change during the year
Cube Highways and Infrastructure Pte. Ltd	-	3,75,00,000	3,75,00,000	100.00%
Cube Highways and Infrastructure-III Pte Ltd	-	12,00,00,000	12,00,00,000	100.00%

* Cube Highways and Infrastructure Pte. Ltd. and Cube Highways and Infrastructure III Pte. Ltd. were declassified as Sponsors of Cube Highways Trust with effect from February 19, 2026. Pursuant to such declassification, CH-I and CH-III no longer form part of the Sponsor category but continue to be included within the Sponsor Group of the Trust.

Cube Highways and Infrastructure V Pte. Ltd. is inducted as a new Sponsor of the Trust with effect from February 19, 2026. For Sponsor (including Sponsor group) lock-in refer note 19(vi) above.

This space has been intentionally left blank

		As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
20A	**Other equity**			
i)	**Capital reserve**			
	Opening Balance	**7,589.78**	**-**	**-**
	Subordinate units extinguishment during the year (Refer Note 19b & 64 & 65)	2,787.86	7,589.78	-
	Closing Balance	**10,377.64**	**7,589.78**	**-**
ii)	**Retained earnings**			
	Opening Balance	**(23,559.55)**	**(15,284.29)**	**(289.96)**
	Net Profit/(loss) for the year	2,165.51	(357.33)	(7,059.15)
	Re-measurement (losses)/gains on defined benefit obligations (net of tax)	1.20	0.55	0.45
	Distribution during the year (Refer Note 63)	(12,975.15)	(7,918.48)	(7,935.63)
	Closing Balance	**(34,367.99)**	**(23,559.55)**	**(15,284.29)**
	Total other equity	**(23,990.35)**	**(15,969.77)**	**(15,284.29)**

Capital Reserve
Capital reserve is created on account of extinguishment of Subordinate Units held by a sponsor(Refer note 64 and 65).

Retained earnings
Retained earnings are created from the profits earned by the Trust as adjusted for distribution to the unitholders .The distributions by the Trust to its unitholders are based on the Net Distributable Cash Flows of the Trust under the SEBI InvIT regulations.

20B	**Distribution-Repayment of Capital***			
	Particulars			
	Opening Balance	(6,840.23)	-	-
	Distribution during the year (Refer Note 63)	(5,738.57)	(6,840.23)	-
	Closing Balance	**(12,578.80)**	**(6,840.23)**	**-**

*The Trust had reduced the Retained Earnings (under Other Equity) for the amount of NDCF in the nature of repayment of capital in past periods. In terms of Clause 4.2.8(b) of the SEBI Master Circular SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025, the Trust is required to regroup the figures for Retained Earnings (under Other Equity) for prior periods presented in the Consolidated Financial Statements and to disclose the same as a separate line item on the face of Consolidated Balance Sheet. Accordingly the Trust has regrouped Rs. 6,840.23 million as at March 31, 2025 respectively from Retained earnings to Distribution-Repayment of Capital.

20C	**Non-Controlling interest**			
	Opening Balance	0.66	0.53	-
	Addition on account of Acquisition	-	-	0.46
	Net Profit for the year	1.64	0.13	0.07
	Re-measurement (losses)/gains on defined benefit obligations (net of tax)	-	-	-
	Total other equity (attributable to Non-Controlling interest)	**2.30**	**0.66**	**0.53**

	As at March 31, 2026	**As at March 31, 2025**	**As at March 31, 2024**
21 Borrowings - Non-current			
At amortised cost			
Secured:			
a) Non - Convertible Debentures (NCD) [Refer note 21(i)]			
- Rated, listed and redeemable	1,045.30	1,243.15	1,956.65
b) Non - Convertible Debt Securities [Refer note 21(i)]			
- Rated, listed and redeemable	43,444.71	30,617.19	10,025.79
Sub-total (A)	**44,490.01**	**31,860.34**	**11,982.44**
c) Term Loan [Refer note 21(ii) A]			
- from Banks	1,00,607.58	98,293.40	80,836.17
- from Financial institution	31,382.63	20,742.12	14,283.13
Sub-total (B)	**1,31,990.21**	**1,19,035.52**	**95,119.30**
Unsecured:			
Non Convertible Debentures From others [Refer note 21(iii)]			
National Investment & Infrastructure Fund	15.92	-	-
Reliance Infrastructure Ltd.	-	100.00	100.00
Sub-total (C)	**15.92**	**100.00**	**100.00**
At fair value through profit or loss			
Unsecured term loan [Refer note 21(ii) B]:			
KNR Constructions Limited	150.99	150.99	150.99
Sub-total (D)	**150.99**	**150.99**	**150.99**
Less: Current maturities of long term borrowings			
Secured:			
a) Non - convertible debentures (NCD)			
- Rated, listed and redeemable	210.00	200.00	611.00
b) Non - Convertible Debt Securities			
- Rated, listed and redeemable	456.80	521.60	360.50
c) Term loan			
- from Banks	3,565.14	3,267.15	2,975.00
- from Financial institution	894.54	610.84	525.00
Unsecured:			
a) Non - convertible debentures - from others	15.92	100.00	100.00
b) Term loans - from others	150.99	150.99	150.99
Total current maturities of borrowings (E) (Refer note 25)	**5,293.39**	**4,850.58**	**4,722.49**
Total non-current borrowings (A+B+C+D-E)	**1,71,353.74**	**1,46,296.27**	**1,02,630.24**

CUBE HIGHWAYS TRUST
Notes forming part of Consolidated Financial Statements for the year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

21(i) Borrowing footnote NCDs and Debt Securities
For repayment terms and security details of the outstanding non-current borrowings (including current maturities) refer the table below:

Secured NCDs:[1]

S.No.	Nature of Borrowings	Name of the Entity	Lender	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024	Interest and repayment terms
1(a)	Non Convertible Debt Securities	Cube Highways Trust	Listed NCDs	8,181.78	-	-	On August 20, 2025, the Trust allotted 42,000 (Forty two thousand) 6.93% and 40,000 (Forty thousand) 7.3015% Senior, Secured, Rated, Listed, Redeemable, Non-Convertible Debt Securities respectively having a face value of Rs. 1,00,000 (Rupees One Lakh) each aggregating to Rs. 8,200 million (Rupees eighty two hundred million Only) ("Debt Securities") on private placement basis which got listed on Bombay Stock Exchange (BSE). Details of utilisation of these debt securities are as follows:

(Amount Rs. Million)

Particulars	Proposed Utilisation	Actual Utilisation upto March 31, 2026	Unutilised Amount as at March 31, 2026
for refinancing of part or full commercial papers (CPs) issued by the issuer	2,620.00	2,620.00	-
for on lending to the tranche III Project SPVs (JUHPL and QEPL) for the purpose of repayment of the existing facilities availed by such Tranche III Project SPVs (JUHPL and QEPL)	5,580.00	5,580.00	-

Redemption terms: As at March 31, 2026, Rs. 4,200.00 million repayable as on February 20, 2029 and Rs. 4,000.00 milion repayable in 4 structured annual installments starting from September 30, 2032 amd ending on August 20, 2035.

1 (b)	Non Convertible Debt Securities	Cube Highways Trust	Listed NCDs	11,507.01	-	-	On April 25, 2025, the Trust allotted 55,200 (Fifty five thousand two hundred) 7.2503% and 60,000 (Sixty thousand) 7.3006% Senior, Secured, Rated, Listed, Redeemable, Non-Convertible Debt Securities respectively having a face value of Rs. 1,00,000 (Rupees One Lakh) each aggregating to Rs. 11,520 million (Rupees eleven thousand five hundred twenty million Only) ("Debt Securities") on private placement basis which got listed on Bombay Stock Exchange (BSE). Details of utilisation of these debt securities are as follows:

(Amount Rs. Million)

Particulars	Proposed Utilisation	Actual Utilisation upto March 31, 2026	Unutilised Amount as at March 31, 2026
for part or full repayment of any of outstanding amounts in relation to any one or more of the Senior Debt Facilities.	11,520.00	11,520.00	-

Redemption terms: As at March 31, 2026, Rs. 5,520.00 million repayable as on April 25, 2028 and Rs. 6000.00 milion repayable as on April 25, 2032.

1 (c)	Non Convertible Debt Securities	Cube Highways Trust	Listed NCDs	-	6,410.43	-	On June 26, 2024, the Trust allotted 64,800 (Sixty four thousand eight hundred) 7.95% Senior, Secured, Rated, Listed, Redeemable, Non-Convertible Debt Securities having a face value of Rs. 1,00,000 (Rupees One Lakh) each aggregating to Rs. 6,480 million (Rupees Six thousand four hundred eighty million Only) ("Debt Securities") on private placement basis which got listed on Bombay Stock Exchange (BSE). Details of utilisation of these debt securities are as follows:

(Amount Rs. Million)

Particulars	Proposed Utilisation	Actual Utilisation upto March 31, 2026	Unutilised Amount as at March 31, 2026
For on lending to the HAM SPVs for the repayment of the Existing Facilities availed by the HAM SPVs in part or in full; and/or for general corporate purposes.	6,480.00	6,480.00	-

Put Option available with the Debt Security Holder

At least 90 (ninety) days prior to the Coupon Payment Date falling on the last day of the Fiscal Year 2026 (i.e. 31 March 2026), and every 2 (two) year anniversary of such Coupon Payment Date thereafter or such other period as may be mutually agreed between the Debt Security Holders.

Call Option available with the Trust

At least 90 (ninety) days prior to the Coupon Payment Date falling on the last day of the Fiscal Year 2026 (i.e. 31 March 2026), and every 2 (two) year anniversary of such Coupon Payment Date thereafter or such other period as may be mutually agreed between the Debt Security Holders and the Issuer (such Coupon Payment Dates being the "Call Option Date"), the Issuer may issue a notice to the Debt Security Trustee in the manner provided under the SEBI Guidelines, setting out the Coupon that will be payable in relation to the Debt Securities from the Call Option Date ("Coupon Notice").

In the event that the acceptance of the Coupon set out in the Coupon Notice is not notified by any Debt Security Holder to the Issuer , the Issuer shall, on the Call Option Date, prepay the entire Outstanding Dues in relation to the Debt Securities held by that Debt Security Holder.

Redemption:

On March 30, 2026, the Trust excercised the call option and redeemed the full outstanding NCDs.

CUBE HIGHWAYS TRUST
Notes forming part of Consolidated Financial Statements for the year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

21(i) Borrowing footnote NCDs and Debt Securities
For repayment terms and security details of the outstanding non-current borrowings (including current maturities) refer the table below:

Secured NCDs:[1]

S.No.	Nature of Borrowings	Name of the Entity	Lender	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024	Interest and repayment terms
1 (d)	Non Convertible Debt Securities	Cube Highways Trust	Listed NCDs	8,474.93	8,559.25	-	On February 12, 2025, the Trust allotted 86,000 (Eighty Six Thousand) 7.67% Senior, Secured, Rated, Listed, Redeemable, Non-Convertible Debt Securities having a face value of Rs. 1,00,000 (Rupees One Lakh) each aggregating Rs. 8,600 million (Rupees Eighty Six Hundred Million Only) ("Listed Debt Securities") on private placement basis which got listed on Bombay Stock Exchange (BSE). Details of utilisation of these debt securities are as follows: **(Amount Rs. Million)** **Particulars** / **Proposed Utilisation** / **Actual Utilisation upto March 31, 2026** / **Unutilised Amount as at March 31, 2026** Acquisition of shares of N.A.M. Expressway Private Limited ("NAMEPL") from Cube Highways and Infrastructure Pte. Ltd (subject to withholding tax Rs 828.42 million) — 7,176.02 — 7,176.02 — - For on-lending of amount to NAMEPL — 1,423.98 — 1,423.98 — - **Redemption terms:** As at March 31, 2026, Rs. 8,492.50 million repayable in remaining 67 structured quarterly installments ending on December 31, 2042. **Put Option available with the Debt Security Holder** Any Debt Security Holder may, at least 60 (sixty) days prior: (i) to the Coupon Payment Date immediately preceding the end of the 10th (tenth) year from (and including) the Deemed Date of Allotment (February 04, 2025); and (ii) to any subsequent Coupon Payment Date specified in the Coupon Notice (such Coupon Payment Date, the "Put Option Date"), demand for redemption of the Debt Securities of such Debt Security Holder. **Call Option available with the Trust** At least 60 (sixty) days prior to each Call Option Date, the Issuer shall issue a notice to the Debt Security Trustee in the manner provided under the SEBI Guidelines, setting out: (A) the revised Coupon that will be payable in relation to the Debt Securities from the Call Option Date; (B) the next Call Option Date, if any, which shall not be earlier than 2 (two) years from the date of such notice ("Coupon Notice"). In the event that the acceptance of the Coupon set out in the Coupon Notice is not notified by any Debt Security Holder to the Issuer , the Issuer shall, on the Call Option Date, prepay the entire Outstanding Dues in relation to the Debt Securities held by that Debt Security Holder.
1 (e)	Non Convertible Debt Securities	Cube Highways Trust	Listed NCDs	5,981.57	5,979.71	-	On February 21, 2025, the Trust allotted 60,000 (Sixty Thousand) 7.59% Senior, Secured, Rated, Listed, Redeemable, Non-Convertible Debt Securities having a face value of Rs. 1,00,000 (Rupees One Lakh) each aggregating Rs. 6000 million (Rupees Six Thousand Million Only) ("Listed Debt Securities") on private placement basis which got listed on Bombay Stock Exchange (BSE). Details of utilisation of these debt securities are as follows: **(Amount Rs. Million)** **Particulars** / **Proposed Utilisation** / **Actual Utilisation upto March 31, 2026** / **Unutilised Amount as at March 31, 2026** For on-lending of amount to NAMEPL — 6,000.00 — 6,000.00 — - **Redemption terms**: As at March 31, 2026, Rs. 6,000 million repayable in remaining 57 structured quarterly installments starting from March 31, 2030 ending on December 31, 2044. **Put Option available with the Debt Security Holder** Debt security holder , at least 90 (ninety) days prior to the Date falling on the 5 (five) year anniversary from the Deemed Date of Allotment (February 21, 2025, and every 3 (three) year anniversary of thereafter or such other period as may be mutually agreed between the Debt Security Holders and the Issuer **Call Option available with the Trust** At least 90(ninety) days prior to the Coupon Payment Date immediately The Issuer may issue a notice ("Coupon Notice") to the Debt Security Trustee in the manner provided under the SEBI Guidelines, setting out the Coupon that will be payable in relation to the Debt Securities from the date immediately succeeding the date falling on: (A) 5 (five) year anniversary of the Deemed Date of Allotment; and (B) every 3 (three) year anniversary thereafter; and/or (C) such other period as may be mutually agreed between the Debt Security Holders and the Issuer. In the event that the acceptance of the Coupon set out in the Coupon Notice is not notified by any Debt Security Holder to the Issuer , the Issuer shall, on the Call Option Date, prepay the entire Outstanding Dues in relation to the Debt Securities held by that Debt Security Holder.

21(i) Borrowing footnote NCDs and Debt Securities
For repayment terms and security details of the outstanding non-current borrowings (including current maturities) refer the table below:

Secured NCDs:[1]

S.No.	Nature of Borrowings	Name of the Entity	Lender	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024	Interest and repayment terms
1 (f)	Non Convertible Debt Securities	Cube Highways Trust	Listed NCDs	9,299.42	9,667.80	10,025.79	During the year ended March 31, 2024, the Trust allotted 103,000 (one lakh three thousand) 7.49% Senior, Secured, Rated, Listed, Redeemable, Non-Convertible Debt Securities having a face value of Rs. 100,000 each aggregating to Rs. 10,300 million ("Debt Securities") on private placement basis which got listed on Bombay Stock Exchange (BSE) which have been fully utilised in earlier years.

(Amount Rs. Million)

Particulars	Proposed Utilisation	Actual Utilisation upto March 31, 2026	Actual Utilisation upto March 31, 2026
Providing loan to GAEPL for repaying existing facilities, in full and meeting any capital expenditure in relation to the Project developed/operated and any other project related expenses; and/or general corporate purposes.	10,300.00	10,300.00	-

Redemption terms: As at March 31, 2026, Rs. 9,321.50 million repayable in remaining 61 structured quarterly installments ending on April 15, 2041.

Put Option available with the Debt Security Holder

Debt Security Holder may, at least 60 days prior to the Coupon Payment Date immediately succeeding the end of the 12th (twelfth) year from (and including) the Date of Allotment (June 28, 2023) (such Coupon Payment Date, the "Put Option Date"), demand for redemption of the Debt Securities of such Debt Security Holder.

Call Option available with the Trust

At least 60 (sixty) days prior to the Coupon Payment Date immediately preceding the end of the 12th (twelfth) year from (and including) the Deemed Date of Allotment (such Coupon Payment Date, the "Call Option Date"), the Issuer shall issue a notice to the Debt Security Trustee in the manner provided under the SEBI Guidelines, setting out the Coupon that will be payable in relation to the Debt Securities from the Call Option Date ("Coupon Notice"). The Debt Security Holders shall notify the Issuer of their acceptance of the Coupon set out in the Coupon Notice within 30 days and the Coupon as specified in the Coupon Notice shall be payable by the Issuer.

In the event that the acceptance of the Coupon set out in the Coupon Notice is not notified by any Debt Security Holder to the Issuer , the Issuer shall, on the Call Option Date, prepay the entire Outstanding Dues in relation to the Debt Securities held by that Debt Security Holder.

1 (g)	Non Convertible Debentures	APEPL	Listed NCDs	-	-	565.90	On November 6, 2012, APEPL issued 5300 secured, rated, listed and redeemable NCD of Rs. 1 million each fully paid up in seven series A to G carrying a yield to maturity of 10.00% p.a. compounded semi-annually on private placement basis. These NCD are redeemable in 26 instalments commencing from April 15, 2013 and ending on October 15, 2025. The Company has the right to purchase such debentures at any time at the price available in the Debt market in accordance with the applicable laws. Series A to E were redeemed as per stipulated terms by March 31, 2024. Series F to G redemption details are given as under:

(Amount Rs. Million)

Series of Debentures Redeemed	Redemption Date	No of Debenture / Bonds	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
Series F	15-Apr-24	461	-	-	125.84
	15-Oct-24		-	-	335.16
Series G	15-Oct-25	106	-	-	106.00
	Total		-	-	**567.00**
Less - upfront fee adjusted from the listed NCDs #			-	-	1.10
Total Listed NCDs			-	-	**565.90**

The upfront fee adjusted from the listed NCDs is recouped in borrowing through interest charge basis effective interest rate after considering this amount.

Series F and G Debentures were early redeemed on August 21, 2024.

Secured by :
- First and exclusive charge on all the following assets of the SPV in favour of the Debenture Trustee, acting for the benefit of the debenture holders;
- immovable property of the SPV:
- all tangible movable assets;
- the escrow account and Its sub-accounts, monies standing to their credit and permitted Investments;
- ail receivables (including annuity receivables from NHAI)
- rights of the SPV under the project documents (other than the concession agreement)
- Rights under the substitution agreement.

1 (h)	Non Convertible Debentures	MBEL	Listed NCDs	1,045.30	1,243.15	1,390.75	On October 16, 2017, the Company issued 1920 secured, rated, listed and redeemable NCD of Rs. 1 million each fully paid up in two series A and B carrying a yield to maturity of 8.40% p.a. compounded semi-annually on private placement basis. These NCD are redeemable in 32 instalments commencing from April 03, 2018 and ending on March 29, 2030. Series A redemption details are given as under:

(Amount Rs. Million)

Series of Debentures Redeemed	Redemption Date	No of Debenture / Bonds	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
Series A	03-Apr-24	150	-	-	75.00
	03-Oct-24		-	-	75.00
	03-Apr-25	200	-	100.00	100.00
	03-Oct-25		-	100.00	100.00
	06-Apr-26	210	105.00	105.00	105.00
	05-Oct-26		105.00	105.00	105.00
	05-Apr-27	220	110.00	110.00	110.00
	04-Oct-27		110.00	110.00	110.00
	04-Apr-28	250	125.00	125.00	125.00
	03-Oct-28		125.00	125.00	125.00
	03-Apr-29	250	125.00	125.00	125.00
	03-Oct-29		125.00	125.00	125.00
	29-Mar-30	120	120.00	120.00	120.00
	Total		**1,050.00**	**1,250.00**	**1,400.00**
Less - upfront fee adjusted from the listed NCDs #			4.70	6.85	9.25
	Total		**1,045.30**	**1,243.15**	**1,390.75**

The upfront fee adjusted from the listed NCDs is recouped in borrowing through interest charge basis effective interest rate after considering this amount.

NCD are secured against:

Except project assets of MBEL as specified in the concession agreement, first pari passu charge on the following assets of MBEL in favour of the Debenture Trustee:
- All tangible movable assets and intangible assets both present and future.
- All bank accounts (excluding the Distribution Account and the DRR Investments), permitted investments and all receivables along with monies received/ receivable by the SPV both present and future;
- The SPV rights, titles, interest, benefits, claims and demands under the insurance contracts together with any receivables or proceeds thereunder, the Concession Agreement (in accordance with the substitution agreement) and the Project Documents along with rights thereunder.

	Total Secured NCDs			**44,490.01**	**31,860.34**	**11,982.44**	

(i) The closing balances are net of transaction / processing fees, and figures reported under Interest and repayment terms are on gross basis.

21(ii) Borrowing footnote term loans
For repayment terms and security details of the outstanding non-current borrowings (including current maturities) refer the table below:

A Secured Loan [(i)]:

Term Loan facilities from Banks and a Financial Institution availed by the Trust have been utilised for onward lending to its subsidiaries for refinancing of existing secured loans and existing subordinate debts and for funding of ongoing capex of the subsidiaries.

Sl. No.	Nature of Borrowings	Name of Entity	Lender	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024	Interest and repayment terms
1	Term loans from banks and financial institution	Cube Highways Trust	1) State Bank of India 2) HDFC Bank limited 3) ICICI Bank Limited 4) Axis Bank Limited 5) National Bank for financing Infrastructure and Development ("NABFID")	1,31,990.21	1,19,035.52	95,119.30	Term Loan facilities from Banks and a Financial Institution availed by the Trust have been utilised for onward lending to its subsidiaries for refinancing of existing secured loans and existing subordinate debts and for funding of ongoing capex of the subsidiaries.

Banks	Interest rate as at March 31, 2026##	Interest rate as at March 31, 2026	Interest rate as at March 31, 2025##	Interest rate as at March 31, 2025	Interest rate as at March 31, 2024##	Interest rate as at March 31, 2024	Repayment period: Remaining unstructured quarterly instalments as at March 31, 2026	Repayment period: Last instalment due on	Outstanding balance as at March 31, 2026	Outstanding balance as at March 31, 2025	Outstanding balance as at March 31, 2024
State Bank of India ("SBI") Tranche 1	3 Months T Bill plus spread	7.50%	1M SBI MCLR plus spread	8.30%	1M SBI MCLR plus spread	8.30%	64	March 31, 2042	53,741.23	55,905.69	58,013.43
State Bank of India ("SBI") Tranche 2	3 Months T Bill plus spread	7.50%	1M SBI MCLR plus spread	8.30%	NA	NA	71	December 31, 2043	9,206.60	9,297.50	-
State Bank of India ("SBI") Tranche 3	3 Months T Bill plus spread	7.50%	NA	NA	NA	NA	71	December 31, 2043	4,868.07	-	-
HDFC Bank Limited ("HDFC") Tranche 1	Repo Rate plus spread	7.45%	1M T-bill plus spread	8.30%	1M T-bill plus spread	8.30%	64	March 31, 2042	6,170.53	6,419.11	6,660.56
HDFC Bank Limited ("HDFC") Tranche 2	Repo Rate plus spread	7.45%	1M T-bill plus spread	8.30%	NA	NA	71	December 31, 2043	4,610.21	4,654.83	-
HDFC Bank Limited ("HDFC") Tranche 3	Repo Rate plus spread	7.45%	NA	NA	NA	NA	71	December 31, 2043	5,838.58	-	-
ICICI Bank Limited ("ICICI")* Tranche 1	NA	NA	NA	NA	3M T-bill plus spread	8.30%		NA	-	11,465.89	11,893.90
ICICI Bank Limited ("ICICI") Tranche 2	1-MCLR-3M	8.10%	3M T-bill plus spread	8.65%	NA	NA	71	December 31, 2043	1,765.69	1,782.64	-
Axis Bank Limited ("AXIS-1")	Repo Rate plus spread	6.95%	Repo Rate plus spread	8.20%	Repo Rate plus spread	8.20%	64	March 31, 2042	3,953.42	4,113.05	4,268.28
Axis Bank Limited-2 ("AXIS-2")	SBI 1M MCLR plus spread	7.95%	Repo Rate plus spread	8.30%	NA	NA	71	December 31, 2043	4,608.32	4,654.69	-
Axis Bank Limited-2 ("AXIS-3")	Repo Rate plus spread	7.45%	NA	NA	NA	NA	71	December 31, 2043	5,844.93	-	-
Total									**1,00,607.58**	**98,293.40**	**80,836.17**

Financial Institution	Interest rate as at March 31, 2026##	Interest rate as at March 31, 2026	Interest rate as at March 31, 2025##	Interest rate as at March 31, 2025	Interest rate as at March 31, 2024##	Interest rate as at March 31, 2024	Repayment period: Remaining unstructured quarterly instalments as at March 31, 2026	Repayment period: Last instalment due on	Outstanding balance as at March 31, 2026	Outstanding balance as at March 31, 2025	Outstanding balance as at March 31, 2024
National Bank for Financing Infrastructure and Development ("NABFID-1")	1 year NLR plus spread	8.15%	1 year NLR plus spread	8.30%	1 year NLR plus spread	8.20%	64	March 31, 2042	13,231.17	13,764.77	14,283.13
National Bank for Financing Infrastructure and Development-2 ("NABFID-2")	6 Months NLR plus spread	7.65%	1 year NLR plus spread	8.20%	NA	NA	71	December 31, 2043	6,910.48	6,977.35	-
National Bank for Financing Infrastructure and Development-3 ("NABFID-3")	6 Months NLR plus spread	7.50%	NA	NA	NA	NA	71	December 31, 2043	4,870.98	-	-
National Bank for Financing Infrastructure and Development-3 ("NABFID-4")	3 Months NLR	7.40%	NA	NA	NA	NA	48	March 31, 2038	6,370.00	-	
Total									**31,382.63**	**20,742.12**	**14,283.13**

Put Option available with the Lenders except for NABFID-4 and SBI Tranche 3

At the end of the 10th year and the 15th year from the Initial Drawdown Date (each such date being "Put Option Exercise Date"), each of the Lenders shall have the option to, within a period of 120 days from each such Put Option Exercise Date ("Put Option Exercise Period"), require the Trust to mandatorily prepay the Outstanding Obligations in respect of its Commitment, in full, without any Prepayment Premium (the "Put Option"), by issuing a notice to the Trust requesting for such prepayment ("Put Option Exercise Notice"). Upon exercise of the Put Option, the Trust shall mandatorily prepay the entire Outstanding Obligations in relation to the Commitment of such Lender within 120 days of the date of Put Option Exercise Notice.

Put Option available with the Lenders except for SBI Tranche 3

At the end of the 5th year, 10th year and the 15th year from the Initial Drawdown Date (each such date being "Put Option Exercise Date"), each of the Lenders shall have the option to, within a period of 120 days from each such Put Option Exercise Date ("Put Option Exercise Period"), require the Trust to mandatorily prepay the Outstanding Obligations in respect of its Commitment, in full, without any Prepayment Premium (the "Put Option"), by issuing a notice to the Trust requesting for such prepayment ("Put Option Exercise Notice"). Upon exercise of the Put Option, the Trust shall mandatorily prepay the entire Outstanding Obligations in relation to the Commitment of such Lender within 120 days of the date of Put Option Exercise Notice.

* In accordance with clause 5.2.1(b)(i)(B) of the Amended and Reinstated Facility Agreement of ICICI Bank Limited, the Board of Directors of Investment Manager (acting on behalf of Trust) has passed resolution dated March 27, 2025 to refinance the ICICI Bank's loan. The said loan is refinanced on April 25, 2025.

##The Spread is based on external credit rating.

(i) All numbers are net of transaction / processing fees

21(ii) Borrowing footnote term loans
For repayment terms and security details of the outstanding non-current borrowings (including current maturities) refer the table below:

Security Terms:

Below are the common security details for the Term loans and Non Convertible Debt Securities:

a)First ranking pari-passu charge, by way of hypothecation on the following (as more stipulated under the Deed of Hypothecation):-

(i) on all moveable assets and the receivables of the Issuer in relation to the Project SPVs, present and future including but not limited to:
(I) all receivables of the Issuer from the Project SPVs;
(II) loans and advances (and all rights, title, security and interest thereunder) made by the Issuer to Project SPVs except for the Excluded SPVs, including the rights under the Substitution Agreement – Project SPVs, Escrow Agreement – Project SPVs and all other Project Documents;
(III) the interest and principal repayment of loans advanced by the Issuer to Project SPVs;
(IV) dividends and any other amounts to be paid or payable by the Project SPVs to the Issuer;
(V) inventories, contractual rights, securities, patents, trademarks, other Intellectual Property and Intellectual Property Rights, equipment and/or insurances (in each instance, if any); and
(VI) all other current assets of the Issuer, including all the Issuer's tangible and intangible assets, including but not limited to its goodwill, undertaking and uncalled capital, both present and future.

(ii) all the Accounts and all other bank accounts of the Issuer in which the Free Cashflows from the Project SPVs owned by the Issuer will be deposited/ credited or any other account opened / maintained by the Issuer in relation to such Project SPVs. It is hereby clarified that bank accounts opened by the Issuer in pursuance to Regulation 9(1) of the Securities and Exchange Board of India (Investment Infrastructure) Regulations, 2014 shall not be included for the purposes of this Section.

(b) A first ranking exclusive Security Interest, by way of hypothecation on the DSR;
(c) An agreement to assign the loans advanced by the Issuer to the Project SPVs (except for the Excluded SPVs) and securities created in favour of the Issuer in respect of such loans (including the right of substitution and termination and invocation of the provisions of Escrow Agreement-Project SPVs in case of default by such Project SPVs except for the Excluded SPVs) in relation to such loans granted by the Issuer. Provided that such assignment shall be effective upon occurrence of an Event of Default;
(d) A pledge of all bonds, non-convertible debentures, or any other securities (except the equity shares) of Project SPVs (other than the Excluded SPVs) held by the Issuer.
(e) A pledge of 100% equity shares (including QEPL which was pledged on October 03, 2025) on a Fully Diluted Basis of all Project SPVs (except for the Excluded SPVs), other than the Nominees' Shares.
(f) A negative lien, other than on Permitted Disposals, on the immovable and movable assets (including current assets and cash flows) of the Project SPVs except for the Excluded SPVs, subject to the rights of the Authorities under the respective Concession Agreements.
(g) In respect of 7.49% Debt Securities, a corporate guarantee and a shortfall undertaking from the Project SPVs except by the Excluded SPVs, in relation to upstreaming of funds and/or direct payment to the Debt Security Holders towards dues owed and payable by the Issuer in relation to the Debt Securities in a form and manner instructed by the Debt Security Holders. The same was waived off w.e.f May 31, 2024.
(h) A pledge of bonds, non-convertible debentures, or any other security (except equity shares) of the Excluded SPVs held by the Issuer and pledge over 100% (one hundred percent) equity shares of APEL and pledge over 99.97% (ninety-nine-point nine seven percent) equity shares of MBEL and a pledge over 100% (one hundred percent) of the equity shares of the other Excluded SPVs, in each case other than the Nominees' Shares.

"Excluded SPVs" referred above shall mean, collectively:
1) Andhra Pradesh Expressways Limited till November 20, 2024*
2) Mahua Bharatpur Expressways Limited; and
3) such other Project SPVs (other than the Tranche I SPVs), in respect of which the Debt Security Holders do not have any Security Interest in accordance with the terms of this Deed.
*Pursuant to the Clause 31.2 (e) and 31.2 (c) of Debt Security Trust Deed dated June 19,2024, and June 14, 2023 respectively, post receipt of no objection certificate for satisfaction of charge for its borrowing from existing lenders by APEPL, Trust has pledged the securities held in APEL in favour of Security Trustee on November 21, 2024.

B Unsecured Loan:

Sl. No.	Nature of Borrowings	Name of SPV	Lender	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024	Significant terms and conditions of the loan (including interest and repayment terms)
1	Term Loan - Others	WVEPL	KNR Constructions Limited	150.99	150.99	150.99	During the year ended March 31, 2021, Cube Highways and Infrastructure III Pte. Ltd (erstwhile holding company of WVEPL) ("Cube Highways") acquired 100% equity share capital of WVEPL from KNR Constructions Limited ("KNR" or "Seller") pursuant to the Share Purchase Agreement dated January 9, 2020 as amended by Amendment Agreement dated September 18, 2020 (collectively referred as "SPA") entered into between Cube Highways, KNR and WVEPL. During the year ended March 31, 2021, WVEPL and KNR agreed to the amount and terms of repayment etc. of Seller Loans by converting existing subordinate loan of KNR in accordance with the terms of SPA. The repayment terms of outstanding Subordinated Outstanding Seller Loans as per the Seller Loan Agreement are as under: Rs. 2.10 million (A portion of the outstanding unsecured loan equal to the Transition Tax Holdback Amounts shall continue to remain outstanding till the income tax assessment for the financial years 2017-18 and 2018-19 is completed by the relevant taxation authorities. The substantial amount was repaid in May 2021.) Rs. 148.89 million (The portion of the outstanding unsecured loan equal to the working capital Pass Through Amounts shall be payable only after it has actually received such amounts from the National Highways Authority of India, Insurance company, State transport Authorities and the relevant Government/ taxation authorities in terms of the Claims Management Agreement, as amended. (The matter is expected to be settled within next one year.)

This space has been intentionally left blank

21(iii) Borrowing footnote NCDs

For repayment terms and security details of the outstanding non-current borrowings (including current maturities) refer the table below:

Unsecured NCDs

S.No.	Nature of Borrowings	Name of SPV	Lender	As at			Description of NCDs and Significant term with respect to repayment schedule and interest
				March 31, 2026	March 31, 2025	March 31, 2024	
1	Non Convertible Debentures	DATRPL	Reliance Infrastructure Ltd.	-	100.00	100.00	On December 23, 2020, DATRPL had issued 5,252,059,146 Unsecured, Seller Debentures ("NCDs") of Rs.1.00 each fully paid up on private placement basis to Reliance Infrastructure Limited ("RIL") (the erstwhile holding company of DATRPL) by conversion of subordinate debt, repayment of creditor and Inter corporate deposit of RIL amounting to Rs. 5,252.06 millions. The Seller Debenture carry coupon rate of 0% per annum on the maturity amount including redemption premium payable while redeeming relevant tranche of Seller Debentures. The closing balance as on March 31, 2025 has been repaid during the year.
2	Non Convertible Debentures	QEPL	National Investment & Infrastructure Fund	15.92	-	-	QEPL had issued 1,592 non-convertible debentures (NCD), having a face value of INR 10,000 each to National Investment and Infrastructure Fund (NIIF) (the erstwhile holding company of QEPL) . Pursuant to terms of the amendment agreement dated June 11, 2025 entered into with NIIF, redemption of the debentures is contingent and shall be due & payable only on the occurrence of certain redemption events as defined in the said amendment agreement. Further, such NCD shall not carry any coupon but will be redeemed at a redemption premium to be calculated based on conditions defined in the amendment agreement.
	Total Unsecured NCDs			**15.92**	**100.00**	**100.00**	

21 (iv) Bank Guarantee

The Trust has obtained a irrevocable and unconditional Bank Guarantee amounting to Rs. 2,500 million (March 31, 2025: 1,500 million, March 31, 2024: Nil) towards meeting the DSRA (Debt Service Reserve Account) in relation to secured loan taken by the Trust.

This space has been intentionally left blank

		As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
22	**Other non-current financial liabilities**			
	Interest accrued but not due on debentures	-	-	185.09
	Security deposits	2.11	2.11	-
	Hold back amount payable to an EPC contractor	-	112.06	-
		2.11	**114.17**	**185.09**
23	**Non-current provisions**			
	Provision for employee benefits			
	- Gratuity [Refer note 40]	39.42	33.49	23.42
	- Compensated absences	21.37	21.71	14.36
	- Long term incentive plan [Refer note 40]	64.14	-	-
	Provision for periodic major maintenance works [Refer note 48 (a)]	6,294.94	4,334.81	2,300.26
		6,419.87	**4,390.01**	**2,338.04**

This space has been intentionally left blank

	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
24 Deferred Tax Asset/Liabilities			
24A Deferred tax liabilities (net)			
Deferred tax liability arising on account of :			
Difference between carrying value of property, plant and equipment, intangible assets and receivable under service concession arrangement as per books and tax	16,271.29	13,641.98	7,824.32
Unamortised processing fees on borrowings	-	-	0.28
Income taxable on receipt basis	7.17	9.70	77.53
Deferred tax asset arising on account of :			
Unused tax losses carried forward	(5.36)	(236.27)	(154.32)
Interest disallowed u/s 94B of Income-tax Act, 1961 carried forward	(1.63)	(68.00)	(112.34)
Expense allowed in tax on payment basis	(1,241.40)	(888.67)	(426.90)
Unabsorbed depreciation carried forward	(11,109.99)	(10,078.52)	(6,877.81)
MAT credit entitlement	-	(91.08)	(18.95)
Deferred tax liabilities (net)	**3,920.08**	**2,289.14**	**311.81**
24B Deferred tax assets (net)			
Deferred tax liabilities arising on account of :			
Difference between carrying value of property, plant and equipment, intangible assets and receivable under service concession arrangement as per books and tax	(512.05)	(514.96)	(408.58)
Income taxable on receipt basis	(0.72)	(2.90)	-
Deferred tax assets arising on account of :			
Expense allowed in tax on payment basis	268.19	19.39	-
Unabsorbed depreciation carried forward	62.68	252.94	-
MAT credit entitlement	637.78	889.32	651.81
Deferred tax assets (net)	**455.88**	**643.79**	**243.23**
Net Deferred tax assets/(liabilities) for the purpose of below disclosures:	**(3,464.20)**	**(1,645.35)**	**(68.58)**

Movement in deferred tax liabilities (net)

Particulars	**Balance as at April 01, 2025**	**Additions on account of acquisition (Refer note 50)**	**Recognised in Consolidated Statement of Profit and Loss**	**Recognised in other comprehensive income/ equity**	**Balance as at March 31, 2026**
Difference between carrying value of property, plant and equipment, intangible assets and receivable under service concession arrangement as per books and tax	(14,156.94)	(2,639.00)	12.60	-	(16,783.34)
Unamortised processing fees on borrowings	-	(19.26)	19.26	-	-
Income taxable on receipt basis	(12.61)	(8.28)	13.00	-	(7.89)
Unused tax losses carried forward	236.27	-	(230.91)	-	5.36
Interest disallowed u/s 94B of Income-tax Act, 1961 carried forward	68.00	-	(66.37)	-	1.63
Expense allowed in tax on payment basis	908.07	0.61	601.08	(0.17)	1,509.59
Unabsorbed depreciation carried forward	10,331.46	1,433.74	(592.53)	-	11,172.67
MAT credit entitlement	980.40	-	(342.62)	-	637.78
Total deferred tax assets/(liabilities)	**(1,645.35)**	**(1,232.19)**	**(586.49)**	**(0.17)**	**(3,464.20)**

Particulars	**Balance as at April 01, 2024**	**Additions on account of acquisition (Refer note 50)**	**Recognised in Consolidated Statement of Profit and Loss**	**Recognised in other comprehensive income/ equity**	**Balance as at March 31, 2025**
Difference between carrying value of property, plant and equipment, intangible assets and receivable under service concession arrangement as per books and tax	(8,232.90)	(2,553.65)	(3,370.39)	-	(14,156.94)
Unamortised processing fees on borrowings	(0.28)	-	0.28	-	-
Income taxable on receipt basis	(77.53)	(1.92)	66.84	-	(12.61)
Unused tax losses carried forward	154.32	-	81.95	-	236.27
Interest disallowed u/s 94B of Income-tax Act, 1961 carried forward	112.34	-	(44.34)	-	68.00
Expense allowed in tax on payment basis	426.90	6.65	474.67	(0.15)	908.07
Unabsorbed depreciation carried forward	6,877.81	440.72	3,012.93	-	10,331.46
MAT credit entitlement	670.76	-	309.64	-	980.40
Total deferred tax assets/(liabilities)	**(68.58)**	**(2,108.20)**	**531.58**	**(0.15)**	**(1,645.35)**

Particulars	**Balance as at April 01, 2023**	**Additions on account of acquisition (Refer note 50)**	**Recognised in Consolidated Statement of Profit and Loss**	**Recognised in other comprehensive income/ equity**	**Balance as at March 31, 2024**
Difference between carrying value of property, plant and equipment, intangible assets and receivable under service concession arrangement as per books and tax	-	(6,866.47)	(1,366.43)	-	(8,232.90)
Unamortised processing fees on borrowings	-	(1.17)	0.89	-	(0.28)
Income taxable on receipt basis	-	(26.83)	(50.70)	-	(77.53)
Equity component of optionally convertible debentures	-	-	-	-	-
Unused tax losses carried forward	-	143.37	10.95	-	154.32
Interest disallowed u/s 94B of Income-tax Act, 1961 carried forward	-	185.66	(73.32)	-	112.34
Expense allowed in tax on payment basis	-	211.36	215.44	0.10	426.90
Unabsorbed depreciation carried forward	-	5,741.36	1,136.45	-	6,877.81
MAT credit entitlement	-	441.93	228.83	-	670.76
Total deferred tax assets/(liabilities)	**-**	**(170.79)**	**102.11**	**0.10**	**(68.58)**

Also, refer note 39 (ii) for unrecognised deferred tax.

	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
25 Current borrowings			
Current maturities of long term borrowings [Refer note 21]	5,293.39	4,850.58	4,722.49
	5,293.39	**4,850.58**	**4,722.49**
26 Trade payables			
Current			
Total outstanding dues of micro enterprises and small enterprises [Refer note 49]	1,341.05	937.36	273.52
Total outstanding dues to creditors other than micro enterprises and small enterprises	1,661.24	1,290.25	1,372.02
	3,002.29	**2,227.61**	**1,645.54**

Note:

Credit period varies as per the contractual terms of various suppliers/vendors. The Trust Group has appropriate policy in place to ensure that all dues are paid within the credit terms agreed with the parties. Also, refer Group's credit risk management policy.

Trade payables ageing schedule

As at March 31, 2026	**Outstanding for following period from due date of payment**						
Particulars	**Unbilled**	**Not due**	**Less than 1 year**	**1-2 year**	**2-3 year**	**More than 3 years**	**Total**
Undisputed outstanding dues of micro enterprises and small enterprises	381.53	223.26	602.67	57.70	29.81	46.08	1,341.05
Undisputed outstanding dues of creditors other than micro enterprises and small enterprises	741.10	54.51	483.32	6.47	213.07	162.77	1,661.24
Disputed dues of micro enterprises and small enterprises	-	-	-	-	-	-	-
Disputed dues of creditors other than micro enterprises and small enterprises	-	-	-	-	-	-	-
Total Trade Payables	**1,122.63**	**277.77**	**1,085.99**	**64.17**	**242.88**	**208.85**	**3,002.29**

As at March 31, 2025	**Outstanding for following period from due date of payment**						
Particulars	**Unbilled**	**Not due**	**Less than 1 year**	**1-2 year**	**2-3 year**	**More than 3 years**	**Total**
Undisputed outstanding dues of micro enterprises and small enterprises	241.97	158.91	415.96	44.33	61.30	14.89	937.36
Undisputed outstanding dues of creditors other than micro enterprises and small enterprises	522.78	108.33	234.02	263.23	20.92	140.97	1,290.25
Disputed dues of micro enterprises and small enterprises	-	-	-	-	-	-	-
Disputed dues of creditors other than micro enterprises and small enterprises	-	-	-	-	-	-	-
Total Trade Payables	**764.75**	**267.24**	**649.98**	**307.56**	**82.22**	**155.86**	**2,227.61**

Trade payables ageing schedule (Continued.)

As at March 31, 2024	Outstanding for following period from due date of payment						
Particulars	**Unbilled**	**Not due**	**Less than 1 year**	**1-2 year**	**2-3 year**	**More than 3 years**	**Total**
Undisputed outstanding dues of micro enterprises and small enterprises	41.92	62.31	137.68	29.76	1.68	0.17	273.52
Undisputed outstanding dues of creditors other than micro enterprises and small enterprises	508.73	78.50	333.33	36.57	96.73	318.16	1,372.02
Disputed dues of micro enterprises and small enterprises	-	-	-	-	-	-	-
Disputed dues of creditors other than micro enterprises and small enterprises	-	-	-	-	-	-	-
Total Trade Payables	**550.65**	**140.81**	**471.01**	**66.33**	**98.41**	**318.33**	**1,645.54**

	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
27 Other financial liabilities			
Current			
Interest accrued but not due on retention money	8.70	8.70	-
Interest accrued but not due on borrowings	174.79	181.66	409.91
Security deposits	4.24	4.23	4.25
Payable to National Highways Authority of India (NHAI)	4.04	6.86	14.90
Creditors for capital supplies and services	164.69	151.03	855.42
Payable to related parties (Refer note 46)	14.12	31.38	30.35
Payable to employees*	90.95	75.64	68.89
Contingent consideration payable towards acquisition of Subsidiaries	1,050.76	1,001.40	-
Hold back amount payable to an EPC contractor	155.85	73.02	-
Other payable	0.94	2.62	23.59
	1,669.08	**1,536.54**	**1,407.31**
Note :			
*Refer note 67			
28 Other current liabilities			
Statutory dues payable	229.50	265.58	214.69
Advance from customers	3.10	5.14	-
Other payable	60.36	13.02	-
	292.96	**283.74**	**214.69**
29 Provisions			
Current			
Provision for employee benefits			
- Gratuity (Refer note 40)	9.50	7.87	6.63
- Compensated absences	6.43	4.15	3.22
- Long term incentive plan (Refer note 40)	5.38	-	-
Provisions for infrastructure upgrade work [Refer note 48 (b)]	1,682.97	1,896.07	2,403.54
Provision for periodic major maintenance works [Refer note 48 (a)]	2,497.72	1,730.85	898.99
	4,202.00	**3,638.94**	**3,312.38**

	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
30 Revenue from operations[(i)]			
Revenue from toll fee collections[(ii)]	34,125.40	28,275.30	24,715.17
Construction income	172.65	634.14	4,025.77
Operation and maintenance income	4,423.10	1,862.68	294.64
Finance Income on annuity receivables	2,933.99	1,106.90	105.68
Revenue from additional work (net of related cost)	25.65	26.30	8.78
Renewals and overlay income	-	1,166.12	-
Claims for compensation from TNSTC / NHAI[(iii)]	708.06	-	11.33
	42,388.85	**33,071.44**	**29,161.37**

Notes:

(i) Refer note 51 for Revenue from contracts with customers

(ii) Revenue from toll fee collections for the year ended March 31, 2026 includes Rs. 1,768.64 million being compensation received/receivable from National Highways Authority of India (NHAI) towards revenue estimated by the Trust SPVs, arising out of Annual Pass with effect from August 15, 2025, priced at Rs. 3,000 for F.Y. 2025-26 which entitles the holder to either 200 Toll-free crossings or One year of Validity which occurs earlier, which is included under Trade receivables as at March 31, 2026.

(iii) Revenue for the year ended March 31, 2026 represents amount settled and received during the year, pursuant to the order dated July 31, 2025, of the High Court of Judicature at Madras between Tamil Nadu State Transport Corporation (TNSTC) and Trust SPVs (SMTPL, MKTPL, NKTPL, and KETPL) towards toll fees for the period from November 2020 to July 17, 2025. This pertains to TNSTC's buses passing through the four tolls at Madurai-Kanyakumari (MK) stretch.

	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
31 Other income			
Interest on financial assets carried at amortised cost:			
- bank deposits	444.25	403.34	435.04
Interest on income tax refund	29.18	30.99	8.28
Sale of scrap	21.26	25.25	10.25
Insurance claim received	29.57	76.47	24.57
Gain on mutual funds (net)*	545.67	835.36	1,015.38
Profit on sale of property, plant and equipment	1.44	1.10	-
Liabilities no longer required written back	76.11	76.53	79.00
Reversal of impairment loss allowance on trade receivables	17.63	-	-
Extinguishment of financial liability related contingent consideration	24.14	-	
Miscellaneous income	12.16	11.04	7.16
	1,201.41	**1,460.08**	**1,579.68**

*includes unrealised fair value gain of Rs. 65.91 million (March 31, 2025: Rs. 64.02 million, March 31, 2024: Rs. 296.31 million) on investments in mutual funds measured at Fair Value Through Profit or Loss (FVTPL) in accordance with Ind AS 109.

32 Cost of construction			
Construction cost	172.65	634.14	4,025.77
	172.65	**634.14**	**4,025.77**
33 Operation and maintenance expenses			
Periodic major maintenance expense [Refer note 48(a)]	3,549.38	3,298.54	1,663.92
Repair and maintenance of carriageway	2,583.14	2,083.61	1,603.79
Toll operation expenses	894.62	795.57	745.06
Security charges	142.40	128.11	124.23
Vehicle hire charges	461.69	377.36	286.58
Power and fuel	537.63	373.40	257.68
Route patrolling expenses	484.15	382.59	285.82
Professional charges - site	133.80	115.40	79.23
Miscellaneous expenses	0.11	0.04	0.11
	8,786.92	**7,554.62**	**5,046.42**
34 Employee benefits expense			
Salary and wages	578.81	458.90	389.40
Gratuity expenses (Refer note 40)	12.32	9.19	5.57
Contribution to provident and other funds	27.81	23.09	18.83
Staff welfare expenses	32.99	23.50	15.86
Long term incentive plan (Refer note 40)	69.52	-	-
	721.45	**514.68**	**429.66**

	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
35 Other expenses			
Rent [(i)]	7.77	4.79	2.74
Project management charges (Refer note 60(i))	1,001.61	738.31	542.14
Investment management fees (Refer note 60(ii))	433.30	331.64	299.17
Rates and taxes	19.78	22.87	11.81
Advertising expenses	3.18	2.87	1.87
Insurance expense	231.21	220.04	217.74
Legal and professional fees	702.72	356.19	285.09
Audit fees[(ii)]	81.94	65.63	59.51
Travelling and conveyance	25.83	19.16	14.29
Printing and stationary	6.50	4.99	3.96
Communication expenses	21.49	17.31	12.14
Penalty to NHAI for delay in execution of major maintenance expenses	-	0.55	4.56
Impairment loss allowance on trade receivables/unbilled revenues	51.57	17.05	35.71
Trustee Fees	2.95	0.94	0.94
Custodian fees	5.12	4.72	3.51
Valuation expense	13.37	12.53	15.12
Doubtful advance/balances written off	-	8.91	-
Allowance for doubtful advances	-	12.31	-
Bad debts written off (net of adjustments from impairment loss allowance on trade receivables)	42.10	1.51	24.03
Information Technology related cost	27.27	16.26	25.49
Royalty expenses	83.04	76.45	48.15
Net loss on foreign currency transaction	0.39	0.11	0.16
Corporate social responsibility expense	77.73	26.59	15.61
Loss on write-off of property, plant and equipment	0.51	0.62	1.91
Loss on remeasurement of Contingent Consideration	23.76	-	-
Miscellaneous expenses	121.66	68.73	53.12
Total	**2,984.80**	**2,031.08**	**1,678.77**

Note:
(i) The Trust Group has taken office premises on lease for which average lease term is 11 months (Short Term Leases).

(ii) Audit Fees

Payments to auditors (including taxes)*:			
- As auditors- for statutory audit and limited review	72.45	59.74	46.34
- As auditors- for audit of Special Purpose Combined Financial Statements	-	-	5.31
- Other Services (certification)	4.54	3.06	4.81
- Out of pocket expenses	4.95	2.83	3.05
	81.94	**65.63**	**59.51**

Note: Audit fees excludes Rs. 75.20 million (including taxes) charged by the statutory auditors for deliverables and certifications required in connection with the Draft Offer Document filed (refer note 46.4).

36 Finance costs			
Interest on financial liabilities classified at amortised cost:			
- term loans	10,061.61	9,123.24	7,672.86
- non-convertible debentures	3,565.49	1,475.60	655.03
- optionally convertible debentures	-	0.78	98.00
- commercial papers	207.13	-	-
Interest on delayed payment of statutory dues	0.73	-	-
Interest on delayed payment to MSME vendors	1.82	1.75	6.91
Interest others	-	-	3.07
Unwinding of interest:			
- on processing fees	217.36	68.59	68.32
- on major maintenance / infrastructure upgrade	500.29	233.60	142.36
- on unsecured loan	-	-	2.64
Other borrowing costs	99.39	267.45	82.10
	14,653.82	**11,171.01**	**8,731.29**

37 Depreciation and amortisation expense			
Depreciation of property, plant and equipment	72.98	56.33	48.17
Depreciation of investment property	0.07	0.07	0.48
Amortisation of intangible assets	14,371.70	13,072.72	11,777.07
	14,444.75	**13,129.12**	**11,825.72**

38 Earnings per unit (EPU)

Basic EPU amounts are calculated by dividing the profit /(loss) for the year attributable to unitholders by the weighted average number of units outstanding during the year.

Diluted EPU amounts are calculated by dividing the profit/ (loss) attributable to unitholders by the weighted average number of units outstanding during the year plus the weighted average number of units that would be issued on conversion of all the dilutive potential units into unit capital.

The following table reflects the income and unit data used in the basic and diluted EPU computations:

Profit/(loss) attributable to unit holders:			
Profit/(loss) for the year attributable to owners of the Trust Group for calculating basic EPU (Rs. in million)	2,165.51	(357.33)	(7,059.22)
Adjustments for reclassification of subordinate units	-	-	-
Profit/(loss) for the year attributable to owners of the Trust Group for calculating diluted EPU (Rs. in million)	**2,165.51**	**(357.33)**	**(7,059.22)**
Calculation of weighted average number of units outstanding (units in Million):			
Weighted average number of Ordinary units outstanding (Units in million)	1,344.07	1,334.45	1,233.94
Add: Estimated Subordinate Units to be reclassified to ordinary Units[(i)]	-	0.03	0.12
Weighted average number of units outstanding for calculating basic EPU (units in million)	**1,344.07**	**1,334.48**	**1,234.06**
Add: Estimated Subordinate Units to be reclassified to ordinary Units[(iii)]	-	-	-
Weighted average number of units outstanding for calculating diluted EPU (units in million)	**1,344.07**	**1,334.48**	**1,234.06**
Basic earnings per unit (Rs. absolute amount)	1.61	(0.27)	(5.72)
Diluted earnings per unit (Rs. absolute amount)	1.61	(0.27)	(5.72)

Notes:
(i) Subordinate units considered for calculating Basic and Diluted EPU (Refer note 64 & 65)

Particulars	Date considered for Basic and Diluted EPU	Units to be reclassified	Date of reclassification	Units reclassified
DATRPL Subordinate Units (Units in million)	March 31, 2024	44.10	July 19, 2024	44.10
JMTPL & MBEL Subordinate Units (Units in million)	March 31, 2025	9.62	July 14, 2025	9.62

(ii) There are no other dilutive units to be considered for the purpose of calculating diluted EPU.
(iii) There have been no other transactions involving units or potential units between the reporting date and the date of authorisation of these Consolidated Financial Statements.

39 Tax expense

	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
(i) Income tax expense recognised in Consolidated Statement of Profit and Loss			
Current tax	488.65	367.11	287.41
Tax for earlier years	4.58	18.54	5.40
Deferred tax	586.49	(531.58)	(102.11)
	1,079.72	**(145.93)**	**190.70**

The major components of income tax expense and the reconciliation of expense based on the respective effective tax rate and the reported tax expense in Consolidated Statement of Profit and Loss are as follows :

Particulars			
Profit/(loss) before tax	3,246.87	(503.13)	(6,868.45)
Blended Tax Rate [(ii)]	41.01%	38.29%	36.68%
Expected tax expense [A]	**1,331.60**	**(192.65)**	**(2,519.21)**
Tax effect of adjustment to reconcile expected income tax expense to reported income tax expense:			
(a) Effect of transactions that are not considered in determining taxable income	37.33	(0.27)	27.87
(b) Impact of income not allowable u/s 10(23FC) and related expenditure including consolidation adjustments not deductible as per Income-tax Act, 1961	(1,525.80)	(534.23)	1,589.28
(c) Effect due to change in tax rate	(62.14)	-	15.70
(d) Effect of income that is exempt from taxation u/s 80IA of the Income-tax Act, 1961	(631.54)	(586.11)	(557.89)
(e) Impact of tax adjustments related to earlier years	41.04	(330.04)	5.40
(f) Others	2.98	0.07	1.64
Effects of recognised deferred tax on temporary differences earlier unrecognised	(278.51)	110.13	(171.80)
Effects of unrecognised deferred tax on deductible temporary differences and tax losses including those reversing or originating and reversing during tax holiday period u/s 80IA of the Income tax Act, 1961			
- Difference between carrying value of property, plant and equipment, intangible assets and receivable under service concession arrangement as per books and tax	(516.76)	(130.32)	(4.43)
- Income taxable on receipt basis	2.97	2.85	0.16
- Expense allowed in tax on payment basis	287.71	213.29	(156.07)
- Unamortised processing fees on borrowings	12.75	(7.26)	3.61
- Unabsorbed depreciation and carry forward losses	1,923.14	1,292.37	2,054.79
- MAT credit entitlement	629.08	-	
- Interest disallowed u/s 94B of the Income-tax Act, 1961 carried forward	(174.13)	16.24	(98.35)
Total adjustments [B]	**(251.88)**	**46.72**	**2,709.91**
Actual tax expense [C=A+B]	**1,079.72**	**(145.93)**	**190.70**

Note:

(i) Trust is a business trust registered under SEBI InvIT Regulations. Hence, the interest and dividend received or receivable by Trust from SPV's is exempt from tax under section 10(23FC) of the Income-tax Act, 1961(Act). Further any expenditure incurred in relation to earning the exempt income is not tax deductible in view of the provisions of section 14A of the Act.

The income of Trust other than exempt income mentioned above, is chargeable to tax at the maximum marginal rates in force of 42.74% (for the year ended March 31, 2025: 42.74%, March 31, 2024: 42.74%) except for the income chargeable to tax on transfer of short term capital assets under section 111A of the Act and long term capital assets under section 112 of the Act.

(ii) Applicable rate to SPV and Cube Highways Trust Standalone wise tax rate ranges between 25.17% - 42.74%. Blended tax rate has been considered for effective tax rate reconciliation.

(iii) In JMTPL, MBEL, WUPTPL, WVEPL, GAEPL, NDEPL, NAMEPL, DATRPL and FRHPL - The Company has elected not to exercise the option permitted under section 115BAA of the Income Tax Act, 1961 as introduced by the Taxation Laws (Amendment) Ordinance, 2019.

(ii) Unrecognised deferred tax:

(A) Deferred tax assets/(liability) has not been recognised in respect of following items because the said temporary differences, business losses etc. will reverse during the holiday period u/s 80IA of the Income-tax Act, 1961 and deferred tax assets are not recognised in the absence of reasonable certainty that future taxable amounts will be available to utilize these temporary differences and business losses:

Particulars			
Business losses and unabsorbed depreciation	2,535.98	1,454.45	2,007.53
Interest disallowed under section 94B of the Income Tax Act, 1961	1,736.29	2,406.02	-
Minimum Alternate Tax (MAT) credits	-	2.95	-
Difference between tax written down value (WDV) and book WDV of intangible assets	(612.14)	(1,872.73)	(2,189.79)
Expense allowed in tax on payment basis	2,128.95	2,664.64	1,490.58
Income taxable on receipt basis	(1.89)	(5.37)	(7.28)
Total	**5,787.19**	**4,649.96**	**1,301.04**

	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024

(B) Deferred tax assets as at March 31, 2026, March 31, 2025 and March 31, 2024 in respect of following deductible temporary items have been restricted only to the extent of deferred tax liabilities in the absence of convincing evidence that future taxable amounts will be available to utilize the temporary differences.

Particulars			
Unabsorbed depreciation	18,275.43	16,112.60	21,232.16
Business losses	12,139.74	8,028.93	4,856.05
Interest disallowed under section 94B of the Income tax Act, 1961	-	370.10	1,156.79
Difference between tax written down value (WDV) and book WDV of intangible assets	779.97	(6,220.68)	(13,909.74)
Amount allowed in tax on actual basis	2,117.97	816.97	385.61
Total	**33,313.11**	**19,107.92**	**13,720.87**

(C) Deferred income tax liabilities are recognised for all taxable temporary differences except in respect of taxable temporary differences associated with investments in subsidiaries where the timing of the reversal of the temporary difference can be controlled and it is probable that the temporary difference will not reverse in the foreseeable future. Accordingly, deferred income tax liabilities on undistributed cumulative earnings of subsidiaries as at March 31, 2026, March 31, 2025 and March 31, 2024 has not been recognised. Further, it is not practicable to estimate the amount of the unrecognized deferred tax liabilities for these undistributed earnings.

(iii) Unused business loss and interest u/s 94B can be carried forward based on the year of origination as follows:

Financial year/period of originati	Financial year of expiry	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
March 31, 2021	March 31, 2029	255.83	-	-
March 31, 2022	March 31, 2030	488.29	-	208.23
March 31, 2023	March 31, 2031	363.28	370.10	948.57
March 31, 2024	March 31, 2032	5,496.23	4,898.00	4,429.13
March 31, 2025	March 31, 2033	3,396.46	3,472.45	-
March 31, 2026	March 31, 2034	5,724.11	-	-

(iv) Minimum alternate tax (MAT):

Tax credits have been recognised on the basis that recovery is probable in the foreseeable future. This recognised MAT credit expires, if unused, based on the year of origination as follows:

Financial year of origination	Financial year of expiry	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
March 31, 2018	March 31, 2032	-	5.25	5.25
March 31, 2019	March 31, 2032	54.56	54.56	54.56
March 31, 2020	March 31, 2032	62.37	62.37	62.37
March 31, 2021	March 31, 2032	72.62	72.62	72.62
March 31, 2022	March 31, 2032	88.10	88.10	88.10
March 31, 2023	March 31, 2032	153.86	153.86	153.86
March 31, 2024	March 31, 2032	233.84	233.84	234.02
March 31, 2025	March 31, 2032	308.03	309.64	-
March 31, 2026	March 31, 2032	293.49	-	-

As at March 31, 2025, the Trust Group had recognised a deferred tax asset of Rs. 980.22 million towards Minimum Alternate Tax ("MAT") credit of certain SPVs. The Finance Act, 2026, amended the provisions relating to MAT, including a reduction in the applicable MAT rate to 14% and restrictions on utilisation of accumulated MAT credit upon opting for the concessional tax regime under Section 200 of the Income-tax Act, 2025.

As at March 31, 2026, the Trust Group has reassessed MAT credit recoverability considering proposed transition of certain subsidiaries to the new tax regime, and remeasured deferred taxes. The resultant write-down led to a net deferred tax charge of Rs. 347.87 million, recognised for the year ended March 31, 2026 in the Consolidated Statement of Profit and Loss.

This space has been intentionally left blank

40 Disclosure relating to employee benefits pursuant to Ind AS 19 - Employee Benefits

(a) Defined contribution plan

The Trust Group contribution to Provident Fund amounting to Rs. 27.81 million (March 31, 2025: Rs. 23.09 million, March 31, 2024: Rs. 18.83 million) has been recognised in the Consolidated Statement of Profit and Loss under the head Employee benefits expense.

(b) Defined benefit plans

The Trust Group provides for gratuity benefits to its employees in India in accordance with the applicable laws. Employees who are in continuous service for 5 years are eligible for gratuity. The amount of gratuity payable on retirement/termination is the employees last drawn basic salary per month completed proportionately for 15 days salary multiplied for number of completed years of service. The gratuity plan is funded plan for 2 SPVs viz. DATRPL and WUPTPL, these 2 SPVs makes contribution to recognised funds with Life Insurance Corporation of India (pension and group schemes department). For other SPVs, the Trust Group operates the unfunded gratuity scheme.

The gratuity scheme covers substantially all regular employees. Commitments are actuarially determined at year-end. The actuarial valuation is done based on "Projected Unit Credit" method. Gains and losses of changed actuarial assumptions are charged to Consolidated Statement of Profit and Loss.

Gratuity

(i) **Amount recognised in the Consolidated Statement of Profit and Loss is as under:**

Description	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
Current Service Cost	10.38	7.82	5.15
Interest cost on defined benefit obligations	3.12	2.56	1.49
Interest income on plan assets	(1.18)	(1.19)	(1.07)
Amount recognised in the Consolidated Statement of Profit and Loss	**12.32**	**9.19**	**5.57**

(ii) **Bifurcation of Actuarial (loss)/gain on obligations:**

Description			
Actuarial (loss)/gain on arising from change in demographic assumption	(0.06)	-	-
Actuarial (loss)/gain on arising from change in financial assumption	2.55	(0.34)	(0.72)
Actuarial (loss)/gain on arising from experience adjustment	(1.17)	1.04	1.07
Actuarial (loss)/gain for the year on obligations	**1.32**	**0.70**	**0.35**

(iii) **Actuarial (loss)/gain on plan asset**

Description			
Actual income on plan asset	1.23	1.15	1.00
Expected interest income	1.18	1.19	1.07
Actuarial (loss)/gain for the year on plan asset	**0.05**	**(0.04)**	**(0.07)**

(iv) **Other Comprehensive Income (OCI)**

Description			
Actuarial (loss)/gain for the year on DBO	1.32	0.70	0.35
Actuarial (loss)/gain for the year on plan asset	0.05	(0.04)	(0.07)
Unrecognized actuarial (loss)/gain for the year	**1.37**	**0.66**	**0.28**

(v) **Change in plan assets**

Description			
Fair value of plan assets at the beginning of the year	17.74	16.59	-
Additions on account of acquisition (refer note 50)	-	-	15.59
Actual return on plan assets	1.23	1.15	1.00
Fair value of plan assets at the end of the year	**18.97**	**17.74**	**16.59**

(vi) **Change in defined benefit obligations**

Description			
Defined benefit liability at the start of the year	46.13	30.05	-
Additions on account of acquisition (refer note 50)	1.06	7.17	23.96
Adjustments related to employees transferred to/from Cube group entities	-	0.11	0.41
Interest Cost	3.12	2.56	1.49
Current service cost	10.38	7.82	5.15
Re-measurements (gain)/loss for the year	(1.32)	(0.70)	(0.35)
Benefit paid directly by the Group	(3.90)	(0.88)	(0.61)
Defined benefit liability at the end of the year	**55.47**	**46.13**	**30.05**

(vii) **The amount included in the Consolidated Balance Sheet arising in respect of its defined benefit obligations/plans**

Description			
Present value of defined benefit obligations/ plans	55.47	46.13	30.05
Fair value of plan assets*	(18.97)	(17.74)	(16.59)
Net defined benefit obligations	**36.50**	**28.39**	**13.46**

Bifurcation of Present Benefit Obligations (PBO) and Plan Assets at the end of year in current and non current

Description			
Current provision (Amount due within one year)*	16.05	12.64	6.63
Non-Current provision (Amount due after one year)	39.42	33.49	23.42
Total PBO at the end of year	**55.47**	**46.13**	**30.05**
Net plan assets at the end of year*	18.97	17.74	16.59
Net PBO at the end of year	**36.50**	**28.39**	**13.46**

*Plan assets of Rs. 6.55 million (March 31, 2025 : Rs. 4.78 million, March 31, 2024: Nil) is adjusted from current provision.

(viii) **Sensitivity analysis for gratuity liability:**

Description	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
Impact of change in discount rate			
Present value of obligations at the end of the period	**55.47**	**46.13**	**30.05**
- Impact due to decrease of 1.00%	4.70	3.71	2.50
- Impact due to increase of 1.00%	(4.09)	(3.19)	(2.17)
Impact of change in salary increase			
Present value of obligations at the end of the period	**55.47**	**46.13**	**30.05**
- Impact due to decrease of 1.00%	(4.10)	(3.27)	(2.21)
- Impact due to increase of 1.00%	4.57	3.63	2.48

The above sensitivity analysis is based on a change an assumption while holding all other assumptions constant. In practice, this is unlikely to occur and changes in some of the assumptions may be correlated. When calculating the sensitivity of the defined benefit obligations to significant actuarial assumptions the same method (present value of the defined benefit obligations calculated with the projected unit credit method at the end of the reporting period) has been applied which was applied while calculating the defined benefit obligations liability recognised in the Consolidated Balance Sheet.

Sensitivities due to mortality and withdrawals are not material and hence impact of change due to these not calculated.
Sensitivities as rate of increase of pensions in payment, rate of increase of pensions before retirement and life expectancy are not applicable.

The methods and types of assumptions used in preparing the sensitivity analysis did not change compared to previous periods.

(ix) **Actuarial assumptions:**

	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
Description			
Discount rate range	7.05%	6.70%	7.15%
Rate of increase in compensation levels range	7.00% for first year, 5.60% thereafter	7.50% for first year, 6.30% thereafter	7.50% for first year, 6.30% thereafter
Retirement age	62 years	58 years	58 years
Mortality rate	100% of IALM (2012-14)	100% of IALM (2012-14)	100% of IALM (2012-14)
Attrition at age (Withdrawal rate %)			
Up to 30 Years	9% per annum	9% per annum	9% per annum
From 31 to 44 years	9% per annum	9% per annum	9% per annum
Above 44 years	9% per annum	9% per annum	9% per annum

Notes:
(i) The plan assets are maintained with LIC of India Gratuity scheme. The details of investment maintained by LIC are not available and therefore not been disclosed.

(c) Long Term Incentive Plan
Long Term Incentive Plan (CHT) 2024 of Cube Highways Trust ("Trust") through Cube Highways Fund Advisors Pvt. Ltd., the Investment Manager of the Trust ("IM"), ("LTIP" or the "Plan"), was approved by the Board of Directors of the IM to incentivise and retain key employees of the IM's affiliates [affiliates of the IM include SPVs under the Trust]. The Plan applies to eligible employees of IM and its affiliates as and when the Board of IM determines. The LTIP is structured as a cash-settled scheme, in which notional LTIP Cash Points ("LCPs") are awarded to participants based on a defined performance measure for Cube Highways Trust (Parent) over future year.

LCPs are granted annually on April 01, from FY 2024 to FY 2027, over four grant cycles. Each grant vests over three years at 20% after the first year, 30% after the second year, and 50% after the third year. The Board of IM may extend or modify the Plan beyond 2027 at its discretion with appropriate modifications. The LTIP does not involve the issuance of any shares or units and therefore does not result in equity dilution.

In terms of the said Plan, the SPVs' Board on July 28, 2025, July 29, 2025 and January 29, 2026, approved LCPs and LCP grants for the Company's eligible employees. Accordingly, the Trust Group has recognized a liability based on an actuarial valuation using a discount rate of 6.50%/6.25%. The LTIP expense recognized for the year ended March 31, 2026 is Rs. 69.52 million (March 31, 2025: Nil, March 31, 2024: Nil).

41 Capital and other commitments

Particulars	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
Estimated amount of contracts remaining to be executed on capital account not provided for (Net of Advance) towards:			
- Property, plant and equipment	12.61	-	21.82
- Intangible assets- Rights under Service Concession Arrangements	124.21	464.92	753.13
Total	**136.82**	**464.92**	**774.95**

The Trust Group has other commitments for purchase orders which are issued after considering requirements per operating cycle for purchase of goods and services in normal course of business. The Trust Group does not have any other long term commitments or material non-cancellable contractual commitments/contracts, which might have material impact on the Consolidated Financial Statements.

42 Contingent liabilities and claims

i) Particulars	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
Claims against the Trust Group not acknowledged as debt			
a) In respect of Income-tax matters, disputed by SPVs	1,427.49	686.83	225.18
b) In respect of Indirect tax matters (VAT/Entry tax/Service tax/GST) disputed by SPVs[(i)]	4,507.89	4,309.77	140.05
c) Damages/Penalties levied by NHAI/Independent engineer on account of default/deficiencies in terms of the concession agreement	56.06	20.61	61.10
d) Revenue Claim levied by State Authority (In terms of the SPA entered between the SPVs and erstwhile promoters, these matters are covered under specific indemnity from erstwhile promoters)	114.40	-	-
e) In respect of Stamp Duty matters, disputed by SPVs[(ii)]	1,931.80	932.70	932.70
f) Civil suits related to accident claim and land encroachment matter at one SPV	7.70	7.70	7.80

Notes:

(i) Includes GST demand of Rs. 3,719.97 million (inclusive of interest and penalty) (March 31, 2025: Rs. 3,571.72 million, March 31, 2024: Nil) received by certain HAM SPVs alleging liability to GST on entire Bid Project Cost amount upfront on receipt of completion certificate, in relation to which the SPVs have filed a writ before the High Court/appeal before the relevant appellate authority. In terms of the SPA entered between the SPVs and erstwhile promoters, these matters are covered under specific indemnity from erstwhile promoters.

(ii) In light of a Supreme Court decision in Rewa Tollway P. Limited v. The State of Madhya Pradesh & ORS., the Trust has reassessed stamp duty obligations (including for stamp duty matters disputed by certain SPVs referred above) for the concession agreements entered into by the SPVs with NHAI, considering inter-alia, types of concession agreement (DBFOT/BOT/TOT/HAM/Annuity), rights under terms and conditions of the concession agreements, indemnity under the Share Purchase Agreements entered by the Trust at the time of acquisition of the SPVs, jurisdiction of the relevant authority, and status of ongoing proceedings. Based on the assessment above supported by the legal advice, the Trust group does not expect the ultimate outflow of resources embodying economic benefits, which could materially affect the financial performance and position of the Trust Group.

(iii) The Management of the Group assesses all material claims in the nature of demands and the show cause notices ("SCNs"), including intimation prior to SCNs, relating to Income tax, Indirect taxes and other litigations against the Group and based on legal advice in certain cases, evaluates whether it is probable, possible or remote ("PPR"). The Group discloses matters as contingent liability that are assessed as possible and accordingly, the contingent liability includes the related interest and penalties only to the extent that demand notices have been received. The relevant SPVs are contesting the aforesaid notices/order before various authorities and are confident that the matters will be decided in Favor of the SPVs and ultimately no liability is likely to be devolved on the respective SPVs. Future ultimate outflow of resources embodying economic benefits in respect of the above matters are uncertain as it depends on the final outcome of the matter involved.

43 Financial instruments by fair value and category

i) Fair values hierarchy

Financial assets and financial liabilities measured at fair value in the Consolidated Balance Sheet are divided into three levels of fair value hierarchy. The three levels are defined based on the observability of significant inputs to the measurement, as follows:

Level 1: Quoted prices (unadjusted) in active markets for financial instruments.
Level 2: The fair value of financial instruments that are not traded in an active market is determined using valuation techniques which maximise the use of observable market data rely as little as possible on entity specific estimates.
Level 3: If one or more of the significant inputs is not based on observable market data, the instrument is included in level 3.

Financial assets/(liabilities) measured at fair value - recurring fair value measurements:

As at March 31, 2026	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets at fair value through profit or loss				
Liquid Investments-mutual funds	-	2,654.95	**-**	**2,654.95**
Investments	-	5,000.98	**-**	**5,000.98**
Liabilities at fair value through profit or loss				
Unsecured term loan from KNR Constructions Limited	**-**	**-**	150.99	**150.99**

As at March 31, 2025	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets at fair value through profit or loss				
Liquid Investments-mutual funds	-	6,439.75	**-**	**6,439.75**
Liabilities at fair value through profit or loss				
Unsecured term loan from KNR Constructions Limited	**-**	**-**	150.99	**150.99**

As at March 31, 2024	**Level 1**	**Level 2**	**Level 3**	**Total**
Assets at fair value through profit or loss				
Investments	-	13,527.76	**-**	**13,527.76**
Liabilities at fair value through profit or loss				
Unsecured term loan from KNR Constructions Limited	**-**	**-**	150.99	**150.99**

Valuation process and technique used to determine fair value

The fair value of investments in mutual fund units are based on the net asset value ('NAV') as stated by the issuers of these mutual fund units in the published statements as at each reported balance sheet dates. NAV represents the price at which the issuer will issue further units of mutual fund and the price at which issuers will redeem such units from the investors.

(ii) Fair value of instruments measured at amortised cost

Fair value of instruments measured at amortised cost for which fair value is disclosed as follows using Level 3 inputs:

Particulars	**As at March 31, 2026**		**As at March 31, 2025**		**As at March 31, 2024**	
	Carrying value	**Fair value**	**Carrying value**	**Fair value**	**Carrying value**	**Fair value**
Financial assets measured at amortised cost:						
Investments	0.01	0.01	0.01	0.01	0.01	0.01
Trade receivables	2,205.27	2,205.27	1,636.71	1,636.71	600.79	600.79
Cash and cash equivalents*	2,535.26	2,535.26	2,027.33	2,027.33	2,416.84	2,416.84
Bank balance other than cash and cash equivalents	2,948.86	2,948.86	6,091.68	6,091.68	3,593.98	3,593.98
Other financial assets	40,519.44	40,519.44	15,401.83	15,401.83	1,827.64	1,827.64
Total financial assets	**48,208.84**	**48,208.84**	**25,157.56**	**25,157.56**	**8,439.26**	**8,439.26**
Financial liabilities (excluding equity component)						
Borrowings	1,76,496.14	1,76,496.14	1,50,995.86	1,50,995.86	1,07,201.74	1,07,201.74
Trade payables	3,002.29	3,002.29	2,227.61	2,227.61	1,645.54	1,645.54
Other financial liabilities	1,671.19	1,671.19	1,650.71	1,650.71	1,592.40	1,592.40
Total financial liabilities	**1,81,169.62**	**1,81,169.62**	**1,54,874.18**	**1,54,874.18**	**1,10,439.68**	**1,10,439.68**

The management assessed that cash and cash equivalents, bank balances other than cash and cash equivalents, trade receivables, other financial assets, trade payables, borrowings and other financial liabilities are approximate to their carrying amounts largely due to the short-term maturities of these instruments. The fair value of the financial assets and liabilities is included at the amount at which the instrument could be exchanged in a current transaction between willing parties, other than in a forced or liquidation sale.

*Excludes liquid investments.

iii) Valuation process and technique used to determine fair value

The Trust is required to present the Consolidated Statement of Total Assets at Fair Value and Consolidated Statement of Total Returns at Fair Value as per SEBI Master Circular No.SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025 as a part of these consolidated financial statements (Refer Consolidated Statement of Net Assets at Fair Value and Consolidated Statement of Total Returns at Fair Value) and in terms of Ind AS 36 "Impairment of Assets" impairment assessment for Intangible assets Rights Under Service Concession Arrangements in individual subsidiary, the Trust has used the significant unobservable inputs in the fair value measurement required for these disclosures, categorised within Level 3 of the fair value hierarchy- level 3, together with a quantitative sensitivity analysis is given below:

Particulars	Input for March 31, 2026	Sensitivity of Input to Fair Value	Increase/ (decrease) in fair value as at March 31, 2026
a. WACC	7.46% to 10.97%	+ 0.50%	(12,635.00)
		-0.50%	13,419.00
b. Inflation rate (Wholesale Price Index)	2.40% to 5.10%	+ 1%	16,521.00
		-1%	(13,422.00)

Particulars	Input for March 31, 2025	Sensitivity of Input to Fair Value	Increase/ (decrease) in fair value as at March 31, 2025
a. WACC	8.30% to 11.57%	+ 0.50%	(11,950.00)
		-0.50%	12,724.00
b. Inflation rate (Wholesale Price Index)	4.10% to 5.10%	+ 1%	15,273.00
		-1%	(14,072.00)

Particulars	Input for March 31, 2024	Sensitivity of Input to Fair	Increase/ (decrease) in fair value
a. WACC	10.2% to 11.0%	+ 0.50%	(10,690.00)
		-0.50%	11,426.00
b. Inflation rate (Wholesale Price Index)	4.10% to 5.10%	+ 1%	14,550.30
		-1%	(12,516.20)

Further, the key assumptions used as inputs for fair valuation includes determination of future cash flows, traffic estimates, assessment of the variation in concession period in certain subsidiaries considering target traffic/ target revenue subject to approvals from the authorities, revenue growth rate, discount rates, inflation rates and other economic factors. [Also, refer Note 2(III)(d)(2), Note 57 and 58 to Consolidated Financial Statement].

iv) Financial instruments by category

	As at March 31, 2026			As at March 31, 2025			As at March 31, 2024		
Particulars	**FVTPL**	**FVOCI**	**Amortised cost**	**FVTPL**	**FVOCI**	**Amortised cost**	**FVTPL**	**FVOCI**	**Amortised cost**
Financial assets									
Investments	5,000.98	-	0.01	-	-	0.01	13,527.76	-	0.01
Other financial assets	-	-	40,519.44	-	-	15,401.83	-	-	1,827.64
Trade receivables	-	-	2,205.27	-	-	1,636.71	-	-	600.79
Cash and cash equivalents (including liquid investments in Mutual Funds)	2,654.95	-	2,535.26	6,439.75	-	2,027.33	-	-	2,416.84
Bank balances other than cash and cash equivalents	-	-	2,948.86	-	-	6,091.68	-	-	3,593.98
Total	**7,655.93**	**-**	**48,208.84**	**6,439.75**	**-**	**25,157.56**	**13,527.76**	**-**	**8,439.26**
Financial liabilities (excluding equity component)									
Borrowings	150.99	-	1,76,496.14	150.99	-	1,50,995.86	150.99	-	1,07,201.74
Trade payables	-	-	3,002.29	-	-	2,227.61	-	-	1,645.54
Other financial liabilities	-	-	1,671.19	-	-	1,650.71	-	-	1,592.40
Total	**150.99**	**-**	**1,81,169.62**	**150.99**	**-**	**1,54,874.18**	**150.99**	**-**	**1,10,439.68**

44 Financial risk management

i) Risk Management

The Trust Group activities expose it to variety of financial risks : credit risk, liquidity risk and market risk. The Board of Directors of the Investment Manager("IM") has overall responsibility for the establishment and oversight of the Trust Group's risk management framework. The Trust Group's risk management framework is established to identify and analyse the key risks faced by the Trust Group, to set appropriate risk limits and controls, and to monitor risks and adherence to limits. Risk management framework systems are reviewed periodically to reflect changes in market conditions and Trust Group's activities.

The Board of Directors of the IM oversee compliance with Trust Group's risk management policies and procedures, and reviews the risk management framework in relation to the risk faced by the Trust. The Audit committee as assisted by the internal audit undertakes regular reviews of risk management controls and procedure, the results of which are taken on record by Audit committee.

A) Credit risk

Credit risk is the risk of financial loss to the Trust Group if a counterparty to a financial instrument fails to meet its contractual obligations, and arises principally from the Trust Group's Cash and cash equivalents, other bank balances, trade receivables, unbilled revenue and other financial assets. Trust Group maximum exposure to credit risk is limited to the carrying amount of financial assets.

Credit risk management

The Trust Group establishes an allowance account for impairment that represents its estimate of losses in respect of its financial assets. The main component of this allowance is estimated losses that relate to specific counterparties. The allowance account is used to provide for impairment losses. Subsequently when the Trust Group is satisfied that no recovery of such losses is possible, the financial asset is considered irrecoverable and the amount charged to the allowance account is then written off against the carrying amount of the impaired financial asset.

Credit risk related to cash and cash equivalents and bank deposits is managed by only accepting highly rated banks and diversifying bank deposits and accounts in different banks. Other financial assets measured at amortised cost includes security deposits, annuity receivable, receivable from related parties and other Credit risk related to these other financial assets is managed by monitoring the recoverability of such amounts continuously, while at the same time internal control system in place ensure the amounts are within defined limits.

As at the reporting date, there is no significant concentrations of credit risk. The maximum exposure to credit risk is represented by the carrying value of each financial asset on the Consolidated Balance Sheet.

Reconciliation of loss allowance for trade receivable, unbilled revenue and other assets from beginning to end of reporting period:

Particulars	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
Opening Balance	201.25	183.56	-
Additions on account of acquisition (refer note 50)	-	-	143.97
Movement in expected credit loss allowance on trade receivables calculated at lifetime expected credit losses	52.10	19.20	42.70
Reversal in expected credit loss allowance on trade receivables and advances	(27.49)	-	-
Adjustment against bad debts written off	-	(1.51)	(3.11)
Closing Balance	**225.86**	**201.25**	**183.56**

The Trust Group estimates the expected credit loss based on specific identified basis. In respect of disputed trade receivables as of March 31, 2026 aggregating Rs 523.28 million (March 31, 2025: Rs. 542.70 million, March 31, 2024: Rs. 131.34 million) relating to the pre acquisition period, the Trust Group has withheld amount of Rs 410.54 million (March 31, 2025: Rs. 410.54 million, March 31, 2024: Rs. 131.34 million) payable to erstwhile shareholders and for remaining amount of Rs 112.74 million (March 31, 2025: Rs 112.74 million, March 31, 2024: Nil) the Trust Group will be indemnified by the erstwhile shareholders. In case of majority of other Trade Receivables (including those outstanding for more than 1 year) as of March 31, 2026, the counter party being the Government Undertaking as such does not have significant credit risk.

Other financial assets measured at amortised cost includes security deposits, annuity receivable, receivable from related parties and other. Credit risk related to these other financial assets is managed by monitoring the recoverability of such amounts continuously, while at the same time internal control system in place ensure the amounts are within defined limits.

B) Liquidity risk

Liquidity risk is the risk that the Trust Group may encounter difficulty in meeting its present and future obligations associated with financial liabilities that are required to be settled by delivering cash or another financial asset. The Trust Group is exposed to liquidity risk due to borrowings, trade and other payables. Trust Group measures risk by forecasting cash flows. The Trust Group’s approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its liabilities when due without incurring unacceptable losses or risking damage to the Trust Group’s reputation. The Trust Group ensures that it has sufficient fund to meet expected operational expenses and servicing of financial obligations.

The Trust Group's objective is to, at all times maintain optimum levels of liquidity to meet its cash and collateral obligations. The Trust Group requires funds both for short-term operational needs as well as long-term investment programs mainly in growth projects. The Trust Group closely monitors its liquidity position and deploys a robust cash management system. It aims to minimize these risks by generating sufficient cashflows from its current operations, which in addition to the available cash and cash equivalents, liquid investments and sufficient committed fund facilities, will provide liquidity.

Consequently, the Trust Group believes its revenue, along with proceeds from financing activities will continue to provide the necessary funds to cover its short term liquidity needs. In addition, the Trust Group projects cash flows and considering the level of liquid assets necessary to meet liquidity requirement.

The Trust Group has undrawn borrowing facilities shown as under:

Banks/Financial institution	Facility	As at March 31, 2026			As at March 31, 2025			As at March 31, 2024		
		Sanctioned amounts	Drawn amounts	Undrawn amounts	Sanctioned amounts	Drawn amounts	Undrawn amounts	Sanctioned amounts	Drawn amounts	Undrawn amounts
Sumitomo Mitsui Banking Corporation	Bank Guarantee and short term loan	2,500.00	1,000.00	1,500.00	-	-	-	-	-	-
IndusInd Bank Limited	Bank Guarantee	2,840.00	1,500.00	1,340.00	2,840.00	1,500.00	1,340.00	-	-	-
IndusInd Bank Limited	Overdraft facility	142.00	-	142.00	142.00	-	142.00	-	-	-

(a) Maturities of financial liabilities

The tables below analyse the Trust Group's financial liabilities into relevant maturity categories based on their contractual maturities for all non-derivative financial liabilities:
The amounts (undiscounted) disclosed in the table are the carrying value as at the balance sheet date.

As at March 31, 2026	**Less than 1 year**	**1-2 year**	**2-5 year**	**More than 5 years**	**Total**
Borrowings	5,293.39	5,538.28	29,209.51	1,37,341.73	**1,77,382.91**
Trade payables	3,002.29	-	-	-	**3,002.29**
Other financial liabilities	1,669.08	2.11	-	-	**1,671.19**
Total	**9,964.76**	**5,540.39**	**29,209.51**	**1,37,341.73**	**1,82,056.39**

As at March 31, 2025	**Less than 1 year**	**1-2 year**	**2-5 year**	**More than 5 years**	**Total**
Borrowings	4,850.58	4,609.58	13,848.45	1,28,573.38	**1,51,881.99**
Trade payables	2,227.61	-	-	-	**2,227.61**
Other financial liabilities	1,536.54	114.17	-	-	**1,650.71**
Total	**8,614.73**	**4,723.75**	**13,848.45**	**1,28,573.38**	**1,55,760.31**

As at March 31, 2024	**Less than 1 year**	**1-2 year**	**2-5 year**	**More than 5 years**	**Total**
Borrowings	4,722.49	4,275.70	12,051.20	86,647.69	**1,07,697.08**
Trade payables	1,645.54	-	-	-	**1,645.54**
Other financial liabilities	1,407.31	185.09	-	-	**1,592.40**
Total	**7,775.34**	**4,460.79**	**12,051.20**	**86,647.69**	**1,10,935.02**

C) Market risk
(a) Interest rate risk
i) Liabilities
The Trust Group's policy is to minimise interest rate cash flow risk exposures on long-term financing. At the reporting periods end, the Trust Group is exposed to changes in market interest rates through bank borrowings at variable interest rates.

Interest rate risk exposure
Below is the overall undiscounted exposure of the Trust Group to interest rate risk:

Particulars (Undiscounted Basis)	**As at March 31, 2026**	**As at March 31, 2025**	**As at March 31, 2024**
Variable rate borrowings	1,32,632.31	1,19,695.00	95,677.28
Fixed rate borrowings	44,750.60	32,186.99	12,019.80
Total borrowings	**1,77,382.91**	**1,51,881.99**	**1,07,697.08**

Sensitivity
Below is the sensitivity of profit or loss and equity changes in interest rates.

Particulars	**For the year ended March 31, 2026**	**For the year ended March 31, 2025**	**For the year ended March 31, 2024**
Interest sensitivity			
Interest rates – increase by 50 bps [(i)]	(663.16)	(598.47)	(478.39)
Interest rates – decrease by 50 bps [(i)]	663.16	598.47	478.39

(i) Holding all other variables constant

ii) Financial Assets
The Trust Group's fixed deposits are carried at amortised costs and are fixed rate deposits. They are therefore not subject to interest rate risk as defined in Ind AS 107 'Financial Instruments Disclosures', since neither the carrying amount nor the future cash flows will fluctuate because of a change in market interest rates.

(b) Price risk

i) Exposure

The Trust Group requires various commodities for the implementation, operation, and major maintenance of its road assets, including bitumen, cement, steel, and other construction materials, which are subject to market price fluctuations. The major maintenance projections used in the valuation and cash flow forecasts are based on technical studies and assumptions regarding future commodity prices, particularly bitumen prices.

Management has considered historical price trends, expected long-term stabilisation in crude oil and bitumen markets, domestic refining capacities and current geopolitical factors while making the provision for major maintenance . Regarding bitumen prices, the forecasts assume elevated prices in the near term, with a gradual moderation towards historical long-term averages over the forecast period.

The Trust Group manages its exposure to such commodity price risks through periodic review of maintenance plans, strategic procurement practices, contractual negotiations, and optimisation of maintenance schedules. Accordingly, management believes that the overall exposure is appropriately reflected and no separate commodity price sensitivity analysis has been presented.

The Trust Group's exposure to price risk also arises from investments classified at fair value through profit or loss. To manage such risks, the Trust Group maintains a diversified investment portfolio comprising fixed-rate bank deposits and mutual fund investments (growth schemes).

ii) Sensitivity

The table below summarises the impact of increase/decrease of the index on the Trust Group's profit for the year :

Impact on loss before tax

Particulars	**As at March 31, 2026**	**As at March 31, 2025**	**As at March 31, 2024**
Mutual Funds			
Net assets value – increase by 100 bps	76.56	64.40	135.28
Net assets value – decrease by 100 bps	(76.56)	(64.40)	(135.28)

(c) Foreign currency risk

Foreign currency risk is the risk that the fair value or future cash flows of an exposure will fluctuate because of changes in foreign exchange rates. The Trust Group has no significant exposure to the risk of changes in foreign exchange rates.

45 Capital management

For the purpose of the Trust Group's capital management, capital includes issued unit capital and all other reserves attributable to the unitholders of the Trust Group. The primary objective of the Trust Group's capital management is to ensure that it maintains a strong credit rating and healthy capital ratios in order to support its business and maximise unit holder value.

The Trust Group manages its capital structure and makes adjustments to it in light of changes in economic conditions and the requirements of the financial covenants. To maintain or adjust the capital structure, the Trust Group may adjust the distribution to unitholders (subject to the provisions of InvIT regulations which require distribution of at least 90% of the net distributable cash flows of the Trust Group to unitholders), return capital to unitholders or issue new units.

The Trust Group monitors capital using a gearing ratio, which is net debt divided by total equity. The Trust Group's policy is to keep the gearing ratio optimum. The Trust Group net debt includes non-current borrowings (including current maturity of non-current borrowings, interest accrued but due on borrowings & interest accrued but not due on debentures less cash and cash equivalent, other bank deposits and current investments).

Debt equity ratio

Particulars	**As at March 31, 2026**	**As at March 31, 2025**	**As at March 31, 2024**
Debts (including interest accrued)	1,76,821.92	1,51,328.51	1,07,947.73
Less : Cash & cash equivalents, other bank balances and current investments	(14,236.29)	(15,005.58)	(15,138.97)
Net Debt	**1,62,585.63**	**1,36,322.93**	**92,808.76**
Total equity	97,829.18	1,14,374.55	1,29,489.91
Net debt to equity ratio (in times)	**1.66**	**1.19**	**0.72**

(This space has been intentionally left blank)

46 Information on related party transactions

The name of the related parties and nature of relationship are as identified by the management of the Investment Manager with reference to the Trust and its subsidiaries which are considered for the Consolidated Financial Statements pursuant to the InvIT Regulations.

46.1 A) List of related parties as per the requirements of Ind-AS 24- Related Party Disclosures

Cube Group Entities* (with whom transactions have taken place)
Cube Highways and Infrastructure 1D Pte. Ltd.
Cube Highways and Infrastructure II Pte. Ltd.
Cube Mobility Investment Pte. Ltd.
Cube Highways Operations Management Private Limited
Cube Highways Technologies Private Limited
Baharampore Farakka Highways Limited (w.e.f. March 28, 2023)
Cube Highways Growth Advisory Private Limited (w.e.f. December 05, 2023)
Delhi Hapur Meerut Expressway Private Limited (w.e.f. January 02, 2024)
Kokhraj Handia Expressway Private Limited (w.e.f. November 10, 2023)
Malavagiri Highways Private Limited (w.e.f. January 02, 2024)
Western M P Infrastructure & Toll Roads Private Limited (w.e.f. Febraury 14, 2024)

B) List of related parties as per Regulation 2(1) (zv) of the InvIT Regulations
1) Parties to the Trust
Sponsor- Cube Highways and Infrastructure Pte. Ltd. (CHIPL) (upto February 18, 2026)
Sponsor- Cube Highways and Infrastructure III Pte. Ltd (CHIPL-III) (upto February 18, 2026)
Sponsor- Cube Highways and Infrastructure V Pte. Ltd. (CH-V) (w.e.f. February 19, 2026)
Project Manager of the Trust(for all SPVs)- Cube Highways and Transportation Assets Advisors Private Limited (CHATAAPL) (Refer note 46.6)
Subsidiary of CHATAAPL- Cube Highways Roots Foundation
Investment Manager of the Trust- Cube Highways Fund Advisors Private Limited (CHFAPL)
Trustee of the Trust- Axis Trustee Services Limited (ATSL)

2) Promoters of the parties to the Trust specified in (1) above
Promoter of CHIPL- ISQ Asia Aggregator Pte. Ltd. (upto February 18, 2026)
Promoter of CHIPL-III- ISQ Asia Infrastructure Holdings II Pte. Ltd. (upto February 18, 2026)
Promoter of CH-V - Cube Highways Holdings V Pte. Ltd. (w.e.f. February 19, 2026)
Promoter of CHATAAPL- Cube Highways and Infrastructure Pte. Ltd. (upto December 28, 2023) ,Cube Highways Advisory Pte. Ltd. (w.e.f December 29, 2023)
Promoter of CHFAPL- Cube Highways Advisory Pte. Ltd.
Promoter of ATSL- Axis Bank Limited

3) Directors of the parties to the Trust specified in (1) above
i) Directors of CHIPL (upto February 18, 2026)
Spyros John Mantzavinatos (upto June 22, 2023)
Kenichi Yoshihara (upto February 07, 2024)
George Currie Crawford (upto September 01, 2025)
Siew Hean Meng (upto August 31, 2023)
Harsh Agrawal
Marcus Christopher Hill (upto March 04, 2025)
Tsuneo Kawasaki (w.e.f February 07, 2024)
Ashutosh Goyal (w.e.f October 01, 2025)
Heng Hong Kiong (upto February 07, 2024)
Lin Le (w.e.f February 07, 2024)

ii) Directors of CHIPL-III (upto February 18, 2026)
Kunal Agarwal
Heng Hong Kiong (upto February 07, 2024)
George Currie Crawford (upto September 01, 2025)
Marcus Christopher Hill (upto March 04, 2025)
Harsh Agrawal
Ashutosh Goyal (w.e.f October 01, 2025)
Lin Le (w.e.f February 07, 2024)

iii) Directors of CH-V (w.e.f. February 19, 2026)
Ashutosh Goyal
Raviraj Vipul Acharya
Lin Le
Zaman Velji
Angela Mary Bouzanis
Kunal Agarwal

iv) Directors of CHATAAPL
Pooja Aggarwal (Upto June 18, 2024)
Bovin Kumar (Upto December 23, 2025)
Mukul Shastry (Upto December 26, 2025)
Ankit Jain ((w.e.f August 21, 2023 upto December 23, 2025)
Gaurav Malhotra (upto August 18, 2023)
Harikishan Reddy Koppula (w.e.f April 02, 2025)
Raviraj Vipul Acharya (w.e.f May 16, 2025)
Angela Mary Bouzanis (w.e.f June 06, 2025)
Varun Unnikrishnan (w.e.f May 16, 2025)

v) Directors of CHFAPL
Upendra Kumar Sinha
Surinder Chawla
Fereshte Dhunjishaw Sethna#
Jayesh Ramniklal Desai
Sandeep Lakhanpal
Harikishan Reddy Koppula (upto June 07, 2023)
Zaman Velji (w.e.f June 08, 2023 upto November 07, 2023)
Chirdeep Singh Bagga (w.e.f June 08, 2023 upto May 31, 2024)
Helly Bharat Ajmera (w.e.f November 07, 2023)
Raviraj Vipul Acharya (w.e.f July 31, 2024)

vi) Directors of ATSL
Rajesh Kumar Dahiya (upto January 15, 2024)
Deepa Rath (upto February 05, 2025)
Ganesh Sankaran (upto January 15, 2024)
Sumit Bali (w.e.f. January 16, 2024 upto August 16, 2024)
Arun Mehta (w.e.f. May 03, 2024)
Pramod Kumar Nagpal (w.e.f. May 03, 2024)
Rahul Ranjan Choudhary (w.e.f February 06, 2025)
Prashant Ramrao Joshi (w.e.f. January 16, 2024 upto April 15, 2026)
Bipin Saraf Kumar (w.e.f. April 11, 2025)

4) Entity in which director of the Investment Manager of the Trust is partner
#DMD Advocates

* Considered as Related Parties although not covered under the definition of Related Parties as per Ind AS 24, Related Party Disclosures. These have been included as voluntary disclosure, following the best corporate governance practices.

46 Information on related party transactions

46.2

	Transactions during the year	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
1	**Issue of ordinary & subordinate unit capital in exchange of shareholdings of the SPVs (Refer foot note (i) to note 19(a))**			
	i) Ordinary unit capital*	-	-	**91,008.69**
	Cube Highways and Infrastructure Pte. Limited	-	-	16,320.78
	Cube Highways and Infrastructure I-D Pte Limited	-	-	2,465.51
	Cube Highways and Infrastructure II Pte Limited	-	-	14,028.28
	Cube Highways and Infrastructure III Pte Limited	-	-	31,268.49
	Cube Mobility Investment Pte Limited	-	-	26,925.63
	ii) Subordinate unit capital	-	-	**15,750.00**
	Cube Highways and Infrastructure Pte. Limited	-	-	3,750.00
	Cube Highways and Infrastructure III Pte Limited	-	-	12,000.00
2	**OCD repayment during the year**	-	**812.43**	**50,484.29**
	Cube Highways and Infrastructure Pte. Limited	-	600.00	9,555.00
	Cube Highways and Infrastructure I-D Pte Limited	-	-	1,151.76
	Cube Highways and Infrastructure II Pte Limited	-	-	6,531.05
	Cube Highways and Infrastructure III Pte Limited	-	212.43	14,256.43
	Cube Mobility Investments Pte. Ltd.	-	-	18,990.05
3	**Reclassification of Subordinate units to Ordinary units (Refer note 19)**			
	Cube Highways and Infrastructure III Pte. Ltd.	-	4,410.23	-
	Cube Highways and Infrastructure Pte. Limited	962.14	-	-
4	**Extinguishment of Subordinate units (Refer note 19)**			
	Cube Highways and Infrastructure III Pte. Ltd.	-	7,589.78	-
	Cube Highways and Infrastructure Pte. Limited	2,787.86	-	-
5	**NCD repayment during the year**			
	Cube Highways and Infrastructure Pte. Limited	-	6,000.00	4,410.10
6	**Interest on non-convertible debentures**			
	Cube Highways and Infrastructure Pte. Limited	-	4.60	5.73
7	**Interest on optionally-convertible debentures**	-	**0.78**	**98.00**
	Cube Highways and Infrastructure Pte. Limited	-	0.43	0.51
	Cube Highways and Infrastructure I-D Pte Limited	-	-	2.87
	Cube Highways and Infrastructure II Pte Limited	-	-	16.28
	Cube Highways and Infrastructure III Pte Limited	-	0.35	31.72
	Cube Mobility Investments Pte. Ltd.	-	-	46.62
8	**Interest payment on non-convertible debentures**			
	Cube Highways and Infrastructure Pte. Limited	-	4,020.79	738.36
9	**Interest payment on optionally-convertible debentures**	-	**198.42**	**7,175.47**
	Cube Highways and Infrastructure Pte. Limited	-	190.79	32.20
	Cube Highways and Infrastructure I-D Pte Limited	-	-	300.05
	Cube Highways and Infrastructure II Pte Limited	-	-	1,394.29
	Cube Highways and Infrastructure III Pte Limited	-	7.63	978.78
	Cube Mobility Investments Pte. Ltd.	-	-	4,470.15
10	**Consideration paid/payable towards acquisition of equity shares of HAM SPVs (Refer note 50B)**			
	Cube Highways and Infrastructure III Pte Limited	23.76	11,709.19	-
11	**Interest payable in terms of SPA towards acquisition of HAM SPVs**			
	Cube Highways and Infrastructure III Pte Limited	-	152.66	-
12	**Consideration paid towards acquisition of equity shares of NAMEPL (Refer note 50C)**			
	Cube Highways and Infrastructure Pte. Ltd.	-	7,176.02	-
13	**Extinguishment of financial liability related contingent consideration**			
	Cube Highways and Infrastructure III Pte. Ltd.	24.14	-	
13	**Investment Management fees (Refer note 60(ii))**			
	Cube Highways Funds Advisors Private Limited	433.30	331.64	299.17
14	**Project Management fees (Refer note 60(i))**			
	Cube Highways and Transportation Assets Advisors Private Limited	1,001.61	738.31	542.14
15	**Rent Expenses**			
	Cube Highways and Transportation Assets Advisors Private Limited	0.61	0.44	0.44
16	**Donations (including corporate social responsibility)**			
	Cube Highways Roots Foundation	72.06	66.24	54.34

	Transactions during the year	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
17	**Reimbursement of expenses**	**19.56**	**31.55**	**28.05**
	Cube Highways Funds Advisors Private Limited	4.75	0.25	13.48
	Cube Highways and Transportation Assets Advisors Private Limited	6.30	-	13.65
	Cube Highways and Infrastructure V Pte. Ltd.	-	31.30	0.83
	Cube Mobility Investments Pte. Ltd.	-	-	0.09
	Kokhraj Handia Expressway Private Limited	5.87	-	-
	Baharampore-Farakka Highways Limited	0.12	-	-
	Western MP Infrastructure & Toll Roads Private Limited	0.12	-	-
	Chenani Nashri Tunnelway Limited	0.12	-	-
	Devanahalli Tollway Private Limited	2.28	-	-
18	**Trustee fee**			
	Axis Trustee Services Limited	2.95	0.94	0.94
19	**Term loan received**			
	Axis Bank Limited	6,000.00	4,710.00	16,252.50
20	**Term loan repaid (including downsell of loan)**			
	Axis Bank Limited	341.06	189.07	22,616.69
21	**NCD issued**			
	Axis Bank Limited	4,200.00	-	-
22	**NCD repaid**			
	Axis Bank Limited	-	5,944.34	2,061.57
23	**Interest expense on borrowings**			
	Axis Bank Limited	1,163.76	554.35	1,208.84
24	**Processing/arranger fee paid on borrowings**			
	Axis Bank Limited	30.73	39.93	57.53
25	**Interest income on fixed deposits**			
	Axis Bank Limited	69.70	70.41	120.14
26	**Bank charges paid**			
	Axis Bank Limited	0.01	0.08	0.22
27	**Bank guarantee commission**			
	Axis Bank Limited	7.39	10.06	15.74
28	**Fixed Deposits placed**			
	Axis Bank Limited	1,809.64	570.78	3,127.01
29	**Fixed Deposits matured**			
	Axis Bank Limited	793.35	4,172.59	2,872.17
30	**Payable/Receivable on account of employees transferred**	**4.45**	**0.08**	**0.54**
	Delhi Hapur Meerut Expressway Private Limited	0.40	0.08	-
	Cube Highways Technologies Private Limited	0.67	-	-
	Cube Highways Growth Advisory Private Limited	0.14	-	-
	Baharampore Farakka Highways Limited	0.14	-	-
	Kokhraj Handia Expressway Private Limited	2.23	-	-
	Malayagiri Highways Private Limited	0.02	-	-
	Cube Highways and Transportation Assets Advisors Private Limited	0.09	-	0.54
	Western M P Infrastructure & Toll Roads Private Limited	0.76	-	-
31	**Legal and Professional Charges**	**320.68**	**7.49**	**42.91**
	Cube Highways Technologies Private Limited	311.49	7.49	40.93
	Cube Highways Growth Advisory Private Limited	2.57	-	-
	DMD Advocates	2.85	-	-
	Axis Bank Limited	3.77	-	1.98
32	**Distributions to Unitholders (return on capital & return of capital)**	**8,037.05**	**7,908.53**	**4,721.75**
	Cube Highways and Infrastructure Pte. Limited	18.04	615.13	636.63
	Cube Highways and Infrastructure I-D Pte Limited	-	146.56	151.63
	Cube Highways and Infrastructure II Pte Limited	1,452.59	1,281.84	761.10
	Cube Highways and Infrastructure III Pte Limited	3,901.20	2,999.02	1,516.46
	Cube Mobility Investment Pte Limited	2,665.22	2,865.98	1,655.93

*Subsequent to allocation of units in exchange of shares of SPVs, the following unitholders have offered for sale 142,323,555 units (aggregating to Rs. 14,232.35 million) as follows:

Total offered for sale	-	-	**14,232.35**
Cube Highways and Infrastructure Pte. Limited	-	-	5,969.02
Cube Highways and Infrastructure II Pte Limited	-	-	1,652.67
Cube Highways and Infrastructure III Pte Limited	-	-	6,610.66

46 Information on related party transactions

46.3	Balances at the year end	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
1	**Trade Payables**	**(654.45)**	**(276.11)**	**(108.44)**
	Cube Highways Funds Advisors Private Limited	(35.01)	(55.45)	(25.69)
	Cube Highways and Transportation Assets Advisors Private Limited	(342.33)	(213.20)	(81.94)
	Cube Highways Technologies Private Limited	(276.17)	(7.46)	(0.81)
	Axis Bank Limited	(0.94)	-	-
2	**Term loan Payable**			
	Axis Bank Limited	(14,476.75)	(8,817.52)	(4,296.77)
3	**NCD payable**			
	Axis Bank Limited	(4,200.00)	-	-
4	**Interest accrued but not due on NCD**			
	Axis Bank Limited	(0.80)	-	-
5	**Bank Balance/Fixed Deposits***			
	Axis Bank Limited	2,243.53	1,163.58	3,359.05
6	**Other receivable**	**69.19**	**14.94**	**0.92**
	Cube Highways and Infrastructure V Pte Ltd	1.83	1.83	0.83
	Cube Mobility Investments Pte. Ltd.	0.09	0.09	0.09
	Cube Highways Roots Foundation	62.17	13.02	-
	Cube Highways Technologies Private Limited	0.68	-	-
	Cube Highways and Transportation Assets Advisors Private Limited	0.14	-	-
	Baharampore Farakka Highways Limited	4.28	-	-
7	**Other payable**	**(14.12)**	**(31.38)**	-
	Cube Highways and Infrastructure V Pte. Ltd.	(2.84)	(31.30)	-
	Delhi Hapur Meerut Expressway Private Limited	-	(0.08)	-
	Cube Highways Growth Advisory Private Limited	(0.14)	-	-
	Cube Highways Funds Advisors Private Limited	(4.57)	-	-
	Baharampore-Farakka Highways Limited	(0.12)	-	-
	Western MP Infrastructure & Toll Roads Private Limited	(0.12)	-	-
	Chenani Nashri Tunnelway Limited	(0.12)	-	-
	Devanahalli Tollway Private Limited	(2.28)	-	-
	Cube Highways and Transportation Assets Advisors Private Limited	(0.09)	-	-
	Cube Highways Technologies Private Limited	(3.62)	-	-
	Kokhraj Handia Expressway Private Limited	(0.22)	-	-
8	**Payable towards acquisition of equity shares of HAM SPVs (including interest)**			
	Cube Highways and Infrastructure III Pte. Ltd.	(788.30)	(1,001.40)	-
9	**Bank Guarantee**			
	Axis Bank Limited	(850.00)	(850.00)	(850.00)

*Transactions of the bank account maintained with Axis Bank Limited has not been disclosed, being in the ordinary course of business as commercial banking operations.

46.4 Pursuant to the resolution dated November 06, 2025, Board of Directors of the Investment Manager of Cube Highways Trust ("Trust") approved, inter alia, conversion of the Trust from a privately listed InvIT to a publicly listed InvIT through an Offer for Sale of its existing units, subject to necessary approvals (the "Offer"). The unitholders subsequently approved the Offer by postal ballot dated January 30, 2026. As set out in the draft offer document dated March 17, 2026 filed with the SEBI in relation to the Offer, the expenses incurred in connection with the Offer, including fee, commission, remuneration etc. payable to the lead managers, underwriters, escrow agents, legal advisors and other intermediaries, shall be borne by and recoverable from the selling unitholders persuant to the Offer Agreement dated March 17, 2026 entered between the Trust and the Selling Unitholders, in proportion to the units transferred and sold by each of the selling unitholder through the Offer for Sale or in any other manner as may be mutually agreed in writing among the relevant parties. Accordingly, expenses amounting to Rs. 207.93 million, incurred up to March 31, 2026, have been recognised as recoverable by the management as at March 31, 2026.

46.5 (i) Pursuant to the binding commitment letter dated March 17, 2026, the Trust intends to, inter alia, acquire up to 100% equity shareholding in Baharampore-Farakka Highways Limited, Devanahalli Tollway Private Limited, Western M P Infrastructure & Toll Roads Private Limited and Chenani Nashri Tunnelway Limited to the extent such equity is held by Cube Highways and Infrastructure V Pte Ltd and Cube Highways and Infrastructure II Pte Ltd (as applicable).

(ii) Cube Highways Trust has the right to acquire new projects (i) through Right of First Offer with the Sponsor in accordance with the Right of First Offer agreement dated March 17, 2026 and (ii) in terms of the Investment Policy.

46.6 Pursuant to a resolution dated February 27, 2026, the Board of directors of the Investment Manager has approved to appoint Cube Highways Asset & Project Advisory Private Limited ["CHAPA(P)L"] as the 'Project Manager' of Cube Highways Trust in place of Cube Highways and Transportation Assets Advisors Private Limited, upon receipt of necessary approvals.

Subsequent to year ended March 31, 2026, upon receipt of approvals, the Project Implementation and Management Agreement dated January 02, 2023 is terminated with effect from June 26, 2026 (the "Effective Date") and 'Cube Highways Asset & Project Advisory Private Limited' is appointed as the 'Project Manager' of Cube Highways Trust from the Effective Date. Accordingly, a new project implementation and management agreement ("Fresh PIMA") has been executed among Axis Trustee Services Limited (the "Trustee"), the Investment Manager, CHAPA(P)L, and the special purpose vehicles ("SPVs") of the Trust, dated June 26, 2026. The change in Project Manager shall be effective as of June 26, 2026.

46.7 Details in respect of related party transactions involving acquisition of SPV as required by paragraph 4 of the chapter 4 to the SEBI master circular no. SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025

For the year ended March 31, 2026: Nil

For the year ended March 31, 2025:

A) Summary of the valuation reports (issued by the independent valuer appointed under the InvIT Regulations):

Name of the SPVs	Date of acquisition	Discounting Rate (WACC)	Method of calculation	Enterprise value as at date of acquisition
SIPL	June 04, 2024	8.30%	Discounted Cash flow method	4,486.00
MHPL	June 04, 2024	8.30%		3,383.00
MSHPL	June 04, 2024	8.30%		4,720.00
THPL	June 04, 2024	8.30%		5,389.00
SPPL	June 04, 2024	8.30%		4,645.00
BWHPL	June 04, 2024	8.30%		4,032.00
NAMEPL	February 12, 2025	10.62%		25,267.72

B) Material conditions or obligations in relation to the transactions:
Share Purchase Agreement dated May 31, 2024 (for HAM SPVs) and June 04, 2024 (for NAMEPL) executed, inter alia, individually between the respective SPVs and the Trust, prescribing certain terms and conditions as agreed between the parties thereto, including without limitation, indemnification provisions for claims in relation to pre-acquisition period subject to limitations on liability, de-minimis values and claim basket values; representations and warranties; payment(s) to erstwhile sellers etc., governing law etc. (as more particularly stipulated under the Share Purchase Agreements) which govern the transfer of shareholding in the Project SPVs to Cube Highways Trust. Acquisition of shares of N.A.M. Expressway Private Limited ("NAMEPL") has been financed from senior, secured, rated, listed, redeemable, non-convertible debt securities bearing coupon interest rate of 7.67%.

46.7 Details in respect of related party transactions involving acquisition of SPV as required by paragraph 4 of the chapter 3 to the SEBI master circular SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025

For the year ended March 31, 2024:

A) Summary of the valuation reports (issued by the independent valuer appointed under the InvIT Regulations):

Name of the SPVs	Date of acquisition	Discounting Rate (WACC)	Method of calculation	Enterprise value as at date of acquisition
HTPL	April 17, 2023	10.10%	Discounted Cash flow method	19,216.40
JLTPL	April 17, 2023	10.10%		12,659.66
JVTPL	April 17, 2023	10.10%		8,476.00
KETPL	April 17, 2023	10.10%		8,869.01
KMTPL	April 17, 2023	10.10%		16,920.07
LRTPL	April 17, 2023	10.10%		12,336.43
MKTPL	April 17, 2023	10.10%		15,961.81
NKTPL	April 17, 2023	10.10%		10,430.56
SMTPL	April 17, 2023	10.10%		10,052.02
DATRPL	April 17, 2023	9.70%		77,792.83
FRHL	April 17, 2023	10.20%		30,105.01
WVEPL	April 17, 2023	10.20%		8,486.66
NDEPL	April 17, 2023	10.40%		7,338.13
WUPTPL	April 17, 2023	9.90%		4,231.85
JMTPL	April 17, 2023	10.30%		13,652.05
APEPL	April 17, 2023	11.00%		2,096.87
GAEPL	April 17, 2023	10.20%		26,083.89
MBEL	April 17, 2023	10.00%		6,061.63

B) Material conditions or obligations in relation to the transactions:

Share Purchase Agreement dated March 30, 2023 executed, inter alia, individually between the respective SPVs and the Trust, prescribing certain terms and conditions as agreed between the parties thereto, including without limitation, indemnification provisions for claims in relation to pre-acquisition period subject to limitations on liability, de-minimis values and claim basket values; representations and warranties; payment(s) to erstwhile sellers etc., governing law etc. (as more particularly stipulated under the Share Purchase Agreements) which govern the transfer of shareholding in the Project SPVs to Cube Highways Trust.

47 Information on segment reporting pursuant to Ind AS 108 - Operating Segments

The Trust group is engaged in the business of setting up of infrastructure facility by way of development of infrastructure projects, operation and maintenance of Infrastructural facilities. As such, all activities undertaken by the SPVs are incidental to the main business. The directors of the SPV and Investment Manager, who have been identified as being the chief operating decision maker (CODM), evaluates the SPVs performance, allocates resources based on the analysis of the previous performance indicators of the SPVs as a single unit. Therefore, there are no separate reportable business segments as per IND AS 108-"Operating Segment".

48 Provisions

(a) Provision for periodic major maintenance work

The Trust Group is required to operate and maintain the project highway during the entire concession period and hand over the project back to the Authority as per the maintenance standards prescribed in Concession agreement.

For this purpose, a regular maintenance along with periodic maintenances is required to be performed. Normally periodic maintenance includes resurface of pavements, repairs of structures and other equipment's and maintenance of service roads.

The maintenance cost/ bituminous overlay may vary based on the actual usage during maintenance period. Accordingly on the grounds of matching cost concept and based on technical estimates, a provision for major maintenance expenses is reviewed and is provided for in the financial statements at each reporting period.

Movement in provisions for periodic major maintenance work

Particulars	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
Opening balance	6,065.66	3,199.25	-
Add: Additions on account of acquisition (refer note 50)	-	1,070.47	3,067.69
Add : Provision charged to Consolidated Statement of Profit and Loss[iii]	3,549.38	2,410.28	1,663.92
Less : Utilised	(1,322.67)	(847.94)	(1,645.95)
Less : Unused amounts reversed	-	-	(10.73)
Add : Unwinding of discount and changes in discount rate	500.29	233.60	124.32
Closing balance	**8,792.66**	**6,065.66**	**3,199.25**
Non-current [i]	6,294.94	4,334.81	2,300.26
Current [ii]	2,497.72	1,730.85	898.99

Notes:

(i) The expected period of utilisation of non current provision is within 2-7 years.

(ii) The expected period of utilisation of current provision is within next 1 year.

(iii) Excludes periodic major maintenance at APEPL of Rs. Nil (March 31, 2025 : 888.26 million, March 31, 2024: Nil) being an annuity concession arrangement.

(b) Provisions for contractual obligation for infrastructure upgrade works

Certain SPVs estimates and provides for contract liability in respect of unavoidable obligations to improve/upgrade the infrastructure to be undertaken as per Concession Agreement with NHAI. These estimates are corroborated through purchase orders/ work orders placed or to be placed by these SPVs as per the road survey reports issued by an independent field expert. As the estimated cost is based on the various assumptions such as current infrastructure (road, pavements, etc.) condition, inflation in material cost etc., hence the Management is required to apply judgement over these factors.

Movement in Provisions for contractual obligation for infrastructure upgrade works

Particulars	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
Opening balance	1,896.07	2,403.54	-
Add: Additions on account of acquisition (refer note 50)	-	-	2,803.91
Add : Additional provision capitalised under service concession arrangement	-	-	128.25
Less : Utilised	(698.34)	(507.47)	(418.42)
Add : Unwinding of discount and changes in discount rate	-	-	18.05
Less : Addition*/(Reversal) on account of change in estimation (Refer note 6)	485.24	-	(128.25)
Closing balance	**1,682.97**	**1,896.07**	**2,403.54**
Non-current	-	-	-
Current [i]	1,682.97	1,896.07	2,403.54

(i) The expected period of utilisation of current provision is within next 1 year.

*After the reporting date, HTPL received a letter dated April 25, 2026, from the National Highways Authority of India ("NHAI") regarding the Negative Change of Scope ("COS") in relation to the construction of the Vehicular Underpass ("VUP") at Km 110+056 under the Concession Agreement. The said communication, inter alia, indicates that discussions between the parties regarding the proposed revised scope/de-scoping and the related financial implications are ongoing, and HTPL has been advised to submit a detailed proposal for consideration by the competent authority.

Based on management's assessment and the information presently available as at the date of approval of these Consolidated Financial Statements, the additions during the year also include a provision recognised by HTPL towards the estimated liability arising from the aforesaid Negative COS.

49 Details of dues to Micro, Small and Medium Enterprises

The details of dues to MSMEs as defined under Micro, Small and Medium Enterprises Development Act, 2006 (MSMED Act), and disclosures pursuant to the MSMED Act are as follows:

Particulars	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
(i) Principal amount remaining unpaid to any supplier as at the end of the accounting year[ii]	997.05	676.58	204.94
(ii) Interest due thereon remaining unpaid to any supplier as at the end of the accounting year	0.10	4.88	0.31
(iii) The amount of interest paid along with the amounts of the payment made to the supplier beyond the appointed day	-		
- Principal	228.56	86.58	134.02
- Interest	-	0.42	38.95
(iv) The amount of interest due and payable for the year	1.82	1.75	6.91
(v) The amount of interest accrued and remaining unpaid at the end of the accounting year	30.63	27.65	26.66
(vi) The amount of further interest due and payable even in the succeeding year, until such date when the interest dues as above are actually paid	-	-	-

Notes:

(i) Dues to Micro Enterprises and Small Enterprises have been determined to the extent such parties have been identified on the basis of information collected by the Management. This has been relied upon by the auditors.

(ii) The above disclosure excludes Rs. 313.37 million (March 31, 2025 : Rs. 233.13 million, March 31, 2024: Rs. 41.92 million) towards amount accrued but not yet billed by MSME vendors.

50 Asset Acquisition

A) i) Acquisition of JUHPL SPV (FY 2025-26)

In terms of Share Purchase Agreement (SPA) dated February 07, 2025 entered amongst the Trust (acting through its Investment Manager), Athaang Infrastructure Private Limited, National Investment and Infrastructure Fund (through its Investment Manager) (Seller) and AJUHPL on June 12, 2025 the Trust has acquired the 100% equity holding of JUHPL for consideration of Rs. 4,145.13 million (including contingent consideration of Rs. 122.99 million) referred to in note 1(ii).

The management applied optional concentration test, under Ind AS 103 "Business Combination", and concluded that the acquired set of activities and assets is not a business because substantially all of the fair value of the gross assets acquired is concentrated under Receivable under Service Concession Arrangements , with similar risk characteristics. Accordingly, this transaction has been accounted for as an asset acquisition. The management identified and recognized the individual identifiable assets acquired and liabilities assumed; and allocated the purchase consideration to the individual identifiable assets and liabilities on the basis of their relative fair values at the date of acquisition.

The allocated value of the identifiable assets and liabilities as at the date of acquisition were:

Assets	**Amount Rs. Million**
Property, Plant and Equipment (net of accumulated depreciation)	26.34
Intangible assets	545.19
Receivable under service concession arrangements	12,051.38
Assets held for sale	3.66
Trade receivables	3.19
Cash and cash equivalents	5,425.07
Other assets	656.39
Total Assets (A)	**18,711.22**
Liabilities	
Borrowings (including current maturities of Non-current borrowings)	12,933.56
Trade Payables	84.67
Other liabilities	1,547.86
Total Liabilities (B)	**14,566.09**
Net Assets/Consideration (A-B)	**4,145.13**

ii) Acquisition of QEPL SPV (FY 2025-26)

In terms of Share Purchase Agreement (SPA) dated February 07, 2025 entered amongst the Trust (acting through its Investment Manager), Quazigund Expressway Private Limited (QEPL) and National Investment and Infrastructure Fund (through its Investment Manager) (Seller) on June 12, 2025 the Trust has acquired the 100% equity holding of QEPL for consideration of Rs. 6,055.10 million referred to in note 1(ii).

The management applied optional concentration test, under Ind AS 103 "Business Combination", and concluded that the acquired set of activities and assets is not a business because substantially all of the fair value of the gross assets acquired is concentrated under Receivable under Service Concession Arrangements , with similar risk characteristics. Accordingly, this transaction has been accounted for as an asset acquisition. The management identified and recognized the individual identifiable assets acquired and liabilities assumed; and allocated the purchase consideration to the individual identifiable assets and liabilities on the basis of their relative fair values at the date of acquisition.

The allocated value of the identifiable assets and liabilities as at the date of acquisition were:

Assets	**Amount Rs. Million**
Property, Plant and Equipment (net of accumulated depreciation)	16.45
Intangible assets	152.45
Receivable under service concession arrangements	19,032.91
Trade receivables	0.68
Cash and cash equivalents	1,904.97
Other assets	3,312.61
Total Assets (A)	**24,420.07**
Liabilities	
Borrowings (including current maturities of Non-current borrowings)	17,921.71
Trade Payables	58.95
Other liabilities	384.31
Total Liabilities (B)	**18,364.97**
Net Assets/Consideration (A-B)	**6,055.10**

This space has been intentionally left blank

50 Asset Acquisition

B) Acquisition of HAM SPVs (FY 2024-25)

In terms of Share Purchase Agreements (SPAs) dated May 31, 2024 entered amongst Trust (acting through its Investment Manager), Axis Trustee Services Limited (acting in its capacity as Trustee of the Trust), Cube Highways and Infrastructure III PTE. Ltd. ("Seller") and the Hybrid Annuity Model SPVs referred to in note 1(ii). (thereinafter referred to as "the parties"), on June 04, 2024 the Trust completed the acquisition of 51% equity holding of HAM SPVs for consideration of Rs. 5,973.80 million (including contingent consideration of Rs. 578.49 million) and the remaining 49% equity of HAM SPVs for consideration of Rs. 5,735.39 million (including contingent consideration of Rs. 555.80 million) on December 03, 2024. The contingent consideration is mainly towards various remedies and indemnities available to the Trust against money held back from annuities by NHAI, claims related to changes in law, claims for balance work, claims under Singapore International Arbitration Centre (SIAC). Further, one of HAM SPV viz. MHPL has initiated arbitration with NHAI with respect to damages amounting to Rs. 1,347.84 million imposed by NHAI mainly on account of default in performing repair and rectification works and NHAI has withheld Rs. 112.72 million from the annuity payments due to MHPL (included under trade receivables). The management, after reviewing the facts and circumstances of the case supported by the legal opinion, believes that the likelihood of any ultimate outflow is remote. Also, under the terms of the SPA, the Seller is responsible for indemnifying, defending, and holding the Trust and the SPV harmless against any losses related to this dispute with NHAI.

The management applied optional concentration test, under Ind AS 103 "Business Combination", and concluded that the acquired set of activities and assets is not a business because substantially all of the fair value of the gross assets acquired is concentrated under Receivable under Service Concession Arrangements , with similar risk characteristics. Accordingly, this transaction has been accounted for as an asset acquisition.

The management identified and recognized the individual identifiable assets acquired and liabilities assumed; and allocated the purchase consideration to the individual identifiable assets and liabilities on the basis of their relative fair values at the date of acquisition.

The allocated value of the identifiable assets and liabilities of the 6 HAM SPVs as at the date of acquisition were:

Assets	**Amount Rs. Million**
Property, Plant and Equipment (net of accumulated depreciation)	24.99
Intangible assets	8,599.81
Capital work-in-progress	80.80
Receivable under service concession arrangements	15,231.56
Investments in Mutual Funds	2,099.98
Trade receivables	1,585.60
Cash and cash equivalents	1,400.95
Bank balance other than cash and cash equivalents	710.37
Other assets	3,399.76
Total Assets (A)	**33,133.82**
Liabilities	
Borrowings (including current maturities of Non-current borrowings)	20,093.28
Trade Payables	241.43
Deferred Tax Liability (net)	660.09
Other liabilities	429.83
Total Liabilities (B)	**21,424.63**
Net Assets/Consideration (A-B)	**11,709.19**

Movement in Contingent Consideration Payable- For the year ended March 31, 2026

Particulars	**Amount Rs. Million**
Contingent Consideration on date of acquisition	1,134.29
Amount paid during FY 2024-25	(133.07)
Contingent Consideration payable as at March 31, 2025	**1,001.22**
Amount paid during FY 2025-26	(212.54)
Extinguishment of financial liability related contingent consideration	(24.14)
Loss on remeasurement of Contingent Consideration	23.76
Contingent Consideration payable as at March 31, 2026	**788.30**

50 Asset Acquisition

C) Acquisition of NAMEPL (FY 2024-25)

In terms of Share Purchase Agreements (SPAs) dated June 04, 2024 entered amongst the Trust (acting through its Investment Manager), Axis Trustee Services Limited (acting in its capacity as Trustee of the Trust), Cube Highways and Infrastructure PTE. Ltd. ("Seller") and N.A.M. Expressway Private Limited (NAMEPL) (thereinafter referred to as "the parties") referred to in note 1(ii), on February 12, 2025 the Trust completed the acquisition of 100% equity holding of NAMEL for consideration of Rs. 7,176.02 million. Accordingly the financial statements of the aforesaid subsidiary for the period February 12, 2025 to March 31, 2025 have been considered in the consolidated financial statements of the Trust Group.

The management applied optional concentration test, under Ind AS 103 "Business Combination", and concluded that the acquired set of activities and assets is not a business because substantially all of the fair value of the gross assets acquired is concentrated in Intangible Assets- Rights under Service Concession Arrangements with similar risk characteristics. Accordingly, this transaction has been accounted for as an asset acquisition.

The management identified and recognized the individual identifiable assets acquired and liabilities assumed; and allocated the purchase consideration to the individual identifiable assets and liabilities on the basis of their relative fair values at the date of acquisition.

The allocated value of the identifiable assets and liabilities of the SPV as at the date of acquisition were:

Assets	**Amount Rs. Million**
Property, Plant and Equipment (net of accumulated depreciation)	23.89
Intangible assets	26,248.85
Intangible assets under development	67.07
Current tax assets (net)	4.10
Investments	442.09
Cash and cash equivalents	68.54
Bank balance other than cash and cash equivalents	1,797.24
Other assets	477.64
Total Assets (A)	**29,129.42**
Liabilities	
Borrowings (including current maturities of Non-current borrowings)	19,144.85
Trade Payables	155.46
Provisions	1,079.14
Deferred Tax Liability (net)	1,448.12
Other liabilities	125.83
Total Liabilities (B)	**21,953.40**
Net Assets/Consideration (A-B)	**7,176.02**

This space has been intentionally left blank

50 Asset Acquisition

D) Acquisition of 18 Subsidiaries (FY 2023-24)

Pursuant to the Share Purchase Agreements dated March 30, 2023, the Trust (acting through its Investment Manager) acquired the entire equity share capital (except for 0.03% of the equity share capital of MBEL) of HTPL, JLTPL, JVTPL, KETPL, KMTPL, LRTPL, MKTPL, NKTPL, SMTPL, DATRPL, FRHPL, WVEPL, NDEPL, WUPTPL, JMTPL, APEPL, GAEPL, MBEL on April 17, 2023 for an equity consideration of Rs. 106,758.69 million (referred to in note 1(ii)). Accordingly the financial statements of the aforesaid subsidiaries for the period April 17, 2023 to March 31, 2024 have been considered in the consolidated financial statements of the Trust Group.

The management applied optional concentration test, under Ind AS 103 "Business Combination", and concluded that the acquired set of activities and assets is not a business because substantially all of the fair value of the gross assets acquired is concentrated in Intangible Assets- Rights under Service Concession Arrangements (other than APEL) and Receivable under Service Concession Arrangements (for APEL), with similar risk characteristics. Accordingly, this transaction has been accounted for as an asset acquisition.

The management identified and recognized the individual identifiable assets acquired and liabilities assumed; and allocated the purchase consideration to the individual identifiable assets and liabilities on the basis of their relative fair values at the date of acquisition.

The allocated value of the identifiable assets and liabilities of the 18 SPVs as at the date of acquisition were:

Assets	**Amount Rs. Million**
Property, Plant and Equipment (net of accumulated depreciation)	239.13
Capital work-in-progress	8.87
Investment properties	7.28
Intangible assets- Rights under Service Concession Arrangements (including other intangible assets)	2,33,472.67
Intangible assets under development	2,097.21
Deferred tax assets (net)	341.16
Current tax assets (net)	459.35
Investments	10,325.25
Trade receivables	809.89
Cash and cash equivalents	6,285.17
Bank balance other than cash and cash equivalents	307.80
Assets held for sale	4.67
Other assets	4,340.59
Total Assets (A)	**2,58,699.04**
Liabilities	
Borrowings (including current maturities of Non-current borrowings)	1,32,894.35
Trade Payables	2,035.57
Provisions	5,906.38
Deferred Tax Liability (net)	511.94
Other liabilities	10,591.65
Total Liabilities (B)	**1,51,939.89**
Non-controlling interest (C)	**0.46**
Net Assets (A-B-C)	**1,06,758.69**

This space has been intentionally left blank

51 Revenue from contracts with customers

1 Disaggregation of revenue

Revenue recognised mainly comprises of revenue from toll collection, claims with NHAI/State authorities, contract revenue. Set out below is the disaggregation of the Trust Group revenue from contracts with customers.

	Description	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
	Operating revenue			
(a)	Revenue from toll fee collections	34,125.40	28,275.30	24,715.17
(b)	Construction income	172.65	634.14	4,025.77
(c)	Finance and Operation & Maintenance Income on annuity receivable from NHAI	7,357.09	2,969.58	400.32
(d)	Revenue from additional work (net of related cost)	25.65	26.30	8.78
(e)	Renewals and overlay income	-	1,166.12	-
(f)	Claims for compensation from NHAI/TNSTC	708.06	-	11.33
	Total revenue	**42,388.85**	**33,071.44**	**29,161.37**

The table below represents disaggregated revenues from contracts with customers based on nature, amount and timing for the year ended March 31, 2026, March 31, 2025 and March 31, 2024.

	Timing of revenue recognition	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
	At point in time	34,833.46	28,275.30	24,726.50
	Over time	7,555.39	4,796.14	4,434.87
	Total revenue	**42,388.85**	**33,071.44**	**29,161.37**

2 Assets and liabilities related to contracts with customers

The following table provides information about receivables, contract assets and contract liabilities from contracts with customers:

Description	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
Contract Assets			
Trade Receivables	2,205.27	1,636.71	600.79
Receivables under service concession arrangements*	38,714.16	14,433.95	600.91
Unbilled Revenue	436.92	335.18	107.25
Total	**41,356.35**	**16,405.84**	**1,308.95**

*For movement of annuity receivables for HAM SPVs , APEPL, JUHPL and QEPL refer note 16(iii).

Contract Liability			
Advance from customers	3.10	5.14	-
Payable to National Highways Authority of India (NHAI)	4.04	6.86	14.90
	7.14	**12.00**	**14.90**

3 Performance Obligation

Income from toll collection
The performance obligation in service of toll collection is recorded as per rates notified by the NHAI/State authorities and payment is generally due at the time of providing service.

Contract revenue
The performance obligation under service concession arrangements (SCA) is due on completion of work as per terms of SCA.

4 Refer note 52 for disclosure in accordance with Appendix D: Service Concession Arrangements Disclosures of Ind AS 115: Revenue from Contracts with Customers.

52 Service Concession Arrangement

The details of service concession arrangements of all the SPVs are as follows:

HTPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of Hazaribagh – Ranchi Section (KM 41.500 – KM 115.290) Road Project on NH-33 in the state of Jharkhand as agreed between the SPV and National Highway Authority of India (NHAI) on Tolling, operation, maintenance and transfer (TOT) basis.
Project	National Highway-33 (NH-33) from KM-41.50 to KM 115.29
Nature of Asset	Intangible
Year when SCA granted	October 20, 2020
Concession Period	30 Years
End of Concession period	October 19, 2050
Stage of Completion	Completed with Commercial Operation Date (COD) as at September 04, 2013
Premature termination	On force majeure event or parties defaulting on their obligation
Operation & Maintenance ("O&M") Handover Date	March 31, 2028
Obligation to provide services:	Operation and routine maintenance of the highway
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay of the roads at the end of specified periods from O&M handover date.
Remaining concession period of rights under SCA as at March 31, 2026	24 years, 06 months and 19 days

JLTPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of Jhansi-Lalitpur Section (KM 00.00 – KM 49.70) Road Project on NH-25 in the state of Uttar Pradesh as agreed between the Company and National Highway Authority of India (NHAI) on Tolling, operation, maintenance and transfer (TOT) basis.
Project	National Highway-25 (NH-25) from KM-00.00 to KM 49.70
Nature of Asset	Intangible
Year when SCA granted	October 20, 2020
Concession Period	30 Years
Estimated Reduction period	1827 Days
End of Concession period	October 19, 2045 (including estimated reduction period)[(i)]
Stage of Completion	Completed with Commercial Operation Date (COD) as at November 12, 2014
Premature termination	On force majeure event or parties defaulting on their obligation
Operation & Maintenance ("O&M") Handover Date	March 31, 2027
Obligation to provide services:	Operation and routine maintenance of the highway
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay of the roads at the end of specified periods from O&M handover date.
Remaining concession period of rights under SCA as at March 31, 2026	19 years, 06 months and 19 days (including estimated reduction period)

JVTPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of Jhansi-Lalitpur Section (KM 49.70 – KM 99.00) Road Project on NH-26 in the state of Uttar Pradesh as agreed between the SPV and National Highway Authority of India (NHAI) on Tolling, operation, maintenance and transfer (TOT) basis.
Project	National Highway-26 (NH-26) from KM-49.70 to KM 99.00
Nature of Asset	Intangible
Year when SCA granted	October 20, 2020
Concession Period	30 Years
Estimated Reduction period	1827 Days
End of Concession period	October 19, 2045 (including estimated reduction period)[(i)]
Stage of Completion	Completed with Commercial Operation Date (COD) as at March 19, 2012
Premature termination	On force majeure event or parties defaulting on their obligation
Operation & Maintenance ("O&M") Handover Date	March 31, 2027
Obligation to provide services:	Operation and routine maintenance of the highway
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay of the roads at the end of specified periods from O&M handover date.
Remaining concession period of rights under SCA as at March 31, 2026	19 years, 06 months and 19 days (including estimated reduction period)

KETPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of Madurai-Kanyakumari Section (KM 52.300 – KM 116.500) Road Project on NH-07 in the state of Tamil Nadu as agreed between the SPV and National Highway Authority of India (NHAI) on Tolling, operation, maintenance and transfer (TOT) basis.
Project	National Highway-07 (NH-07) from KM-52.30 to KM 116.50
Nature of Asset	Intangible
Year when SCA granted	October 20, 2020
Concession Period	30 Years
End of Concession period	October 19, 2050
Stage of Completion	Completed with Commercial Operation Date (COD) as at August 15, 2011
Premature termination	On force majeure event or parties defaulting on their obligation
Obligation to provide services:	Operation and routine maintenance of the highway
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay of the roads at the end of specified periods.
Remaining concession period of rights under SCA as at March 31, 2026	24 years, 06 months and 19 days

52 Service Concession Arrangement

The details of service concession arrangements of all the SPVs are as follows:

KMTPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of Kotwa-Muzaffarpur Section (KM 440.00 – KM 520.00) Road Project on NH-28 in the state of Bihar as agreed between the SPV and National Highway Authority of India (NHAI) on Tolling, operation, maintenance and transfer (TOT) basis.
Project	National Highway-28 (NH-28) from KM-440.00 to KM 520.00
Nature of Asset	Intangible
Year when SCA granted	October 20, 2020
Concession Period	30 Years
Estimated Reduction period	1827 Days
End of Concession	October 19, 2045 (including estimated reduction period)[(i)]
Stage of Completion	Completed with Commercial Operation Date (COD) as at December 09, 2012
Premature termination	On force majeure event or parties defaulting on their obligation
Obligation to provide services:	Operation and routine maintenance of the highway
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay of the roads at the end of specified periods.
Remaining concession period of rights under SCA as at March 31, 2026	19 years, 06 months and 19 days (including estimated reduction period)

LRTPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of Lucknow-Raibareli Section (KM 12+700 to KM 82+700) Road Project on NH 24B in the state of Uttar Pradesh as agreed between the SPV and National Highway Authority of India (NHAI) on Tolling, operation, maintenance and transfer (TOT) basis.
Project	National Highway-24B (NH-24B) from KM-12+700 to KM 82+700
Nature of Asset	Intangible
Year when SCA granted	October 20, 2020
Concession Period	30 years
End of Concession	October 19, 2050
Stage of Completion	Completed with Commercial Operation Date (COD) as at March 05, 2015
Premature termination	On force majeure event or parties defaulting on their obligation
Operation & Maintenance ("O&M") Handover Date	March 31, 2029
Obligation to provide services:	Operation and routine maintenance of the highway
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay of the roads at the end of specified periods from O&M handover date.
Remaining concession period of rights under SCA as at March 31, 2026	24 years, 06 months and 19 days

MKTPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of Madurai-Kanyakumari Section (KM 00.00 – KM 52.30) Road Project on NH-07 in the state of Tamil Nadu as agreed between the SPV and National Highway Authority of India (NHAI) on Tolling, operation, maintenance and transfer (TOT) basis.
Project	National Highway-07 (NH-07) from KM-00.00 to KM 52.30
Nature of Asset	Intangible
Year when SCA granted	October 20, 2020
Concession Period	30 Years
Estimated Reduction period	1826 days
End of Concession period	October 19, 2045 (Including Estimated reduction period)(i)
Stage of Completion	Completed with Commercial Operation Date (COD) as at September 10, 2012
Premature termination	On force majeure event or parties defaulting on their obligation
Obligation to provide services:	Operation and routine maintenance of the highway
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay of the roads at the end of specified periods.
Remaining concession period of rights under SCA as at March 31, 2026	19 years, 06 months and 19 days (including estimated reduction period)

NKTPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of Madurai-Kanyakumari Section (KM 180.00 – KM 243.47) Road Project on NH-07 in the state of Tamil Nadu as agreed between the Company and National Highway Authority of India (NHAI) on Tolling, operation, maintenance and transfer (TOT) basis.
Project	National Highway-07 (NH-07) from KM-180.00 to KM 243.47
Nature of Asset	Intangible
Year when SCA granted	October 20, 2020
Concession Period	30 Years
End of Concession period	October 19, 2050
Stage of Completion	Completed with Commercial Operation Date (COD) as at May 23, 2011
Premature termination	On force majeure event or parties defaulting on their obligation
Obligation to provide services:	Operation and routine maintenance of the highway
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay of the roads at the end of specified periods.
Remaining concession period of rights under SCA as at March 31, 2026	24 years, 06 months and 19 days

52 Service Concession Arrangement

The details of service concession arrangements of all the SPVs are as follows:

SMTPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of Madurai-Kanyakumari Section (KM 116.50 – KM 180.00) Road Project on NH-07 in the state of Tamil Nadu as agreed between the SPV and National Highway Authority of India (NHAI) on Tolling, operation, maintenance and transfer (TOT) basis.
Project	National Highway-07 (NH-07) from KM-116.50 to KM 180.00
Nature of Asset	Intangible
Year when SCA granted	October 20, 2020
Concession Period	30 Years
End of Concession period	October 19, 2050
Stage of Completion	Completed with Commercial Operation Date (COD) as at May 23, 2011
Premature termination	On force majeure event or parties defaulting on their obligation
Obligation to provide services:	Operation and maintenance of the project
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay of the roads at the end of specified periods.
Remaining concession period of rights under SCA as at March 31, 2026	24 years, 06 months and 19 days

DATRPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of six lanes Delhi - Agra Section (KM 20.500 – KM 200.000) Road Project on NH-2 in the state of Haryana/Uttar Pradesh as agreed between the Company and National Highway Authority of India (NHAI) on Design, Built, Finance, Operate and Transfer (DBFOT) basis under National Highway Development Program (NHDP) phase -V.
Project	Project Six lanes Delhi-Agra Section (KM 20.500 – KM 200.000) Road Project on NH-2
Nature of Asset	Intangible (Rights under Service Concession Arrangements (SCA) for Toll Road Carriageway)
Year when SCA granted	October 16, 2012
Concession period	26 Years
Estimated extension of concession period	1989 days
Stage of completion	Completed with Provisional Commercial Operation Date (COD) as May 20, 2022. The date of issue of this Provisional Completion date shall be the COD, as defined in the said concession agreement.
End of concession period	February 12, 2044 (Including estimated extension period)[(i)]
Premature termination	On force majeure event or parties defaulting on their obligation
Obligation to provide services:	To establish, develop, finance, design, construct the roads & bridges and operation and maintenance of rehabilitation and strengthening of existing 6 lane highway of KM 20.500 to KM 200.000 of NH-2 (Delhi - Agra section) in state of Haryana/Uttar Pradesh on DBFOT basis under National Highway Development Program (NHDP) phase -V.
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay of the roads at the end of specified periods.
Remaining concession period of rights under SCA as at March 31, 2026	17 years, 10 months and 12 days (Including Estimated extension period)

FRHPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of four lanes Farakka – Raiganj Section (KM 295.00 – KM 398.000) Road Project on NH-34 in the state of West Bengal as agreed between the SPV and National Highway Authority of India (NHAI) on Design, Built, Finance, Operate and Transfer (DBFOT) basis under National Highway Development Program (NHDP) phase -III
Project	Four lanes Farakka – Raiganj Section (KM 295.00 – KM 398.000) Road Project on NH-34
Nature of Asset	Intangible (Rights under Service Concession Arrangements (SCA) i.e. Intangible Assets-Toll Road Carriageway)
Year when SCA granted	February 01, 2011
Concession period	30 Years
Estimated extension of concession period	90 Days
Stage of completion	Completed with Commercial Operation Date (COD) as at May 03, 2021
End of concession period	May 03, 2041 (Including estimated extension period)[(i)]
Premature termination	On force majeure event or parties defaulting on their obligation
Obligation to provide services:	To establish, develop, finance, design, construct the roads & bridges and operation and maintenance of rehabilitation and strengthening of existing 4 lane divided highway of (KM 295.00 to KM 398.00) of NH-34 (Farakka- Raiganj section) in state of West Bengal on DBFOT basis under National Highway Development Program (NHDP) phase -III.
Major Overlays	In terms of the SCA , the SPVs obligation to carry out overlay of the roads has not been defined. However, basis quality parameters to be maintained as per SCA, the management is expecting to carry out the overlay of the roads at interval of five to six years.
Remaining concession period of rights under SCA as at March 31, 2026	15 years, 01 months and 03 days (Including Estimated extension period)

52 Service Concession Arrangement

The details of service concession arrangements of all the SPVs are as follows:

WVEPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of Walayar – Vadakkancherry (KM 182.250 to KM 240.000) Road Project on NH-47 (Now NH-544) in the State of Kerala as agreed between the SPV and National Highway Authority of India (NHAI) on Design, Build, Finance, Operate and Transfer (DBFOT) basis.
Project	National Highway-47 (Now NH-544) from KM 182.250 to KM 240.000 (approx. 54 km) on the Walayar- Vadakkencherry section.
Nature of Asset	Intangible
Year when SCA granted	May 18, 2013
Cash support by way of grant	2646.00 million (29% of the total project cost) adjusted with intangible asset.
Concession period	20 Years
Estimated extension of concession period	1599 days
Stage of completion	Completed with commercial operation date (COD) as at October 31, 2015
End of concession period	October 01, 2037 (Including estimated extension period)[(ii)]
Premature termination	On force majeure event or parties defaulting on their obligation
Obligation to provide services:	Establish, develop, finance and design and construct the roads and bridges on NH-47 (NH-544) and to operate and maintain the project.
Major Overlays	In terms of the SCA , the SPVs obligation to carry out overlay of the roads has not been defined. However, basis quality parameters to be maintained as per SCA, the management is expecting to carry out the overlay of the roads at interval of six to seven years.
Remaining concession period of rights under SCA as at March 31, 2026	11 years, 06 months and 01 day (Including Estimated extension period)

NDEPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of four lanes (KM 28.200 – KM 110.000) Road Project on NH-48 in the state of Karnataka as agreed between the SPV and National Highway Authority of India (NHAI) on Built, Operate and Transfer (BOT) basis under National Highway Development Program (NHDP) phase -III A.
Project	Four lanes (KM 28.200 – KM 110.000) Road Project on NH-48
Nature of Asset	Intangible (Rights under Service Concession Arrangements (SCA) i.e. Intangible Assets-Toll Road Carriageway)
Year when SCA granted	July 9, 2007
Original Concession Period	25 Years w.e.f January 5, 2008 i.e. Appointed Date (180 days from date of signing of agreement i.e. July 07, 2007)
Details of substitution of concessionaire	Substitution of concessionaire vide Supplementary agreement dated January 11, 2021 to Original concession agreement dated July 9, 2007 for balance concession period from January 11, 2021 to January 29, 2033. (Including estimated extension period)
Premature termination	On force majeure event or parties defaulting on their obligation
Stage of completion	Completed with Provisional Commercial Operation Date (COD) as June 23, 2012. The date of issue of this Provisional Completion date shall be the COD, as defined in the said concession agreement.
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay during the entire concession period and hand over the project back to the Authority (NHAI) as per the maintenance standards prescribed in Concession agreement.
Obligation to provide services:	To establish, design, engineering, financing, construction and operation and maintenance of rehabilitation and strengthening of existing 2- lane road and widening to 4 lane divided highway of KM 28.200 to KM 110.000 of NH-48 in state of Karnataka on BOT basis under National Highway Development Program (NHDP) phase -III A.
Remaining concession period of rights under SCA as at March 31, 2026	06 years, 09 months, 29 days

52 Service Concession Arrangement

The details of service concession arrangements of all the SPVs are as follows:

WUPTPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of four lanes Meerut – Muzaffarnagar Section (KM 52.250 – KM 131.000) Road Project on NH-58 in the state of Uttar Pradesh as agreed between the Company and National Highway Authority of India (NHAI) on Built, Operate and Transfer (BOT) basis under National Highway Development Program (NHDP) phase -III A.
Project	Four lanes Meerut – Muzaffarnagar Section (KM 52.250 – KM 131.000) Road Project on NH-58
Nature of Asset	Intangible (Rights under Service Concession Arrangements (SCA) i.e. Intangible Assets-Toll Road Carriageway)
Year when SCA granted	September 09, 2005
Appointed Date	March 09, 2006
Concession period	20 Years
Estimated extension of concession period	109 days
End of Concession Period	June 23, 2026 (Including extension period)
Stage of completion	Completed with Commercial Operation Date (COD) as at April 25, 2011
Premature termination	On force majeure event or parties defaulting on their obligation
Obligation to provide services:	To establish, develop, finance, design, construct the roads & bridges and operation and maintenance of rehabilitation and strengthening of existing 2- lane road and widening to 4 lane divided highway of KM 52.250 to KM 131.000 of NH-58 (Meerut- Muzaffarnagar section) in state of Uttar Pradesh on BOT basis under National Highway Development Program (NHDP) phase -III A.
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay of the roads at the end of specified periods.
Remaining concession period of rights under SCA as at March 31, 2026	02 months and 23 days (Including extension period)

JMTPL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of Jaipur – Mahua Section (KM 120.000 – KM 228.000) Road Project on NH-21 in the state of Rajasthan as agreed between the Company and National Highway Authority of India (NHAI) on Built, Operate and Transfer (BOT) basis. ("Project Highway")
Project	National Highway-21 (NH-21) from KM-120.00 to KM 228.00
Nature of Asset	Intangible (Rights under Service Concession Arrangements (SCA) i.e. Intangible Assets-Toll Road Carriageway)
Year when SCA granted	September 23, 2005
Concession period	25 Years
Estimated extension of concession period	81 Days
End of Concession period	June 09, 2031 (Including extension period)
Stage of completion	Completed with Commercial Operation Date (COD) as at March 08, 2008
Premature termination	On force majeure event or parties defaulting on their obligation
Obligation to provide services:	To establish, develop, finance and design and construct the roads and bridges on NH-21 and to operate and maintain the project.
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay of the roads at the end of specified periods.
Remaining concession period of rights under SCA as at March 31, 2026	5 years, 02 months and 09 days (Including extension period)

MBEL

Description and right to use specified asset	Toll collection from the users and operation and maintenance of four lanes Bharatpur – Mahua Section (KM 63.000 – KM 120.000) Road Project on NH-11 in the state of Rajasthan as agreed between the Company and National Highway Authority of India (NHAI) on Built, Operate and Transfer (BOT) basis. ("Project Highway")
Project	Four lanes Bharatpur – Mahua Section (KM 63.000 – KM 120.000) Road Project on NH-11
Nature of Asset	Intangible (Rights under Service Concession Arrangements (SCA) i.e. Intangible Assets-Toll Road Carriageway)
Year when SCA granted	October 13, 2005
Appointed date	April 10, 2006
Concession period	25 Years
Estimated extension of concession period	47 Days
End of Concession period	May 26, 2031 (Including extension period)
Stage of completion	Completed with Commercial Operation Date (COD) as at September 13, 2009
Premature termination	On force majeure event or parties defaulting on their obligation
Obligation to provide services:	To establish, develop, finance and design and construct the roads and bridges on NH-11 and to operate and maintain the project
Major Overlays	In terms of the SCA , the SPV is obligated to carry out overlay of the roads at the end of specified periods.
Remaining concession period of rights under SCA as at March 31, 2026	5 years, 01 month and 26 days (Including extension period)

52 Service Concession Arrangement

The details of service concession arrangements of all the SPVs are as follows:

GAEPL

Description and right to use specified asset	Design, Engineering, Finance, Construction, Operation and Maintenance of Ghaziabad – Aligarh Section of NH-91 from Km. 23.600 to Km. 149.900 in the State of Uttar Pradesh under NHDP Phase III on Design, Build, Finance, Operate and Transfer (the "DBFOT") Basis
Project	Project 4/6 lanes Ghaziabad – Aligarh Section of NH-91 from Km. 23.600 to Km. 149.900
Nature of Asset	Intangible (Rights under Service Concession Arrangements (SCA) for Toll Road Carriageway)
Year when SCA granted	May 20, 2010
Concession period	24 Years
Estimated extension of concession period	1577 Days
End of concession period	June 20, 2039
Premature termination	On force majeure event or parties defaulting on their obligation
Major Overlays	In terms of the SCA , the SPVs obligation to carry out overlay of the roads has not been defined. However, basis quality parameters to be maintained as per SCA, the management is expecting to carry out the overlay of the roads at interval of six to seven years.
Remaining concession period of rights under SCA as at March 31, 2026	13 years, 02 months and 20 days

NAMEPL

Description and right to use specified asset:	Toll collection from the users and operation and maintenance of four lanes Narketpally-Addanki-Medarametla Road (SH-2) from Km 0.000 to Km 212.500 Road Project in the state of Andhra Pradesh and Telangana under Public-Private Partnership as agreed between the Company and Chief Engineer (R&B) Core Road Network & Managing Director, A.P Road Development Corporation, Hyderabad and Engineer - in -Chief (R&B)- PPP, NH, CRF&LWE Telangana State, Hyderabad on Design, Built, Finance, Operate and Transfer (DBFOT) basis.
Project	Project four lanes Narketpally-Addanki-Medarametla Road (SH-2) from Km 0.000 to Km 212.500 Road Project.
Nature of Asset	Intangible (Rights under Service Concession Arrangements (SCA) for Toll Road Carriageway)
Year when SCA granted	July 23, 2010
Concession period	24 Years
Estimated extension of concession period	1838 Days
End of concession period	27-11-2039 (Including estimated extension period)[(i)]
Premature termination	On force majeure event or parties defaulting on their obligation
Major Overlays	In terms of the SCA , the Companies obligation to carry out overlay of the roads has not been defined. However, basis quality parameters to be maintained as per SCA, the management is expecting to carry out the overlay of the roads at interval of six to seven years
Remaining concession period of rights under SCA as at March 31, 2026	13 years, 07 months and 27 days (Including Estimated extension period)

APEPL

Project	Kothakota (km.136+077) to Kurnool (Km.210+699) on NH-44 (NH-7) in the state of Andhra Pradesh under North South Corridor (NHDP Phase II)
Nature of Asset	BOT (Annuity) Basis
Year when SCA granted	March 20, 2006
Concession period	20 Years
Commercial Operation Date ("COD")	September 30, 2009
End of Concession period	September 30, 2026
Number of Toll Plaza and Lanes	1 Toll Plaza at Km 200+700 (Pullur) with 6 Lanes (5+1Lanes) in each direction (Since the asset is under Annuity model, APEPL does not receive annuity revenue. APEPL receives fixed annuity over the concession period)
Remaining concession period of rights under SCA as at March 31, 2026	6 months

THPL

Tirumala Highway Private Limited is formed as a special purpose vehicle (SPV) to implement a road project envisaging Six Laning of Chittor (Design Km 0.000/Existing Km 158.000) to Mallavaram (Design Km 61.128/Existing Km 41.8000) of NH -140 under Bharatmala Pariyojana on Hybrid Annuity Mode in the State of Andhra Pradesh.	Bid Project Cost of the project is Rs. 10,566 million with O& M cost of Rs. 30 million
	The authority shall pay the total BPC to the concessionaire in two parts. 40% of the BPC shall be payable in 5 instalments during construction period and the remaining BPC of 60% will be payable in 30 biannual instalments after 180 days from Completion date of the project.
	Concession period comprises of 2.5 years of construction period and operation of 17.5 years commencing from Completion Date starting from the appointed date i.e. January 04, 2019.
	In terms of the SCA , the Company is obligated to carry out overlay of the roads at the end of specified periods.
	The project has achieved partial completion certificate on May 10, 2021
	Infrastructure return at the end of project concession period ending on May 09, 2036
	Remaining concession period of rights under SCA as at March 31, 2026 is 10 years 01 month 09 days

52 Service Concession Arrangement

The details of service concession arrangements of all the SPVs are as follows:

BWHPL

Borgaon Watambare Highways Private Limited is formed as a special purpose vehicle (SPV) to implement a road project envisaging Four Laning of Sangli- Solapur (Package- II: Borgaon to Watambare) section of NH-166 from existing Ch. Km 219.956 to Ch. 272.394 (Design Ch. Km. 224.000 to Km. 276.000) of length 52 Km. in the state of Maharashtra on Hybrid Annuity Mode	Bid Project Cost of the project is Rs. 10,294 million with O&M cost of Rs. 30 million
	The authority shall pay the total BPC to the concessionaire in two parts. 40% of the BPC shall be payable in 5 instalments during construction period and the remaining BPC of 60% will be payable in 30 biannual instalments after 180 days from Completion date of the project.
	Concession period comprises of 730 days of construction period and operation of 15 years commencing from Completion Date starting from the appointed date i.e. September 24, 2021
	In terms of the SCA , the Company is obligated to carry out overlay of the roads at the end of specified periods.
	The project has achieved provisional completion on September 24, 2021
	Infrastructure return at the end of project concession period ending on September 23, 2036.
	Remaining concession period of rights under SCA as at March 31, 2026 is 10 years 05 months 23 days

SIPL

Srirangam Infra Private Limited is formed as a special purpose vehicle (SPV) to implement a road project envisaging Four Laning of Trichy (Km 0.000) to Kallagam (Km 38.700) Section of NH-227 under Bharatmala Pariyojana (Residual projects under NHDP) on Hybrid Annuity Mode in the State of Tamilnadu on Hybrid Annuity Mode	Bid Project Cost of the project is Rs. 10,206 million with O& M cost of Rs. 30 million
	The authority shall pay the total BPC to the concessionaire in two parts. 40% of the BPC shall be payable in 5 instalments during construction period and the remaining BPC of 60% will be payable in 30 biannual instalments after 180 days from Completion date of the project.
	Concession period comprises of 2 years of construction period and operation of 15 years commencing from Completion Date starting from the appointed date i.e. March 01, 2019.
	In terms of the SCA , the Company is obligated to carry out overlay of the roads at the end of specified periods.
	The project has achieved partial completion certificate on May 30, 2021
	Infrastructure return at the end of project concession period ending on May 29, 2036
	Remaining concession period of rights under SCA as at March 31, 2026 is 10 years 1 month 29 days

SPPL

Shankarampet Projects Private Limited is formed as a special purpose vehicle (SPV) to implement a road project envisaging Four Laning of NH-161 from Ramsanpalee village (Design Km 39.980/Existing Km 44.757) to Mangloor village (Design Km 86.788/Existing Km 91.350) (Design length = 46.808 Km) in the state of Telangana under Bharatmala Pariyojana on Hybrid Annuity Mode.	Bid Project Cost of the project is Rs. 8,230 million with O& M cost of Rs. 30 million
	The authority shall pay the total BPC to the concessionaire in two parts. 40% of the BPC shall be payable in 5 instalments during construction period and the remaining BPC of 60% will be payable in 30 biannual instalments after 180 days from Completion date of the project.
	Concession period comprises of 2 years of construction period and operation of 15 years commencing from Completion Date starting from the appointed date i.e. May 02, 2019
	In terms of the SCA , the Company is obligated to carry out overlay of the roads at the end of specified periods.
	The project has achieved partial completion certificate on October 05, 2021
	Infrastructure return at the end of project concession period ending on October 04, 2036
	Remaining concession period of rights under SCA as at March 31, 2026 is 10 years, 06 months and 04 days

MHPL

Mangloor Highways Private Limited is formed as a special purpose vehicle (SPV) to implement a road project envisaging Four Laning of NH- 161 from Mangloor Existing Km 91.350 to Telangana Maharashtra Border Existing Km 140.873 in the state of Telangana under Bharatmala Pariyojana on Hybrid Annuity mode	Bid Project Cost of the project is Rs. 9,360 million with O& M cost of Rs. 30 million
	The authority shall pay the total BPC to the concessionaire in two parts. 40% of the BPC shall be payable in 5 instalments during construction period and the remaining BPC of 60% will be payable in 30 biannual instalments after 180 days from Completion date of the project.
	Concession period comprises of 730 days of construction period and operation of 15 years commencing from Completion Date starting from the appointed date i.e. April 22, 2019.
	In terms of the SCA , the Company is obligated to carry out overlay of the roads at the end of specified periods.
	The project has achieved provisional completion on December 15, 2021.
	Infrastructure return at the end of project concession period ending on December 14, 2036
	Remaining concession period of rights under SCA as at March 31, 2026 is 10 years 08 months 14 days

52 Service Concession Arrangement

The details of service concession arrangements of all the SPVs are as follows:

MSHPL

DBL Mangalwedha Solapur Highways Private Limited is formed as a special purpose vehicle (SPV) for construction of road project envisaging four laning of Sangli- solapur (Package -IV: Mangalwedha to Solapur) Section of NH- 166 in the state of Maharashtra on Hybrid Annuity Mode	Bid Project Cost of the project is Rs. 11,410 million with O& M cost of Rs. 30 million
	The authority shall pay the total BPC to the concessionaire in two parts. 40% of the BPC shall be payable in 5 instalments during construction period and the remaining BPC of 60% will be payable in 30 biannual instalments after 180 days from Completion date of the project.
	Concession period comprises of 730 days of construction period and operation of 15 years commencing from Completion Date starting from the appointed date i.e. May 23 ,2019
	In terms of the SCA , the Company is obligated to carry out overlay of the roads at the end of specified periods.
	The project has achieved Provisional Completion on December 14, 2021
	Infrastructure return at the end of project concession period ending on December 13, 2036
	Remaining concession period of rights under SCA as at March 31, 2026 is 10 years 08 months 13 days

JUHPL

Project	Rehabilitation, strengthening and four laning of Jammu- Udhampur Section from KMs 15 to Kms 67 of NH-1A (now NH-44) on BOT (annuity) basis on DBFOT pattern, in the Union Territory of J&K
Nature of Asset	BOT (Annuity) Basis
Appointed date	June 17, 2011
Concession period	20 Years
Commercial Operation Date ("COD")	May 31, 2018
End of Concession period	July 22, 2031
Remaining concession period of rights under SCA as at March 31, 2026	5 Years, 03 months and 22 days

QEPL

Project	16.268 (4 lane) Augmentation of the existing road from km 189.350 to km 204.700 including construction of two tunnels (2 lane) of 0.69 kms and 8.45 kms on the Quazigund-Banihal section of NH 1A on DBFOT (annuity) basis, in the Union Territory J&K
Nature of Asset	BOT (Annuity) Basis
Appointed date	June 05, 2011
Concession period	20 Years
Commercial Operation Date ("COD")	December 15, 2022
End of Concession period	June 05, 2031
Remaining concession period of rights under SCA as at March 31, 2026	5 Years, 02 months and 05 days

(i) Variation in concession period has been estimated by the management after considering contractual entitlement to variations in concession period on a case-to-case basis taking into account the provisions of the concession agreement of the respective SPVs, the facts and circumstances giving rise to such variations and the status of the approvals for each such variation. The Management has considered variation in concession period for the purpose of estimating amortization of Intangible Assets- Toll Road Carriageway, estimating fair value of net assets of SPVs and also for determination of recoverable amounts for Intangible Assets- Toll Road Carriageway of SPVs [Also, refer note 2(III)(d)(4)].

(ii) In respect of WVEPL, the SPV has invoked arbitration as per the terms of the SCA with respect to reduction of 1.5 years in the concession period by NHAI as against the claims lodged by the SPV with NHAI towards the extension of concession period on account of decrease in target traffic etc. Considering the terms of the Concession Agreement, traffic studies, workings and independent legal advice obtained, the Management is confident that the SPV will be able to succeed in arbitration and will get extension in concession period as claimed. Pending final outcome of the matter under arbitration, the Management has considered the extended concession period for purpose of preparation of these consolidated financial statements.

53 WVEPL has certain potential claims against various third parties inter alia including National Highway Authority of India, state transport authorities, insurance companies and also certain receivables for the period prior to March 31, 2019. The SPV has entered Claims Management Agreement dated January 9, 2020 as amended by the Amendment Agreement dated September 18, 2020 with KNR ("Agreement') wherein the SPV and KNR have commercially agreed that any monetary compensation received by the SPV pursuant to such claims shall be passed through to KNR, net of related costs and expenses, applicable taxes and adjustments as defined under the Agreement. No amounts have been received from third parties referred above and therefore, no adjustments have been made in these Consolidated Financial Statements for the same.

Disclosures pursuant to SEBI Master circular

Additional disclosures as required by paragraph 4 of chapter 3 to the SEBI Master Circular No. SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025

54 Project wise operating cash flows -For the year ended March 31, 2026

Particulars	WUPTPL	APEPL	JMTPL	MBEL	FRHPL	DATRPL	GAEPL	WVEPL	NDEPL	HTPL	JLTPL	JVTPL	KETPL	KMTPL
Profit/(loss) before tax	649.18	9.70	1,210.56	507.33	(986.41)	(504.45)	72.30	(207.17)	15.36	(296.69)	315.48	259.59	(601.14)	(697.70)
Depreciation and amortisation expense	735.06	0.19	423.00	216.47	562.30	1,248.45	853.81	250.33	315.76	341.13	204.34	131.60	206.26	344.46
Loss on sale/write-off of property, plant and equipment (net)	-	-	0.09	(0.64)	0.03	-	-	-	-	-	-	-	-	-
Net gain on sale of mutual funds	(32.31)	(8.97)	(18.43)	(22.44)	-	(13.34)	(29.04)	-	(5.27)	(9.37)	(7.95)	-	(7.76)	-
Net gain on investments measured at fair value through profit or loss	(9.87)	(0.64)	(3.61)	(6.68)	-	(0.13)	(5.15)	-	(0.25)	(1.67)	(1.02)	-	(0.31)	-
Liabilities no longer required written back	(38.23)	(0.35)	(0.16)	(0.59)	-	(2.08)	(2.14)	-	(2.64)	(0.13)	(0.48)	(0.59)	(1.23)	(2.25)
Interest income	(0.50)	(15.06)	-	(18.65)	-	(6.43)	-	-	-	(17.43)	(4.61)	(5.58)	(4.86)	-
Interest on income tax refund	-	(7.82)	(1.14)	-	(0.04)	(0.68)	-	-	(0.05)	-	(0.06)	-	-	(0.05)
Impairment loss allowance on financial assets (including write-offs)	-	-	-	-	1.62	-	-	-	-	-	-	-	-	0.26
Finance costs	64.94	223.44	102.14	131.46	2,408.91	3,845.37	2,693.37	743.12	379.97	1,357.96	476.90	283.91	975.34	1,161.02
Operating cash flows before working capital changes and other adjustments	**1,368.27**	**200.49**	**1,712.45**	**806.26**	**1,986.41**	**4,566.71**	**3,583.15**	**786.28**	**702.88**	**1,373.80**	**982.60**	**668.93**	**566.30**	**805.74**
Working capital changes and other adjustments:														
Decrease/(Increase) in inventories	(5.45)	1.53	(2.46)	2.13	(2.18)	(3.46)	1.49	(1.94)	(3.40)	(0.44)	(3.15)	(3.00)	1.73	(4.07)
Decrease/(Increase) in trade receivables	(42.84)	(1.01)	(19.80)	(4.67)	(1.75)	(41.99)	(151.01)	(2.80)	(13.70)	(14.11)	(5.73)	(1.72)	(14.75)	(4.21)
Decrease/(Increase) in financial assets and non financial assets	45.94	865.58	30.77	(0.47)	3.36	34.85	(19.03)	(2.43)	2.49	(28.76)	(1.63)	0.25	(9.32)	(1.17)
(Decrease)/Increase in trade payables	123.23	(14.87)	20.73	16.50	9.91	(4.08)	23.13	17.95	33.35	48.02	10.79	8.90	10.50	14.11
(Decrease)/Increase in provisions	(576.07)	5.30	297.22	99.07	186.45	766.82	271.76	115.10	242.79	4.21	2.96	0.24	127.63	173.55
(Decrease)/Increase in financial liabilities and non financial liabilities	(32.73)	(57.11)	10.35	4.20	1.79	2.37	(5.55)	1.79	3.75	(0.37)	0.69	2.04	2.42	1.21
Cash flow generated from operating activities post working capital changes	**880.35**	**999.91**	**2,049.26**	**923.02**	**2,183.99**	**5,321.22**	**3,703.94**	**913.95**	**968.16**	**1,382.35**	**986.53**	**675.64**	**684.51**	**985.16**
Income tax (paid)/ refund (net)	(16.43)	15.69	(238.61)	(94.15)	0.63	13.46	(3.83)	(0.30)	0.07	(4.13)	0.63	(0.59)	(1.02)	0.76
Net cash generated from operating activities	**863.92**	**1,015.60**	**1,810.65**	**828.87**	**2,184.62**	**5,334.68**	**3,700.11**	**913.65**	**968.23**	**1,378.22**	**987.16**	**675.05**	**683.49**	**985.92**

Project wise operating cash flows -For the year ended March 31, 2026

Particulars	LRTPL	MKTPL	NKTPL	SMTPL	SIPL	SPPL	THPL	BWHPL	MSHPL	MHPL	NAMEPL	QEPL	JHUPL
Profit/(loss) before tax	(68.83)	(35.77)	(755.92)	(563.71)	253.44	45.56	154.94	139.27	141.46	(74.91)	(1,157.61)	33.13	967.64
Depreciation and amortisation expense	173.35	322.48	257.13	208.57	1.40	0.92	1.06	1.11	1.24	1.20	601.31	3.72	3.62
Loss on sale/write-off of property, plant and equipment (net)	-	-	-	-	0.04	0.32	-	0.01	0.01	0.01	-	-	(0.80)
Net gain on sale of mutual funds	(7.43)	-	(13.53)	-	(7.70)	(16.56)	(15.72)	(15.92)	(8.65)	(13.44)	-	(68.65)	(50.72)
Net gain on investments measured at fair value through profit or loss	(1.32)	-	(0.56)	-	(0.73)	(1.92)	(1.05)	(0.49)	(1.47)	(1.41)	-	(5.03)	(13.69)
Liabilities no longer required written back	(5.57)	(1.84)	(1.89)	(1.17)	(0.11)	(0.09)	(0.30)	(0.06)	(0.47)	(1.55)	(4.63)	(2.11)	(2.99)
Interest income	(42.44)	(1.09)	(235.48)	(1.00)	-	(0.10)	(1.25)	-	(4.09)	-	(25.62)	(35.41)	(24.66)
Interest on income tax refund	(0.09)	(0.03)	-	(0.01)	-	-	-	-	-	-	-	(23.23)	(5.43)
Impairment loss allowance on financial assets (including write-off)	-	-	-	(0.20)	5.31	42.70	-	-	-	8.88	-	-	4.99
Allowance for doubtful advances	-	-	-	-		-	-	-	-	-	-	-	(4.05)
Advances and other balance written off	-	-	-	-		0.30	0.67	21.39	13.03	0.63	-	-	-
Finance costs	551.99	1,084.44	1,367.51	971.74	165.98	342.54	221.02	189.45	227.49	261.10	2,788.71	1,468.76	841.00
Operating cash flows before working capital changes and other adjustments	**599.66**	**1,368.19**	**617.26**	**614.22**	**417.63**	**413.67**	**359.37**	**334.76**	**368.55**	**180.51**	**2,202.16**	**1,371.18**	**1,714.91**
Working capital changes and other adjustments:													
Decrease/(Increase) in inventories	(1.39)	(1.50)	2.98	2.95	(3.85)	0.29	(0.82)	(0.32)	1.01	(1.87)	(20.19)	(5.95)	(6.14)
Decrease/(Increase) in trade receivables	(8.52)	(11.75)	(5.35)	(7.21)	24.64	(25.78)	0.11	85.78	64.71	7.32	(1.22)	(441.00)	0.95
Decrease/(Increase) in financial assets and non financial assets	0.43	(0.76)	5.05	0.37	406.62	507.14	788.40	410.43	441.30	437.30	(79.82)	3,072.83	(66.16)
(Decrease)/Increase in trade payables	6.30	45.22	21.69	18.96	15.15	13.95	11.38	11.33	7.03	(4.73)	91.01	89.43	8.93
(Decrease)/Increase in provisions	2.76	123.02	123.35	127.82	0.31	4.33	0.22	-	1.62	(0.10)	204.57	0.46	0.51
(Decrease)/Increase in financial liabilities and non financial liabilities	(0.18)	2.60	1.17	2.31	2.20	2.66	(0.04)	(31.06)	1.38	(1.00)	7.52	25.00	(262.48)
Cash flow generated from operating activities post working capital changes	**599.06**	**1,525.02**	**766.15**	**759.42**	**862.70**	**916.26**	**1,158.62**	**810.92**	**885.60**	**617.43**	**2,404.03**	**4,111.95**	**1,390.52**
Income tax (paid)/ refund (net)	(2.93)	0.16	(24.10)	(0.12)	(52.16)	(75.01)	(142.41)	(58.61)	(66.10)	(55.50)	(0.86)	57.79	54.93
Net cash generated from/(used in) operating activities	**596.13**	**1,525.18**	**742.05**	**759.30**	**810.54**	**841.25**	**1,016.21**	**752.31**	**819.50**	**561.93**	**2,403.17**	**4,169.74**	**1,445.45**

Cube Highways Trust
Notes forming part of Consolidated Financial Statements for the year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

Disclosures pursuant to SEBI Master circular

Additional disclosures as required by paragraph 4 of chapter 3 to the SEBI Master Circular No. SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025

Project wise operating cash flows -For the year ended March 31, 2025

Particulars	WUPTPL	APEPL	JMTPL	MBEL	FRHPL	DATRPL	GAEPL	WVEPL	NDEPL	HTPL	JLTPL	JVTPL	KETPL
Profit/(loss) before tax	155.91	184.16	1,383.62	412.31	(759.87)	(311.52)	(493.36)	(233.06)	(23.00)	(552.39)	172.10	172.65	(694.58)
Depreciation and amortisation expense	837.04	0.33	395.70	195.24	561.67	1,245.03	715.93	250.19	313.65	341.18	205.11	130.09	206.33
Loss/(profit) on sale/write-off of property, plant and equipment (net)	-	-	0.12	(0.52)	-	0.43	0.07	(0.58)	-	-	-	-	-
Net gain on sale of mutual funds	(28.01)	(35.51)	(18.55)	(47.31)	(21.06)	(33.69)	(74.39)	(7.27)	(15.16)	(36.12)	(24.86)	(24.43)	(11.73)
Liabilities no longer required written back	(3.21)	(0.34)	(4.64)	(0.83)	(2.59)	(3.89)	(0.78)	(3.35)	(3.77)	(1.66)	(0.95)	(1.12)	(2.16)
Interest income	(6.67)	(25.13)	-	(3.73)	-	(3.75)	(20.54)	-	-	(2.58)	(0.52)	(1.02)	(0.49)
Interest on income tax refund	-	(1.13)	-	-	(0.39)	(6.71)	(0.48)	(0.07)	(0.21)	(0.02)	(0.01)	0.06	(0.01)
Impairment loss allowance on financial assets (including write-offs)	1.51	-	-	-	1.75	-	15.30	-	-	0.06	0.06	-	-
Allowance for doubtful advances	2.18	-	-	-	1.07	0.05		0.15	0.25	0.04	0.35	0.32	1.23
Finance costs	164.26	332.37	194.12	233.39	2,095.03	3,591.40	2,717.45	722.84	473.29	1,434.56	542.49	328.03	899.57
Operating cash flows before working capital changes and other adjustments	**1,123.01**	**454.75**	**1,950.37**	**788.55**	**1,875.61**	**4,477.35**	**2,859.20**	**728.85**	**745.05**	**1,183.07**	**893.77**	**604.58**	**398.16**
Working capital changes and other adjustments:													
Decrease/(Increase) in inventories	(2.07)	1.97	10.81	6.47	(2.50)	(15.77)	(12.95)	(1.90)	4.08	(0.97)	(2.15)	(2.26)	(2.96)
Decrease/(Increase) in trade receivables	(3.00)	2.61	1.30	(1.86)	(10.40)	18.90	2.32	(0.83)	(0.15)	0.55	0.60	(1.11)	(1.26)
Decrease/(Increase) in financial assets and non financial assets	18.04	(467.05)	14.22	20.60	23.76	63.17	18.85	3.22	7.62	(10.22)	13.03	9.39	1.05
(Decrease)/Increase in trade payables	(5.22)	26.04	(6.80)	(45.55)	19.24	(38.21)	84.39	12.10	(4.51)	1.49	2.63	(0.02)	0.20
(Decrease)/Increase in provisions	257.18	0.57	(369.42)	(26.54)	170.03	520.47	197.79	85.62	126.80	0.35	0.52	0.31	100.93
(Decrease)/Increase in financial liabilities and non financial liabilities	(286.79)	(12.09)	4.30	(8.69)	(12.47)	(4.30)	(46.90)	(0.28)	(0.33)	0.47	(0.10)	(0.27)	(0.39)
Cash flow generated from operating activities post working capital changes	**1,101.15**	**6.80**	**1,604.78**	**732.98**	**2,063.27**	**5,021.61**	**3,102.70**	**826.78**	**878.56**	**1,174.74**	**908.30**	**610.62**	**495.73**
Income tax (paid)/ refund (net)	(30.51)	34.81	(242.23)	(75.91)	19.27	75.82	4.70	1.31	4.07	(0.58)	(0.93)	(0.97)	0.01
Net cash generated from operating activities	**1,070.64**	**41.61**	**1,362.55**	**657.07**	**2,082.54**	**5,097.43**	**3,107.40**	**828.09**	**882.63**	**1,174.16**	**907.37**	**609.65**	**495.74**

Project wise operating cash flows -For the year ended March 31, 2025

Particulars	KMTPL	LRTPL	MKTPL	NKTPL	SMTPL	SIPL	SPPL	THPL	BWHPL	MSHPL	MHPL	NAMEPL
Profit/(loss) before tax	(660.62)	(96.49)	(522.23)	(939.09)	(654.68)	165.11	72.30	179.51	(6.11)	(17.71)	(68.50)	(159.22)
											-	
Depreciation and amortisation expense	343.34	171.12	322.35	248.08	208.96	1.01	0.68	0.66	0.84	0.95	0.56	74.42
Net gain on sale of mutual funds	(13.45)	(40.05)	(8.93)	(52.34)	(6.07)	(25.56)	(23.31)	(71.50)	(11.24)	(12.94)	(14.55)	(15.39)
Liabilities no longer required written back	(9.08)	(1.13)	(4.74)	(4.36)	(4.06)	(2.74)	(4.87)	(4.83)	(4.72)	(3.62)	(1.60)	-
Interest income	0.00	(7.88)	-	(237.34)	0.00	(9.53)	(13.87)	(20.08)	(14.76)	(9.99)	1.20	(23.27)
Interest on income tax refund	(0.02)	(0.02)	(0.02)	(1.04)	(0.01)	(0.64)	(7.46)	(0.85)	(5.28)	(3.58)	(3.04)	-
Impairment loss allowance on financial assets (including write-offs)	0.06	0.27	-	-	-	1.15	3.20	0.86	1.28	0.69	1.22	-
Allowance for doubtful advances	2.17	0.44	1.74	0.09	1.41	-	-	-	0.29	0.28	0.25	-
Finance costs	1,088.51	553.21	1,027.88	1,360.91	904.54	248.99	365.90	376.31	218.57	271.44	290.50	353.29
Gain on extinguishment of optionally convertible debentures						-	-	-	-	-	-	-
Operating cash flows before working capital changes and other adjustments	**750.91**	**579.47**	**816.05**	**374.91**	**450.09**	**377.79**	**392.57**	**460.08**	**178.87**	**225.52**	**206.04**	**229.83**
Working capital changes and other adjustments:												
Decrease/(Increase) in inventories	(6.83)	(2.14)	(2.02)	(3.20)	(1.65)	(9.55)	(1.46)	(3.48)	(1.40)	2.48	4.73	(2.74)
Decrease/(Increase) in trade receivables	0.13	0.36	(1.63)	(3.98)	(2.75)	471.56	(11.47)	1.78	-	101.42	(0.54)	3.07
Decrease/(Increase) in financial assets and non financial assets	9.90	19.17	6.88	1.34	4.65	132.98	92.35	135.28	661.07	689.98	557.94	4.27
(Decrease)/Increase in trade payables	(13.81)	5.29	(1.77)	(9.61)	(0.73)	15.78	30.46	41.37	8.95	(4.98)	20.94	42.46
(Decrease)/Increase in provisions	142.52	0.50	92.10	96.55	98.70	0.12	0.68	(0.17)	0.09	0.12	0.06	80.30
(Decrease)/Increase in financial liabilities and non financial liabilities	(1.87)	1.32	(0.22)	(0.90)	(2.58)	(1.07)	(3.81)	(144.12)	79.22	0.17	1.45	(18.28)
Cash flow generated from operating activities post working capital changes	**880.95**	**603.98**	**909.39**	**455.11**	**545.73**	**987.61**	**499.32**	**490.74**	**926.80**	**1,014.71**	**790.62**	**338.91**
Income tax (paid)/ refund (net)	(0.57)	(1.30)	-	(1.24)	(0.03)	(21.42)	96.45	14.16	44.32	4.68	6.32	(9.94)
Net cash generated from operating activities	**880.38**	**602.67**	**909.39**	**453.87**	**545.70**	**966.19**	**595.77**	**504.90**	**971.12**	**1,019.39**	**796.94**	**328.97**

This space has been intentionally left blank

Cube Highways Trust
Notes forming part of Consolidated Financial Statements for the year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

Disclosures pursuant to SEBI Master circular

Additional disclosures as required by paragraph 4 of chapter 3 to the SEBI Master Circular No. SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025

Project wise operating cash flows -For the year ended March 31, 2024

Particulars	**WUPTPL**	**APEPL**	**JMTPL**	**MBEL**	**FRHPL**	**DATRPL**	**GAEPL**	**WVEPL**	**NDEPL**
Profit/(loss) before tax	142.13	(74.64)	1,236.41	206.84	(843.14)	(521.09)	(269.72)	(127.63)	(26.29)
	-	-	-	-	-	-	-	-	-
Depreciation and amortisation expense	792.93	0.62	349.10	170.95	538.49	1,196.04	567.89	239.84	300.42
Loss/(profit) on sale/write-off of property, plant and equipment (net)	0.24	0.03	0.46	0.29	0.20	0.13	0.36	-	-
Net gain on sale of mutual funds	(42.30)	(5.55)	(39.75)	(25.25)	(65.14)	(89.75)	(133.50)	(15.65)	(38.11)
Net gain on investments measured at fair value through profit or loss	(6.45)	(22.64)	(2.51)	(14.97)	(9.71)	(20.92)	3.28	0.29	1.15
Liabilities no longer required written back	(0.56)	(5.82)	(3.06)	(5.32)	(3.15)	(10.99)	(36.15)	(1.58)	(10.72)
Impairment loss allowance on financial assets (including write-off)	5.21	-	3.79	22.32	-	-	23.89	1.81	0.03
Interest income	(18.04)	(63.65)	(1.71)	(25.00)	(2.59)	(2.96)	(55.99)	(0.83)	(6.56)
Interest on income tax refund	(1.25)	-	-	-	(5.62)	-	(0.16)	(0.27)	(0.02)
Finance costs	298.69	340.34	220.50	292.73	2,112.75	3,391.69	2,289.86	669.70	486.58
Operating cash flows before working capital changes and other adjustments	**1,170.60**	**168.69**	**1,763.23**	**622.59**	**1,722.09**	**3,942.15**	**2,389.76**	**765.68**	**706.48**
Working capital changes and other adjustments:									
Decrease/(Increase) in inventories	(5.43)	(6.66)	(1.97)	(20.40)	(17.30)	2.47	41.55	1.91	(7.54)
Decrease/(Increase) in trade receivables	1.06	123.38	3.86	3.64	2.31	22.76	(25.31)	6.01	6.37
Decrease/(Increase) in financial assets and non financial assets	(28.48)	907.18	41.92	90.61	8.61	63.86	415.52	26.94	29.65
(Decrease)/Increase in trade payables	24.38	(85.18)	(140.85)	70.71	(73.69)	(83.02)	(59.37)	28.27	(49.16)
(Decrease)/Increase in provisions	172.45	0.64	(23.31)	(361.00)	143.34	317.99	(692.82)	(15.95)	13.56
(Decrease)/Increase in financial liabilities and non financial liabilities	(7.07)	6.74	4.28	10.37	(14.38)	(50.69)	31.72	(12.43)	(7.75)
Cash flow generated from operating activities post working capital changes	**1,327.51**	**1,114.79**	**1,647.16**	**416.52**	**1,770.98**	**4,215.52**	**2,101.05**	**800.43**	**691.61**
Income tax (paid)/ refund (net)	19.73	(15.50)	(212.03)	(18.88)	(7.93)	(40.19)	(6.73)	(27.99)	(3.30)
Net cash generated from operating activities	**1,347.24**	**1,099.29**	**1,435.13**	**397.64**	**1,763.05**	**4,175.33**	**2,094.32**	**772.44**	**688.31**

Project wise operating cash flows -For the year ended March 31, 2024

Particulars	**HTPL**	**JLTPL**	**JVTPL**	**KETPL**	**KMTPL**	**LRTPL**	**MKTPL**	**NKTPL**	**SMTPL**
Profit/(loss) before tax	(568.69)	41.03	76.78	(604.08)	(666.34)	(141.44)	(566.96)	(790.66)	(593.91)
	-	-	-	-	-	-	-	-	-
Depreciation and amortisation expense	327.14	196.84	125.55	199.77	326.90	163.12	308.80	243.58	200.13
Loss on disposal of property, plant and equipment	-	-	-	0.00	0.13	0.08	-	-	-
Net gain on sale of mutual funds	(24.52)	(22.53)	(17.22)	(15.65)	(32.51)	(19.68)	(21.17)	(7.23)	(5.88)
Net gain on investments measured at fair value through profit or loss	(27.26)	(53.23)	(43.67)	(7.17)	(30.89)	(30.25)	(5.41)	(22.59)	(1.89)
Liabilities no longer required written back	(0.10)	(0.53)	(0.13)	(0.05)	(0.47)	(0.15)	(0.05)	(0.09)	(0.08)
Impairment loss allowance on financial assets (including write-off)	0.01	-	0.01	0.48	-	-	0.69	0.43	1.07
Interest income	(1.61)	(1.17)	(0.55)	(0.47)	(1.04)	(2.47)	(0.90)	(228.36)	(0.44)
Interest on income tax refund	(0.16)	(0.15)	(0.12)	(0.06)	(0.15)	(0.15)	(0.07)	(0.07)	(0.03)
Finance costs	1,216.82	613.64	380.61	809.64	1,049.44	521.69	1,025.86	1,156.87	799.21
Operating cash flows before working capital changes and other adjustments	**921.63**	**773.90**	**521.26**	**382.41**	**645.07**	**490.75**	**740.79**	**351.88**	**398.18**
Working capital changes and other adjustments:									
Decrease/(Increase) in inventories	(1.00)	(3.25)	(3.70)	(10.63)	(4.60)	(5.77)	(8.90)	(9.81)	(10.77)
Decrease/(Increase) in trade receivables	1.61	2.22	1.61	(1.81)	8.91	1.40	(2.60)	(1.90)	(2.38)
Decrease/(Increase) in financial assets and non financial assets	0.19	21.38	0.60	6.10	4.44	(6.48)	5.17	(0.92)	(0.60)
(Decrease)/Increase in trade payables	5.22	(2.04)	1.23	11.61	6.56	2.69	(3.08)	19.71	12.27
(Decrease)/Increase in provisions	(4.97)	(0.74)	(0.85)	88.10	119.88	(9.85)	85.20	82.56	84.23
(Decrease)/Increase in financial liabilities and non financial liabilities	(13.01)	(7.82)	(3.73)	(10.71)	(14.97)	(4.57)	(10.59)	(12.78)	(9.39)
Cash flow generated from operating activities post working capital changes	**909.67**	**783.65**	**516.42**	**465.07**	**765.29**	**468.17**	**805.99**	**428.74**	**471.54**
Income tax (paid)/ refund (net)	3.73	2.95	2.51	1.25	3.47	2.31	1.38	(21.29)	0.72
Net cash generated from operating activities	**913.40**	**786.60**	**518.93**	**466.32**	**768.76**	**470.48**	**807.37**	**407.45**	**472.26**

This space has been intentionally left blank

Cube Highways Trust
Notes forming part of Consolidated Financial Statements for the year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

Disclosures pursuant to SEBI Master circular
Additional disclosures as required by paragraph 4 of chapter 3 to the SEBI Master Circular No. SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025

55 Capitalisation statement

Particulars	Pre-issue as at March 31, 2026	As adjusted for offer
Debt:		
Non-current borrowings (Refer note 21)	1,71,353.74	
Current borrowings (Refer note 25)	5,293.39	
Interest accrued on borrowings (Refer note 27)	174.79	
Total adjusted debt (A)	**1,76,821.92**	Corresponding details post offer of units are not available, hence the required disclosure in respect of the same have not been provided and will be determined on finalisation of offer price.
Equity:		
Unit Capital (Refer note 19)	1,34,396.03	
Other equity and Distribution-Repayment of Capital (Refer note 20A & 20B)	(36,569.15)	
Total equity attributable to Unitholders (B)	**97,826.88**	
Debt equity ratio [A/B]	**1.81**	

56 Debt payment history

Particulars	For the year ended March 31, 2026					For the year ended March 31, 2025				For the year ended March 31, 2024			
	Term loans	Non Convertible Debentures	Other long term borrowings	Commercial Papers	Total	Term loans	Non Convertible Debentures	Other long term borrowings	Total	Term loans	Non Convertible Debentures and Optionally Convertible Debentures	Other long term borrowings	Total
Carrying amount of debt at the beginning of the year	**1,19,035.52**	**31,960.34**	**150.99**	**-**	**1,51,146.85**	**95,119.30**	**12,082.44**	**150.99**	**1,07,352.73**	**-**	**-**	**-**	**-**
Cash adjustments:													
Addition on account of acquisition	28,508.40	2,346.87	-	-	**30,855.27**	10,966.86	28,271.26	-	**39,238.12**	64,115.33	68,359.81	419.28	**1,32,894.42**
Additional borrowings during the year	28,370.00	19,720.00	-	13,292.87	**61,382.87**	27,710.00	21,080.00	-	**48,790.00**	98,500.00	10,300.00	-	**1,08,800.00**
Repayments during the year	(44,017.89)	(9,502.90)	-	(13,292.87)	**(66,813.66)**	(14,657.02)	(29,437.21)	-	**(44,094.23)**	(66,973.38)	(66,554.85)	(270.00)	**(1,33,798.23)**
Processing fees Paid	(106.67)	(35.46)	-	-	**(142.13)**	(163.29)	(45.07)	-	**(208.36)**	(609.02)	(28.98)	-	**(638.00)**
Other adjustments:													
Non-cash adjustment:													
- Unwinding of interest	200.85	17.08	-	-	**217.93**	59.67	8.92	-	**68.59**	86.37	6.46	1.71	**94.54**
- Others	-	-	-	-	**-**	-	-	-	**-**	-	-	-	**-**
Carrying amount of debt at the end of year	**1,31,990.21**	**44,505.93**	**150.99**	**-**	**1,76,647.13**	**1,19,035.52**	**31,960.34**	**150.99**	**1,51,146.85**	**95,119.30**	**12,082.44**	**150.99**	**1,07,352.73**
Interest paid (including capitalised) during the year					**(14,407.68)**				**(11,593.73)**				**(16,683.62)**

Reconciliation of borrowings and debt repayment history

Particulars	As at March 31, 2026	As at March 31, 2025	As at March 31, 2024
Long Term Borrowings	1,71,353.74	1,46,296.27	1,02,630.24
Short Term Borrowings	5,293.39	4,850.58	4,722.49
Total Borrowings	**1,76,647.13**	**1,51,146.85**	**1,07,352.73**

Disclosures pursuant to SEBI Master circular
Disclosures as required by chapter 4 to the SEBI Master Circular No. SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025

57 Consolidated Statement of Net Assets at Fair Value

As at March 31, 2026

Particulars	Book value	Fair value
A. Assets	2,93,984.70	3,78,024.37
B. Liabilities of Consolidated Trust Group[3]	1,96,155.52	1,82,093.67
C. Net assets (A-B)	**97,829.18**	**1,95,930.70**
D. Less: Non-controlling interests	2.30	0.94
E. Net Assets attributable to unitholders of the Trust (C-D)	**97,826.88**	**1,95,929.76**
F. Number of Ordinary units	1,344.07	1,344.07
G. Net Asset Value ("NAV") (E/F) (Rs.)	**72.78**	**145.77**

As at March 31, 2025

Particulars	Book value	Fair value
A. Assets	2,80,001.55	3,33,121.06
B. Liabilities of Consolidated Trust Group[3]	1,65,627.00	1,54,545.71
C. Net assets (A-B)	**1,14,374.55**	**1,78,575.35**
D. Less: Non-controlling interests	0.66	1.62
E. Net Assets attributable to unitholders of the Trust (C-D)	**1,14,373.89**	**1,78,573.73**
F. Number of Ordinary units	1,334.45	1,334.45
G. Net Asset Value ("NAV") (E/F) (Rs.)	**85.71**	**133.82**
H. Number of Ordinary units	1,334.45	1,334.45
Add: Estimated Subordinate units to be reclassified to Ordinary units [2(i)]	9.62	9.62
Total Number of Ordinary and estimated reclassified Subordinate units	1,344.07	1,344.07
I. NAV (including subordinate units) [E/H] (Rs.)	**85.10**	**132.86**

As at March 31, 2024

Particulars	Book value	Fair value
A. Assets	2,46,257.52	2,78,221.03
B. Liabilities of Consolidated Trust Group[3]	1,16,767.61	1,08,161.43
C. Net assets (A-B)	**1,29,489.91**	**1,70,059.60**
D. Less: Non-controlling interests	0.53	1.75
E. Net Assets attributable to unit holders of the Trust (C-D)	**1,29,489.38**	**1,70,057.85**
F. Number of Ordinary units	1,290.35	1,290.35
G. Net Asset Value ("NAV") (E/F) (Rs.)	**100.35**	**131.79**
H. Number of Ordinary units	1,290.35	1,290.35
Add: Estimated Subordinate units to be reclassified to Ordinary units [2(ii)]	52.50	52.50
Total Number of Ordinary and estimated reclassified Subordinate units	1,342.85	1,342.85
I. NAV (including subordinate units) [E/H] (Rs.)	**96.43**	**126.64**

Notes:

1 The above Consolidated Statement of Net Assets at Fair Value (NAV) is prepared and calculated in accordance with SEBI (Infrastructure Investment Trusts) Regulations, 2014 and the Circulars issued there under. The Trust's projected expenses have not been considered for calculating the fair value of assets at the Trust and NAV.

2 (i) Estimated reclassification of Subordinate Units to Ordinary units on achievement of actual performance matrix in respect of JMTPL and MBEL (as per entitlement Event B as defined in note 19).

(ii) Estimated reclassification of Subordinate Units to Ordinary Units on achievement of actual performance matrix in respect of DATRPL (Entitlement Event A as per terms defined in note 19) and projected achievable actual performance matrix in respect of JMTPL and MBEL (Entitlement Event B as per terms defined in note 19).

3 Fair values of assets of subsidiaries/SPVs are calculated based on their independent fair value done by the expert appointed by the Trust under SEBI (Infrastructure Investments Trust) Regulations, 2014, as amended and after making necessary adjustments to arrive at fair value of all assets. Fair value of liabilities is different from book value of liabilities on account of exclusion of liabilities which have already been considered by the valuer while computing the fair value of assets. Refer Annexure A for adjustments made to the valuation arrived by the independent valuer to compute the fair value of assets presented in the Consolidated Statement of Net Assets at Fair Value.

4 The key assumptions used as inputs for the calculation of Enterprise Value and fair value include determination of future cash flows, traffic estimates, assessment of the variation in concession period in certain subsidiaries, considering target traffic/ target revenue subject to approvals from the authorities, revenue growth rate, discount rates, inflation rates and other economic factors.

During the year ended March 31, 2026, NHAI, vide its Policy Circular dated September 13, 2025, revised the Wholesale Price Index (WPI) linking factor from 1.641 to 1.561, resulting in a reduction of around 3–5% in base toll rates. The said Circular was challenged before the High Court of Delhi by various parties (including the Highway Operators Association of India) by filing Writ petitions (Civil) and Civil Miscellaneous Applications.

The Hon'ble High Court of Delhi, vide order dated October 17, 2025, has directed that the aforesaid Policy/ Circular dated 13.09.2025 be kept in abeyance. The matter is to be re-examined by the NHAI within a fixed timeline, after considering the representations and submissions of stakeholders, and a reasoned order is to be passed thereafter, taking into account all relevant aspects of the matter.

As of the reporting date, the Enterprise Value, as determined by the independent valuer, has been computed using the WPI linking factor of 1.641.

Disclosures pursuant to SEBI Master circular
Disclosures as required by chapter 4 to the SEBI Master Circular No. SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025

57 Consolidated Statement of Net Assets at Fair Value (Contd.)

Annexure A: Adjustments made to the valuation arrived at by the independent valuer to compute the fair value of assets

As at March 31, 2026

SPVs	Enterprise Value as given by Independent valuer	Liabilities *	Fair value of assets
	A	B	A+B
JUHPL	12,239.56	1,514.43	13,753.99
APEPL	815.59	546.01	1,361.60
BWHPL	3,216.01	545.97	3,761.98
DATRPL	77,786.20	330.56	78,116.76
FRHPL	26,470.79	168.49	26,639.28
GAEPL	38,838.97	112.70	38,951.67
HTPL	20,155.92	120.35	20,276.27
JLTPL	12,951.00	321.53	13,272.53
JMTPL	7,340.97	90.26	7,431.23
JVTPL	8,014.12	369.59	8,383.71
KETPL	10,784.58	80.98	10,865.56
KMTPL	13,991.52	83.35	14,074.87
LRTPL	8,546.26	40.32	8,586.58
MBEL	4,118.85	83.28	4,202.13
MHPL	2,746.61	6.94	2,753.55
MKTPL	16,608.25	154.21	16,762.46
MSHPL	3,733.22	65.49	3,798.71
NAMEL	27,665.92	2,040.22	29,706.14
NDEPL	4,667.25	54.89	4,722.14
NKTPL	14,254.81	591.86	14,846.67
QEPL	19,251.23	138.19	19,389.44
SIPL	3,465.57	220.70	3,686.27
SMTPL	11,778.47	134.37	11,912.84
SPPL	4,196.88	188.99	4,385.87
THPL	4,700.95	189.65	4,890.60
TRUST Standalone	-	1,273.09	1,273.09
WUPTPL	977.25	71.25	1,048.50
WVEPL	9,100.82	69.13	9,169.95
Total	**3,68,417.57**	**9,606.80**	**3,78,024.37**

As at March 31, 2025

SPVs	Enterprise Value as given by Independent valuer	Liabilities *	Fair value of assets
	A	B	A+B
APEPL	1,315.71	1,342.83	2,658.54
BWHPL	3,579.87	822.50	4,402.37
DATRPL	74,916.86	135.46	75,052.32
FRHPL	26,853.11	129.42	26,982.53
GAEPL	32,781.86	542.99	33,324.85
HTPL	18,223.96	291.41	18,515.37
JLTPL	12,260.61	350.97	12,611.58
JMTPL	9,493.15	549.06	10,042.21
JVTPL	7,738.00	334.83	8,072.83
KETPL	9,526.96	154.76	9,681.72
KMTPL	13,261.16	111.85	13,373.01
LRTPL	7,709.62	293.31	8,002.93
MBEL	4,319.70	708.50	5,028.20
MHPL	2,939.71	468.87	3,408.58
MKTPL	14,168.25	(64.85)	14,103.40
MSHPL	4,207.50	212.90	4,420.40
NAMEL	27,676.30	1,914.93	29,591.23
NDEPL	5,076.11	60.71	5,136.82
NKTPL	12,913.44	1,137.08	14,050.52
SIPL	4,011.89	357.52	4,369.41
SMTPL	10,344.93	101.46	10,446.39
SPPL	4,432.32	443.47	4,875.79
THPL	5,330.37	453.63	5,784.00
TRUST Standalone	-	(898.64)	(898.64)
WUPTPL	165.39	467.90	633.29
WVEPL	9,410.37	41.04	9,451.41
Total	**3,22,657.15**	**10,463.91**	**3,33,121.06**

As at March 31, 2024

SPVs	Enterprise Value as given by Independent valuer	Liabilities *	Fair value of assets
	A	B	A+B
APEPL	1,014.00	1,972.13	2,986.13
DATRPL	73,155.00	840.50	73,995.50
FRHPL	26,570.00	806.66	27,376.66
GAEPL	29,946.00	2,352.55	32,298.55
HTPL	16,703.00	688.91	17,391.91
JLTPL	11,648.00	1,207.85	12,855.85
JMTPL	10,046.00	510.63	10,556.63
JVTPL	7,269.00	994.31	8,263.31
KETPL	8,289.00	208.85	8,497.85
KMTPL	13,139.00	693.65	13,832.65
LRTPL	7,652.00	739.27	8,391.27
MBEL	4,429.00	1,049.23	5,478.23
MKTPL	13,640.00	175.96	13,815.96
NDEPL	5,329.00	743.98	6,072.98
NKTPL	9,076.00	3,683.15	12,759.15
SMTPL	9,329.00	103.38	9,432.38
TRUST Standalone	-	2,308.91	2,308.91
WUPTPL	1,370.00	942.36	2,312.36
WVEPL	9,502.00	92.75	9,594.75
Total	**2,58,106.00**	**20,115.03**	**2,78,221.03**

*Excludes borrowings (net of Cash and Cash Equivalents) and liabilities already considered by Independent Valuer for calculation of Enterprise Value.

Disclosures pursuant to SEBI Master circular

Disclosures as required by chapter 4 to the SEBI Master Circular No. SEBI/HO/DDHS-PoD-2/P/CIR/2025/102 dated July 11, 2025

58 Consolidated Statement of Total Returns at Fair Value

Particulars	For the year ended		
	March 31, 2026	**March 31, 2025**	**March 31, 2024**
Total comprehensive income/(loss) for the year (as per the Consolidated Statement of Profit and Loss)	2,168.35	(356.65)	(7,058.70)
Add/Less: Other changes in fair value not recognized in Total Comprehensive Income[(i)]	33,900.73	23,631.12	40,569.69
Total returns at fair value	**36,069.08**	**23,274.47**	**33,510.99**

Note:

(i) Computed based on difference in fair value (based on the valuation done by independent valuer appointed by the Trust) and book value of net assets as at March 31, 2026, March 31, 2025, and March 31, 2024.

CUBE HIGHWAYS TRUST
Notes forming part of Consolidated Financial Statements for the year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

59 Additional information pursuant to paragraph 12.3 of Division II of Schedule III to the Companies Act, 2013 - 'General instructions for the preparation of consolidated financial statements of Division II of Schedule III.

As at and for the year ended March 31, 2026

Name of entity in the group	Net Assets (total Assets minus total liabilities)		Share in Profit or (loss)		Share in other comprehensive income/(loss)		Share in total comprehensive income/(loss)	
	As a % of consolidated net assets	Amount	As a % of consolidated net profit or (loss)	Amount	As a % of consolidated other comprehensive income	Amount	As a % of consolidated Total comprehensive income	Amount
Parent								
Cube Highways Trust	133.68%	1,30,778.14	656.57%	14,228.86	-	-	656.21%	14,228.86
Subsidiaries								
Indian								
WUPTPL	0.94%	924.28	29.50%	639.38	2.24%	0.03	29.49%	639.41
APEPL	(0.43%)	(424.93)	0.45%	9.66	(11.20%)	(0.14)	0.44%	9.52
JMTPL	2.57%	2,518.21	37.66%	816.11	11.62%	0.14	37.64%	816.25
MBEL	1.05%	1,023.37	25.14%	544.76	33.45%	0.40	25.14%	545.16
FRHPL	(7.85%)	(7,680.66)	(45.52%)	(986.41)	(12.37%)	(0.15)	(45.50%)	(986.56)
DATRPL	(4.32%)	(4,224.62)	(23.27%)	(504.37)	20.82%	0.25	(23.25%)	(504.12)
GAEPL	2.26%	2,212.10	3.34%	72.30	11.70%	0.14	3.34%	72.44
WVEPL	(2.37%)	(2,316.39)	(9.56%)	(207.16)	2.57%	0.03	(9.55%)	(207.13)
NDEPL	(0.74%)	(726.31)	0.71%	15.38	4.90%	0.06	0.71%	15.44
HTPL	(1.76%)	(1,717.88)	(13.69%)	(296.67)	4.65%	0.06	(13.68%)	(296.61)
JLTPL	0.65%	633.15	10.88%	235.86	(11.87%)	(0.14)	10.87%	235.72
JVTPL	0.50%	492.78	8.94%	193.77	4.48%	0.05	8.94%	193.82
KETPL	(2.19%)	(2,137.65)	(27.74%)	(601.14)	1.41%	0.02	(27.72%)	(601.12)
KMTPL	(1.89%)	(1,849.03)	(32.20%)	(697.71)	(2.99%)	(0.04)	(32.18%)	(697.75)
LRTPL	0.21%	207.23	(3.18%)	(68.83)	0.83%	0.01	(3.17%)	(68.82)
MKTPL	(1.16%)	(1,139.70)	(1.65%)	(35.74)	8.05%	0.10	(1.64%)	(35.64)
NKTPL	(2.87%)	(2,809.38)	(34.88%)	(755.92)	(1.08%)	(0.01)	(34.86%)	(755.93)
SMTPL	(2.08%)	(2,034.45)	(26.01%)	(563.72)	(2.41%)	(0.03)	(26.00%)	(563.75)
SIPL	0.74%	728.68	8.71%	188.86	3.65%	0.04	8.71%	188.90
SPPL	0.55%	535.23	1.54%	33.34	4.65%	0.06	1.54%	33.40
THPL	1.02%	1,001.11	5.26%	114.07	(0.58%)	(0.01)	5.26%	114.06
BWHPL	0.47%	461.31	4.74%	102.68	(0.91%)	(0.01)	4.73%	102.66
MSHPL	0.44%	435.19	4.86%	105.29	(0.17%)	(0.00)	4.86%	105.29
MHPL	(0.02%)	(20.36)	(2.60%)	(56.42)	0.58%	0.01	(2.60%)	(56.41)
NAMEPL	(5.08%)	(4,972.26)	(58.57%)	(1,269.35)	8.05%	0.10	(58.54%)	(1,269.25)
JUHPL	3.24%	3,170.93	33.11%	717.63	5.81%	0.07	33.10%	717.70
QEPL	4.77%	4,666.10	1.53%	33.13	14.11%	0.17	1.54%	33.30
Non controlling Interest	0.00%	2.30	0.08%	1.64	-	-	0.08%	1.64
Intra Group Eliminations	(20.35%)	(19,907.31)	(454.15%)	(9,842.13)	-	-	(453.90%)	(9,842.11)
Total	**100.00%**	**97,829.18**	**100.00%**	**2,167.15**	**100.00%**	**1.20**	**100.00%**	**2,168.35**

CUBE HIGHWAYS TRUST
Notes forming part of Consolidated Financial Statements for the year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

59 Additional information pursuant to paragraph 12.3 of Division II of Schedule III to the Companies Act, 2013 - 'General instructions for the preparation of consolidated financial statements of Division II of Schedule III.

As at and for the year ended March 31, 2025

Name of entity in the group	Net Assets (total Assets minus total liabilities)		Share in Profit or (loss)		Share in other comprehensive income/(loss)		Share in total comprehensive income/(loss)	
	As a % of consolidated net assets	Amount	As a % of consolidated net profit or (loss)	Amount	As a % of consolidated other comprehensive income	Amount	As a % of consolidated Total comprehensive income	Amount
Parent								
Cube Highways Trust	118.26%	1,35,263.00	(2798.32%)	9,995.67	-	-	(2802.63%)	9,995.67
Subsidiaries		-		-				
Indian		-		-				
WUPTPL	0.25%	284.87	(35.26%)	125.96	(25.45%)	(0.14)	(35.28%)	125.82
APEPL	(0.38%)	(434.46)	(51.55%)	184.15	(9.09%)	(0.05)	(51.62%)	184.10
JMTPL	2.38%	2,717.09	(387.16%)	1,382.94	(10.91%)	(0.06)	(387.74%)	1,382.88
MBEL	0.42%	478.87	(125.37%)	447.83	(3.64%)	(0.02)	(125.56%)	447.81
FRHPL	(5.85%)	(6,694.10)	212.73%	(759.87)	40.00%	0.22	212.99%	(759.65)
DATRPL	(3.25%)	(3,720.51)	86.29%	(308.22)	34.55%	0.19	86.37%	(308.03)
GAEPL	1.87%	2,139.66	138.12%	(493.36)	16.36%	0.09	138.31%	(493.27)
WVEPL	(1.84%)	(2,109.26)	65.25%	(233.06)	(5.45%)	(0.03)	65.35%	(233.09)
NDEPL	(0.65%)	(741.75)	6.45%	(23.03)	(16.36%)	(0.09)	6.48%	(23.12)
HTPL	(1.24%)	(1,421.26)	154.64%	(552.38)	5.45%	0.03	154.87%	(552.35)
JLTPL	0.51%	582.12	(35.94%)	128.39	20.00%	0.11	(36.03%)	128.50
JVTPL	0.41%	463.55	(36.03%)	128.69	(1.82%)	(0.01)	(36.08%)	128.68
KETPL	(1.34%)	(1,536.52)	194.45%	(694.57)	1.82%	0.01	194.74%	(694.56)
KMTPL	(1.01%)	(1,151.28)	184.94%	(660.60)	12.73%	0.07	185.20%	(660.53)
LRTPL	0.24%	276.05	27.01%	(96.48)	3.64%	0.02	27.05%	(96.47)
MKTPL	(0.97%)	(1,104.06)	146.20%	(522.24)	(5.45%)	(0.03)	146.44%	(522.27)
NKTPL	(1.80%)	(2,053.45)	262.90%	(939.08)	1.82%	0.01	263.30%	(939.07)
SMTPL	(1.29%)	(1,470.70)	183.28%	(654.69)	(3.64%)	(0.02)	183.57%	(654.71)
SIPL	0.77%	877.01	(70.22%)	250.83	7.27%	0.04	(70.34%)	250.87
SPPL	0.73%	836.21	(44.61%)	159.34	12.73%	0.07	(44.70%)	159.41
THPL	1.11%	1,273.75	(34.73%)	124.05	32.73%	0.18	(34.83%)	124.23
BWHPL	0.31%	358.64	1.61%	(5.75)	(3.64%)	(0.02)	1.62%	(5.77)
MSHPL	0.29%	329.90	(16.90%)	60.36	3.64%	0.02	(16.93%)	60.37
MHPL	0.03%	36.06	(3.84%)	13.73	14.55%	0.08	(3.87%)	13.81
NAMEPL	(3.24%)	(3,703.01)	47.47%	(169.58)	(21.82%)	(0.12)	47.58%	(169.70)
Non controlling Interest	0.00%	0.66	(0.04%)	0.13	-	-	(0.04%)	0.13
Intra Group Eliminations	(4.72%)	(5,402.53)	2028.64%	(7,246.36)	-	-	2031.76%	(7,246.34)
Total	**100.00%**	**1,14,374.55**	**100.00%**	**(357.20)**	**100.00%**	**0.55**	**100.00%**	**(356.65)**

CUBE HIGHWAYS TRUST
Notes forming part of Consolidated Financial Statements for the year ended March 31, 2026
(All amounts in Rs. million unless otherwise stated)

59 Additional information pursuant to paragraph 12.3 of Division II of Schedule III to the Companies Act, 2013 - 'General instructions for the preparation of consolidated financial statements of Division II of Schedule III.

As at and for the year ended March 31, 2024

Name of entity in the group	Net Assets (total Assets minus total		Share in Profit or (loss)		Share in other comprehensive		Share in total comprehensive	
	As a % of consolidated net assets	Amount	As a % of consolidated net profit or (loss)	Amount	As a % of consolidated other comprehensive income	Amount	As a % of consolidated Total comprehensive income	Amount
Parent								
Cube Highways Trust	108.14%	1,40,026.04	(49.27%)	3,477.96	-	-	(49.27%)	3,477.96
Subsidiaries		-		-				
Indian		-		-				
WUPTPL	0.12%	159.06	(1.99%)	140.36	70.58%	0.33	(1.99%)	140.69
APEL	(0.48%)	(618.56)	1.06%	(74.56)	23.24%	0.11	1.05%	(74.45)
JMTPL	1.64%	2,120.52	(17.26%)	1,218.25	12.37%	0.06	(17.26%)	1,218.31
MBEL	0.02%	31.06	(2.81%)	198.19	(33.90%)	(0.16)	(2.81%)	198.03
FRHPL	(4.58%)	(5,934.45)	11.94%	(843.14)	8.10%	0.04	11.94%	(843.10)
DATRPL	(2.64%)	(3,412.47)	8.65%	(610.96)	16.84%	0.08	8.65%	(610.88)
GAEPL	2.03%	2,632.93	3.82%	(269.72)	(7.46%)	(0.04)	3.82%	(269.76)
WVEPL	(1.45%)	(1,876.16)	1.81%	(127.64)	11.09%	0.05	1.81%	(127.59)
NDEPL	(0.55%)	(718.63)	0.37%	(26.25)	(1.49%)	(0.01)	0.37%	(26.26)
HTPL	(0.67%)	(868.91)	8.06%	(568.71)	(5.76%)	(0.03)	8.06%	(568.74)
JLTPL	0.35%	453.62	(0.43%)	30.15	(3.62%)	(0.02)	(0.43%)	30.13
JVTPL	0.26%	334.87	(0.81%)	57.13	(1.92%)	(0.01)	(0.81%)	57.12
KETPL	(0.65%)	(841.96)	8.56%	(604.09)	0.85%	0.00	8.56%	(604.09)
KMTPL	(0.38%)	(490.75)	9.42%	(664.95)	30.06%	0.16	9.42%	(664.79)
LRTPL	0.29%	372.51	1.86%	(131.46)	(24.95%)	(0.12)	1.86%	(131.58)
MKTPL	(0.45%)	(581.79)	8.03%	(567.09)	11.73%	0.04	8.03%	(567.05)
NKTPL	(0.86%)	(1,114.38)	11.20%	(790.67)	(1.92%)	(0.01)	11.20%	(790.68)
SMTPL	(0.63%)	(816.00)	8.41%	(593.90)	(3.84%)	(0.02)	8.41%	(593.92)
Non controlling Interest	0.00%	0.53	(0.00%)	0.05	-	-	(0.00%)	0.05
Intra Group Eliminations	0.49%	632.83	89.36%	(6,308.10)	-	-	89.37%	(6,308.10)
	100.00%	**1,29,489.91**	**100.00%**	**(7,059.15)**	**100.00%**	**0.45**	**100.00%**	**(7,058.70)**

60 Investment Management and Project Management Fees

(i) Project Management Fees (refer note 46.6)

Pursuant to Project Implementation and Management Agreement dated January 02, 2023 (PM Agreement) in consideration of services to be rendered by Project Manager in accordance with and subject to agreement and applicable law, each project SPV's agree to pay fees ("Fee") from their respective funds, on an arm length basis, to the Project Manager. The fee shall be calculated annually and shall be higher of :-
(a) 1.55% of the standalone revenue of the project SPV based on audited financial statements of Project SPV.
OR
(b) During the terms of relevant Concession Agreement for each Project SPV the Minimum Threshold as specified in Schedule 4 of the PM Agreement in relation to each Project SPV, subject to escalation of 7% per annum.

(ii) Investment Management Fees

In terms of the InvIT Regulations, the Trust has entered into Investment Management Agreement dated March 11, 2022 with Cube Highways Fund Advisors Private Limited ("the Investment Manager"), which got amended on May 30, 2022, on December 16, 2022, March 08, 2024 and on July 24, 2024 (herein after referred to as IM Agreement).

As per Schedule II of the IM Agreement as amended from time to time, the Investment Manager shall be entitled to a fee from the funds of the Trust in accordance with the IM Agreement ("Management Fee") as under:

For the period upto December 15, 2022 (in terms of Amended and Restated IM Agreement dated May 30, 2022)	Higher of: (a) Subsequent to the Initial Offer, the Management Fee shall be 0.88% of the revenue of the Initial SPVs ("Fee Percentage"); (b) Rs. 190 million ("Minimum Threshold") subject to an escalation of 7% per annum from March 31, 2023
For the period upto May 31, 2024 (in terms of Amended and Restated IM Agreement dated December 16, 2022)	Higher of: (a) 0.94% of the revenue of the Initial SPVs ("18 SPV's");or (b) Rs. 190 million ("Minimum Threshold") subject to an escalation of 7% per annum from March 31, 2023
For the period from and after June 01, 2024 (in terms of Amended and Restated IM Agreement dated July 24, 2024)	Higher of: (a) 0.81% of the revenue of the Project SPVs ("24 SPV's including 6 HAM SPV's"); or (b) Rs. 190 million ("Minimum Threshold") subject to an escalation of 7% per annum from March 31, 2023
For the period from and after February 12, 2025 (in terms of Amended and Restated IM Agreement dated July 24, 2024)	Higher of: (a) 0.75% of the revenue of the Project SPVs ("27 SPV's including 6 HAM SPV's, NAMEPL, QEPL and JUHPL"); or (b) Rs. 190 million ("Minimum Threshold") subject to an escalation of 7% per annum from March 31, 2023

61 During the year ended March 31, 2026, the Trust has been assigned/reaffirmed the credit ratings for its borrowings as follows:-

Sr. No.	Nature of Borrowings	Rating Agency	Rating	Date
1	Rupee Term Loan	CRISIL	"CRISIL AAA/Stable"	Reaffirmed on June 04, 2025, September 15, 2025, February 10, 2026, March 05, 2026 and March 23, 2026
		ICRA	"ICRA AAA/Stable"	Reaffirmed on April 17, 2025, August 13, 2025. Assigned/Reaffirmed on August 28, 2025
		India Ratings	"IND AAA/Stable"	Reaffirmed on April 18, 2025, April 22, 2025, June 09, 2025 and August 14, 2025
2	Bank Guarantee	CRISIL	"CRISILA1+"/"CRISIL AAA/Stable"	Reaffirmed on June 04, 2025, September 15, 2025, February 10, 2026, March 05, 2026 and March 23, 2026
		ICRA	"ICRA AAA/Stable"	Reaffirmed on April 17, 2025, August 13, 2025. Assigned/Reaffirmed on August 28, 2025
		India Ratings	"IND AAA/Stable"	Reaffirmed on April 18, 2025, April 22, 2025, June 09, 2025 and August 14, 2025
3	Non-Convertible Debt Securities	ICRA	"ICRA AAA/Stable"	Assigned/Reaffirmed on April 17, 2025, August 13, 2025 and August 28, 2025
		CRISIL	"CRISIL AAA/Stable"	Reaffirmed on June 04, 2025 and February 10, 2026
		India Ratings	"IND AAA/Stable"	Reaffirmed on April 18, 2025, April 22, 2025, and June 09, 2025. Assigned/Reaffirmed on August 14, 2025. Reaffirmed on August 28, 2025
4	Commercial papers	CRISIL	"CRISIL A1+"	Reaffirmed on June 04, 2025 and February 10, 2026
		India Ratings	"IND A1+"	Assigned on June 09, 2025 and affirmed on August 14, 2025

62 At the end of each reporting period, in terms of Ind AS 36 "Impairment of Assets" the Management carries out impairment assessment for Intangible assets Rights Under Service Concession Arrangements in individual subsidiary (cash generating unit) and determine the recoverable amount of non-current investments in subsidiaries as at the reporting date.

An impairment loss is recognised if the carrying amount of the Intangible assets exceeds its recoverable amount. The recoverable amount is determined by the Management based on the value in use approach using an External Independent Valuer. The key judgements in determining the value in use approach included revenue and other cash flow projections for the remaining concession period, changes in interest rates, discount rates, risk premium for market conditions etc. The revenue projection is based on assumptions made by the Management regarding future traffic growth and inflation factor for assessing user toll fee as supported by the studies from the Third-party Independent Consultant.

Based on the aforesaid impairment assessment done by the management of Investment Manager, the Trust has recognized following impairment loss / (reversal) - net in respect of Intangible assets Rights Under Service Concession Arrangements in the Consolidated Statement of Profit and Loss:

For the year ended March 31, 2026 **(Amounts in Rs. Million)**

Particulars	Impairment Loss/(reversal)	Recoverable Value	Discounting rate (%)
GAEPL	(1,421.00)	38,839.00	9.86%

For the year ended March 31, 2025: Nil

For the year ended March 31, 2024 **(Amounts in Rs. Million)**

Particulars	Impairment Loss/(reversal)	Recoverable Value	Discounting rate (%)
WUPTPL	122.51	1,656.00	10.70
GAEPL	1,421.00	28,525.00	10.60
NDEPL	368.10	4,960.90	10.70
FRHPL	3,039.42	23,530.57	10.60
LRTPL	920.84	6,731.16	10.40
Total	**5,871.87**	**65,403.63**	

The aforesaid recoverable value of these Intangible assets – Rights under Service Concession Arrangements is based on Enterprise Value as determined by the External Independent valuer. For valuation process and technique used to determine fair value (refer note 57(4)) of Consolidated Financial Statements.

63 **Distribution**

A) Details of distribution made by the Trust to Unitholders is as under:

(Amounts in Rs. Million)

Particulars	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024
Interest (Return on capital)	10,747.19	7,313.90	6,849.16
Dividend	2,187.76	564.99	1,032.28
Other Income on surplus fund at Trust	40.20	39.59	54.19
Repayment of capital	5,738.57	6,840.23	-
	18,713.72	**14,758.71**	**7,935.63**

B) Subsequent to the year ended March 31, 2026, the Board of Directors of Investment Manager in its meeting dated May 22, 2026 approved a distribution of Rs. 3.57 per unit aggregating Rs. 4,798.33 million for the quarter ended March 31, 2026 to be paid within 5 days from the record date. This distribution is subsequently paid.

64 The Board of Directors of the Investment Manager in its meeting held on July 01, 2024 approved the reclassification of 44.10 million Subordinate Units out of the total 120 million Subordinate Units, issued as part of the initial offer to Cube Highways & Infrastructure III Pte. Ltd. (CH-III), Sponsor of the InvIT, into 44.10 million Ordinary Units, in terms of the performance metrics and the Entitlement Event as defined in the Trust Deed and disclosed in the Final Placement Memorandum dated April 17, 2023. The Board of Directors, accordingly, also approved the extinguishment of the balance 75.90 million Subordinate Units held by CH-III not reclassified into Ordinary Units. These 44.10 million Subordinate Units reclassified into Ordinary Units on July 19, 2024 and got listed on Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) on July 29, 2024.

65 The Board of Directors of the Investment Manager in its meeting held on July 01, 2025 approved the reclassification of 9.62 million Subordinate Units out of the total 37.50 million Subordinate Units, issued as part of the initial offer to Cube Highways and Infrastructure Pte Ltd (CH-I), Sponsor of the InvIT, in terms of the performance metrics and the Entitlement Event as defined in the Trust Deed. The Board of Directors, accordingly, also approved the extinguishment of the balance 27.87 million Subordinate Units held by CH-I not reclassified into Ordinary Units. These 9.62 million Subordinate Units reclassified into Ordinary Units on July 14, 2025 and got listed on Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) on July 17, 2025.

66 The Trust Group has assessed the implications of the four Labour Codes notified by the Government of India, namely the Code on Wages, 2019, the Industrial Relations Code, 2020, the Code on Social Security, 2020 and the Occupational Safety, Health and Working Conditions Code, 2020, which came into effect on November 21, 2025, on the employee benefits of the Trust Group. Based on the current understanding of the applicable provisions, the rules notified by the Government of India on 8 May 2026, FAQs issued by the Ministry of Labour and Employment, and legal opinions obtained, the Trust Group estimated that the provisions currently in force do not have a material impact on the consolidated financial statements of the Trust Group.

Further, considering the evolving regulatory framework, judicial developments, and the possibility of future obligations arising under the labour laws, the Trust Group will continue to monitor these developments and appropriately reassess the accounting impact, if any, in future periods.

67 The Trust Group has reclassified the accruals relating to employees' salaries and wages from "Trade payables" to "Other financial liabilities" for the year ended March 31, 2024, in view of the opinion of Expert Advisory Committee of the Institute of Chartered Accountants of India considering the said disclosure could be more relevant to the users of the financial statements. This change doesn't result in any impact on the total current liabilities.

68 The Trust Group has not traded or invested in Cryptocurrency or Virtual Currency during years ended March 31, 2026, March 31, 2025 and March 31, 2024.

69 The Trust Group has made transactions with the Companies which were struck off under section 248 of the Companies Act, 2013 or section 560 of Companies Act, 1956, The detail of the same is as follows:

Name of Struck Off companies	Nature of Transaction	For the year ended March 31, 2026	For the year ended March 31, 2025	For the year ended March 31, 2024	Relationship with the struck off company
Tollways Infra Projects Private Limited	COS Contractor	-	0.63	-	No Relation
Rousing Trading (INDIA)	Repair and maintenance	0.64	-	0.06	No Relation
Fairdeal Motor and Workshop Pvt Ltd	Vehicle repair	0.02	-	-	No Relation

70 The Trust Group does not have any transaction which is not recorded in the books of account that has been surrendered or disclosed as income during the year in the tax assessments under the Income Tax Act, 1961 (such as, search or survey or any other relevant provisions of the Income Tax Act, 1961).

71 During the year, WUPTPL has filed a first motion application/petition with the National Company Law Tribunal (NCLT) for reduction and reorganisation of capital under Section 230, read with Sections 66 and 52, and other applicable provisions of the Companies Act, 2013. The NCLT has passed an order on October 07, 2025, dispensing with the meetings of shareholders and creditors. The Company has filed the second motion petition before NCLT, which is pending. The Consolidated Financial Statement for the year ended March 31, 2026, has been prepared without giving effect to the proposed capital reduction and reorganisation, pending receipt of necessary approvals and completion of related compliances.

72 The Trust Group has not been declared as a wilful defaulter by any bank or financial institution or other lender.

73 The Trust Group does not have any Benami property, where any proceeding has been initiated or pending against the Trust Group for holding any Benami property.

74 The Consolidated Financial Statements have been approved by the Board of Directors of the Investment Manager to the Trust through resolution by circulation dated July 02, 2026.

For and on behalf of the Board of Directors of
Cube Highways Fund Advisors Private Limited
(in its capacity as the Investment Manager of Cube Highways Trust)

UPENDRA KUMAR SINHA
Digitally signed by UPENDRA KUMAR SINHA
Date: 2026.07.02 19:07:47 +05'30'

Upendra Kumar Sinha
Chairman
DIN: 00010336
Place: New Delhi
Date: July 02, 2026

VINAY C SEKAR
Digitally signed by VINAY C SEKAR
Date: 2026.07.02 19:09:41 +05'30'

Vinay Chandramouli Sekar
Chief Executive Officer

Place: Gurugram
Date: July 02, 2026

PANKAJ VASANI
Digitally signed by PANKAJ VASANI
Date: 2026.07.02 19:11:32 +05'30'

Pankaj Vasani
Chief Financial Officer

Place: Noida
Date: July 02, 2026

Richa Gupta Rohatgi
Digitally signed by Richa Gupta Rohatgi
Date: 2026.07.02 19:13:38 +05'30'

Richa Gupta Rohatgi
Compliance Officer & CS
MRN: A24446
Place: Noida
Date: July 02, 2026